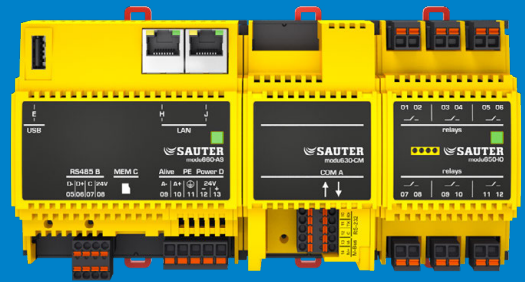
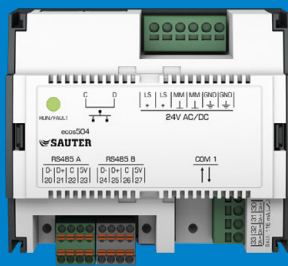


2024

# Catalogue

# Product and Systems

# Information





# Complete solutions from a single source

New building, refurbishment or building operation – SAUTER is your reliable partner for sustainability, operational safety and comfort of real estate. With our intelligent solutions for building control, room automation and technical facility management, we safeguard your investment and support you in achieving your ESG goals. We create sustainable environments. Since 1910.

## The SAUTER Group

- Global company headquartered in Basel, Switzerland
- Technology leader in the field of building automation, system integration and building services
- Focus: maximum energy efficiency and sustainability
- Goal: investment and operational safety throughout the entire building life cycle
- Member of the BACnet Interest Group (BIG-EU), BACnet International, EnOcean Alliance as well as the eu.bac, KNX and DALI Alliance (DiiA)









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# Product highlights



## Smart Sensor viaSens

Smart buildings need comprehensive sensor technology. The Smart Sensor viaSens measures temperature, air humidity and air quality as well as brightness, presence and sound pressure level. It also has an animated LED light ring. Multiple sensors communicate wirelessly via a Bluetooth mesh network. Effective IoT integration is possible with the secure MQTT interface of the sensor gateway.

## SAUTER Vision Center

The web-based building management and integration platform for operating and visualising building operations is constantly being expanded. Highlights in 2024 include new alarm features, improved user administration, audit trail updates and intrinsic security mechanisms.



## modu6 IP coupler for I/O modules

The new modu6 12-LC unit enables I/O and communication modules of a modu6 automation station to be remotely connected via the IP network. Communication is encrypted via MQTT. The integrated web server provides a secure user interface for configuration during commissioning.

## AXT3/AXS3 actuators for unit valves

The AXT3 actuators for unit valves and AXS3 continuous actuators for unit valves with stroke indicator ensure efficient room temperature control. The range includes two basic types for different operating voltages as well as NC (normally closed) and NO (normally open) versions. There are also versions with plug-in cables for flexible use. Numerous valve adapters allow fitting on all common unit valves. OEM solutions are possible.



## Redesigned room transducers with app

The comprehensive range of room transducers for optional detection of temperature, humidity, VOC or CO<sub>2</sub> now have upgraded CO<sub>2</sub> sensors and a new, timeless design. A smart-phone app is now available for individually configuring the measuring ranges and output signals of the room transducers with active signals.

## modulo 6 with BACnet/SC

Firmware update 2.0 for modulo 6 provides multi-layered protection for installations of any size. It supports BACnet/SC and the RADIUS protocol and has even more secure network separation. moduWebUnity, the web application for visualisation, now supports operation via touch panels and the export of measurement data for further processing with ERP systems.




























# Mobile Apps

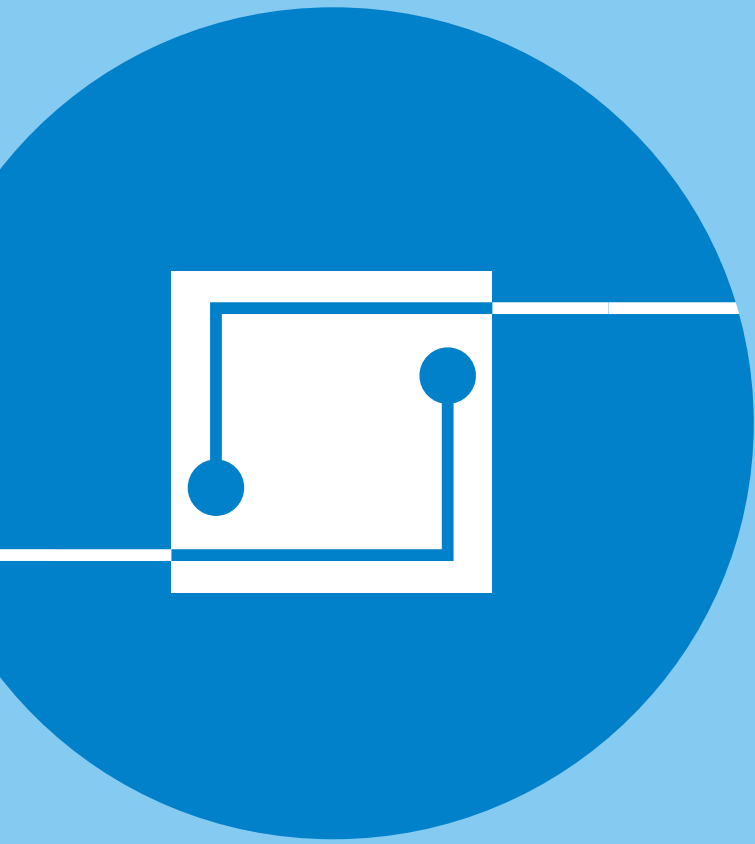
## From installation to service.

Mobile apps supplement the SAUTER product portfolio. They help users execute tasks or provide services remotely. Here is a handy overview of the apps that are currently available.

## Overview of mobile apps (alphabetical order)

	Name	Main functions	iOS	Android
	ecoUnit	<ul style="list-style-type: none"> <li>Controlling the ecoUnit Touch room operating unit (EY-RU365)</li> </ul>		
	eValveco Assistant	<ul style="list-style-type: none"> <li>Commissioning, configuration, service and operation</li> <li>Creating and managing projects</li> </ul>		
	Mobile Room Control, the Mobile Building Services app	<ul style="list-style-type: none"> <li>Operating room functions, information and notifications for tenants, owners and operators</li> <li>Booking meeting rooms, assets, parking spaces and workspaces</li> </ul>		
	modulo 6	<ul style="list-style-type: none"> <li>Commissioning, service and operation</li> </ul>		
	Smart Actuator	<ul style="list-style-type: none"> <li>Commissioning, service and operation</li> <li>Application selection and configuration</li> <li>Creating and managing projects</li> </ul>		
	ValveDim	<ul style="list-style-type: none"> <li>Access to the SAUTER valve and actuator portfolio</li> <li>Configuring valve and actuator combinations</li> </ul>		
	viaSens	<ul style="list-style-type: none"> <li>Commissioning the sensor in the SAUTER meshNet                             <ul style="list-style-type: none"> <li>Sensor network configuration</li> <li>Basic configuration of the sensor</li> <li>Calibration of the sensor</li> <li>Beacon transmission capacity display</li> </ul> </li> </ul>		

# On/off controllers



## Proven technology developed further.

Two-point controllers from SAUTER are used to limit, regulate and monitor temperature, pressure and humidity, with no auxiliary energy required. They provide reliability, even in difficult conditions.

## 2-point controllers

### Thermostats

Overview of fan-coil room-temperature controllers	10	TSHK 681, 682: Fan-coil room temperature controller	17
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# Fan-coil room-temperature controllers

SAUTER fan-coil controllers are used for demand-led activation of fan-coil units and ensure that they are operated with optimum use of energy. There are controllers for fan-coil units with a three-speed fan and for the continuous activation of EC motors. The controllers are suitable for 2- and 4-pipe installations and also for fan-coil units with an electric reheater.

## Overview of fan-coil room-temperature controllers



Type designation	TSO, TSH	TSHK 621...643	TSHK 670...672	TSHK 681...682
Indicating and operating elements				
Mode switch for heating	•	•	•	–
Mode switch for cooling	•	•	•	–
Mode switch for fan	•	•	•	•
Setpoint adjuster	•	•	•	•
LCD	–	–	–	•
Method of operation				
Load (A)	≤ 10	≤ 6	≤ 10	≤ 6
External sensor	–	–	–	•
2-pipe installation	–	•	–	•
4-pipe installation	–	•	•	•
C/O (changeover)	–	–	–	•
Further information	Page 11	Page 13	Page 15	Page 17

## TSO, TSH: Room thermostat

### Features

- Variable room temperature as setpoint based on printed temperature scale
- Variants of the standard devices are available, such as thermal feedback, night set-back mode, fan switches and switches for heating/cooling
- Setpoint adjuster with mechanical min. and max. limitation of the setting range

### Technical data

#### Power supply

Load <sup>1)</sup>	230 V~ 10(2,5) A, 24 V= max. 1 A, 24 V~ min. 0.2 A
--------------------	--

#### Parameters

Setting range	5...30 °C
Night-time reduction (N/R)	Approx. 5 K
Time constant in still air	17 minutes
Time constant in moving air (0.2 m/s)	13 minutes
Thermal feedback	Proportional band Shortest switching interval
	Approx. 3 K Approx. 19 minutes (E = 0.5)

#### Ambient conditions

Ambient temperature	0...50 °C
---------------------	-----------

#### Construction

Weight	0.11 kg
Dimensions	76 × 76 mm
Housing	Pure white (RAL 9010)
Housing material	Fire-retardant thermoplastic
Fitting	Wall/recessed
Cable inlet	At rear
Baseplate	Black thermoplastic with membrane sensor and contact system
Screw terminals	For electrical cables of up to 1.5 mm <sup>2</sup>

#### Standards, directives

Type of protection	IP20 (EN 60529)
Protection class	II (IEC 60730)
Energy class	I = 1% as per EU 811/2013, 2010/30/EU, 2009/125/EC

CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1, EN 60730-2-9
	Low-Voltage Directive 2014/35/EU	EN 60730-1

### Overview of types

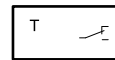
**i** Supply voltage: 10% more voltage means proportional band approx. 4 K, switching period 15 minutes and actual value reduction approx. 0.5 K

**i** H/C = heating or cooling, depending on connection; H//C = heating or cooling, selectable

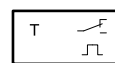
Type	Operating mode switch	Output for	Power supply
TSO670F001	-	H/C	-
TSH670F002	-	H/C	230 VAC, ± 10%, 50...60 Hz
TSH676F002	-	H/C	230 VAC, ± 10%, 50...60 Hz



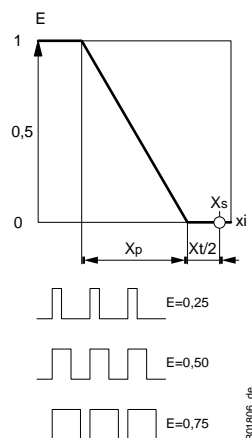
TSO67\*F001



TSO67\*F001



TSH67\*F002



E= control factor

<sup>1)</sup> For TSO672F001 for cooling 5(1.5) A



- TSO670F001, TSO672F001: Switching difference 1.3 K without thermal feedback<sup>2)</sup>
- TSH670F002, TSH676F002: Dynamic switching difference 0.5 K with thermal feedback<sup>3)</sup>
- TSH676F002: Additional feature N/R (normal/reduced) for external clock

#### Accessories

Type	Description
0362225001	Intermediate plate, pure white, for wall mounting on recessed junction box

<sup>2)</sup> Devices without thermal feedback are pure 2-point controllers. The static switching difference is given, i.e. for very slow changes in temperature. For faster changes in temperature, the time constant must be taken into account.

<sup>3)</sup> Devices with thermal feedback are pulsed by a built-in heating resistor. The control factor falls as the temperature increases, i.e. the controller has proportional behaviour. A small temperature variation of  $\pm 0.1 \dots 0.5$  K occurs as a result of switching, depending on the time constant of the room.

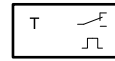
## TSHK 621...643: Fan-coil room temperature controller, electromechanical

### Features

- Variable room temperature as setpoint based on printed temperature scale
- Changeover from heating to cooling via switch or type of connection
- ON/OFF toggle switch for mains voltage, plus other slide switches for operating mode and fan, depending on the type
- More constant room temperature due to thermal feedback
- Suitable for wall mounting or fitting on recessed junction boxes
- Setpoint adjuster with mechanical min. and max. limitation of the setting range
- 2-point pulsed activation
- Individual unitary temperature control in residential and business rooms for activating, for example, electric heating systems, thermal actuators, or fans or cooling units in air-conditioning systems.



TSHK6\*\*F00\*



### Technical data

Power supply	
Power supply <sup>1)</sup>	230 V~, approx. ±10%, 50...60 Hz
Parameters	
Setting range	5...30 °C
Proportional band	3 K
Hysteresis <sup>2)</sup>	Approx. ±0.1...0.5 K
Shortest switching interval	Approx. 19 minutes (E = 0.5)
Time constant in still air	20 minutes
Dead time in still air	2 minutes
Time constant in moving air (0.2 m/s)	15 minutes
Dead time in moving air (0.2 m/s)	1 minute
Ambient conditions	
Ambient temperature	0...55 °C
Outputs	
Load	6(3) A, 230 V~
Fan load	6(3) A, 230 V~
Construction	
Weight	0.18 kg
Housing	Pure white (RAL 9010)
Housing material	Fire-retardant thermoplastic (fire classification UL94 HB)
Baseplate	Black thermoplastic with bimetallic sensor and contact snap mechanism with permanent magnet
Cable inlet	At rear
Screw terminals	For electrical cables of up to 2.5 mm <sup>2</sup>
Standards and directives	
Type of protection	IP30 (EN 60529)
Protection class	II (IEC 60730)
Energy class	I = 1% as per EU 811/2013, 2010/30/EU, 2009/125/EC






<sup>1)</sup> 10% more voltage results in: Proportional band approx. 4 K, switching period 15 min, actual-value reduction approx. 0.5 K

<sup>2)</sup> Devices with thermal feedback are pulsed by a built-in heating resistor. The control factor reduces as the temperature increases (i.e. the controller has proportional behaviour). A small temperature variation of ±0.1...0.5 K occurs as a result of pulsing, depending on the time constant of the room



### Overview of types

Type	Operating mode
TSHK621F001	Heating/cooling; 2-pipe
TSHK642F001	Heating only / cooling only; 2-pipe
TSHK643F001	Heating/cooling; 4-pipe

	TSHK621	TSHK642	TSHK643
Mains switch on/off	•	•	•
Operating mode switch		–	
Fan speeds			

### Accessories

Type	Description
0362239001	Pure white intermediate cover plate, suitable for various recessed junction boxes



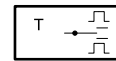
## TSHK 670...672: Fan-coil room temperature controller, heating/cooling sequence

### Features

- Variable room temperature as setpoint based on printed temperature scale
- Gradual transition from heating to cooling through sequence characteristic
- Variants with master switch plus slide switch for the fan
- Suitable for wall mounting or fitting on recessed junction boxes
- Electronics unit and switching relay
- Setpoint adjuster with mechanical min. and max. limitation of the setting range
- Quasi-continuous temperature control
- 2-point pulsed activation
- Individual unitary temperature control in residential and business rooms for activating, for example, electric heating systems, thermal actuators, or fans or cooling units in air-conditioning systems.



TSHK67\*F001



### Technical data

Power supply	
Power supply	230 V~, approx. $\pm 10\%$ , 50...60 Hz
Parameters	
Setting range	5...30 °C
Proportional band	2 × 3 K
Sequence dead zone	2 K $\pm 0,7$
Hysteresis <sup>1)</sup>	Approx. $\pm 0.1...0.5$ K
Shortest switching interval	Approx. 19 minutes (E = 0.5)
Time constant in still air	20 minutes
Dead time in still air	2 minutes
Time constant in moving air (0.2 m/s)	15 minutes
Dead time in moving air (0.2 m/s)	1 minute
Ambient conditions	
Ambient temperature	0...55 °C
Outputs	
Load	10(4) A, 230 V~
Fan load	6(3) A, 230 V~
Function	
Operating mode	Heating/cooling sequence; 4-pipe
Construction	
Weight	0.18 kg
Housing	Pure white (RAL 9010)
Housing material	Fire-retardant thermoplastic (fire classification UL94 HB)
Baseplate	Black thermoplastic with NTC sensor
Cable inlet	At rear
Screw terminals	For cables of up to 2.5 mm <sup>2</sup>
Standards and directives	
Type of protection	IP30 (EN 60529)

<sup>1)</sup> The device is pulsed electronically. When the temperature increases, the control factor is reduced to 0 on the "Heating" output and increased to E = 1 on the "Cooling" output. A small temperature variation of  $\pm 0.1...0.5$  K occurs as a result of pulsing, depending on the time constant of the room



Protection class	II (IEC 60730)
Energy class	I = 1% as per EU 811/2013, 2010/30/EU, 2009/125/EC

### Overview of types

Type	Number of switches
TSHK670F001	0
TSHK672F001	2

	TSHK670	TSHK672
Mains switch ON/OFF	–	•
Fan speeds	–	⏏ ⏏ ⏏
Indicators/display	–	1 LED

### Accessories

Type	Description
0362239001	Pure white intermediate cover plate, suitable for various recessed junction boxes

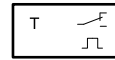
## TSHK 681, 682: Fan-coil room temperature controller, with digital display

### Features

- LCD of the room temperature or setpoint, with two buttons ( $\pm$ ) for adjusting the setpoint
- Output for heating or cooling depending on connection type, or change in direction of operation with external switch
- With main switch for mains power supply and slide switch for three fan speeds
- Suitable for wall mounting or fitting on recessed junction boxes
- Electronics unit and switching relay
- Quasi-continuous temperature control
- 2-point pulsed activation
- Individual unitary temperature control in residential and business rooms for activating e.g. electric heating systems, thermal actuators, or fans or cooling units in air-conditioning systems.



TSHK68\*F001



### Technical data

#### Power supply

Power supply <sup>1)</sup>	230 V~, approx. $\pm 10$ V, 50...60 Hz
----------------------------	--

#### Parameters

Setting range	5...30 °C; resolution 0.5 °C
Proportional band	3 K
Display of actual value	0...40 °C; resolution 0.1 °C
Hysteresis <sup>2)</sup>	Approx. $\pm 0.1$ ...0.5 K
Shortest switching interval	Approx. 18 minutes (E = 0.5)
Time constant in still air	20 minutes
Dead time in still air	2 minutes
Time constant in moving air (0.2 m/s)	15 minutes
Dead time in moving air (0.2 m/s)	1 minutes

#### Ambient conditions

Ambient temperature	0...55 °C
---------------------	-----------

#### Outputs

Load	3(2) A, 230 V~
Fan load	6(3) A, 230 V~

#### Construction

Weight	0.18 kg
Housing	Pure white (RAL 9010)
Housing material	Fire-retardant thermoplastic (fire classification UL94 HB)
Baseplate	Black thermoplastic with NTC sensor
Cable inlet	At rear
Screw terminals	For cables of up to 2.5 mm <sup>2</sup>

#### Standards and directives

Type of protection	IP30 (EN 60529)
Protection class	II (IEC 60730)
Energy class	I = 1% as per EU 811/2013, 2010/30/EU, 2009/125/EC

<sup>1)</sup> 10% more voltage results in: Proportional band approx. 4 K, switching period 15 min, actual-value reduction approx. 0.5 K

<sup>2)</sup> The device is pulsed electronically. When the temperature increases, the control factor falls to zero at the "Heating" output and rises to E = 1 at the "Cooling" output. A small temperature variation of  $\pm 0.1$ ...0.5 K occurs as a result of pulsing, depending on the time constant of the room



### Overview of types

Type	Operating mode
TSHK681F001	Heating or cooling or heating/cooling; 2-pipe
TSHK682F001	Heating/cooling; 4-pipe

	TSHK681	TSHK682
Mains switch ON/OFF	•	(•)
Operating mode switch	–	☰ OFF ☼ ☽
Fan speeds	☽ ☽ ☽	☽ ☽ ☽
Indicators/display	°C digital	°C digital

### Accessories

Type	Description
0362238001	Cable temperature sensor, 4 m long, made of PVC, for external temperature measurement (max. 50 m)
0362239001	Pure white intermediate cover plate, suitable for various recessed junction boxes

# Universal thermostats

Temperature control, temperature monitoring and temperature limitation: SAUTER universal thermostats are used for these three applications. They provide control, monitoring and limitation according to needs without auxiliary energy.

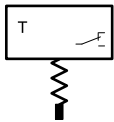
## Overview of universal thermostats



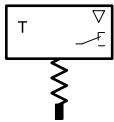
Type designation	TUC
Application	
Clamp-on temperature	•
Duct	•
Pipe	•
Operating mode	
Temperature controller, monitor (TR, TW)	•
Safety temperature limiter (STB)	•
Temperature limiter (TB)	•
Further information	Page 20



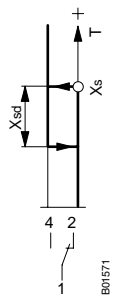
TUC\*0\*F00\*



TW, STW



TB, STB



TUC207F003

TUC407F001

TUC407F002

## TUC: Universal thermostat

### Features

- Regulates and monitors the temperature of liquids in baths, containers, pipes, ducts and HVAC installations
- Variants as temperature monitor (TW) and temperature limiter (TB)
- Double thermostat as TW and TB
- Thermostat with remote sensor
- Clamp-on thermostat
- Capillary tube thermostat with or without thermowell
- The shift in the change-over point is minimised due to the temperature compensation
- Thermowell supplied (max. 12 bar)

The following features and certifications do **not** apply to the United Kingdom of Great Britain and Northern Ireland (UK):

- Variants as safety temperature monitor (STW), or safety temperature limiter (STB)
- Double thermostat as STW or STB
- As per PED 2014/68/EU classified as cat. IV (TUC207F003, TUC407F001, TUC407F002)

Use in safety applications is not permitted in the United Kingdom.

### Technical data

#### Power supply

Max. load	Terminal 1-2	230 VAC, 10(2.5) A (on the normally-closed contact)
	Terminal 1-4	230 VAC 2(0.4) A
Min. load	Terminal 1-2, 1-4	24 VAC/DC, 100 mA

#### Parameters

Adjustment point	At $t_a$ 22 °C
Effect of temperature at instrument head	Approx. -0.1...-0.2 K/K
Time constant with thermowell (LW 7)	< 45 s (water) < 60 s (oil)
Time constant without thermowell	< 120 s (air)

#### Ambient conditions

Ambient temperature	0...70 °C
Storage and transport temperature	-25...80 °C
Max. pipe temperature during fitting	120 °C

#### Construction

Connection terminals	Plug-in connectors
Cable cross-section	0.75...2.5 mm <sup>2</sup>
Sensor cartridge	Ø 6.5 mm
Housing	Two sections, lower section black, upper section yellow, including inspection window
Housing material	PA, ABS, PMMA
Weight	0.2 kg

#### Standards, directives

Type of protection	IP54 (EN 60529)
Protection class	I (EN 60730)



## Overview of types

Type	Setting range	Type	Switching difference	Capillary tube length	Sensor cartridge length (± 12 mm)	Thermowell	Max. sensor temp.	Approval
TUC101F003	-10...50 °C	TW	Approx. 4.2 K	1.6 m	80 mm	100 mm, brass	140 °C	CE, UKCA
TUC102F001	5...30 °C	TW	Approx. 5.6 K	0.7 m	65 mm	100 mm, brass	200 °C	CE, UKCA
TUC105F001	15...95 °C	TW	Approx. 5.6 K	0.7 m	65 mm	100 mm, brass	200 °C	CE, UKCA
TUC106F001	40...120 °C	TW	Approx. 5.6 K	0.7 m	65 mm	100 mm, brass	200 °C	CE, UKCA
TUC107F001	50...130 °C	TW	Approx. 5.6 K	0.7 m	65 mm	100 mm, brass	200 °C	CE, UKCA
TUC108F001	80...160 °C	TW	Approx. 5.6 K	0.7 m	65 mm	100 mm, stainless steel	200 °C	CE, UKCA
TUC207F003	70...130 °C	STW	Approx. 10 K	1.6 m	60 mm	100 mm, brass	160 °C	CE
TUC303F001	15...60 °C	TB	≤ 20 K	0.7 m	70 mm	100 mm, brass	200 °C	CE, UKCA
TUC307F001	50...130 °C	TB	≤ 20 K	0.7 m	65 mm	100 mm, brass	200 °C	CE, UKCA
TUC407F001	95...130 °C	STB	≤ 20 K	0.7 m	76 mm	100 mm, brass	160 °C	CE
TUC407F002	95...130 °C	STB	≤ 20 K	0.7 m	76 mm	150 mm, brass	160 °C	CE

- ☛ Universal thermostats approved in the UK must not be used as STW or STB in safety applications.
- ☛ The TUC207F003, TUC407F001 and TUC407F002 devices comply with modules B (type test) and D (QA system, CE 0035) of Pressure Equipment Directive 2014/68/EU.
- ☛ Only use the supplied thermowells or stainless steel thermowells (part nos.: 0393022\*\*\* or 0392022\*\*\*) with the TÜV-certified devices.
- ☛ TUC108F001 with adapter for temperature reduction, only mount with supplied thermowell.

## Accessories

Type	Description
0300360008	Retaining holder for cable temperature sensor or capillary tube with 0392022*** (LW 7) or LW 15 (10 pcs)
0300360009	Holder for sensor cartridge
0300360010	Retaining strap for fitting onto pipes with a diameter of 15...100 mm
0300360011	Mounting plate for double thermostats
0300360012	Sensor support spiral for fitting in ventilation duct
0300360013	Duct/wall mounting bracket

## Thermowells

### Features

- Fitted in pipes and containers for holding sensor cartridges, immersion stems, temperature sensors, temperature controllers or thermostats
- Made of brass (Ms) or stainless steel (V4A)
- Versions with cylindrical pipe thread (G½" male ISO 228/1, flat-sealing)<sup>1)</sup> or cone-shaped (R½" ISO 7/1 sealing in thread)
- With pressure spring (LW 15)
- With retaining holder



### Overview of types

Type	LW	Length	Material	Thread	Nominal pressure	Test pressure	T <sub>max</sub>
0391022050	7	50 mm	Stainless steel	G½"	40 bar	60 bar	325 °C
0391022100	7	100 mm	Stainless steel	G½"	40 bar	60 bar	325 °C
0391022200	7	200 mm	Stainless steel	G½"	40 bar	60 bar	325 °C
0391022300	7	300 mm	Stainless steel	G½"	40 bar	60 bar	325 °C
0391022450	7	450 mm	Stainless steel	G½"	40 bar	60 bar	325 °C
0391022600	7	600 mm	Stainless steel	G½"	40 bar	60 bar	325 °C
0391011050	7	50 mm	Brass	R½"	10 bar	16 bar	160 °C
0391011100	7	100 mm	Brass	R½"	10 bar	16 bar	160 °C
0391011150	7	150 mm	Brass	R½"	10 bar	16 bar	160 °C
0391011200	7	200 mm	Brass	R½"	10 bar	16 bar	160 °C
0391011300	7	300 mm	Brass	R½"	10 bar	16 bar	160 °C
0391011450	7	450 mm	Brass	R½"	10 bar	16 bar	160 °C
0393022100	15	100 mm	Stainless steel	G½"	40 bar	60 bar	450 °C
0393022200	15	200 mm	Stainless steel	G½"	40 bar	60 bar	450 °C
0393022450	15	450 mm	Stainless steel	G½"	40 bar	60 bar	450 °C
0393012100	15	100 mm	Brass	G½"	16 bar	25 bar	160 °C
0393012200	15	200 mm	Brass	G½"	16 bar	25 bar	160 °C
0392022100	7	100 mm	Stainless steel	G½"	25 bar	40 bar	450 °C
0392022200	7	100 mm	Stainless steel	G½"	25 bar	40 bar	450 °C
0392022300	7	300 mm	Stainless steel	G½"	25 bar	40 bar	450 °C

<sup>1)</sup> G½" male ISO 228/1, flat-sealing: for welding bushings with flat seal (accessories)








- ⚡ 0392022100 and 0392022300 for TUC thermostats only
- ⚡ With the TUC407F001 and TUC207F003, only use the supplied thermowells or stainless-steel thermowells (part nos.: 0393022\*\*\* or 0392022\*\*\*).
- ⚡ 0391... with pressure screw (retaining holder) up to max. 200 °C

### Accessories

Type	Description
0300360008	Retaining holder for cable temperature sensor or capillary tube with 0392022*** (LW 7) or LW 15 (10 pcs)
0364263000	Welding sleeve of steel, with female thread G $\frac{1}{2}$ ", flat seal of copper
0300360017	Pressure spring for LW 15 (10 pieces)

			
LW 7, 50 mm	•	• L > 50 mm	–
LW 7, 100 mm	•	•	–
LW 7, 150 mm	•	•	–
LW 7, 200 mm	•	•	–
LW 7, 300 mm	•	• L > 300 mm	–
LW 7, 450 mm	•	•	–
LW 7, 600 mm	•	–	–
LW 15, 100 mm	•	–	•
LW 15, 200 mm	•	–	•
LW 15, 450 mm	•	–	•
0392022100	–	–	•
0392022200	–	–	•
0392022300	–	–	•

- ⚡ 0392022100 and 0392022300 for TUC thermostats only.
- ⚡ With the TUC407F001 and TUC207F003, only use the supplied thermowells or stainless-steel thermowells (part nos.: 0393022\*\*\* or 0392022\*\*\*).
- ⚡ Only use the thermowells (LW 15) with at least 2 sensors or thermostats with a diameter of at least 6 mm
- ⚡ 0391... with pressure screw (retaining holder) up to max. 200 °C.

# Frost monitors

SAUTER frost monitors protect ventilation systems against icing. With their special construction and design, they are particularly suitable for compact installations and/or installations that are subject to vibrations.

## Overview of frost monitors



Type designation	TFL 201	TFL 611
Function		
Monitor	•	•
Limiter	•	–
Output signal		
Switched	•	•
Continuous	–	•
Auxiliary energy	•	–
Further information	Page 25	Page 27

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

### Features

- Temperature monitoring in heating coils and air ducts
- Variants as monitors or limiters
- Copper capillary tube
- Switching point can be set internally
- Small switching difference
- With capillary-tube holders made of plastic

### Technical data

#### Power supply

Max. load	Terminal 1-2	230 VAC, 10(2.5) A (on the normally-closed contact)
	Terminal 1-4	230 VAC 2(0.4) A

#### Parameters

	Setting range	-10...15 °C
	Factory setting	5 °C
	Switching difference	1.5 K
	Tolerance of switching difference	Max. ±1 K
	Max. sensor temperature	120 °C
Time characteristic	Time constant in moving air (0.3 m/s) <sup>1)</sup>	Capillary tube length 1.5 m: 25 s
		Capillary tube length 3 m: 31 s
		Capillary tube length 6 m: 51 s

#### Ambient conditions

Ambient temperature <sup>2)</sup>	-5...70 °C
Max. capillary temperature	120 °C
Storage and transport temperature	-30...80 °C

#### Construction

Connection terminals	Plug-in connectors
Cable cross-section	Ø 0.75...2.5 mm <sup>2</sup>
Housing	Two sections, lower section black, upper section yellow, including inspection window
Housing material	ABS, PMMA
Weight	0.2 kg

#### Standards, directives

Type of protection	IP65 (EN 60529)
Protection class	I (IEC 60730)
EMC Directive 2014/30/EU	EN 60730-1, EN 60730-2-9
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-9

### Overview of types

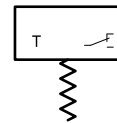
Type	Function	Switching difference	Capillary tube	Capillary tube holder
TFL201F002	Monitor	1.5 K (±1 K)	3000 mm	3
TFL201F022	Limiter	1.5 K (±1 K)	3000 mm	3
TFL201F102	Monitor	1.5 K (±1 K)	1500 mm	3
TFL201F602	Monitor	1.5 K (±1 K)	6000 mm	6
TFL201F622	Limiter	1.5 K (±1 K)	6000 mm	6

<sup>1)</sup> The frost monitor always reacts to the coldest point (minimum length 7.5 cm (1.5 m), 15 cm (3 m) and 30 cm (6 m))

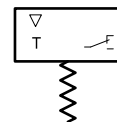
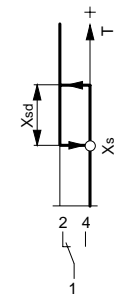
<sup>2)</sup> The head of the instrument must be fitted in a warmer location than the sensor; see fitting instructions



TFL201F\*\*2



TFL201F\*02



TFL201F\*22



### Accessories

Type	Description
0300360014	Six holders for fitting the capillary tube



## TFL 611: Continuous frost monitor with capillary sensor

### Features

- Records the lowest temperature that occurs for a length of at least 250 mm at any position along the capillary tube
- Used on air side in ventilation and air conditioning units where protective measures must be taken against freezing
- Active capillary sensor for measuring the lowest temperatures in the range 0...15 °C
- Vapour-filled capillary tube and diaphragm system with inductive system of measurement
- Setting range 1...10 °C
- Start-up function
- LED and 7-segment display
- Self-monitoring of sensor line

### Technical data

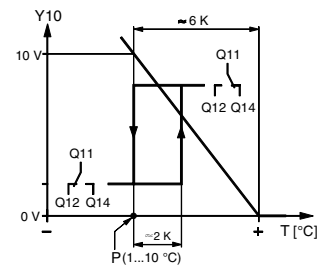
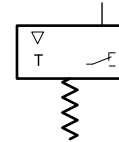
Power supply		
Power supply <sup>1)</sup>		24 V~, 10/-20%
Power consumption		< 6.6 VA
Frequency		50...60 Hz
Parameters		
Measuring range		0...15 °C
Setting range		1...10 °C
Adjustment point		5 °C
Accuracy for adjustment point		± 1 K
Switching difference		Approx. 2 K
Temperature for capillary tube		< 110 °C
Time constant in still air		Approx. 90 s
Time constant in moving air		< 40 s
Response length for capillary tube		Min. 250 mm
Inputs/outputs		
Admissible cable length		300 m with 1.5 mm <sup>2</sup>
Analogue input		
Valve control for terminal Y		0...10 V
Current		< 0.1 mA
Analogue outputs		
Sensor temperature for terminal B		0...10 V $\triangleq$ 0...15 °C
Valve control for terminal Y10		0...10 V
Current		± 1 mA
Potential-free relay outputs (Q terminals)		
Min. switching capacity		12 V~/=, 100 mA
Max. switching capacity		250 V~, 6(2) A; 24 V=, 6 A
Ambient conditions		
Operation		
Humidity (non-condensing)		< 85% rh
Temperature		-15...55 °C
Storage and transport		
Humidity (non-condensing)		< 95% rh
Temperature		-25...65 °C
Construction		
Terminals with spring technology		Max. 2 × 1.5 mm <sup>2</sup> Or 1 × 2.5 mm <sup>2</sup> Min. 0.25 mm <sup>2</sup>
Cable inlet		Cable gland M16 for cable diameter 5...10 mm
Protection class <sup>2)</sup>		I
Housing		PA, silver grey (RAL 7001)

<sup>1)</sup> SELV/PELV: Safety Extra Low Voltage/Protected Extra Low Voltage

<sup>2)</sup> No earth conductor necessary



TFL611F\*01



Housing cover	PC, transparent
Cap	ABS, light grey (RAL 7035)
Capillary tube	Copper

#### Standards and directives

Vibration resistance	EN 60721-3-3 (class 3M2)
Type of protection	IP42 (EN 60529)
Operation as per IEC 721-3-3	Class 3K5
Storage and transport as per IEC 721-3-2	Class 2K3
RoHS Directive 2011/65/EU	EN IEC 63000
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN60730-2-9

#### Overview of types

Type	Description	Weight
TFL611F201	Continuous frost monitor; 0...15 °C; capillary tube length= 2 m	340 g
TFL611F601	Continuous frost monitor; 0...15 °C; capillary tube length= 6 m	410 g

#### Accessories

Type	Description
0292146001	Set for duct fitting consisting of: 5 capillary-tube holders, 1 depth-adjustable flange
0300360014	Six holders for fitting the capillary tube
0374534001	Depth-adjustable flange

# Pressure switches

SAUTER pressure switches can be used in any application for controlling and monitoring the pressure in liquids, gases and vapours. They detect changes in pressure in gaseous and/or liquid media and are used to switch pumps, valves or compressors.

## Overview of pressure switches

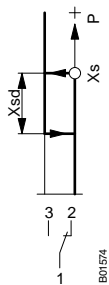
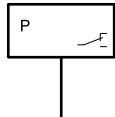


Type designation	DSA	DSB	DSF	DSL	DSH	DFC 17B	DFC 27B	DSD
Pressure monitors	•	•	•	–	–	•	•	–
Pressure limiters								
For rising pressure	–	–	–	–	•	•*)	•*)	–
For falling pressure	–	–	–	•	–	•*)	•*)	–
Differential pressure switch	–	–	–	–	–	–	–	•
Pressure sensors								
Of brass	•	•	–	•	–	•	–	–
Of stainless steel	–	–	•	–	•	–	•	•
Switching difference								
Fixed	•	–	–	•	•	–	–	•
Variable	–	•	•	–	–	•	•	–
Certification								
VdTÜV 100	–	•	•	•	•	•	•	–
EN 12952-11, EN 12953-9	–	•	•	•	•	•	•	–
Germanischer Lloyd (GL)	–	•	•	•	•	•	•	–
Lloyds Register	–	•	•	•	•	–	–	–
Can be used for aggressive media	–	–	•	–	•	–	•	–
Further information	Page 30	Page 32		Page 34		Page 36		Page 38

☛ \*) Depending on approval



DSA14\*F002



## DSA: Pressure switch

### Features

- For regulating and monitoring pressure in liquids, gases and vapours
- Especially suitable for applications in compact installations
- Upper switching point can be adjusted
- Fixed switching difference, no hysteresis setting is necessary
- Sealable
- Pressure sensor made of brass for non-aggressive media

### Technical data

#### Power supply

Maximum load with gold-plated contacts <sup>1)</sup>	400 mA, 24 V, 10 VA
Minimum load with gold-plated contacts	4 mA, 5 V
Maximum load with silver-plated contacts	10(4) A, 250 VAC, 50 W, 250 VDC
Minimum load with silver-plated contacts	100 mA, 24 V

#### Parameters

Pressure connection	G $\frac{1}{2}$ " A
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#### Ambient conditions

Admissible sensor temperature	70 °C
Ambient temperature	-20...70 °C

#### Construction

Fitting	Pipe and wall mounting
Housing	Transparent cover
Housing material	Impact-proof thermoplastic
Device plug	Standard female connector for $\varnothing$ 6...10 mm cable

#### Standards, directives

Type of protection <sup>2)</sup>	IP65 (EN 60529)	
Protection class	I (IEC 60730)	
CE/UKCA conformity <sup>3)</sup>	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-6
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-6
	EMC-D 2014/30/EU (CE)	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	EMC-2016 (UKCA)	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Machinery-D 2006/42/EC (CE)	EN ISO12100: Annex II B of the Reg.	
SMSR-2008 (UKCA)	EN ISO12100: Annex II B of the Reg. (Partly Completed Machinery)	
RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000	
RoHS-2012 (UKCA)	EN IEC 63000	
PED 2014/68/EU (CE)	Article 4.3 and Annex A of the Reg.	
PESR-2016 (UKCA)	Article 8.3 and Essential Safety Requirements of the Reg.	

<sup>1)</sup> If the contacts are subjected to a load greater than specified, the gold plating will be destroyed. They are then classed merely as silver contacts and lose the properties of gold-plated contacts.

<sup>2)</sup> Depending on the fitting position, see the fitting instructions. The devices are not suitable for outdoor applications.

<sup>3)</sup> Use as a pressure limiter is not permitted. The use of an electrical interlock is not permitted.





### Overview of types

Type	Setting range	Switching difference	Maximum pressure	Admissible vacuum loading	Weight
DSA140F002	0.5...2.5 bar	0.25 bar	12 bar	-0.7 bar	0.5 kg
DSA143F002	0.5...6 bar	0.3 bar	16 bar	-0.7 bar	0.5 kg
DSA146F002	1...10 bar	0.4 bar	20 bar	-1.0 bar	0.4 kg

☛ DSA: Pressure sensor made of brass for non-aggressive media;  $X_s$  = upper switching point

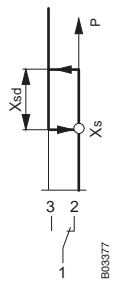
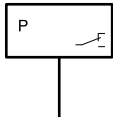
### Accessories

Type	Description
0035465000	Throttle screw for absorbing pressure surges, brass
0214120000	Throttle screw for absorbing pressure surges, stainless steel
0259239000	Reduction nipple G $\frac{1}{2}$ " on 7/16" 20-UNF-2A for copper tubes of $\varnothing$ 6 mm, brass
0292001000	Setpoint adjuster according to customer's wishes (setting accuracy: $\pm 3\%$ of the setting range, but a minimum of $\pm 0.2$ bar)
0292004000	Setpoint adjuster sealed (with accessory 0292001000 only)
0292018001	Damping screw for absorbing pressure surges in low viscosity media
0292150001	Fixing bracket for wall mounting
0296936000	Fixing brackets for rail: top-hat rail EN 60715, 35 $\times$ 7.5 mm and 35 $\times$ 15 mm
0300360007	Capillary throttle, stainless steel, length 1 m, G $\frac{1}{2}$ "-G $\frac{1}{2}$ "
0311572000	Screw fitting for copper tubes of $\varnothing$ 6 mm, brass
0381141001	Profile sealing ring, copper, for G $\frac{1}{2}$ "

☛ 0296936000: With accessory 0292150001 only



DSB1\*\*F001



## DSB, DSF: Pressure monitors and pressure switches

### Features

- For regulating and monitoring pressure in liquids, gases and vapours
- Adjustable lower switching point
- Adjustable switching difference
- Sealable
- Pressure sensor made of brass for non-aggressive media (DSB)
- Pressure sensor made of stainless steel for aggressive media (DSF)
- SIL 2-certified as per IEC 61508<sup>1)</sup>
- Approved for marine applications (GL- and LR-certified)

### Technical data

#### Power supply

Maximum load with gold-plated contacts <sup>2)</sup>	400 mA, 24 V, 10 VA
Minimum load with gold-plated contacts	4 mA, 5 V
Maximum load with silver-plated contacts	10(4) A, 250 VAC, 50 W, 250 VDC
Minimum load with silver-plated contacts	100 mA, 24 V

#### Parameters

Pressure connection	G 1/2" A
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#### Ambient conditions

Ambient temperature	-20...70 °C
---------------------	-------------

#### Construction

Housing	Transparent cover
Housing material	Impact-proof thermoplastic
Device plug	Standard female connector for cable Ø 6...10 mm

#### Standards, directives

Type of protection <sup>3)</sup>	IP65 (EN 60529)	
Protection class	I (IEC 60730)	
Test mark <sup>4)</sup>	TÜV DWFS (SDBFS) ID: 06024	
Ship-approved	Germanischer Lloyd (GL) Lloyds Register (LR)	
CE/UKCA conformity <sup>5)</sup>	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-6
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-6
	EMC-D 2014/30/EU (CE)	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	EMC-2016 (UKCA)	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	Machinery-D 2006/42/EC (CE)	EN ISO12100:2018

<sup>1)</sup> SIL 2 approval is not valid in the United Kingdom (UK).

<sup>2)</sup> If the contacts are subjected to a load greater than specified, the gold plating will be destroyed. They are then classed merely as silver contacts and lose the properties of gold-plated contacts

<sup>3)</sup> Depending on the fitting position, see the fitting instructions. The devices are not suitable for outdoor applications.

<sup>4)</sup> For the EU: DWFS (SDBFS): As a safety pressure limiter when an external electrical locking facility is fitted downstream in the circuit. Certificates can be downloaded from [www.certipedia.com](http://www.certipedia.com).  
For the United Kingdom (UK): Use as a safety pressure limiter is not permitted. The use of an electrical interlock is not permitted.

<sup>5)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues



SMSR-2008 (UKCA)	EN ISO 12100:2018
RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000:2018
RoHS-2012 (UKCA)	EN IEC 63000:2018
PED 2014/68/EU (CE)	VdTÜV pressure information sheet 100, sheet 1, cat. IV EN 12952-11, EN 12953-9
PESR-2016 (UKCA) <sup>6)</sup>	Article 8.3 of the Reg. AD 2000 Rulebook
SIL conformity as per SIL 2	Standards <sup>7)</sup> IEC 61508 parts 1-2 and 4-7

### Overview of types

Type	Setting range	Switching difference	Maximum pressure	Max. sensor temp.	Admissible vacuum loading	Weight
DSB138F001	0...1.6 bar	0.25...0.65 bar	12 bar	70 °C	-0.7 bar	0.5 kg
DSB140F001	0...2.5 bar	0.25...0.75 bar	12 bar	70 °C	-0.7 bar	0.5 kg
DSB143F001	0...6 bar	0.3...1.6 bar	16 bar	70 °C	-0.7 bar	0.5 kg
DSB146F001	0...10 bar	0.8...3.7 bar	30 bar	70 °C	-1 bar	0.4 kg
DSB152F001	6...16 bar	1...4 bar	30 bar	70 °C	-1 bar	0.4 kg
DSB158F001	0...25 bar	1...7.5 bar	60 bar	70 °C	-1 bar	0.4 kg
DSB170F001	5...40 bar	1.4...7.5 bar	60 bar	70 °C	-1 bar	0.4 kg
DSF125F001	-1...1.5 bar	0.25...0.75 bar	12 bar	110 °C	-1 bar	0.5 kg
DSF127F001	-1...5 bar	0.3...1.5 bar	16 bar	110 °C	-1 bar	0.5 kg
DSF135F001	0...0.6 bar	0.12...0.60 bar	12 bar	110 °C	-1 bar	0.5 kg
DSF138F001	0...1.6 bar	0.25...0.7 bar	12 bar	110 °C	-1 bar	0.5 kg
DSF140F001	0...2.5 bar	0.25...0.75 bar	12 bar	110 °C	-1 bar	0.5 kg
DSF143F001	0...6 bar	0.3...1.5 bar	16 bar	110 °C	-1 bar	0.5 kg
DSF146F001	0...10 bar	0.8...3.0 bar	18 bar	110 °C	-1 bar	0.5 kg
DSF152F001	0...16 bar	1.2...3.8 bar	60 bar	110 °C	-1 bar	0.3 kg
DSF158F001	0...25 bar	1.5...8.0 bar	60 bar	110 °C	-1 bar	0.3 kg
DSF170F001	15...40 bar	1.7...8.2 bar	60 bar	110 °C	-1 bar	0.3 kg

☛ DSB: Pressure sensor made of brass for non-aggressive media;  $X_S$  = lower switching point.

☛ DSF: Pressure sensor made of stainless steel for aggressive media;  $X_S$  = lower switching point.

☛ The switching difference must be within the setting range of the switching point. The minimum values of the switching difference are only possible in the lower setting range.

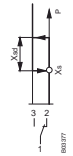
### Accessories

Type	Description
0259239000	Reduction nipple G $\frac{1}{2}$ " on 7/16" 20-UNF-2A for copper tubes of $\varnothing$ 6 mm, brass
0292001000	Setpoint adjuster according to customer's wishes (setting accuracy: $\pm 3\%$ of the setting range, but a minimum of $\pm 0.2$ bar)
0292002000	Switching difference according to customers' wishes (setting accuracy: $\pm 5\%$ of the setting range, but a minimum of $\pm 0.05$ bar, with accessory 0292001000 only)
0292004000	Setpoint adjuster sealed (with accessory 0292001000 only)
0292150001	Fixing bracket for wall mounting
0296936000	Fixing brackets for rail: top-hat rail EN 60715, 35 × 7.5 mm and 35 × 15 mm
0311572000	Screw fitting for copper tubes of $\varnothing$ 6 mm, brass
0381141001	Profile sealing ring, copper, for G $\frac{1}{2}$ "

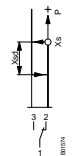
☛ 0296936000: With accessory 0292150001 only

<sup>6)</sup> SIL 2 approval is not valid in the United Kingdom (UK).

<sup>7)</sup> SIL 2 approval is not valid in the United Kingdom (UK).



DSL1\*\*F001



DSH1\*\*F001



## DSL, DSH: Specially designed pressure limiter

### Features

- Switching point can be adjusted
- Sealable
- Pressure sensor made of brass for non-aggressive media (DSL)
- Pressure sensor made of stainless steel for aggressive media (DSH)
- Locking type: With falling pressure (DSL) or with rising pressure (DSH)
- SIL 2 certified as per IEC 61508
- Approved for marine applications (GL and LR certified)

### Technical data

#### Power supply

Maximum load with gold-plated contacts <sup>1)</sup>	400 mA, 24 V, 10 VA
Minimum load with gold-plated contacts	4 mA, 5 V
Maximum load with silver-plated contacts	10(4) A, 250 VAC, 50 W, 250 VDC
Minimum load with silver-plated contacts	100 mA, 24 V

#### Parameters

Pressure connection	G 1/2" A
---------------------	----------

#### Ambient conditions

Ambient temperature	-20...70 °C
---------------------	-------------

#### Construction

Housing	Transparent cover
Housing material	Impact-proof thermoplastic
Device plug	Standard female connector for cable of Ø 6...10 mm

#### Standards and directives

Type of protection <sup>2)</sup>	IP65 (EN 60529)
Protection class	I (IEC 60730)
Test mark <sup>3)</sup>	TÜV DSL: SDBF ID: 06022 DSH: SDB ID: 06023 PED: 2014/68/EU, cat. IV
Ship-approved	Germanischer Lloyd (GL) Lloyds Register (LR)
CE conformity according to	EMC Directive 2014/30/EU EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU EN 60730-1, EN 60730-2-6
	PED 2014/68/EU VdTÜV pressure information sheet 100, cat. IV EN 12952-11, EN 12953-9
	Machinery Directive 2006/42/EC (according to Appendix II, 1B) EN ISO 12100:2018
SIL conformity as per SIL 2	Standards IEC 61508 parts 1-2 and 4-7

<sup>1)</sup> If the contacts are subjected to a load greater than specified, the gold plating will be destroyed. They are then classed merely as silver contacts and lose the properties of gold-plated contacts

<sup>2)</sup> Depending on the fitting position, see the fitting instructions. The devices are not suitable for outdoor applications.

<sup>3)</sup> Certificates can be downloaded from [www.certipedia.com](http://www.certipedia.com). The certificates are not valid in the United Kingdom of Great Britain and Northern Ireland.



## Overview of types

**i** Min. change for reset: Average values

Type	Setting range	Min. change for reset	Maximum pressure	Admissible sensor temperature	Admissible vacuum loading	Weight
DSL140F001	0...2.5 bar	0.4 bar	12 bar	70 °C	-0.7 bar	0.5 kg
DSL143F001	0...6 bar	0.5 bar	16 bar	70 °C	-0.7 bar	0.5 kg
DSL152F001	6...16 bar	1.2 bar	30 bar	70 °C	-1.0 bar	0.4 kg
DSH127F001	-1...5 bar	-0.4 bar	16 bar	110 °C	-1.0 bar	0.5 kg
DSH143F001	0.5...6 bar	-0.45 bar	16 bar	110 °C	-0.7 bar	0.5 kg
DSH146F001	1...10 bar	-0.8 bar	18 bar	110 °C	-1.0 bar	0.5 kg
DSH152F001	2...16 bar	-1.5 bar	60 bar	110 °C	-1.0 bar	0.3 kg
DSH158F001	5...25 bar	-1.8 bar	60 bar	110 °C	-1.0 bar	0.3 kg
DSH170F001	15...40 bar	-2.0 bar	60 bar	110 °C	-1.0 bar	0.3 kg

☛ DSL: Locks when the pressure falls (SDBF); pressure sensor made of brass for non-aggressive media.

☛ DSH: Locks when the pressure rises (SDB); pressure sensor made of stainless steel.

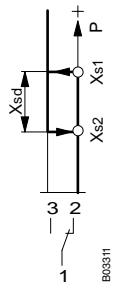
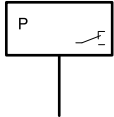
## Accessories

Type	Description
0259239000	Reduction nipple G $\frac{1}{2}$ " on 7/16" 20-UNF-2A for copper tubes of $\varnothing$ 6 mm, brass
0292001000	Setpoint adjuster according to customer's wishes (setting accuracy: $\pm 3\%$ of the setting range, but a minimum of $\pm 0.2$ bar)
0292004000	Setpoint adjuster sealed (with accessory 0292001000 only)
0292150001	Fixing bracket for wall mounting
0296936000	Fixing brackets for rail: top-hat rail EN 60715, 35 $\times$ 7.5 mm and 35 $\times$ 15 mm
0311572000	Screw fitting for copper tubes of $\varnothing$ 6 mm, brass
0381141001	Profile sealing ring, copper, for G $\frac{1}{2}$ "

☛ 0296936000: With accessory 0292150001 only



DFC17B76F001



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

### Features

- For regulating and monitoring pressure in liquids, gases and vapours
- Especially suitable for installations subject to vibrations
- Contact rating 1 mA/6 V to 10 A/400 V
- Gold-plated silver contacts, vibration-proof snap-action switch with single-pole change-over switch
- Upper and lower switching points can be set independently of each other
- Sealable
- Splashproof
- DFC17B\*\*F001: Pressure sensor made of brass for non-aggressive media
- DFC27B\*\*F002: Pressure sensor made of stainless steel for aggressive media

### Technical data

#### Power supply

Maximum load with gold-plated contacts <sup>1)</sup>	200 mA, 50 V
Minimum load with gold-plated contacts	1 mA, 6 V
Maximum load with silver-plated contacts <sup>2)</sup>	10(2) A, 400 VAC (25 W), 250 VDC
Minimum load with silver-plated contacts	100 mA, 24 V

#### Ambient conditions

Media temperature	≤ 110 °C
Ambient temperature	-40...70 °C

#### Construction

Housing	Transparent cover
Housing material	Light alloy
Cable inlet	PG 13.5
Screw terminals	For electrical cables up to 2.5 mm <sup>2</sup>
Pressure connection	G½" A

#### Standards, directives

Type of protection	IP44 (EN 60529)
Protection class	I (IEC 60730)
Test mark <sup>3)</sup>	TÜV DWFS (SDBF) ID: 06018 DWFS (SDB) ID: 06019 DB (SDBF) ID: 06017

#### CE/UKCA conformity<sup>4)</sup>

Mode of operation	Type 2 B (EN 60730)
LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-6
EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-6
EMC-D 2014/30/EU (CE)	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
EMC-2016 (UKCA)	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Machinery-D 2006/42/EC (CE)	EN ISO12100:2018

<sup>1)</sup> If the contacts are subjected to a load greater than 200 mA, 50 V, the gold plating will be destroyed. They are then classed merely as silver contacts and lose the properties of gold-plated contacts

<sup>2)</sup> Take the RC circuitry into account for inductive loads  
230/400 V networks

From 70 °C media temperature, the current must be reduced to 6 A

<sup>3)</sup> Certificates can be downloaded from [www.certipedia.com](http://www.certipedia.com). The certificates are not valid in the United Kingdom (UK).


<sup>4)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues



SMSR-2008 (UKCA)	EN ISO12100:2018
RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000:2018
RoHS-2012 (UKCA)	EN IEC 63000:2018
PED 2014/68/EU (CE)	VdTÜV pressure information sheet 100, sheet 1, cat. IV EN 12952-11, EN 12953-9
PESR-2016 (UKCA) <sup>5)</sup>	Article 8.3 of the Reg. AD 2000 Rulebook

### Overview of types

Type	Setting range (bar)	Min. switching difference (bar)	Maximum pressure (bar)	Max. temp., sensor (°C)	Admissible vacuum loading (bar)	Weight (kg)
DFC17B54F001	0...2.5	0.14	16	70	-0.7	1.2
DFC17B58F001	0...6.0	0.18	16	70	-1.0	1.2
DFC17B59F001	-1...5.0	0.20	16	70	-1.0	1.2
DFC17B76F001	0...10	0.50	40	70	-1.0	1.1
DFC17B78F001	0...16	0.50	40	70	-1.0	1.1
DFC17B79F001	16...32	0.80	42	70	-1.0	1.1
DFC17B96F001	0...25	1.70	100	70	-1.0	1
DFC17B97F001	25...50	2.00	100	70	-1.0	1
DFC17B98F001	0...40	1.80	100	70	-1.0	1
DFC27B26F002	-1...2.5	0.30	21	110	-1.0	0.9
DFC27B43F002	0.5...6.0	0.30	21	110	-1.0	0.9
DFC27B46F002	1...10	0.30	21	110	-1.0	0.9
DFC27B52F002	2...16	0.30	21	110	-1.0	0.9

 The switching difference must be within the setting range of the switching point. The minimum values of the switching difference are only possible in the lower setting range.

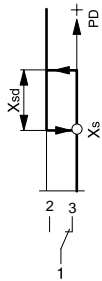
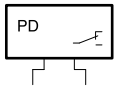
### Accessories

Type	Description
0259239000	Reduction nipple G $\frac{1}{2}$ " on 7/16" 20-UNF-2A for copper tubes of $\varnothing$ 6 mm, brass
0311572000	Screw fitting for copper tubes of $\varnothing$ 6 mm, brass
0035465000	Throttle screw for absorbing pressure surges, brass
0214120000	Throttle screw for absorbing pressure surges, stainless steel
0300360007	Capillary throttle, stainless steel, length 1 m, G $\frac{1}{2}$ "-G $\frac{1}{2}$ "
0292018001	Damping screw for absorbing pressure surges in low viscosity media
0259189000	Holder for raised wall mounting
0292019001	Setpoint adjustment for each switching point according to customer's wishes (setting accuracy: $\pm 3\%$ of the setting range)
0292019002	Sealing of the adjustment screw for each switching point (only with accessory 0292019001)
0381141001	Profile sealing ring, copper, for G $\frac{1}{2}$ "

<sup>5)</sup> For the United Kingdom (UK): Use as a safety pressure limiter is not permitted. The use of an electrical interlock is not permitted.



DSD1\*\*F002



## DSD: Differential pressure switch

### Features

- For monitoring the differential pressure in liquids, gases and vapours
- For use in, for example, filter technology and in process plants
- Differential pressure setting ranges from 0.06 to 6 bar
- Up to 80 °C media temperature
- High repeatability
- High overload protection
- Can be used in all neutral media, such as heating water, neutral gases, oils etc.
- Long serviceable life
- With fitting bracket

### Technical data

#### Parameters

Min. load	AC min: 0.1 A, 250 VAC, 25 VA DC min: 0.1 A, 30 VDC
Max. load	AC max: 3(1) A, 250 VAC, 250 VA DC max: 0.4 A, 30 VDC, 10 W
Temperature dependence	1.5%/10 K
Accuracy	3% of the setting range
Hysteresis	12% of the setting range
Mechanical serviceable life	10 <sup>6</sup> switchings
Max. static operating pressure (positive and negative pressure)	16 bar

#### Ambient conditions

Ambient temperature	-10...70 °C
Media temperature	0...80 °C (non-freezing media)
Ambient humidity	45...75% rh

#### Construction

Power cable <sup>1)</sup>	3...0.5 mm <sup>2</sup>
Diaphragms	Chromium-nickel steel 1.4310
Connection thread	G 1/8" (female thread)
Weight	0.2 kg

#### Standards, directives

	Type of protection	IP65 (EN 60529)
	Protection class	II (EN 60730)
CE conformity according to	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-6 Altitude up to 2000 m
	EMC Directive 2014/30/EU	EN 55014-1 Click rate N < 0.2 Art. 4.4
	PED 2014/68/EU	Art. 4.3 and Art. 13, fluid group 2

#### Overview of types

Type	Setting range (bar)
DSD134F102	0.06...0.6
DSD137F002	0.10...1.0
DSD140F002	0.25...2.5
DSD143F002	0.6...6.0

<sup>1)</sup> 1 m long, fixed wiring





**Accessories**

Type	Description
0300360005	Cutting ring fitting G $\frac{1}{8}$ " to 6 mm pipe (2 pcs)
0300360006	Pneumatic fitting G $\frac{1}{8}$ " to 6 mm hose (2 pcs)
0300360016	Throttle screws G $\frac{1}{8}$ ", G $\frac{1}{4}$ " (2 pcs)



# Humidistats

Room-, panel- and duct-mounted humidistats are employed for monitoring and controlling devices that are used for humidity regulation (fans, driers and humidifiers).

## Overview of humidistats



Type designation	HSC 120	HSC 101	HBC
Application			
Room	•	–	–
Panel	–	•	–
Duct	–	–	•
Further information	Page 41	Page 42	Page 43

## HSC 120: Room humidistat

### Features

- Monitoring and regulation of relative air humidity in rooms by controlling fans, drying units and air humidifiers
- Variable relative humidity as setpoint based on printed scale in % rh
- Measurement taken via a measuring element of stabilised synthetic textile tape.
- Controller with fixed switching difference of  $X_{sd}$

### Technical data

#### Power supply

Max. load	5(3) A, 250 VAC
Min. load	100 mA, 24 VAC/DC

#### Parameters

Setting range	30...90% rh
Setting accuracy <sup>1)</sup>	±5% rh
Humidity calibration at	55% rh, 23 °C
Switching difference $X_{sd}$	Typ. 8% rh
Long-term stability	Approx. -1.5% rh/a
Time constant in moving air (0.2 m/s)	Approx. 5 minutes
Temperature effect	0.5% rh/K

#### Ambient conditions

Operation	Ambient humidity	30...90% rh non-condensing
	Temperature	0...50 °C
Storage and transport	Ambient humidity	10...95% rh non-condensing
	Temperature	-25...70 °C without condensation

#### Construction

Dimensions W × H × D	76 × 76 × 34 mm
Weight	0.09 kg
Housing	Pure white (RAL 9010)
Housing material	Fire-retardant thermoplastic, UL94V-0
Screw terminals	For electrical wires of up to 1.5 mm <sup>2</sup>

#### Standards, directives

Type of protection <sup>2)</sup>	IP 30 (EN 60730-1), operating status
Protection class	II (IEC 60730)
Environment class	3K3 (IEC 60721-3-3)

CE conformity according to	EMC Directive 2014/30/EU	EN 60730
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-13

### Overview of types

Type	Features
HSC120F001	Setting via external setpoint adjuster
HSC120F010	Internal setpoint adjuster

### Accessories

Type	Description
0362225001	Intermediate plate, pure white, for wall mounting on recessed junction box

<sup>1)</sup> The setting accuracy of the humidistat is valid for the calibration point ±5% rh at 55% rh and 23 °C following initial calibration at the factory. See diagram "Setting accuracy". In general, humidity sensors (humidistats) are subject to increased ageing if they are used and/or stored in very contaminated air or aggressive gases. The humidistat may start to drift and its linearity may change under these conditions. If the humidistats are used in very contaminated air, the warranty does not cover a premature re-calibration or the replacement of the complete humidistat

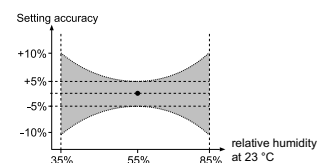
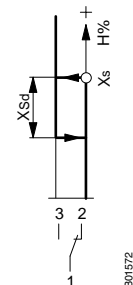
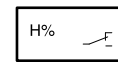
<sup>2)</sup> Operating status: device mounted and closed



HSC120F001



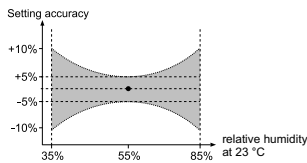
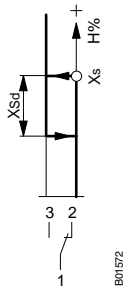
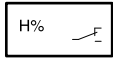
HSC120F010



## HSC 101: Panel-mounted humidistat (packing unit: 50 pieces)



HSC101F001



### Features

- Monitoring and regulation of relative humidity by controlling fans, drying units and air humidifiers
- Adjustment of change-over point via setpoint adjustment axis
- Suitable for fitted applications with protection class II
- Measurement via a measuring element of stabilised synthetic textile tape
- Secured with bolting hole and fixing hole (blind hole)
- Micro-switch with single-pole change-over contacts and fixed switching difference
- Suitable for panel-mounted units only

### Technical data

#### Power supply

Max. load	5(3) A, 250 VAC
Min. load	100 mA, 24 V

#### Parameters

Setting range	25...95% rh
Setting accuracy <sup>1)</sup>	±5% rh
Humidity calibration at	55% rh, 23 °C
Switching difference $X_{sd}$ <sup>2)</sup>	Typ. 8% rh
Long-term stability	- 1.5% rh/a
Time constant in moving air (0.2 m/s)	Approx. 3 minutes
Temperature effect	0.5% rh/K

#### Ambient conditions

Operation	Humidity (non-condensing)	25...95% rh
	Temperature	0...70 °C
Storage and transport	Humidity (non-condensing)	10...95% rh
	Temperature	-20...70 °C

#### Construction

Weight	0.03 kg
Baseplate	Thermoplastic
Electrical connection	AMP terminals 2.8 mm

#### Standards, directives<sup>3)</sup>

CE conformity according to	Type of protection	IP00 (EN 60529)
	Protection class	0 (IEC 60730)
CE conformity according to	EMC Directive 2014/30/EU	EN 55014 Art. 4.2
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-13

### Overview of types

Type	Features
HSC101F001	Panel-mounted humidistat

<sup>1)</sup> The setting accuracy of the humidistat is valid for the calibration point ±5% rh at 55% rh and 23 °C following initial calibration at the factory. See diagram "Setting accuracy". In general, humidity sensors (humidistats) are subject to increased ageing if they are used and/or stored in very contaminated air or aggressive gases. The humidistat may start to drift and its linearity may change under these conditions. If the humidistats are used in very contaminated air, the warranty does not cover a premature re-calibration or the replacement of the complete humidistat

<sup>2)</sup> Can be substantially improved by recalibration during usage

<sup>3)</sup> The fitting method must adhere to the relevant safety standards



## HBC: Duct-mounted humidistat

### Features

- Monitoring and regulation of relative humidity by controlling fans, drying units and air humidifiers
- Temperature-compensated humidity sensor
- Variable relative humidity as setpoint based on printed scale in % rh
- Includes fixing bracket with seal for duct or wall mounting
- For fitting in a ventilation duct or on a wall
- With single-pole change-over contacts and fixed switching difference  $X_{sd}$
- Immersion depth 130...156 mm; includes fixing bracket

### Technical data

Power supply		
Max. load		5(3) A, 250 VAC
Min. load		100 mA, 24 V

Parameters		
Setting range		15...95% rh
Setting accuracy		±5% rh
Humidity calibration at		55% rh, 23 °C
Temperature influence		Compensated
Long-term stability		-1.5% rh/a
Time constant in moving air (0.2 m/s)		Approx. 3 minutes
Switching difference $X_{sd}$		Typically 8% rh (after humidity calibration)
Max. air speed		10 m/s

Ambient conditions		
Operation	Humidity (non-condensing)	30...90% rh
	Temperature	0...70 °C
Storage and transport	Humidity (non-condensing)	10...95% rh
	Temperature	-20...70 °C

Construction		
Housing material		Glass-fibre-reinforced thermoplastic
Housing cover		Thermoplastic, sealable
Sensor tube		Glass-fibre-reinforced thermoplastic, Ø 30 mm
Cable inlet		PG 11
Screw terminals		For electrical cables of up to 1.5 mm <sup>2</sup>

Standards and directives		
Type of protection		IP30 (EN 60529)
Protection class		II (IEC 60730)
EMC Directive 2014/30/EU		EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
Low-Voltage Directive 2014/35/EU		EN 60730-1, EN 60730-2-13

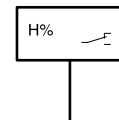
### Overview of types

Type	Switching range $X_{sh}$	Number of switches	Weight
HBC111F001	-	1	0.33 kg
HBC112F001	6...25% rh	2	0.35 kg

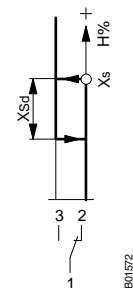
☛ HBC 112: For 3-point control or min./max. monitoring and internally adjustable switching range  $X_{sd}$



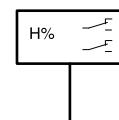
HBC111\*F001



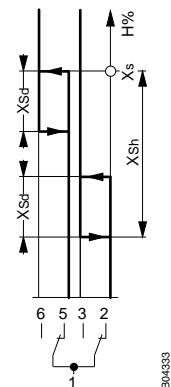
HBC111F001



HBC111F001



HBC112F001



HBC112F001



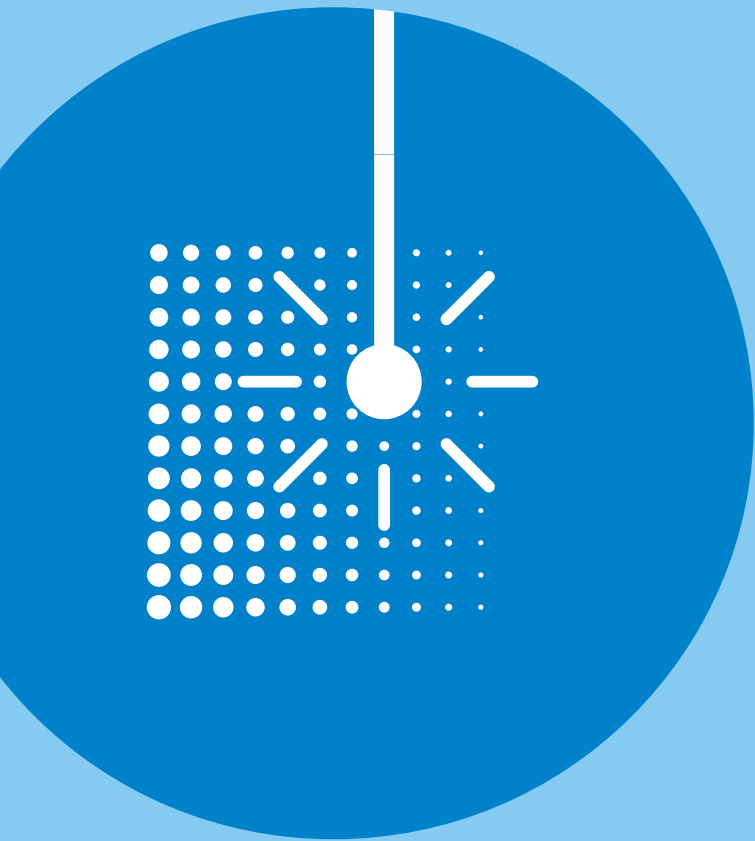
### Accessories

Type	Description
0303538001	Set for increasing protection rating to IP55 (housing lid with transparent cap for setpoint knob, seal, 1 cable gland - PG 11, 1 plug - PG 11)
0370560011	Cable screw fitting PG 11, plastic, for cable of Ø 9...11 mm





# Data capture



## **Accurate measured values are the basis for efficient control.**

The results from the data capture form the basis for control and monitoring. SAUTER provides quality sensors for all physical variables, such as temperature, humidity, pressure, flow and air quality, that are specifically geared towards building automation systems and the HVAC industry.



# Data capture

## Temperature

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# Temperature sensors

SAUTER temperature sensors are used for heating and air-conditioning systems in residential, office and business spaces. They are used to measure room, duct, outside and pipe temperatures.

## Overview of temperature sensors



Type designation	EGT 130	EGT 330...335, 430	EGT 386, 388, 486, 686, 688	EGT 301, 401
Application				
Pipe/duct	–	–	–	–
Cable	–	–	–	–
Room (passive)	–	•	•	–
Room (active)	•	–	–	–
Clamp-on temperature	–	–	–	–
Outdoor temperature	–	–	–	•
Further information	Page 49	Page 49	Page 51	Page 52



Type designation	EGT 353...356, 456, 554	EGT 346...348, 392, 446, 447	EGT 311, 411	EGS 100
Application				
Pipe/duct	–	•	–	–
Cable	•	–	–	–
Room (passive)	–	–	–	–
Room (active)	–	–	–	–
Clamp-on temperature	–	–	•	–
Outdoor temperature	–	–	–	–
Radiation temperature	–	–	–	•
Further information	Page 54	Page 56	Page 60	Page 62

## EGT 130, 330, 332, 335, 430: Room temperature sensor, surface-mounted

### Features


- Passive or active measuring element for room temperature
- Variants with setpoint adjuster, presence button and multicolour status LED
- Suitable for direct wall mounting and recessed junction boxes

### Technical data

Ambient conditions		
Ambient temperature		-35...70 °C
Ambient humidity		Max. 85% rh, non-condensing
Construction		
Colour		Traffic white (RAL9016)
Housing material		Polycarbonate (PC) UL94-V0
Cable inlet		Through the back
Connection terminals		Spring-type terminals, max. 1.5 mm <sup>2</sup>
Weight		50 g
Standards, directives		
CE/UKCA conformity <sup>1)</sup>	Type of protection	IP20 (EN 60529) after fitting
	EMC-D 2014/30/EU (CE)	EGT130F032: EN 60730-1 (mode of operation 1, residential premises)
	EMC-2016 (UKCA)	See EMC Directive
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Resistance values

Measuring element	Standard	Nominal value at 0 °C	Tolerance at 0 °C
Ni500	DIN 43760	500 Ω	±0.4 K
Ni1000	DIN 43760	1000 Ω	±0.4 K
Pt100	DIN EN 60751	100 Ω	±0.3 K
Pt1000	DIN EN 60751	1000 Ω	±0.3 K

 The tolerances only apply to the measuring elements. The accuracy of the sensor depends on the measuring element used and the cable length

Active type	Measuring range	Measuring accuracy at 21 °C	Output signal	Power supply	Power consumption
EGT130F032	0...50 °C Other ranges can be parametrised	Typically ±1% of measuring range <sup>2)3)</sup>	0...10 V, min. load impedance 5 kΩ	15...24 VDC (±10%) / 24 VAC (±10%)	Max. 0.3 W (24 VDC) 0.5 VA (24 VAC)

### Overview of types

Type	Description	Output signal	Measuring range	Setpoint adjuster
EGT330F053	Room temperature sensor	Passive, Ni500	-35...70 °C	-
EGT330F103	Room temperature sensor	Passive, Ni1000	-35...70 °C	-
EGT332F103	Room temperature sensor, setpoint adjuster	Passive, Ni1000	-35...70 °C	Pot. 2.5 kΩ

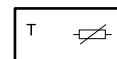
<sup>1)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues

<sup>2)</sup> With offset adjustment ±3 K

<sup>3)</sup> The transducers must be operated at a constant operating voltage (±0.2 V). Current/voltage peaks when switching the supply voltage on/off must be prevented by the customer.



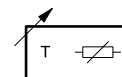
EGT\*30F\*\*\*



EGT332F103



EGT335F103



Type	Description	Output signal	Measuring range	Setpoint adjuster
EGT335F103	Room temperature sensor, setpoint adjuster, presence button, status LED (RGB)	Passive, Ni1000	-35...70 °C	Pot. 2.5 kΩ
EGT430F013	Room temperature sensor	Passive, Pt100	-35...70 °C	-
EGT430F103	Room temperature sensor	Passive, Pt1000	-35...70 °C	-
EGT130F032	Room temperature transducer	Active, 0...10 V	0...50 °C	-

### Accessories

Type	Description
0300230010	USB Bluetooth® dongle

## EGT 386, 388, 486, 686, 688: Room temperature sensor, recessed

### Features

- Passive room temperature measurement
- For temperature measurement in dry rooms (e.g. in residential properties, offices and business premises)
- Including frame

### Technical data

#### Parameters

	Measuring range	-35...70 °C
Time characteristic	Time constant in still air	30 minutes

#### Ambient conditions

	Storage and transport temperature	-35...70 °C
	Ambient temperature	-35...70 °C

#### Construction

	Housing	Pure white
	Housing material	Thermoplastic
	Frame design	Gira E2

#### Standards, directives

	Type of protection	IP20 (EN 60529)
CE conformity according to	RoHS Directive 2011/65/EU	EN IEC 63000

#### Resistance values / characteristics

**i** The tolerance listed below applies only to the corresponding measuring element. The accuracy of the sensor depends on the cable length and the measuring element used.

Measuring element	Standard	Nominal value at 0 °C	Tolerance at 0 °C
Ni1000	DIN 43760	1000 Ω	±0.4 K
Pt1000	DIN EN 60751	1000 Ω	±0.3 K
NTC 10k	-	10 kΩ at 25 °C	±0.3 K

### Overview of types

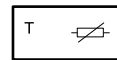
Type	Measuring element	Adjuster	Weight
EGT386F101	Ni1000	-	53 g
EGT388F101	Ni1000	10 kΩ	83 g
EGT388F102	Ni1000	100 Ω	83 g
EGT486F101	Pt1000	-	83 g
EGT686F101	NTC 10k	-	53 g
EGT688F101	NTC 10k	10 kΩ	83 g



EGT386F101

EGT486F101

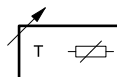
EGT686F101



EGT388F101

EGT388F102

EGT688F101

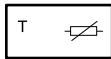




EGT\*01F102



EGT301F031



## EGT 301, 401, 601: Outdoor-temperature sensor

### Features

- Passive or active measuring element
- Extra protection against dust and humidity (IP65)
- Cable inlet on back or via cable gland
- For weather-dependent heating and ventilation systems

### Technical data

Parameters		
	Recommended measurement current	< 1 mA
Time characteristic	Time constant in still air	EGT*01F102: 12 minutes EGT301F031: 7 minutes
Ambient conditions		
	Ambient temperature	EGT*01F102: -35...90 °C EGT301F031: -35...70 °C
Storage and transport	Storage and transport temperature	-35...70 °C
	Humidity (non-condensing)	85% rh
Construction		
	Sensor sleeve	EGT301F031: stainless steel 1.4571 Ø 6 × 25 mm
	Housing	White
	Housing material	Polyamide
	Connection terminals	Screw terminals 0.35...1.5 mm <sup>2</sup> , for number of poles, see connection diagram
	Cable inlet	EGT*01F102: M16 for cable min. Ø 5 mm, max. Ø 8 mm EGT301F031: M20 for cable min. Ø 5 mm, max. Ø 8 mm
Standards, directives		
	Type of protection	IP65 (EN 60529)
CE conformity according to	RoHS Directive 2011/65/EU	EN IEC 63000
	EMC Directive 2014/30/EU	EGT301F031: EN 60730-1 (mode of operation 1, residential premises)

### Resistance values / characteristics

**i** The tolerance listed below applies only to the corresponding measuring element. The accuracy of the sensor depends on the cable length and the measuring element used.

Measuring element	Standards	Nominal value at 0 °C	Tolerance at 0 °C
Ni1000	DIN 43760	1000 Ω	±0.4 K
Ni1000 TK5000	-	1000 Ω	±0.4 K
Pt1000	DIN EN 60751	1000 Ω	±0.3 K



Active type	Measuring range	Measuring accuracy at 21 °C	Output signal	Power supply	Power consumption
EGT301F031	5 temperature ranges (-50...160 °C), adjustable on device (see connection diagram)	Typically $\pm 1\%$ of measuring range <sup>1)2)</sup>	0...10 V, min. load impedance 1 k $\Omega$	15...24 VDC ( $\pm 10\%$ ) / 24 VAC ( $\pm 10\%$ )	Max. 0.42 W / 0.84 VA

#### Overview of types

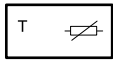
Type	Description	Output signal	Measuring range	Weight
EGT301F102	Outdoor temperature sensor	Passive, Ni1000	-35...90 °C	80 g
EGT401F102	Outdoor temperature sensor	Passive, Pt1000	-35...90 °C	80 g
EGT601F102	Outdoor temperature sensor	Passive, Ni1000 TK5000	-35...90 °C	80 g
EGT301F031	Outdoor temperature transmitter	Active, 0...10 V	-50...160 °C (5 ranges)	120 g

<sup>1)</sup> With offset adjustment  $\pm 3$  K

<sup>2)</sup> The transducers must be operated at a constant operating voltage ( $\pm 0.2$  V). Current/voltage peaks when switching the supply voltage on/off must be avoided by the customer.



EGT\*5\*F\*\*\*



## EGT 353...356, 456, 554, 654: Cable temperature sensor

### Features

- Passive measuring element
- Particularly suitable for direct connection in installations with short distances between the controllers and the sensors
- Sensor with a wide range of applications and high type of protection (IP67) and fast time characteristic
- Used in air, used in liquid media with thermowells, or as a clamp-on temperature sensor with an accessory
- Large temperature measuring range

### Technical data

Parameters		
	Recommended measurement current	Typ. < 1 mA
Time characteristic in water	Time constant with thermowell (LW 7) in still water	9 seconds ( $t_{63}$ )
Time characteristic in air	Time constant in still air	155 seconds ( $t_{63}$ )
	Time constant in moving air (3 m/s)	35 seconds ( $t_{63}$ )

### Construction

Sensor sleeve	$\varnothing 6 \times L$ (mm) - see table, up to 16 bar
Material	Sensor sleeve: Stainless steel 1.4571 Cable: see table
Power cable	$\varnothing 5$ mm with wire ferrules
Cable cross-section	$2 \times 0.25$ mm <sup>2</sup>
Active length	10 mm

### Standards and directives

	Type of protection	IP67 (EN 60529)
CE conformity according to	RoHS Directive 2011/65/EU	EN IEC 63000

### Resistance values / characteristics

**i** The tolerance listed below applies only to the corresponding measuring element. The accuracy of the sensor depends on the cable length and the measuring element used.

Measuring element	Standards	Nominal value	Tolerance at 0 °C
Ni1000	DIN 43760	1000 $\Omega$ at 0 °C	$\pm 0.4$ K
Ni1000 TK5000		1000 $\Omega$ at 0 °C	$\pm 0.4$ K
Pt100	DIN EN 60751	100 $\Omega$ at 0 °C	$\pm 0.3$ K
Pt1000	DIN EN 60751	1000 $\Omega$ at 0 °C	$\pm 0.3$ K
NTC 10k	-	10 k $\Omega$ at 25 °C	$\pm 0.3$ K
NTC 22k	-	22 k $\Omega$ at 25 °C	$\pm 0.3$ K

### Overview of types

Type	Measuring element	Sleeve length LH	Total length Lg	Material	Measuring range	Weight
EGT353F101	NTC 10k	50 mm	1.5 m	PVC	-35...100 °C	40 g
EGT353F103	NTC 10k	50 mm	3 m	PVC	-35...100 °C	85 g
EGT353F110	NTC 10k	50 mm	10 m	PVC	-35...100 °C	280 g
EGT353F120	NTC 10k	50 mm	20 m	PVC	-35...100 °C	550 g
EGT554F103	NTC 22k	50 mm	3 m	PVC	-35...100 °C	85 g
EGT354F102	Ni1000	50 mm	1 m	PVC	-35...100 °C	30 g
EGT354F104	Ni1000	50 mm	3 m	PVC	-35...100 °C	85 g
EGT354F111	Ni1000	50 mm	10 m	PVC	-35...100 °C	280 g
EGT354F121	Ni1000	50 mm	20 m	PVC	-35...100 °C	550 g





Type	Measuring element	Sleeve length LH	Total length Lg	Material	Measuring range	Weight
EGT654F102	Ni1000 TK5000	50 mm	1 m	PVC	-35...100 °C	30 g
EGT355F902	Ni1000	100 mm	2 m	Silicone	-50...180 °C	60 g
EGT355F903	Ni1000	150 mm	2 m	Silicone	-50...180 °C	60 g
EGT356F102	Ni1000	50 mm	1 m	Silicone	-50...180 °C	30 g
EGT356F104	Ni1000	50 mm	3 m	Silicone	-50...180 °C	90 g
EGT356F111	Ni1000	50 mm	10 m	Silicone	-50...180 °C	300 g
EGT356F304	Ni200	50 mm	3 m	Silicone	-50...180 °C	90 g
EGT456F012	Pt100	50 mm	1 m	Silicone	-50...180 °C	30 g
EGT456F102	Pt1000	50 mm	1 m	Silicone	-50...180 °C	30 g

### Accessories

Type	Description
0300360000	Compression fitting G $\frac{1}{4}$ "; stainless steel, up to 16 bar
0300360003	Mounting flange; plastic
0300360004	Heat-conducting paste incl. gun with 2 g content
0300360008	Retaining holder for cable temperature sensor or capillary tube with 0392022*** (LW 7) or LW 15 (10 pcs)
0300360012	Sensor support spiral for fitting in ventilation duct
0313214001	Fixing kit for cable temperature sensor (holder, heat-conducting paste, retaining strap)

☛ 039\*\*\*\*\*: Thermowells (LW 7 and LW 15) made of brass or stainless steel (see product data sheet)

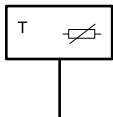
## EGT 346...348, 392, 446, 447, 646, 647: Duct temperature sensor



EGT\*4\*



EGT392F102



### Features

- Passive or active measuring element
- For use in pipes and vessels by means of optional thermowells (LW 7). For use in standard HVAC applications up to 160 °C and aggressive ambient conditions up to 260 °C (EGT392F102)

### Technical data

Parameters		
	Recommended measurement current	Typ. < 1 mA
Time characteristic	Time constant in moving air (3 m/s)	35 s ( $t_{63}$ )
	Time constant in still air	155 s ( $t_{63}$ )
	Time constant in still water	9 s ( $t_{63}$ )
	Time constant in still water, with thermo-well made of brass	17 s ( $t_{63}$ )
	Time constant in still water, with thermo-well made of stainless steel	20 s ( $t_{63}$ )

### Ambient conditions

	Ambient temperature	EGT*4* passive: -35...90 °C EGT*4* active: -35...70 °C EGT392F102: -25...90 °C
Storage and transport	Storage and transport temperature	-35...70 °C
	Humidity (non-condensing)	85% rh

### Construction

	Housing	EGT*4*: Black/yellow
	Housing material	EGT*4*: Polyamide EGT392F102: Form J made of die-cast aluminium
	Connection terminals	EGT*4*: 45° screw terminals 0.35...1.5 mm <sup>2</sup> For number of poles, see connection diagram
	Cable inlet	M16 for cable min. Ø 5 mm, max. Ø 8 mm
	Immersion stem	Ø 6×L (mm) made of stainless steel 1.4571, up to 16 bar, see table
	Active length	10 mm

### Standards, directives

	Type of protection	IP65 (EN 60529)
CE conformity according to	RoHS Directive 2011/65/EU	EN IEC 63000
	EMC Directive 2014/30/EU	EGT34*F031: EN 60730-1 (mode of operation 1, residential premises)

### Resistance values / characteristics

**i** The tolerance listed below applies only to the corresponding measuring element. The accuracy of the sensor depends on the cable length and the measuring element used.

Measuring element	Standard	Nominal value at 0 °C	Tolerance at 0 °C
Ni1000	DIN 43760	1000 Ω	±0.4 K
Ni1000 TK5000	-	1000 Ω	±0.4 K
Ni200	DIN 43760	200 Ω	±0.4 K
Pt1000	DIN EN 60751	1000 Ω	±0.3 K
Pt100	DIN EN 60751	100 Ω	±0.3 K



Active types	Measuring range	Measuring accuracy at 21 °C <sup>1)2)</sup>	Output signal	Power supply	Power consumption
EGT346F031	5 temperature ranges (-50...160 °C), adjustable on device (see connection diagram)	Typically ±1% of measuring range	0...10 V, min. load 5 kΩ	15...24 V= (±10%) / 24 V~ (±10%)	Typical 0.35 W / 0.82 VA
EGT347F031					
EGT348F031					

### Overview of types

Type	Description	Output signal	Measuring range	Immersion length (L)	Weight
EGT346F022	Duct temperature sensor	Passive, Ni200	-50...160 °C	100 mm	85 g
EGT346F102	Duct temperature sensor	Passive, Ni1000	-50...160 °C	100 mm	85 g
EGT347F022	Duct temperature sensor	Passive, Ni200	-50...160 °C	200 mm	95 g
EGT347F102	Duct temperature sensor	Passive, Ni1000	-50...160 °C	200 mm	95 g
EGT348F102	Duct temperature sensor	Passive, Ni1000	-50...160 °C	450 mm	120 g
EGT392F102	Duct temperature sensor	Passive, Ni1000	-50...260 °C	100 mm	105 g
EGT446F012	Duct temperature sensor	Passive, Pt100	-50...160 °C	100 mm	85 g
EGT446F102	Duct temperature sensor	Passive, Pt1000	-50...160 °C	100 mm	85 g
EGT447F012	Duct temperature sensor	Passive, Pt100	-50...160 °C	200 mm	95 g
EGT447F102	Duct temperature sensor	Passive, Pt1000	-50...160 °C	200 mm	95 g
EGT646F102	Duct temperature sensor	Passive, Ni1000 TK5000	-35...160 °C	100 mm	85 g
EGT647F102	Duct temperature sensor	Passive, Ni1000 TK5000	-35...160 °C	200 mm	85 g
EGT346F031	Duct temperature transmitter	Active, 0...10 V	-50...160 °C (5 ranges)	100 mm	90 g
EGT347F031	Duct temperature transmitter	Active, 0...10 V	-50...160 °C (5 ranges)	200 mm	100 g
EGT348F031	Duct temperature transmitter	Active, 0...10 V	-50...160 °C (5 ranges)	450 mm	120 g

### Accessories

Type	Description
0300360000	Compression fitting G¼"; stainless steel, up to 16 bar
0300360003	Mounting flange; plastic
0300360004	Heat-conducting paste incl. gun with 2 g content

☛ 039\*\*\*\*\*: Thermowells (LW 7 and LW 15) made of brass or stainless steel (see product data sheet)

<sup>1)</sup> With offset adjustment ±3 K

<sup>2)</sup> The transducers must be operated at a constant operating voltage (±0.2 V). Current/voltage peaks when switching the supply voltage on/off must be avoided by the customer.

## Thermowells



### Features

- Fitted in pipes and containers for holding sensor cartridges, immersion stems, temperature sensors, temperature controllers or thermostats
- Made of brass (Ms) or stainless steel (V4A)
- Versions with cylindrical pipe thread (G $\frac{1}{2}$ " male ISO 228/1, flat-sealing)<sup>1)</sup> or cone-shaped (R $\frac{1}{2}$ " ISO 7/1 sealing in thread)
- With pressure spring (LW 15)
- With retaining holder

### Overview of types

Type	LW	Length	Material	Thread	Nominal pressure	Test pressure	T <sub>max</sub>
0391022050	7	50 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	325 °C
0391022100	7	100 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	325 °C
0391022200	7	200 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	325 °C
0391022300	7	300 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	325 °C
0391022450	7	450 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	325 °C
0391022600	7	600 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	325 °C
0391011050	7	50 mm	Brass	R $\frac{1}{2}$ "	10 bar	16 bar	160 °C
0391011100	7	100 mm	Brass	R $\frac{1}{2}$ "	10 bar	16 bar	160 °C
0391011150	7	150 mm	Brass	R $\frac{1}{2}$ "	10 bar	16 bar	160 °C
0391011200	7	200 mm	Brass	R $\frac{1}{2}$ "	10 bar	16 bar	160 °C
0391011300	7	300 mm	Brass	R $\frac{1}{2}$ "	10 bar	16 bar	160 °C
0391011450	7	450 mm	Brass	R $\frac{1}{2}$ "	10 bar	16 bar	160 °C
0393022100	15	100 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	450 °C
0393022200	15	200 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	450 °C
0393022450	15	450 mm	Stainless steel	G $\frac{1}{2}$ "	40 bar	60 bar	450 °C
0393012100	15	100 mm	Brass	G $\frac{1}{2}$ "	16 bar	25 bar	160 °C
0393012200	15	200 mm	Brass	G $\frac{1}{2}$ "	16 bar	25 bar	160 °C
0392022100	7	100 mm	Stainless steel	G $\frac{1}{2}$ "	25 bar	40 bar	450 °C
0392022200	7	100 mm	Stainless steel	G $\frac{1}{2}$ "	25 bar	40 bar	450 °C
0392022300	7	300 mm	Stainless steel	G $\frac{1}{2}$ "	25 bar	40 bar	450 °C




<sup>1)</sup> G $\frac{1}{2}$ " male ISO 228/1, flat-sealing: for welding bushings with flat seal (accessories)



- ⚡ 0392022100 and 0392022300 for TUC thermostats only
- ⚡ With the TUC407F001 and TUC207F003, only use the supplied thermowells or stainless-steel thermowells (part nos.: 0393022\*\*\* or 0392022\*\*\*).
- ⚡ 0391... with pressure screw (retaining holder) up to max. 200 °C

### Accessories

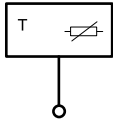
Type	Description
0300360008	Retaining holder for cable temperature sensor or capillary tube with 0392022*** (LW 7) or LW 15 (10 pcs)
0364263000	Welding sleeve of steel, with female thread G $\frac{1}{2}$ ", flat seal of copper
0300360017	Pressure spring for LW 15 (10 pieces)

			
LW 7, 50 mm	•	• L > 50 mm	–
LW 7, 100 mm	•	•	–
LW 7, 150 mm	•	•	–
LW 7, 200 mm	•	•	–
LW 7, 300 mm	•	• L > 300 mm	–
LW 7, 450 mm	•	•	–
LW 7, 600 mm	•	–	–
LW 15, 100 mm	•	–	•
LW 15, 200 mm	•	–	•
LW 15, 450 mm	•	–	•
0392022100	–	–	•
0392022200	–	–	•
0392022300	–	–	•

- ⚡ 0392022100 and 0392022300 for TUC thermostats only.
- ⚡ With the TUC407F001 and TUC207F003, only use the supplied thermowells or stainless-steel thermowells (part nos.: 0393022\*\*\* or 0392022\*\*\*).
- ⚡ Only use the thermowells (LW 15) with at least 2 sensors or thermostats with a diameter of at least 6 mm
- ⚡ 0391... with pressure screw (retaining holder) up to max. 200 °C.



EGT\*11F\*\*\*



## EGT 311, 411, 611: Clamp-on temperature sensor

### Features

- Passive or active measuring element
- Extra protection against dust and humidity (IP65)
- Temperature measurement on pipes
- Including retaining strap for pipes of  $\varnothing$  10...50 mm
- Heat-conducting paste (silicone-free) is included in the scope of delivery

### Technical data

#### Parameters

	Recommended measurement current	Typ. < 1 mA
Time characteristic with heat-conducting paste	Time constant	16 s

#### Ambient conditions

Storage and transport temperature	-35...70 °C
Humidity (non-condensing)	85% rh

#### Construction

Housing	Yellow/black
Housing material	Polyamide
Connection terminals	Screw terminals 0.35...1.5 mm <sup>2</sup> , for number of poles, see connection diagram
Cable inlet	M16 for cable min. $\varnothing$ 5 mm, max. $\varnothing$ 8 mm

#### Standards, directives

CE conformity according to	Type of protection	IP65 (EN 60529)
	RoHS Directive 2011/65/EU	EN IEC 63000
	EMC Directive 2014/30/EU	EGT311F031: EN 60730-1 (mode of operation 1, residential premises)

#### Resistance values / characteristics

**i** The tolerance listed below applies only to the corresponding measuring element. The accuracy of the sensor depends on the cable length and the measuring element used.

Measuring element	Standards	Nominal value at 0 °C	Tolerance at 0 °C
Ni1000	DIN 43760	1000 $\Omega$	$\pm$ 0.4 K
Ni1000 TK5000	-	1000 $\Omega$	$\pm$ 0.4 K
Ni200	DIN 43760	200 $\Omega$	$\pm$ 0.4 K
Pt1000	DIN EN 60751	1000 $\Omega$	$\pm$ 0.3 K

Active type	Measuring range	Measuring accuracy at 21 °C	Output signal	Power supply	Power consumption
EGT311F031	5 temperature ranges (-50...160 °C), adjustable on device (see connection diagram)	Typically $\pm$ 1% of measuring range <sup>1)2)</sup>	0...10 V, min. load impedance 5 k $\Omega$	15...24 V= ( $\pm$ 10%) / 24 V~ ( $\pm$ 10%)	Max. 0.42 W / 0.84 VA

<sup>1)</sup> With offset adjustment  $\pm$ 3 K

<sup>2)</sup> The transducers must be operated at a constant operating voltage ( $\pm$ 0.2 V). Current/voltage peaks when switching the supply voltage on/off must be avoided by the customer.



### Overview of types

Type	Description	Output signal	Measuring range	Weight
EGT311F022	Clamp-on temperature sensor	Passive, Ni200	-35...90 °C	80 g
EGT311F102	Clamp-on temperature sensor	Passive, Ni1000	-35...90 °C	80 g
EGT411F102	Clamp-on temperature sensor	Passive, Pt1000	-35...90 °C	80 g
EGT611F102	Clamp-on temperature sensor	Passive, Ni1000 TK5000	-35...90 °C	80 g
EGT311F031	Clamp-on temperature transmitter	Active, 0...10 V	-50...160 °C (5 ranges)	120 g

### Accessories

Type	Description
0300360002	Retaining strap 900 mm and heat-conducting paste
0300360004	Heat-conducting paste incl. gun with 2 g content



EGS100F70\*

## EGS 100: Radiation temperature sensor

### Features

- Mean value measuring of radiation temperature and room temperature
- Ni or NTC characteristic
- Passive measuring element
- Measuring range: -35...70 °C
- Measuring element: Thin-film sensor

### Technical data

#### Parameters

	Measuring range	-35...70 °C
Time characteristic	Time constant in still air	15 min

#### Construction

	Weight	0.1 kg
	Dimensions	84.5 × 84.5 mm
	Housing	Pure white, similar to RAL 9010
	Housing material	Thermoplastic with black hemisphere
	Connection terminals	2 × 1.5 mm <sup>2</sup>

#### Standards and directives

	Type of protection	IP30 (EN 60529)
	RoHS Directive 2011/65/EU	EN IEC 63000
CE conformity	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)

### Overview of types

Type	Resistance values	Tolerance	Measuring elements
EGS100F705	1 kΩ (at 0 °C)	±0.4 K (at 0 °C)	2 × Ni500 as per DIN 43760 in series
EGS100F706	10 kΩ (at 25 °C)	±1% (at 25 °C)	2 × NTC 5 kΩ in series
EGS100F707	22 kΩ (at 25 °C)	±1% (at 25 °C)	2 × NTC 11 kΩ in series





# Air quality sensors

Air quality is of the utmost importance for the performance and well-being of people in closed rooms. With CO<sub>2</sub> and VOC sensors from SAUTER, it is possible to measure air quality exactly, so that ventilation systems can be controlled in accordance with demand. As a result, not only is the indoor air quality improved, but energy consumption is also reduced by improving the operational efficiency of ventilation systems.

## Overview of air quality sensors



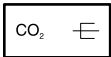
Type designation	EGQ 220, 222	EGQ 120	EGQ 281
<b>Application</b>			
Room, surface-mounted	•	•	–
Room, recessed	–	–	•
Duct	–	–	–
<b>Variables</b>			
CO <sub>2</sub>	•	–	•
VOC	–	•	–
Temperature	•	–	–
Humidity	–	–	–
Pressure	–	–	–
Further information	Page 64	Page 66	Page 67



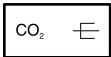
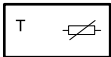
Type designation	EGQ 212	EGQ 110
<b>Application</b>		
Room, surface-mounted	–	–
Room, recessed	–	–
Duct	•	•
<b>Variables</b>		
CO <sub>2</sub>	•	–
VOC	–	•
Temperature	•	–
Humidity	–	–
Pressure	–	–
Volume flow	–	–
Further information	Page 68	Page 70



EGQ220F032



EGQ222F032



## EGQ 220, 222: Room transducer, CO<sub>2</sub>, surface-mounted

### Features

- Measurement of CO<sub>2</sub> concentration for demand-controlled ventilation of rooms such as meeting and conference rooms, offices and classrooms
- Available with and without temperature sensor
- CO<sub>2</sub> measurement with NDIR<sup>1)</sup> Dual-beam technology, therefore stable in the long term and largely resistant to external influences
- Very fast response to changes in the CO<sub>2</sub> concentration in rooms
- Developed according to EN 13779, EN 15251, VDI 6038 and VDI 6040 directives

### Technical data

#### Power supply

Power supply	15...35 VDC / 19...29 VAC SELV
Power consumption	Typ. 0.4 W at 24 VDC Typ. 0.8 VA at 24 VAC
Start-up current	Max. 1.6 A

#### Parameters

Time characteristic	Readiness for operation	< 2 minutes operational, < 15 minutes response time
	In room (0.1 m/s)	2 minutes
CO <sub>2</sub>	Measuring range	0...2000 ppm (ex works)
	Average measuring accuracy	±75 ppm >750 ppm: ±10% (typ. at 21 °C)
	Pressure dependence	Typ. 0.135% of the measured value per mm Hg
	Temperature dependence	Typ. 2 ppm per °C (0...50 °C)
Temperature (EGQ 222)	Gradual drift <sup>2)</sup>	< 5% FS or < 10% per year
	Measuring range	-35...70 °C
	Average measuring accuracy	±0.5 K (typ. at 21 °C)

#### Ambient conditions

Ambient temperature	-35...70 °C
Ambient humidity	Max. 85% rh, non-condensing

#### Inputs/outputs

Output signal	0...10 V CO <sub>2</sub> /temperature
---------------	---------------------------------------

#### Construction

Colour	Traffic white (RAL9016)
Housing material	Polycarbonate (PC) UL94-V0
Cable inlet	Through the rear wall
Connection terminals	Spring-type terminal, max. 1.5 mm <sup>2</sup>
Weight	90 g

#### Standards, directives

CE/UKCA conformity <sup>3)</sup>	Type of protection	IP20 (EN 60529) after fitting
	EMC-D 2014/30/EU (CE)	EN 60730-1 (mode of operation 1, residential premises)
	EMC-2016 (UKCA)	See EMC-D
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

<sup>1)</sup> NDIR: Non-dispersive infrared sensor

<sup>2)</sup> Air flow velocity: 0.15 m/s. Air flow direction: Laminar upwards

<sup>3)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues



**Overview of types**

Type	Description	Output signal
EGQ220F032	Room transducer, CO <sub>2</sub>	Active, 1 × 0...10 V, load ≥ 10 kΩ
EGQ222F032	Room transducer, CO <sub>2</sub> , temp.	Active, 2 × 0...10 V, load ≥ 10 kΩ

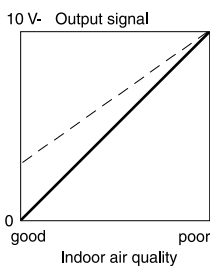
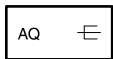
**Accessories**

Type	Description
0300230010	USB Bluetooth® dongle





EGQ120F032



## EGQ 120: Room transducer, air quality, surface-mounted

### Features

- Measures the relative VOC mixed gas concentration (organic components in the room air), such as tobacco smoke, kitchen vapours
- Demand-based ventilation control in buildings such as restaurants and offices
- Active VOC semi-conductor sensor for measuring mixed gas concentration
- Suitable for direct wall mounting and recessed junction boxes

### Technical data

#### Power supply

Power supply	15...35 VDC / 19...29 VAC SELV
Power consumption	Typ. 0.4 W at 24 VDC Typ. 0.8 VA at 24 VAC
Start-up current	Max. 1.6 A

#### Parameters

Type of sensor	VOC (heated metal oxide semiconductor)
----------------	--

#### Ambient conditions

Ambient temperature	-35...70 °C
Ambient humidity	Max. 85% rh, no condensation

#### Inputs/outputs

Output signal	Active, 0...10 V, min. load 10 kΩ
---------------	-----------------------------------

#### Construction

Colour	Traffic white (RAL9016)
Housing material	Polycarbonate (PC UL94-V0)
Cable inlet	Through the rear wall
Connection terminals	Spring-type terminal, max. 1.5 mm <sup>2</sup>
Weight	65 g

#### Standards, directives

CE/UKCA conformity <sup>1)</sup>	Type of protection	IP20 (EN 60529) after fitting
	EMC-D 2014/30/EU (CE)	EN 60730-1 (mode of operation 1, residential premises)
	EMC-2016 (UKCA)	See EMC-D
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Description
EGQ120F032	Room transducer, active, air quality

### Accessories

Type	Description
0300230010	USB Bluetooth® dongle



<sup>1)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues

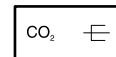
## EGQ 281: Room transducer, CO<sub>2</sub>, recessed

### Features

- CO<sub>2</sub> sensor for continuous measurement of the CO<sub>2</sub> concentration for the demand-controlled ventilation of rooms (e.g. meeting rooms, conference rooms, offices, classrooms, etc.)
- CO<sub>2</sub> measurement with NDIR dual-beam technology<sup>1)</sup>, therefore stable in the long term and resistant to external influences
- Any ageing or contaminating effects are continuously compensated in real time
- Very fast response to changes in the CO<sub>2</sub> concentration in rooms
- Temperature-compensated calibration for the standard air pressure of 1013 mbar
- Calibrated ex works and ready to use immediately
- Low energy requirement of the ventilation system during the warming up time of the sensor
- Including frame



EGQ281F031



### Technical data

Power supply		
Power supply (SELV)		15...24 V= (±10%) / 24 V~ (±10%)
Power consumption		< 1.6 W (typ. 0.3 W) < 3.9 VA (typ. 0.7 VA)
Output signal		
Analogue output		0...10 V
Load current		Max. 10 mA
Parameters		
Measuring range		0...2000 ppm
Measuring accuracy		< ±50 ppm 2% of the measured value (25 °C and 1013 mbar)
Time constant		< 195 s (t <sub>90</sub> )
Measuring cycle		15 s
Long-term stability		Typ. 20 ppm/year
Ambient conditions		
Ambient temperature		-20...70 °C
Construction		
Housing		Pure white
Housing material		Lower section: PA6 Front plate: PC
Frame design		Gira E2
Weight		90 g
Standards, directives		
Type of protection		IP30 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

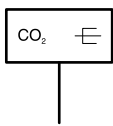
Type	Description
EGQ281F031	Room transducer, CO <sub>2</sub> ; 0...10 V, recessed

<sup>1)</sup> NDIR: Non-dispersive infrared sensor





EGQ212F032



## EGQ 212: Duct transducer, CO<sub>2</sub> and temperature

### Features

- Duct sensor for measuring carbon dioxide (CO<sub>2</sub>) content for demand-based ventilation of indoor spaces
- CO<sub>2</sub> measurement with NDIR<sup>1)</sup> Dual-beam technology, therefore stable in the long term and largely resistant to external influences
- Measurement of temperature in ventilation ducts
- Two analogue 0...10 V outputs are available: one for CO<sub>2</sub> measurement and one for temperature measurement. This allows direct connection to an automation station
- Automatic drift compensation
- Mounting accessories and flange included

### Technical data

Power supply		
	Power supply (SELV)	15...35 V= / 19...29 V~
	Power consumption	Max. 2.3 W (24 V=) / 4.3 VA (24 V~)
	Peak inrush current	1.2 A < 3 ms
Outputs		
	Output signal	2 × 0...10 V, load min.: 10 kΩ
Parameters		
	Flow speed	Min. 0.3 m/s, max. 12 m/s
Time characteristic	In moving air (3 m/s)	5 minutes
CO <sub>2</sub>	Measuring range	0...2000 ppm
	Measuring accuracy	±50 ppm drift over the serviceable life +3% of the measured value (typical at 21 °C, 50% rh)
Temperature	Measuring range	0...50 °C
	Measuring accuracy	±0.5 K (typical at 21 °C)
Ambient conditions		
	Ambient temperature	0...50 °C
	Ambient humidity	Max. 85% rh non-condensing
Construction		
	Connection terminals	Plug-in female connectors, removable
	Cable cross-section	Max. 2.5 mm <sup>2</sup>
	Cable inlet	Removable insert, M20 for cable, min. Ø 4.5 mm, max. Ø 9 mm
	Housing	Yellow/black
	Housing material	Housing: PC, sensor tube: PA6
	Filter unit material	Stainless steel, wire mesh
	Sensor tube diameter	19.5 mm
	Sensor tube length	180 mm
	Weight	150 g
Standards, directives		
	Type of protection	Instrument head: IP65 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN IEC 63000

<sup>1)</sup> NDIR: Non-dispersive infrared sensor



### Overview of types

Type	Features
EGQ212F032	Duct transducer, CO <sub>2</sub> and temperature; 2 × 0...10 V

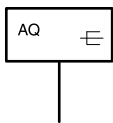
### Accessories

Type	Description
0300360003	Mounting flange; plastic





EGQ110F032



## EGQ 110: Duct transducer, air quality (VOC), temperature

### Features

- Duct air quality sensor for detection of volatile organic compounds (VOC) for demand-controlled ventilation of indoor spaces. VOC sources include flue gases, solvents as well as various cleaning agents and building materials
- Measurement of temperature in ventilation ducts
- Two analogue 0...10 V outputs are available: one for VOC measurement and one for temperature measurement. This allows direct connection to an automation station
- Automatic calibration via an integrated algorithm
- Mounting accessories and flange included

### Technical data

#### Power supply

Power supply (SELV)	15...35 V= / 19...29 V~
Power consumption	Max. 2.3 W (24 V=) / 4.3 VA (24 V~)
Peak inrush current	1.2 A < 3 ms

#### Outputs

Output signal	2 × 0...10 V, load min.: 10 kΩ
---------------	--------------------------------

#### Parameters

	Flow speed	Min. 0.3 m/s, max. 12 m/s
Time characteristic	In moving air (3 m/s)	5 minutes
VOC	Measuring range	0...100%
	Serviceable life	Typically 10 years
	Sensor	Heated tin dioxide semiconductor
Temperature	Measuring range	0...50 °C
	Measuring accuracy	±0.5 K (typical at 21 °C)

#### Ambient conditions

Ambient temperature	0...50 °C
Ambient humidity	Max. 85% rh non-condensing

#### Construction

Connection terminals	Plug-in female connectors, removable
Cable cross-section	Max. 2.5 mm <sup>2</sup>
Cable inlet	Removable insert, M20 for cable, min. Ø 4.5 mm, max. Ø 9 mm
Housing	Yellow/black
Housing material	Housing: PC, sensor tube: PA6
Filter unit material	Stainless steel, wire mesh
Sensor tube diameter	19.5 mm
Sensor tube length	180 mm
Weight	150 g

#### Standards, directives

	Type of protection	Instrument head: IP65 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

Type	Features
EGQ110F032	Duct transducer; VOC and temperature; 2 × 0...10 V





## Accessories

Type	Description
0300360003	Mounting flange; plastic



# Humidity sensors

SAUTER humidity sensors are used for the energy-efficient control and monitoring of ventilation systems. Sensors are available for measuring the relative humidity and enthalpy of the air. They can be used in residential or business premises and can also be fitted in air ducts.

## Overview of humidity sensors



Type designation	EGH 120, 130	EGH 681	EGH 110...112	EGE 112	EGH 102
<b>Application</b>					
Room, surface-mounted	•	–	–	–	–
Room, recessed	–	•	–	–	–
Duct	–	–	•	•	–
Clamp-on sensor	–	–	–	–	•
<b>Measurement</b>					
Temperature	•	•	•	•	–
Relative humidity	•	•	•	–	–
Enthalpy	–	–	–	•	–
Dew point	–	–	–	–	•
<b>Further information</b>	Page 73	Page 74	Page 75	Page 76	Page 77

## EGH 120, 130: Room transducer, relative humidity and temperature, surface-mounted

### Features

- Measurement of humidity via a fast, capacitive sensor
- Active measuring element
- Suitable for direct wall mounting and recessed junction boxes
- Converts the measured values into a continuous analogue signal (0...10 V / 4...20 mA)

### Technical data

Parameters		
Relative humidity	Measuring range	0...100% rh, no condensation
	Measuring accuracy	±2 % between 10...90 % rh (typ. at 21 °C)
Temperature	Measuring range	0...50 °C
	Measuring accuracy	±0.5 °C (typ. at 25 °C)

### Ambient conditions

Ambient temperature	-35...70 °C
Ambient humidity	Max. 85% rh, non-condensing

### Construction

Colour	Traffic white (RAL9016)
Housing material	Polycarbonate (PC) UL94-V0
Cable inlet	Through the rear wall
Connection terminals	Spring-type terminals, max. 1.5 mm <sup>2</sup>
Weight	80 g

### Standards, directives

CE/UKCA conformity <sup>1)</sup>	Type of protection	IP20 (EN 60529) after fitting
	EMC-D 2014/30/EU (CE)	EN 60730-1 (mode of operation 1, residential premises)
	EMC-2016 (UKCA)	See EMC Directive
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Description	Output signal	Power supply	Power consumption
EGH120F042	Room transducer, rh, temp.	Active, 2 × 4...20 mA Max. load 500 Ω	15...24 VDC, ±10%	Max. 1 W
EGH130F032	Room transducer, rh, temp.	Active, 2 × 0...10 V Min. load 20 kΩ	15...24 VDC, ±10% 24 VAC, ±10%	Max. 0.3 W (24 VDC) 0.5 VA (24 VAC)

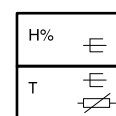
### Accessories

Type	Description
0300230010	USB Bluetooth® dongle



EGH120F042

EGH130F032



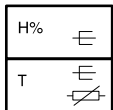
<sup>1)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues



## EGH 681: Room transducer, relative humidity and temperature, recessed



EGH681F031



### Features

- Measures the relative humidity and temperature in rooms
- Regulation of the room climate in combination with room automation systems
- Fast response time and high precision
- Including frame

### Technical data

Power supply		
Power supply		15...24 V= (±10%) or 24 V~ (±10%)
Power consumption		Typ. 0.3 W / 0.5 VA
Output signal		
Output signal		0...10 V, load resistance at least 10 kΩ
Parameters		
Measuring range, temperature		0...50 °C
Measuring range, humidity		0...100% rh
Ambient conditions		
Ambient temperature		-20...70 °C
Construction		
Housing		Pure white
Housing material		Lower section: ABS Front plate: PC
Frame design		Gira E2
Weight		80 g
Standards, directives		
Type of protection		IP30 (EN 60529)
CE conformity according to	RoHS Directive 2011/65/EU	EN IEC 63000
	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)

### Overview of types

Type	Description
EGH681F031	Room transducer, relative humidity and temperature, recessed



## EGH 110...112: Duct transducer, relative humidity and temperature

### Features

- Measures the relative humidity and temperature in air ducts
- Measurement by means of fast capacitive measuring element
- Active and passive measuring element
- Immersion depth 140 mm
- Mounting flange supplied

### Technical data

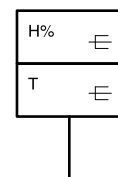
Power supply		
	Power supply	15...24 V= ( $\pm 10\%$ ) or 24 V~ ( $\pm 10\%$ )
	Peak inrush current	1.5 A, 4 ms
Parameters		
Humidity	Measuring range, humidity	0...100% rh, no condensation
	Measuring accuracy, humidity	Typ. $\pm 2\%$ (10...90% rh)
	Repeat accuracy	Typ. $\pm 0.1\%$ rh
	Gradual drift	Typ. $< 0.5\%$ rh/year
Temperature	Measuring range, temperature	-20...80 °C
	Measuring accuracy, temperature	$\pm 0.5$ °C (typ. at 25 °C)
	Repeat accuracy	Typ. $\pm 0.1$ °C
	Gradual drift	Typ. $< 0.04$ °C/year
Time characteristic	In moving air (3 m/s)	2 minutes (t63)
	Readiness for operation	10 seconds (operational), 5 minutes (max. precision)
	Flow speed	Min: 0 m/s Max: 10 m/s
	Hysteresis	$\pm 1\%$
Ambient conditions		
	Ambient temperature	-20...70 C
Construction		
	Connection terminals	Screw terminals, max. 1.5 mm <sup>2</sup>
	Cable inlet	M20 for cable with min. $\varnothing$ 5 mm, max. $\varnothing$ 10 mm
	Housing	Yellow/black
	Housing material	PA6
	Filter unit material	Stainless steel, wire mesh
	Sensor tube diameter	19.5 mm
	Sensor tube length	140 mm
	Weight	120 g
Standards and directives		
CE conformity according to	Type of protection	Instrument head: IP65 (EN 60529)
	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

Type	Power consumption	Output signal
EGH110F041	Max. 1 W (24 V=)	2 × 4...20 mA (max. load 500 $\Omega$ )
EGH111F031	Max. 0.4 W (24 V=)   0.8 VA (24 V~)	2 × 0...10 V (min. load 10 k $\Omega$ ) + Ni1000
EGH112F031	Max. 0.4 W (24 V=)   0.8 VA (24 V~)	2 × 0...10 V (min. load 10 k $\Omega$ )

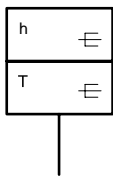


EGH11\*F0\*1





EGE112F031



## EGE 112: Duct transducer, enthalpy

### Features

- Measures the enthalpy and temperature in air ducts
- Measurement by means of fast capacitive measuring element
- Active measuring element
- Unaffected by flow speeds and normal contamination
- Mounting flange supplied

### Technical data

Power supply		
Power supply		15...24 V= (±10%) or 24 V~ (±10%)
Power consumption		Max. 0.4 W (24 V=)   0.8 VA (24 V~)
Outputs		
Output signal		2 x 0...10 V (min. load 10 kΩ)
Parameters		
Flow speed		Min. 3 m/s Max. 10 m/s
Time characteristic	Time constant in moving air (3 m/s)	3 minutes
Enthalpy	Measuring range	0...100 kJ/kg
	Measuring accuracy	3.5 kJ/kg (typ. at 21 °C)
Temperature	Measuring range	-20...80 °C
	Measuring accuracy	±0.5 °C (typ. at 25 °C)
Ambient conditions		
Ambient temperature		-20...70 °C
Construction		
Connection terminals		Screw terminal, max. 1.5 mm <sup>2</sup>
Cable inlet		M20 for cable Ø min. 5.8 mm, max. 10 mm
Housing		Yellow/black
Housing material		PA6
Filter unit material		Stainless steel, wire mesh
Sensor tube diameter		19.5 mm
Sensor tube length		140 mm
Weight		120 g
Standards, directives		
Type of protection		Instrument head: IP65 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

Type	Description
EGE112F031	Duct transducer, enthalpy and temperature, 2 x 0...10 V



## EGH 102: Dew point monitor and transducer

### Features

- Protects against dew formation on chilled ceilings
- Controls a regulating unit via a holding relay that interrupts the cooling water flow or increases the cooling water temperature
- Best solution for monitoring chilled-ceiling systems
- Measurement taken by a spring-mounted dew point sensor
- Active measuring element
- Variant with external sensor (EGH102F101)
- Holding relay with changeover contacts
- Includes retaining strap for pipes of  $\varnothing$  10...100 mm and heat-conducting paste

### Technical data

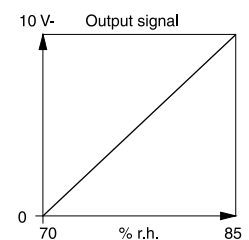
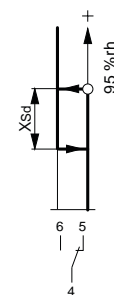
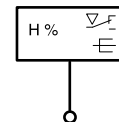
Power supply		
Power supply		24 V~/=, $\pm 20\%$
Power consumption		Max. 1 VA
Parameters		
Measuring range		70...85% rh
Changeover contact <sup>1)</sup>		1 A, 24 V~/=
Response time in still air		80 to 99% rh, 99 to 80% rh, max. 3 minutes
Exposure to dew		Max. 30 min
Switching difference		Fixed, approx. 5% rh
Switching point		95 $\pm$ 4% rh
Ambient conditions		
Ambient temperature		5...60 °C
Inputs/outputs		
Output signal		Approx. 70...85% rh, 0...10 V, load > 10 k $\Omega$
Construction		
Screw terminals		For electrical cables of up to 1.5 mm <sup>2</sup>
Housing		Pure white (RAL 9010)
Housing material		Fire-retardant thermoplastic
Weight		0.1 kg
Cable inlet		For Pg 11
Standards and directives		
Type of protection		IP40 (EN 60529)
Mode of operation		Type 1 C (EN 60730)

### Overview of types

Type	Clamp-on sensor
EGH102F001	Integrated in housing
EGH102F101	Cable 1 m long, sensor integrated in the cable end



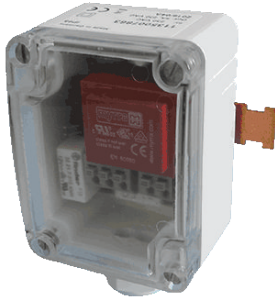
EGH102F\*01



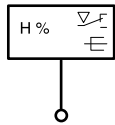
<sup>1)</sup> When activating relays, gates etc. with  $\cos \phi < 0.3$ , it is recommended to use RC circuitry in parallel to the coil. This reduces contact pitting and prevents high-frequency interference



## EGH 103: Dew point monitor



EGH103F001



### Features

- Protects against dew formation on chilled ceilings, etc.
- Controls a regulating unit via a holding relay that interrupts the cooling water flow or increases the cooling water temperature.
- Measurement is performed by a dew point sensor
- Potential-free output contact for 24 V and 230 V
- Holding relay with changeover contacts
- LED indicator for power supply and dew formation
- Plug-in connectors for electrical cables up to 1.5 mm<sup>2</sup>
- Cable inlet M20
- Fitted onto pipes using the provided cable tie for pipes Ø 10...40 mm

### Technical data

Power supply		
Power supply		230 V~ ±10%
Power consumption		Max. 3.5 VA
Parameters		
Changeover contact <sup>1)</sup>		5 A, 230 V~
Switching point		95 ±4% rh
Switching difference		Fixed, approx. 5% rh
Ambient conditions		
Ambient temperature		-20...60 °C (non-condensing)
Construction		
Housing		Pure white, PA6
Weight		0.19 kg
Standards and directives		
Type of protection		IP 65 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1 (mode of operation 1, residential premises)
	Low-Voltage Directive 2014/35/EU	EN 61000-6-1, EN 61000-6-3

### Overview of types

Type	Description
EGH103F001	Dew point monitor 230 V~

### Accessories

Type	Description
0300360004	Heat-conducting paste incl. gun with 2 g content

<sup>1)</sup> When activating relays, gates, etc. with  $\cos \phi < 0.3$ , it is recommended to use RC circuitry in parallel to the coil. This reduces contact pitting and prevents high-frequency interference





# Flow and pressure sensors

SAUTER flow and pressure sensors enable the accurate measurement of air pressures and flow speeds in rooms and ventilation ducts. This includes the measurement of duct pressures for precise control and monitoring of ventilation systems. Additionally, SAUTER flow and pressure sensors can also be used to measure room pressures in laboratories and clean rooms and for flow monitoring in fume cupboards.

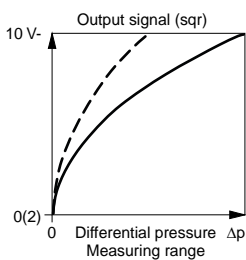
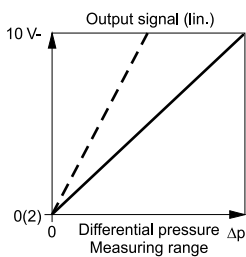
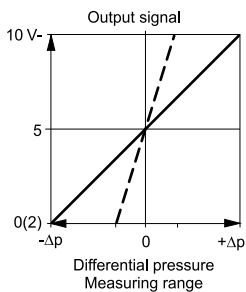
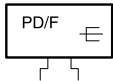
## Overview of flow and pressure sensors



Type designation	EGP 100	XAFP 100	SVU 100	DSU, DSI	DSDU, DSDI	SGU 100
Variable	$\Delta p$	$\Delta p$	m/s	$\Delta p$	$\Delta p$	mm
Application						
Duct	•	•	–	–	–	–
Laboratories & clean rooms	•	•	–	–	–	–
Fume cupboards	•	•	•	–	–	•
Pressure monitoring in liquids, gases and vapours	–	–	–	•	•	–
Travel measurement	–	–	–	–	–	•
Further information	Page 80	Page 82	Page 83	Page 84	Page 86	Page 88



EGP100F\*12



— Gain  $\Delta p = 1$   
 - - - Gain  $\Delta p = 3$

## EGP 100: Differential pressure transducer

### Features

- Exact measurement of positive, negative and differential pressures in gases
- Optimised for applications such as filter monitoring, room or duct pressure monitoring, level monitoring in fluids, actuating frequency converters for fan control and recording volume flow, especially for room air balancing in laboratories
- Can be ideally combined with XAFP 100 flow probe for precise measurement of volume flow
- Static pressure sensor
- Can be fitted in any position
- Can be used for dusty air or air polluted with chemicals (not ATEX approved)
- Manufacturer's test certificate ex works
- The measuring range can be adapted optimally to the needs of the application
- Variable zero point and filter time constant to suppress pressure surges in the system
- Display shows the actual value and the signal progression (depending on type)
- Status LED for immediate indication of operating status (depending on type)
- Measuring range can be reduced to one third (depending on type)
- Fitted to either wall or DIN rail (EN 60715)
- Cover that does not require special tools to open

### Technical data

#### Power supply

	Power supply	24 V~/=, $\pm 20\%$
Power consumption F**2	24 V~	3.0 VA
	24 V=	1.3 W
Power consumption F**1	24 V~	1.4 VA
	24 V=	0.4 W

#### Parameters

Admissible positive pressure	$\pm 20$ kPa
Influence of position <sup>1)</sup>	< 0.1% FS (full span)
Non-linearity	1% FS pressure-linear
Zero point stability	< 0.3% FS
Reproducibility	0.2% FS
Pneumatic connection <sup>2)</sup>	6.2 mm
Parts in contact with media	PC/ABS blend

#### Ambient conditions

Media temperature	0...70 °C
Admissible operating pressure $p_{stat}$ <sup>3)</sup>	$\pm 7$ kPa
Ambient temperature	0...60 °C
Ambient humidity	5...95% rh, no condensation

#### Inputs/outputs

Output signal <sup>4)</sup>	F*01: 0...10 V, load > 10 k $\Omega$ F*02/F*12: 0(2)...10 V, load < 500 $\Omega$
Filter time constant	F*01: 0.05...2 s F*02, F*12: 0.15...5.2 s

<sup>1)</sup> The sensor is calibrated at the factory for vertical fitting. The influence of position must be taken into account if the unit is not fitted in the vertical position

<sup>2)</sup> Max. length of measuring wire ( $d_i = 6.2$  mm):  $L_{max} = 15$  m for time constant < 0.5 s,  $L_{max} = 60$  m for time constant > 0.5 s

<sup>3)</sup> The zero point should be recalibrated if the admissible operating pressure is exceeded

<sup>4)</sup> With a load of < 500  $\Omega$ , a change-over to 0...20 mA or 4...20 mA occurs automatically. Output protected against short circuits and excess voltage up to 24 V~



**Construction**

Pressure connection	Internal Ø 6 mm
Housing	PC/ABS
Cable gland	M16
Screw terminals	For electrical cables of up to 1.5 mm <sup>2</sup>

**Standards, directives**

Type of protection	IP65 (EN 60529)
Protection class	III (EN 60730-1)
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4

**Overview of types**

**i** Output signal: Analogue output limited to 10.6 V. Measured values with an overrun of 6% of the measuring range can therefore be transferred

**i** Variable characteristic/LED: Manual adjustment of measuring range with gain potentiometer. Signal curve: linear/root-extracted. Output signal: 0...10 V / 2...10 V via DIP switches or with CASE Sensors software

Type	Measuring range	Display	Variable characteristic/LED	Weight (kg)
EGP100F101	±75 Pa, ±0.75 mbar	–	–	0.17
EGP100F102	±75 Pa, ±0.75 mbar	–	•	0.18
EGP100F112	±75 Pa, ±0.75 mbar	•	•	0.19
EGP100F201	±150, 1.5 mbar	–	–	0.17
EGP100F202	±150, 1.5 mbar	–	•	0.18
EGP100F212	±150, 1.5 mbar	•	•	0.19
EGP100F301	0...150 Pa, 0...1.5 mbar	–	–	0.17
EGP100F302	0...150 Pa, 0...1.5 mbar	–	•	0.18
EGP100F312	0...150 Pa, 0...1.5 mbar	•	•	0.19
EGP100F401	0...300 Pa, 0...3.0 mbar	–	–	0.17
EGP100F402	0...300 Pa, 0...3.0 mbar	–	•	0.18
EGP100F412	0...300 Pa, 0...3.0 mbar	•	•	0.19
EGP100F601	0...1000 Pa, 0...10.0 mbar	–	–	0.17
EGP100F602	0...1000 Pa, 0...10.0 mbar	–	•	0.18
EGP100F612	0...1000 Pa, 0...10.0 mbar	•	•	0.19

**Accessories**

Type	Description
0010240300	Connection set, 6 mm, complete
XAFP100F001	Flow probe to measure the air volume in ventilation ducts
CERTIFICAT001	Manufacturer's test certificate type M
CERTIFICAT999	Test for further device (from 2 pcs.)
0300360001	USB-RS-485 converter



XAFP100F001

## XAFP 100: Flow probe for ventilation ducts

### Features

- Flow probe for precise and inexpensive recording of differential pressure signals in ventilation and air conditioning systems
- Efficient regulation of applications for demand-controlled ventilation in offices, laboratories, fume cupboards and clean rooms, by combining an air damper and an electronic/pneumatic volume flow controller
- In combination with a square root differential pressure sensor, air volume flows can be reliably recorded and monitored
- Optimised flow profile for accurate measurement of differential pressure signals
- Can be used in atmospheres containing aggressive substances
- Length (396 mm) can be shortened on site if necessary

### Technical data

#### Parameters

Measurement tolerance	< 3%
Range (mm)	DN 80...400

#### Admissible ambient conditions

Operating temperature	0...50 °C
Ambient humidity	< 85% rh, no condensation

#### Function

Function	Flow probe
----------	------------

#### Construction

Dimensions	65 × 40 × 396 mm (W × H × L)
Bore	Ø 30...32 mm

#### Material

Flow probe	PA 6
Seal	PE, physiologically safe
Connecting tube	PU

#### Standards and directives

Flow probe	Electrical	UL 7468
	Flammability	UL 94, IEC 60695-2-12, IEC 60695-2-13

### Overview of types

Type	Features
XAFP100F001	Flow probe for ventilation ducts



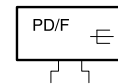
## SVU 100: Air-flow transducer

### Features

- Precise and long-term stable recording of air inflow speeds in fume cupboards with a time constant of <100 ms
- Particularly suitable for fume cupboards with horizontal and vertical front sashes
- Air volume control according to needs for fume cupboards with horizontal and vertical front sashes
- Precise and long-term stable recording of air inflow speeds in fume cupboards
- Reliable detection of reversal of flow direction
- Integrated filter unit that protects against contamination of the sensor
- Dynamic pressure sensor based on thin-film technology
- Fitted to the fume cupboard simply and quickly



SVU100F005



### Technical data

#### Power supply

Power supply	24 V~, -15%/+20%, 50...60 Hz
Power consumption	1 VA

#### Parameters

Measuring range	0...1 Pa
Measuring span <sup>1)</sup>	0...1.3 m/s
Differential pressure	Approx. 0...1 Pa
Time constant	< 0.1 s
Air throughput rate	3 cm <sup>3</sup> /min (at 1 m/s)

#### Ambient conditions

Ambient temperature	5...55 °C
Ambient humidity	< 90% rh

#### Inputs/outputs

Output signal <sup>2)</sup>	0...10 V
Linearity	2% (based on the output signal)

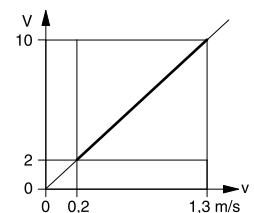
#### Standards and directives

Type of protection	IP40 (EN 60529) with terminal cover
CE conformity according to	EMC Directive 2014/30/EU EN 61000-6-1, EN 61000-6-3

### Overview of types

Type	Feature
SVU100F005	Linear to $v$ [m/s]

☛ Specified flow speed is based on  $\rho = 1.2 \text{ kg/m}^3$



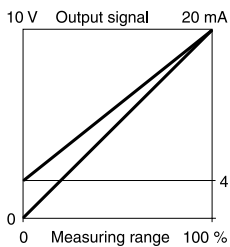
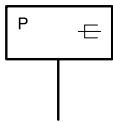
<sup>1)</sup> Recommended measuring span 0.2...1.3 m/s (output 2...10 V)

<sup>2)</sup> Output signal: Output protected against short circuits and excess voltage up to 24 V~





DS\*2\*\*F002



## DSU, DSI: Pressure transmitter

### Features

- For measuring pressure in liquids, gases and vapours
- Sturdy device with ceramic diaphragm
- High precision
- High positive pressure protection
- High vibration resistance
- Low hysteresis
- Standard signal 2...10 V or 4...20 mA
- Pressure sensor made of stainless steel for aggressive media
- With standard plug as per DIN EN 175301-803-A

### Technical data

#### Power supply

Power supply	See type list
Electrical connection	DSI: Two-wire DSU: Three-wire

#### Parameters

Temperature dependence	Zero point 0.07% FS/K Measuring range 0.05% FS/K
Admissible load	DSU: $U_b \geq 15 \text{ V} \geq 5 \text{ k}\Omega$ $U_b \geq 20 \text{ V} \geq 2 \text{ k}\Omega$ DSI: $(U_b - 6 \text{ V}) / 0.02 \text{ A}$

#### Ambient conditions

Ambient temperature	0...60 °C
Media temperature	0...85 °C

#### Inputs/outputs

Hysteresis	< 0.5% FS
Linearity	< 1% FS

#### Construction

Housing material	Chromium-nickel steel 1.4305
Device plug	Plug connection 4-pin, standard plug DIN EN 175 01-803-A, cable gland M16
Cable cross-section	Max. 1.5 mm <sup>2</sup>
Pressure connection	G 1/2"
Weight	0.2 kg

#### Standards and directives

	Type of protection	IP65 (EN 60529)
	Protection class	III (EN 61140)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1 / EN 61000-6-2 EN 61000-6-3 / EN 61000-6-4 EN 60730
	PED 2014/68/EU	Subject to Art. 3.3 of PED without safety function



### Overview of types

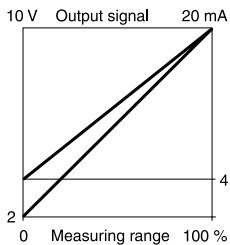
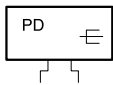
Type	Measuring range (bar)	Output signal	Power supply	Maximum pressure	Power consumption
DSU203F002	0...2.5 bar	0...10 V	24 V=/~	8 bar	24 V=/~, 0.5 W (VA)
DSU206F002	0...6 bar	0...10 V	24 V=/~	20 bar	24 V=/~, 0.5 W (VA)
DSU210F002	0...10 bar	0...10 V	24 V=/~	32 bar	24 V=/~, 0.5 W (VA)
DSU216F002	0...16 bar	0...10 V	24 V=/~	50 bar	24 V=/~, 0.5 W (VA)
DSU225F002	0...25 bar	0...10 V	24 V=/~	80 bar	24 V=/~, 0.5 W (VA)
DSI203F002	0...2.5 bar	4...20 mA	24 V=	8 bar	24 V=, 0.7 W
DSI206F002	0...6 bar	4...20 mA	24 V=	30 bar	24 V=, 0.7 W
DSI210F002	0...10 bar	4...20 mA	24 V=	32 bar	24 V=, 0.7 W
DSI216F002	0...16 bar	4...20 mA	24 V=	50 bar	24 V=, 0.7 W
DSI225F002	0...25 bar	4...20 mA	24 V=	80 bar	24 V=, 0.7 W

### Accessories

Type	Description
0300360007	Capillary throttle, stainless steel, length 1 m, G $\frac{1}{2}$ "-G $\frac{1}{2}$ "
0300360015	Wall holder for DSU/DSI



DSD\*10\*F021



## DSDU, DSDI: Differential pressure transmitter

### Features

- For measuring pressure differences in liquids, gases and vapours
- Pressure measuring in non-aggressive fluids or gaseous media
- Sturdy device with ceramic diaphragm
- For use in filter technology, heating systems etc.
- Differential pressure measuring range from 0...6 bar
- Analogue signal 0...10 V or 4...20 mA
- 24 V~/= supply voltage
- With fitting bracket
- Standard plug as per DIN EN 175301-803-A

### Technical data

Power supply	
Power supply	24 V~/~, ±20%, (50...60 Hz)
Electrical connection	Three-wire
Power consumption	< 1.5 W (VA)

Parameters	
Output signal	0...10 V Load: > 2 kΩ 4...20 mA Load: ≤ 700 Ω (V=), ≤ 400 Ω (V~)
Accuracy <sup>1)</sup>	≤ 1%

Ambient conditions	
Ambient temperature	-20...80 °C
Media temperature	0...80 °C (non-freezing media)
Ambient humidity	45...75% rh
Burst pressure	64 bar (both sides)

Construction	
Housing material	Brass
Diaphragms	Ceramic
Connection thread	G 1/8" (female thread)
Device plug	Plug connection 4-pin, standard plug DIN EN 175 01-803-A, cable gland M16
Weight	0.62 kg

Standards and directives		
	Type of protection	IP65 (EN 60529)
CE conformity according to	EMC Directive 2014/30/EU	EN 61326-1, EN 61326-2-3
	PED 2014/68/EU	Fluid group II, article 4.3

### Overview of types

Type	Measuring range $\Delta p$	Output signal	Max. pressure (connection +)	Max. pressure (connection -)
DSDI101F021	0...1 bar	4...20 mA	10 bar	5 bar
DSDI103F021	0...2.5 bar	4...20 mA	21 bar	15 bar
DSDI106F021	0...6 bar	4...20 mA	21 bar	15 bar
DSDU101F021	0...1 bar	0...10 V	10 bar	5 bar
DSDU103F021	0...2.5 bar	0...10 V	21 bar	15 bar
DSDU106F021	0...6 bar	0...10 V	21 bar	15 bar

<sup>1)</sup> Including non-linearity and hysteresis in compensated temperature range 10...70°C





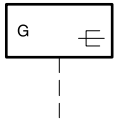
**Accessories**

Type	Description
0300360005	Cutting ring fitting G $\frac{1}{8}$ " to 6 mm pipe (2 pcs)
0300360006	Pneumatic fitting G $\frac{1}{8}$ " to 6 mm hose (2 pcs)
0300360016	Throttle screws G $\frac{1}{8}$ ", G $\frac{1}{4}$ " (2 pcs)





SGU100F01



## SGU 100: Sash sensor

### Features

- Infinitely-variable measurement of the position of the vertical front sash on laboratory fume cupboards
- Accurate detection of sash position, with no wear and tear
- Fast control of the air volume; no oscillation
- Easy fitting, preferably on the counterweight of the front sash
- Teach-in function for adjusting the travel of the front sash
- Easy to program using the SAUTER CASE Sensors software
- Integrated excess-travel alarm
- Power cable 2.5 m long,  $7 \times 0.32 \text{ mm}^2$ , fixed to housing
- Fitted with halogen-free cable as standard
- Remote access and remote maintenance: Commissioning and service via bus or external push-button
- 3-colour LED status indicator
- Acoustic status and alarm elements (can be deactivated)

### Technical data

#### Power supply

Power supply 24 VAC	$\pm 20\%$ , 50...60 Hz
Power supply 24 VDC	$\pm 20\%$
Power consumption 24 V <sup>~1)</sup>	Typically: 2 VA, 0.75 W, inactive buzzer, max.: 4 VA, 1.5 W, active buzzer
Power consumption 24 V <sup>=2)</sup>	Typically: 0.6 W, inactive buzzer, max.: 1.1 W, active buzzer

#### Parameters

Linearity error	Max. 1.5% based on working range, e.g.: 2...10 V = 8 V
Hardware response time <sup>3)</sup>	< 100 ms
Filter time constant	0...5, 22 s, variable using SAUTER CASE Sensors

#### Ambient conditions

Operating temperature	0...55 °C
Storage and transport temperature	-20...70 °C
Humidity	85% rh, no condensation

#### Inputs/outputs

Digital input	$I_{\text{out\_source}}$ max.: 1 mA, $V_{\text{out}}$ max.: 18 V at $R_{\text{load}} = \infty$
Alarm output	$I_{\text{sink}}$ max.: 2 mA, open collector output, 100 mV at $I_{\text{sink}} = 2 \text{ mA}$ , $V_{\text{in}}$ max.: 24 V <sup>=</sup> , 20% at $I_{\text{sink}} = 0 \text{ mA}$
Voltage output <sup>4)</sup>	0/2...10 V, 1 mA max., $V_{\text{out}}$ max.: 11.5 V, can be parametrised, Default 2...10 V
Typical overall error	2.5% (nonlinearity, hysteresis, offset, amplified; based on working range)
Temperature effect	< 0.04 %/K

<sup>1)</sup> Default is buzzer active

<sup>2)</sup> Inactive/active buzzer: Default is buzzer active

<sup>3)</sup> The set filter time constant must be added

<sup>4)</sup> Protected against short circuits and excess voltage to 24~



**Construction**

Weight	0.68 kg
Length of cable without bus termination <sup>51</sup>	Up to 200 m, Ø 0.5 mm

**Standards and directives**

Type of protection	IP10 (EN 60529), IP20 (EN 60529)
Protection class	III (EN 60730)
Software	A (EN 60730)
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4

**Overview of types**

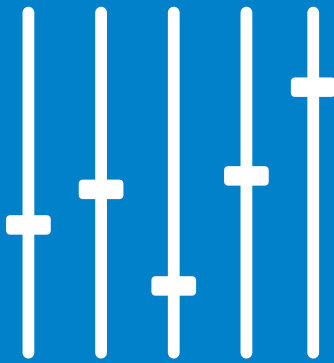
Type	Working range	Resolution of working stroke
SGU100F010	200...800 mm for bench-mounted fume cupboards (max. spring travel 1000 mm)	< 1 mm
SGU100F011	400...1600 mm for walk-in fume cupboards (max. spring travel 2000 mm)	< 2 mm

**Accessories**

Type	Description
0300360001	USB-RS-485 converter

<sup>51</sup> Cable length of bus termination on both sides 120 Ω: 200...500 m, Ø 0.5 mm

# Single-room, heating and air- conditioning controllers



**For all building situations: stand-alone or networked.**

SAUTER stand-alone controllers are tailored to applications such as heating, air-conditioning, ventilation or room control. They can be installed quickly. The intuitive operating concept ensures maximum comfort and guarantees, at the same time, the greatest possible energy efficiency in day-to-day operations. This allows all requirements for smooth functionality and economical operation to be combined.

## Single-room, heating and air-conditioning controllers

### Single-room control

Overview of room temperature controllers	92	TRT 317, 327: Electronic room thermostat for heating and heating/cooling	99
NRFC 413, 422...424: Modbus fan coil thermostat	93	FXV 3***: Electrical distributor	101
TRA 410, 421: Room thermostat for heating and heating/cooling with display	97	FXV 33** EasySwitch: Electric distributor for control signals	103

### equitherm heating control

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### flexotron controllers for ventilation and air-conditioning

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### VAV compact controllers

ASV205BF132*, ASV215BF132*: VAV compact controller	118
ASV2*5BF152*: VAV controller for laboratory and pharmaceutical applications	121
FCCP: Fume cupboard indicator and monitor	124



# Room temperature controllers

The SAUTER single-room controller combines the highest standards of operability with a modern design. The device can be used in various applications in hotel, business or residential premises. These include individual temperature control for single rooms, apartments and zones in 2- and 4-pipe systems. The electronic room controller is powerful, economical and easy to operate.

## Overview of room temperature controllers



Type designation	NRFC 4
Application	
Air-conditioning controller	•
Fan-coil controller	•
For 2-pipe installation	•
For 4-pipe installation	•
For 2/3-way zone valve	–
For 6-way ball valve	–
Outputs	
Continuous	•
Quasi-continuous, 2-point	•
3-point	–
Relay	•
Control	
PI	•
Operation and indicator	
Display	•
Presence button	–
Communication	
Protocols	Modbus RTU
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## NRFC 413, 422...424: Modbus fan coil thermostat

### Features

- Single-room controller for heating and cooling by means of air conditioning units in commercial and residential buildings
- For 2- or 4-pipe fan coil units, two-stage heating systems or water-bearing heat pumps
- Can be integrated into building management systems via Modbus/RTU
- Large configurable display with backlight
- Integrated ON/OFF timer
- Deactivatable button operation for public installations
- Valve control via 2-point or 0...10 V output
- Supports 3-speed fans or fans with EC motor
- Summertime/wintertime change-over in 2-pipe applications
- Automatic deactivation of internal temperature sensor when using a cable temperature sensor
- Installation via mounting plate without opening the controller
- Universal design and low installation height of 14 mm for inconspicuous fitting



NRFC413MF111

### Technical data

#### Power supply

Power supply	100...240 V~, 50/60 Hz
Power consumption	5 VA

#### Ambient conditions

Ambient temperature	0...40 °C
Ambient humidity	10...90% rh, no condensation
Storage and transport temperature	-10...60 °C

#### Inputs/outputs

Inputs	Temperature sensor	NTC 10k
	Digital input	closed < 0.3 V= open > 0.7 V=
	Analogue input	0...10 V
Outputs	Analogue output U	0...10 V (100 kΩ)
	Relay output	2.2 A (I <sub>R</sub> ); 3.6 A (I <sub>X</sub> ) cos φ 0.98 each at 240 V~

#### Interfaces, communication

RS-485	Communication protocol	Modbus/RTU
	Connection	Screw terminal, 3-pole 0.14...1.5 mm <sup>2</sup> rigid A (D+) / B (D-)
	Bus speed	4800, 9600 bit/s (adjustable)
	Address range	164
	Function codes	01, 03, 04, 06, 16
	CRC check	CRC-16
	Data type	u16
	Data format	10 bit, 1 start, 8 data, 1 stop, no parity
	Indicator/display	LCD display with backlight (adjustable)
	Buttons	6

#### Construction

Weight	0.3 kg
Dimensions W × H × D	88 × 88 × 46.2 mm
Housing	Upper and lower part white
Housing material	Polycarbonate
Fitting	On round or square recessed box



**Standards, directives**

	Type of protection	IP20 (EN 60529)
	Protection class	II as per IEC 60730
CE conformity according to	EMC Directive 2014/30/EU	EN 60730-1, EN 60730-2-9 residential premises Type1.C
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-9
	RoHS Directive 2011/65/EU	EN IEC 63000

**Inputs/outputs**

Type	AI	DI	AO	DO
NRFC413MF111	1 × NTC, 1 × 0...10 V	1	1	3 × relay (single-pole normally-open contact)
NRFC422MF111	1 × NTC	1	0	5 × relay (single-pole normally-open contact)
NRFC423MF111	1 × NTC	1	2	3 × relay (single-pole normally-open contact)
NRFC424MF112	1 × NTC	1	2	3 × relay (single-pole normally-open contact)

**Overview of types**

Type	Description	Fan
NRFC413MF111	2-pipe, continuous, with positional feedback signal	3 speeds
NRFC422MF111	2-pipe or 4-pipe, 2-point	3 speeds
NRFC423MF111	2-pipe or 4-pipe, continuous	3 speeds
NRFC424MF112	2-pipe or 4-pipe, 2-point or 2-pipe, continuous	EC motor with cut-off function



# Surface temperature regulation

The systems and solutions from SAUTER set standards for convenient control of surface heating and cooling systems. The products stand for technologically advanced, precise and easy to operate installations. The systems provide modern solutions for single- and multi-family buildings, hotels and public buildings, where the focus is on optimal comfort, easy operation and energy efficiency.

## Overview of surface temperature regulation



Type designation	TRA 410, 421	TRT 317, 327
<b>Application</b>		
Controller	•	•
Electrical distributor	–	–
Operating device	•	•
<b>Circuits/zones</b>		
Channels	–	–
Time programme/set-back mode	•	•
<b>Power supply</b>		
24 V / 230 V	•	•
Battery mode	–	–
<b>Operation and indicator</b>		
Display	•	–
Sensor buttons	–	–
Rotary knob	•	•
Status LED	–	–
<b>Communication and functions</b>		
Communication via wireless connection	–	–
Communication via wire connection	•	•
Network connection/LAN	–	–
Heating/cooling	•	•
Access via app	–	–
<b>Further information</b>	Page 97	Page 99



Type designation	FXV 3***	FXV 33**
Application		
Controller	–	–
Electrical distributor	•	•
Operating device	–	–
Circuits/zones		
Channels	6/10	8
Time programme/set-back mode	•	•
Power supply		
24 V / 230 V	• / •	– / •
Battery mode	–	–
Operation and indicator		
Display	–	–
Sensor buttons	–	–
Rotary knob	–	–
Status LED	•	•
Communication and functions		
Communication via wireless connection	–	–
Communication via wire connection	•	•
Network connection/LAN	–	–
Heating/cooling	•	•
Access via app	–	–
Further information	Page 101	Page 103

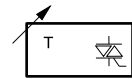
## TRA 410, 421: Electronic room thermostat for heating and heating/cooling with display

### Features

- Electronic room thermostat for 24 V or 230 V for heating or heating/cooling with display
- Easy to read LCD with backlight on TRA 421
- Silent-switching Triac output (24 V types)
- Easy to wire up
- NTC sensor
- Time programme and pilot clock output integrated in TRA 421
- Optimised time programme for comfort control and energy saving
- Input for lowering the room temperature (TRA 410)
- Input for heating/cooling changeover (TRA 421)
- Input for external temperature sensor
- Cooling lock function on versions for heating/cooling
- Integrated "NC" and "NO" changeover
- Modern design with ergonomic setpoint adjuster
- Restriction of temperature setting range
- Automatic frost protection facility at 5 °C and valve protection facility



TRA4\*\*F21\*



### Technical data

#### Power supply

Power supply	See type list
Power consumption	< 0.3 W in idle state
Fuse	In housing: 230 V= T1AH 24 V= T1A

#### Parameters

Number of actuators	AXT: 230 V, max. 5 pcs. parallel 24 V, max. 4 pcs. parallel
Setting range	5...30 °C
Switching difference	±0.2 K
Set-back	2 K or adjustable
Measuring element	NTC 22k

#### Ambient conditions

Ambient temperature	0...50 °C
Ambient humidity	5...80% rh, no condensation

#### Construction

Housing	Cover: White (RAL 9016) Lower section: Signal white (RAL 9003)
Housing material	Thermoplastic PC + ABS
Fitting	Wall, recessed junction box

#### Inputs/outputs

Switching element	230 V, relay 24 V, Triac
Switch rating	230 V, 1 A 24 V, 1 A
ECO input	230 V, voltage detection 230 V 24 V, voltage detection 24 V



Heating/cooling	Input: 230 V, voltage detection 230 V 24 V, voltage detection 24 V
Pilot timer	Output: 230 V, 100 mA 24 V, 100 mA

**Connection terminals / cable**

Connection terminals	Screw terminals 0.22 mm <sup>2</sup> to 1.5 mm <sup>2</sup>
Power cable	Solid: NYM-J/NYM-O (max. 5 × 1.5 mm <sup>2</sup> ) Flexible: H03V2V2H2-F / H05V2V2H2-F

**Standards, directives**

Type of protection	IP20 (EN 60529)
Protection class 24 V	III (EN 60730)
Protection class 230 V	II (EN 60730)
CE conformity according to	EMC Directive 2014/30/EU EN 61000-6-1, EN 61000-6-3 Low-Voltage Directive 2014/35/EU EN 60730-1, EN 60730-2-9

**Overview of types**

Type	Description	Power supply	Weight
TRA410F210	Heating, lowering, frost protection function	230 V~, ±10%, 50 Hz	130 g
TRA410F212	Heating, lowering, frost protection function	24 V~, ±20%, 50 Hz	130 g
TRA421F210	Heating/cooling, lowering, frost protection and valve protection function, cooling lock	230 V~, ±10%, 50 Hz	140 g
TRA421F212	Heating/cooling, lowering, frost protection and valve protection function, cooling lock	24 V~, ±10%, 50 Hz	140 g

**Accessories**

Type	Description
AXT3**	Thermal actuators for unit valves (see product data sheet)
EGT554F103	Cable temperature sensor, NTC 22k, -35...100 °C, IP67, length 3 m

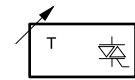
## TRT 317, 327: Electronic room thermostat for heating and heating/cooling

### Features

- Electronic room thermostat for 24 V or 230 V for heating or heating/cooling
- Silent-switching Triac output on 24 V types
- Easy to wire up
- NTC sensor
- With input for lowering the room temperature
- With input for heating/cooling changeover (TRT 327)
- With cooling lock function on versions for heating/cooling
- Modern design with ergonomic setpoint adjuster
- With restriction of temperature setting range
- Electrical connection in baseplate with screw terminals
- With automatic frost protection facility at 8 °C and valve protection function



TRT3\*\*F21\*



### Technical data

#### Power supply

Power supply	24 V~ / 230 V~
Power consumption	< 0.3 W in idle state
Fuse	In housing: 230 V= T2AH 24 V= T1A

#### Parameters

Number of actuators	AXT: 230 V, max. 6 pcs. parallel 24 V, max. 4 pcs. parallel
Setting range	10...28 °C
Switching difference	±0.5 K
Set-back	2 K
Measuring element	NTC

#### Ambient conditions

Ambient temperature	0...50 °C
Ambient humidity	5...80% rh, no condensation

#### Construction

Housing	Cover: White (RAL 9016) Lower section: Signal white (RAL 9003)
Housing material	Thermoplastic PC + ABS
Fitting	Wall, recessed junction box

#### Inputs/outputs

Switching element	230 V, relay 24 V, Triac
Switch rating	230 V, 1.8 A
ECO input	230 V, voltage detection 230 V 24 V, voltage detection 24 V
Heating/cooling	230 V, voltage detection 230 V 24 V, voltage detection 24 V

#### Connection terminals / cable

Connection terminals	Screw terminals 0.22mm <sup>2</sup> to 1.5mm <sup>2</sup>
Switching difference	±0.5 K
Cord grip	External



**Standards, directives**

	Type of protection	IP20 (EN 60529)
	Protection class 24 V	III (EN 60730)
	Protection class 230 V	II (EN 60730)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-9

**Overview of types**

Type	Description	Voltage	Weight
TRT317F210	Heating, lowering, frost protection function	230 V~, ± 10 %, 50 Hz	90 g
TRT317F212	Heating, lowering, frost protection function	24 V~, ± 20 %, 50 Hz	90 g
TRT327F210	Heating/cooling, lowering, frost protection and valve protection function, cooling lock	230 V~, ± 10 %, 50 Hz	135 g
TRT327F212	Heating/cooling, lowering, frost protection and valve protection function, cooling lock	24 V~, ± 10 %, 50 Hz	135 g

**Accessories**

Type	Description
AXT3**	Thermal actuators for unit valves (see product data sheet)

## FXV 3\*\*\*: Electric distributor for positioning signals



FXV3210F002

FXV

### Features

- For easy wiring of up to 6 or 10 zones in a surface heating system
- For transferring switching signals from the unitary controllers for heating or heating/cooling
- Individual forwarding of time commands or night set-back to the appropriate actuators; max. 2 timer channels
- With pump and boiler control
- Pump logic with adjustable follow-on time for actuating the circulation pump
- Integrated valve protection function
- Input for temperature limiter or dew point monitor
- LED status indicator
- Pump control direction switching for NC/NO actuators
- For connecting up to 18 actuators
- Cable guidance, standard-compliant cord grip and screwless terminal connections
- Easy, intuitive wiring and installation

### Technical data

#### Power supply

Power supply 230 VAC	±10%, 50...60 Hz
Power supply 24 VAC	±20%, 50...60 Hz
Distributor fuse 24 V	T2A
Distributor fuse 230 V	T4AH

#### Parameters

Circuits/zones	6 or 10
Timer channels/set-back	2

#### Ambient conditions

Ambient temperature	0...50 °C
Storage temperature	-20...70 °C
Ambient humidity	< 80% rh

#### Inputs/outputs

Outputs	Number of actuators	6 channels: Max. 15 pcs. 10 channels: Max. 18 pcs.
	Pump connection	Max. 6 (2) A
	Boiler connection	Max. 6 (2) A
Inputs	Set-back	Potential-free contact input
	Heating/cooling	Potential-free contact input
	TB or dew point	Potential-free NC contact

#### Construction

Housing material	Flame-retardant ABS plastic, black RAL9005
Cover	Transparent grey plastic
Fitting	Mounted unit, DIN rail

#### Connection terminals / cable

Connection terminals	Terminals with spring technology for 0.2 to 1.5 mm <sup>2</sup> vertical cable entry
Power cable	Solid: NYM-J/NYM-O (max. 5 × 1.5 mm <sup>2</sup> ) Flexible: H03V2V2H2-F / H05V2V2H2-F
Cable clamping device	Integrated in housing



**Standards, directives**

	Type of protection	IP20 (EN 60529)
	Protection class	II (EN 60730)
CE conformity	EMC Directive 2014/30/EU	EN 60730-1 Type 1C
	Low-Voltage Directive 2014/35/EU	EN 60730-1 & -2-9 Type 1C

**Overview of types**

Type	Nominal voltage	Features	Channels	Weight
FXV3006F001	24 V~ / 230 V~	Heating, with decrease	6	482 g
FXV3110F001	230 V~	Heating/cooling, with decrease and pump control	10	515 g
FXV3110F002	24 V~	Heating/cooling, with decrease and pump control	10	515 g
FXV3210F001	230 V~	Heating/cooling, with decrease, pump logic, boiler control and LED indicator	10	550 g
FXV3210F002	24 V~	Heating/cooling, with decrease, pump logic, boiler control and LED indicator	10	534 g

**Accessories**

Type	Description
O450573001	Transformer 230 / 24 V, 42 VA



## FXV 33\*\* EasySwitch: Electric distributor for control signals



FXV3308F011

### Features

- For the control of a maximum of twelve thermal actuators for unit valves and the connection of up to eight room thermostats
- Flexible assignment of the actuators to the room thermostats via rotary switch
- Distribution of the power supply, the positioning signals and a shared time programme for room operating units
- Easy-to-change channel assignment without rewiring
- Pump logic module for activating a circulation pump
- Input for timer for individual forwarding of time commands to the heating zones
- LED status indicators for power supply, pump logic module and active heating channels
- Integrated cable guides and terminal connection without tools
- Fitting on DIN rail or wall mounting

### Technical data

Power supply		
Power supply		230 V~, ±10%, 50...60 Hz
Distributor fuse 230 V		T4AH (5 × 20 mm)
Parameters		
Control loops/heating zones <sup>1)</sup>		Max. 8 inputs
Timer channel/set-back		Yes
Ambient conditions		
Ambient temperature		0...50 °C
Storage temperature		-20...70 °C
Ambient humidity		10...85% rh
Inputs/outputs		
Outputs	Number of actuators	Max. 12 thermal actuators for unit valves (for heating circuits)
	Pump connection	Max. 2 (1) A
Inputs	Set-back	Contact input
Construction		
Housing material		PC-ABS plastic, black (similar to RAL9005) Fire-retardant as per UL94V-0
Cover material		PC plastic, grey transparent Fire-retardant as per UL94V-0
Fitting		Mounted unit, DIN rail, 35 mm or optionally screw-on mounting
Dimensions W × H × D		350 × 100 × 52 mm
Connection terminals / cable		
Connection terminals		Spring-loaded plug-in connectors
Cable cross-section		0.5...1.5 mm <sup>2</sup>
Power cable		Solid: NYM-J/NYM-O (max. 5 × 1.5 mm <sup>2</sup> ) Flexible: H05V2V2H2-F
Cable clamping device		Cable fastening points integrated without tools into housing

<sup>1)</sup> TRA or TRT room thermostats:  
TRA: max. five AXT per heating zone  
TRT: max. six AXT per heating zone



**Standards, directives**

	Type of protection	IP20 (EN 60730)
	Protection class	II (EN 60730)
CE conformity	EMC Directive 2014/30/EU	EN 60730-1, residential premises
	Low-Voltage Directive 2014/35/EU	EN 60730-1 & -2-9 Type 1C

**Overview of types**

Type	Nominal voltage	Features	Channels	Weight
FXV3308F011	230 V~	Heating/cooling, with decrease, pump logic and LED indicator	8	580 g



# Heating controller

SAUTER heating controllers of the equitherm series are easy to operate, while ensuring that your installation meets the highest standards of energy-optimised operation. Using communication accessories, the devices can be networked together in larger plants or integrated into a building automation system. The applications for these heating controllers include weather-dependent boiler and/or supply temperature control and domestic hot water preparation, as well as heating control in local or district heating networks.

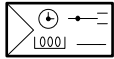
## Overview of heating controllers



Type designation	EQJW 126	EQJW146F001	EQJW146F002	EQJW246F002
<b>Application</b>				
Solar	–	•	•	•
Boiler control	–	•	•	•
Supply temperature control	•	•	•	•
Heating of drinking water	–	•	•	•
Local/district heating	•	•	•	•
<b>Operation</b>				
Symbol display	•	•	–	–
Graphics display	–	–	•	•
<b>Function</b>				
Control loops	1		2	3
Switching programmes	•	•	•	•
<b>Inputs/outputs</b>				
Inputs/outputs (0...10 V)	–		1	1/1
Digital inputs	–		2	17
Analogue inputs (Ni1000/ Pt1000)	3		8	17
Relay (pump/actuator)	3		7	11
<b>Communication</b>				
Interfaces			RJ45	
Protocols			Modbus RTU, device bus (TAP), Modbus RTU, Device bus (TAP), M-Bus	
Logbook	–	–	•	•
Further information	Page 106	Page 108	Page 108	Page 111



EQJW126F001



## EQJW 126: Heating controller with digital user interface, equitherm

### Features

- PI supply temperature control by heating curve or 4-point characteristic
- Convenient to use with modern operating concept (turn and press) and large LCD
- Convenient weekly and annual switching programmes with optimisation of switching times
- Automatic summertime/wintertime changeover
- Min./max. limitation of supply temperature and max. limitation of return temperature
- Frost-protection facility and pump and valve anti-jamming function
- Function heating (floor-drying function)
- Room temperature switching using room temperature sensor
- Ni/Pt1000 inputs for the outside, supply, return flow and room temperature
- Relay outputs with varistor suppression for activating control units and pump
- Manual mode
- Electrical connection in baseplate
- Interface for various accessories such as modem, gateway, data logging module etc.

### Technical data

Power supply		
Power supply		230 V~, ±15%, 50...60 Hz
Power consumption		Approx. 1.5 VA
Parameters		
Control parameters	Amplification KP	0.1...50
	Integral action time	1...999 seconds
	Frost-protection temperature	3 °C
Temperature ranges	Normal temperature	0...40 °C
	Reduced temperature	0...40 °C
	Supply temperature	-5...150 °C
	Outdoor temperature	-50...50 °C
	Cycle time	Running time of the valve ± 15
	Running time of valve	30...300 seconds
Ambient conditions		
Ambient temperature		0...40 °C
Ambient humidity		5...95% rh, no condensation
Storage and transport temperature		-10...60 °C
Inputs/outputs		
Number of inputs		3 analogue, Ni1000/Pt1000
Number of outputs		3 relays
Pump relay <sup>1)</sup>		1 × 2 A, 250 V~, cos φ > 0,5
Actuator relay (3-point or 2-point) <sup>2)</sup>		2 × 2 A, 250 V~, cos φ > 0,5
Function		
Digital timer for weekly/annual switching programme	Backup power supply	Min. 24 hours, typically 48 hours
	Accuracy	< 10 minutes/year
Weekly switching programme	Number of switching commands	42/week
	Min. switching interval	15 minutes
Annual switching programme	Number of switching commands	20
	Min. switching interval	1 day

<sup>1)</sup> Start-up current max. 16 A (1 second)

<sup>2)</sup> Extra low voltage not admissible



**Interfaces and communication**

Interface	RJ45
Protocol	Modbus, device bus (TAP)

**Construction**

Weight	0.5 kg
Dimensions	144 × 98 × 54 mm
Housing	Light-grey
Housing material	Fire-retardant thermoplastic
Fitting	Wall, switch panel, DIN rail
Screw terminals	For electrical cables of up to 2.5 mm <sup>2</sup>

**Standards and directives**

CE conformity according to	Type of protection (when fitted in panels)	IP40 (EN 60529)
	Protection class	II (IEC 60730-1)
	Software class	A (IEC 60730-1, Appendix H)
	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1

**Overview of types**

Type	Features
EQJW126F001	Heating controller with digital user interface

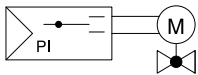
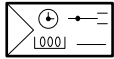
**Accessories**

Type	Description
AVF***	Motorised valve actuator (see product data sheet)
AVM***	Motorised valve actuator (see product data sheet)
AXM***	Motorised valve actuator (see product data sheet)
EGT***	External temperature sensor Ni1000 (see product data sheet)
0440210001	Communication module for connecting EQJW 126/146 controllers to RS-232 (PC)
0440210002	Communication module for connecting EQJW 126/146 controllers to modem
0440210003	Communication module for connecting EQJW 126/146 controllers to RS-485 bus
0440210004	Communication module for connecting EQJW 126/146 controllers to RS-485 bus (master)
0440210005	ModBus-TCP gateway
0440210011	ModBus-GPRS gateway
0440210006	ModBus-MBus gateway
0440210007	Converter/repeater for RS-232 or RS-485 interfaces
0440210008	RS-485 overvoltage protection
0440210010	Parameter storage module for transferring controller parameters
0440210012	Cable converter, 2 conductors, RS-485

## EQJW 146: Heating and district heating controller, equitherm



EQJW146F002



### Features

- Weather-dependent supply temperature control by heating curve or 4-point characteristic and drinking water heating
- 29 system models, for example for district heating, single-stage boilers, drinking water heating with solar energy or buffer tank
- Convenient to use with modern operating concept (turn and press) and large LCD
- Convenient weekly and annual switching programmes with optimisation of switching times
- Automatic summertime/wintertime changeover
- Min./max. limitation of supply temperature and max. limitation of return temperature
- Frost-protection facility and anti-jamming function for valve and pump
- Floor-drying function
- Function for protecting against legionellae
- Room temperature switching using room-temperature sensors
- Ni/PT1000 inputs for the outside, supply, drinking water, return flow and room temperature
- Relay outputs with varistor suppression for activating control units and pumps
- Manual mode
- Logbook
- Configurable input/output 0...10 V
- External demand processing, binary or analogue (0..10 V)
- Interface for various accessories such as modem, gateway, data logging module etc.

### Technical data

Power supply		
	Power supply	230 V~, ±15%, 50...60 Hz
	Power consumption	Approx. 1.5 VA
Parameters		
Control characteristic	Supply temperature	PI control
	Drinking water temperature	2-point
Control parameters	Amplification KP	0.1...50
	Integral action time	1...999 seconds
	Switching difference for drinking water	1...30 K
Temperature ranges	Normal temperature	0...40 °C
	Reduced temperature	0...40 °C
	Supply temperature	0...140 °C
	Return temperature	0...140 °C
	Outdoor temperature	-50...50 °C
	Drinking water temperature	20...90 °C
	Frost-protection temperature	-15...3 °C
	Running time of valve	30...300 seconds
	Cycle time	Running time of the valve ± 15
Ambient conditions		
	Ambient temperature	0...40 °C
	Ambient humidity	5...95% rh, no condensation
	Storage and transport temperature	-10...60 °C
Inputs/outputs		
	Number of outputs	7 relays
	Pump relay <sup>1)</sup>	3 × 2 A, 250 V~, cos φ > 0,5

<sup>1)</sup> Start-up current max. 16 A (1 second)



Actuator relay <sup>2)</sup>	4 × 2 A, 250 V~, cos φ > 0,5
Continuous input/output <sup>3)</sup>	1 × 0...10 V
Number of inputs	2 digital, 8 analogue
Analogue inputs	8 Ni1000/Pt1000

**Function**

Timer	Backup power supply	Min. 24 hours, typically 48 hours
	Accuracy	< 10 minutes/year
Weekly switching programme	Number of programmes	3
	Number of switching commands	42 each
	Min. switching interval	15 minutes
Annual switching programme	Number of programmes	1 (for heating circuits)
	Number of switching commands	20 each
	Min. switching interval	1 day

**Interfaces, communication**

Communication	Interface	RJ45
	Protocol	Modbus, device bus (TAP)

**Construction**

Weight	0.5 kg
Dimensions	144 × 98 × 54 mm
Housing	Light-grey
Housing material	Fire-retardant thermoplastic
Fitting	Wall, switch panel, DIN rail
Screw terminals	For electrical cables of up to 2.5 mm <sup>2</sup>

**Standards, directives**

CE conformity according to	Type of protection	IP40 (EN 60529) (when fitted in panels)
	Protection class	II (IEC 60730-1)
	Software class	A (IEC 60730-1, Appendix H)
	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1

**Overview of types**

Type	Features
EQJW146F001	Heating and district heating controller with symbol display
EQJW146F002	Heating and district heating controller with graphic display

**Accessories**

Type	Description
AVF***	Motorised valve actuator (see product data sheet)
AVM***	Motorised valve actuator (see product data sheet)
AXM***	Motorised valve actuator (see product data sheet)
EGT***	External temperature sensor Ni1000 (see product data sheet)
0440210001	Communication module for connecting EQJW 126/146 controllers to RS-232 (PC)
0440210002	Communication module for connecting EQJW 126/146 controllers to modem
0440210003	Communication module for connecting EQJW 126/146 controllers to RS-485 bus
0440210004	Communication module for connecting EQJW 126/146 controllers to RS-485 bus (master)
0440210005	ModBus-TCP gateway
0440210011	ModBus-GPRS gateway
0440210006	ModBus-MBus gateway
0440210007	Converter/repeater for RS-232 or RS-485 interfaces
0440210008	RS-485 overvoltage protection

<sup>2)</sup> Extra low voltage not admissible

<sup>3)</sup> As input for requirement or outside temperature signal. As output for continuous control or requirement request, load > 5 kΩ

Type	Description
0440210010	Parameter storage module for transferring controller parameters
0440210012	Cable converter for 2-conductor RS-485 interface





## EQJW 246: Heating and district heating controller, equitherm

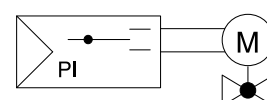
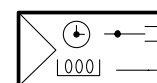
### Features

- Max. three control loops in the following combinations:
  - Control of a primary heat exchanger or boiler, two regulated and one unregulated heating circuit, and control of the drinking water heating in the secondary circuit
  - Weather-dependent buffer tank control with solid fuel boiler and solar circuit control, as well as max. two mixed-heating circuits
  - Control of two weather-dependent heating circuits and one drinking water heating with three valves in the primary circuit
  - Control of three weather-dependent heating circuits
- EQJW246F003: Applications with up to six control loops via expansion modules
- Different system models, e.g. for district heating, single-stage boilers, buffer tanks, drinking water heating with solar energy
- Weather-dependent supply temperature control based on heating characteristic or 4-point characteristic
- To regulate more circuits, multiple controllers can be connected to each other via a device bus
- Convenient operation with state-of-the-art operating concept (turn and press) and large graphical display
- Convenient weekly and annual switching programmes with optimisation of switching times
- Automatic summertime/wintertime change-over
- Min./max. limitation of supply temperature and max. limitation of return temperature
- Frost-protection facility and anti-jamming function for valve and pump
- Floor-drying function
- Function for protecting against legionellae
- Room temperature switching using room-temperature sensors
- Ni/Pt1000 inputs for the outside, supply, drinking water, return flow and room temperature
- Relay outputs with varistor suppression for activating control units and pumps
- Manual mode
- Logbook
- 0...10 V inputs for external requirement or outdoor temperature signal
- 0...10 V outputs for external requirement, analogue/PWM outputs, speed-controlled pump etc.
- Binary interfaces for fault signals or external requirement processing
- Interfaces for various accessories such as modem, gateway, data storage module etc.



EQJW246F002

EQJW246F003



### Technical data

#### Power supply

Power supply	230 VAC, $\pm 15\%$ , 50...60 Hz
Power consumption	Max. 10 VA

#### Parameters

Control characteristic	Supply temperature	PI control
	Drinking water temperature	2-point
Control parameters	Amplification KP	0.1...50
	Integral action time	1...999 sec.
	Switching difference for drinking water	1...30 K
Temperature ranges	Normal temperature	0...40 °C
	Reduced temperature	0...40 °C
	Supply temperature	0...140 °C
	Return temperature	0...140 °C
	Outdoor temperature	-50...50 °C
	Drinking water temperature	20...90 °C
Frost-protection temperature	-15...3 °C	



	Running time of valve	15...240 sec.
	Cycle time	Running time of the valve $\pm$ 15
<b>Ambient conditions</b>		
	Ambient temperature	0...40 °C
	Ambient humidity	5...95% rh, no condensation
	Storage and transport temperature	-10...60 °C
<b>Inputs/outputs<sup>1)</sup></b>		
	Pump relay <sup>2)</sup>	5 $\times$ 2 A, 250 VAC
	Actuator relay <sup>3)</sup>	F002: 6 $\times$ 2 A, 250 VAC F003: 4 $\times$ 2 A, 250 VAC, 2 $\times$ 0,12 A, 250 VAC (Triac)
	Continuous output <sup>4)</sup>	F002: 2 $\times$ 0...10 V F003: 4 $\times$ 0...10 V
	Inputs	F002: 17 configurable Ni/Pt1000, binary, 1 $\times$ 0...10 V F003: 14 configurable Ni/Pt1000, binary, 3 $\times$ 0...10 V F002 and F003: 1 $\times$ pulse 3...800 lmp/h of h from heat meter for power limitation in HK1
<b>Function</b>		
Timer	Backup power supply	Min. 24 h; typically 48 h
	Accuracy	< 10 minutes/year
Weekly switching programme	Number of programmes	3
	Number of switching commands	42 each
	Min. switching interval	15 minutes
Annual switching programme	Number of programmes	1 (for heating circuits)
	Number of switching commands	20 each
	Min. switching interval	1 day
<b>Interfaces, communication</b>		
	M-Bus	For max. 3 M-Bus units, protocol as per EN 1434-3
	RS-485 <sup>5)</sup>	F002: 1 $\times$ RS-485 for device bus or Modbus/RTU F003: 2 $\times$ RS-485 for device bus and Modbus/RTU
	Ethernet	Modbus TCP/IP
<b>Construction</b>		
	Weight	0.5 kg
	Dimensions	144 $\times$ 98 $\times$ 54 mm
	Housing	Light-grey
	Housing material	Fire-retardant thermoplastic
	Fitting	Wall, switch panel, DIN rail
	Screw terminals	For electrical cables up to 2.5 mm <sup>2</sup>
<b>Standards, directives</b>		
	Type of protection	IP40 (EN 60529) (panel mounting)
	Protection class	II (IEC 60730-1)
	Software class	A (IEC 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1

<sup>1)</sup> See also "Type overview"

<sup>2)</sup> Start-up current max. 16 A (1 second)

<sup>3)</sup> Extra low voltage not admissible

<sup>4)</sup> 0...10 V output, e.g. for continuous control, outside temperature, external requirement or for speed control of pumps, load > 5 k $\Omega$ .  
0/10 V: PWM signal for pump speed control

<sup>5)</sup> Device bus: 2-wire bus, inverse, with reverse polarity protection, max. 32 users.  
Modbus/RTU: Modbus protocol data format 8N1, RJ45

### Overview of types

Type	Features	Outputs	Inputs
EQJW246F002	Heating and district heating controller with graphic display, 1 × RS-485	11 relays, 2 × 0...10 V.	17 × Ni1000/Pt1000 and binary 1 × 0...10 V 1 × pulse
EQJW246F003	Heating and district heating controller with graphic display, 2 × RS-485, expandable for up to 6 control loops with accessories	12 relays, 4 × 0...10 V.	14 × Ni1000/Pt1000 and binary 3 × 0...10 V 1 × pulse

### Accessories

Type	Description
AVF***	Motorised valve actuator (see product data sheet)
AVM***	Motorised valve actuator (see product data sheet)
AXM***	Motorised valve actuator (see product data sheet)
EGT***	External temperature sensor Ni1000 (see product data sheet)
0440210001	Communication module for connecting EQJW 126/146 controllers to RS-232 (PC)
0440210002	Communication module for connecting EQJW 126/146 controllers to modem
0440210003	Communication module for connecting EQJW 126/146 controllers to RS-485 bus
0440210004	Communication module for connecting EQJW 126/146 controllers to RS-485 bus (master)
0440210005	ModBus-TCP gateway
0440210006	ModBus-MBus gateway
0440210011	ModBus-GPRS gateway
0440210007	Converter/repeater for RS-232 or RS-485 interfaces
0440210008	RS-485 overvoltage protection
0440210010	Parameter storage module for transferring controller parameters
0440210012	Cable converter for 2-conductor RS-485 interface
0440210014	I/O extension module for EQJW246F003

# Controllers for ventilation and air-conditioning

SAUTER controllers for ventilation and air-conditioning cover all the possible applications for demand-based control of ventilation and air-conditioning systems. The large number of integrated standard applications meets the requirements for the modularity and the energy-efficient operation of your installations. A wide range of additional functions enable the establishment of complex control systems and the integration into a building automation system.

## Overview of controllers for ventilation and air-conditioning



	flexotron400	
Type designation	RDT405F201	RDT410F*01
Control loops		
Cascade	–	•
P-controller	•	•
PI-controller	•	•
PID-controller	–	•
Function		
Time programme	–	•
Communication		
Number of inputs	3	5
Number of outputs	2	5
Modbus	–	–
BACnet	–	–
Serial interface for parameters and configuration	–	–
Application		
Supply temperature control	•	•
Supply air cascade control	–	•
Air-conditioning control	–	–
Further information	Page 115	

## RDT 405, 410: Electronic controller for simple applications, flexotron400

### Features

- Five different control models for each device, for temperature, pressure, CO<sub>2</sub>, supply air cascade, heating
- Easy to operate with large, illuminated LCD and rotary knob
- Fast commissioning due to simple operating concept
- Weekly programme (depending on variant)
- External setpoint

### Technical data

#### Power supply

	Power supply	24 V~, ±15%, 50...60 Hz (RDT4**F201) 230 V~, +10%/-15% 50...60 Hz (RDT4**F301)
RDT 405	Power consumption	4 VA, 2 W
RDT 410	Power consumption	7.5 VA, 5 W
	Start-up current	16 A (2 ms) 24V~ devices 23 A (2 ms) 230 V~ devices

#### Parameters

Control characteristics	P/PI
P-band $X_p$	0...99 K
Integral action time	0...990 s

#### Setting and measuring ranges

RDT 405	Measuring range, temperature	-20...60, 20...100, 60...140 °C
RDT 410	Measuring range, temperature	5...80, -30...50 °C
	Input for external setpoint	0...40 °C
	Humidity	0...100% rh
	Humidity	0...100% rh
	CO <sub>2</sub>	10...9900 ppm for 100% signal

#### Ambient conditions

Ambient temperature	0...50 °C
Ambient humidity	5...95% rh, no condensation
Storage and transport temperature	-20...70 °C

#### Inputs/outputs

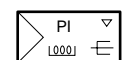
Universal inputs	Ni1000 (DIN 43760)
Digital inputs	Potential-free contacts
Analogue inputs	Ni1000 (DIN 43760) for temperature, setpoint
Analogue outputs	0...10 V, 2 mA, protected against short circuit
Digital outputs	RDT410F201: Triac 2 × 24 V~, 0.3 A 1 × 230 V~, 5 A RDT410F301: Triac 2 × 24 V~, 0.16 A 1 × 230 V~, 5 A

#### Construction

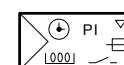
Dimensions W × H × D	123 × 99 × 64 mm
Screw terminals	For electrical cables of up to 1.5 mm <sup>2</sup>
Fitting	Top-hat rail, wall, panel
Housing material	PC+ABS



RDT4\*\*F\*01



RDT405F201



RDT410F\*01



### Standards and directives

	Type of protection <sup>1)</sup>	IP20 (EN 60529)
	Protection class	II (RDT410F301 only)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN61000-6-3

### Overview of types

Type	Analogue inputs	Digital inputs	Universal inputs	Analogue outputs	Digital outputs	Input for external setpoint	Week time-switch	Weight
RDT405F201	1	1	1	2	0	1	–	0.2 kg
RDT410F201	2	2	1	2	3	1	•	0.3 kg
RDT410F301	2	2	1	2	3	1	•	0.45 kg

⚡ Week time-switch: only RDT410F\*01 (number of switching commands: 8)

### Accessories

Type	Description
XYE460F001	flexotron400 demo case
0460240001	flexotron400/800 pluggable terminal strips
0460240010	Cabinet fitting kit for flexotron400
EGT388F102	External setpoint adjuster, room operating unit with potentiometer and temperature sensor, recessed
EGT333F102	External setpoint adjuster, room operating unit with potentiometer and temperature sensor, surface-mounted

<sup>1)</sup> When installed

# VAV compact controller for laboratory and pharmaceutical applications

SAUTER VAV controllers enable the air volume to be regulated in accordance with demand in order to optimise energy consumption in ventilation systems. They are used in laboratories, clean rooms, hospital wards and operating theatres. In combination with additional sensors and monitoring facilities, they ensure that fume cupboards are regulated in accordance with the relevant standards.

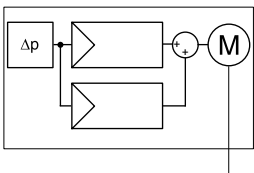
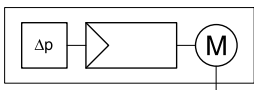
## Overview of VAV compact controllers



Type designation	ASV205BF132*, ASV215BF132*	ASV215BF152*
Technical data		
Adm. dimensions of damper shaft (mm)	Ø 8...16	Ø 8...16
Running time (s)	30...105 60...105	3...15
Power supply (V)	24	24
Communication/protocol	RS-485 SLC / BACnet MS/TP	RS-485 SLC / BACnet MS/TP
Further information	Page 118	Page 121



ASV205BF132E



## ASV205BF132E, ASV215BF132E: VAV compact controller

### Features

- Supply and return air control for individual rooms such as offices, conference rooms and hotel rooms, in conjunction with a VAV box or a damper and flow probe
- Pressure control in supply and return air ducts for low-noise, energy-efficient air distribution
- Static measurement of differential pressure with MEMS sensor
- Can be used for measuring in areas with dirty or contaminated return air
- Low energy consumption and long serviceable life thanks to low-wear stepping motor
- Electromechanical, torque-based switch-off for safe operation
- Extremely simple installation due to self-centring shaft adapter
- Disengageable gear unit for manual adjustment and positioning of damper
- Integrated second control loop for the following applications<sup>1)</sup>:
  - Duct pressure and zone control
  - Room climate regulation
- 2 x RS-485 bus interface on RJ12 and connection terminal
  - Up to 31 subscribers in a segment with SLC (SAUTER Local Communication) protocol
  - Communication within network via BACnet MS/TP
- Input and output signals for integrating:
  - Setpoints and actual values
  - Power outputs for reheaters and recoolers
  - EY-RU 3\*\* digital room operating units
  - Analogue output
- Easy programming of the following applications using the SAUTER CASE VAV software<sup>2)</sup>:
  - Volume flow control
  - Room pressure control
  - Duct pressure control
- Adjustable end values of the differential pressure measuring range<sup>3)</sup>
  - 100...300 Pa
- Efficient control algorithm for fast control loops
- Priority control via switching contacts
- Zero point can be calibrated

### Technical data

Power supply		
	Power supply <sup>4)</sup>	24 V~, +/-20%, 50...60 Hz 24 V=, -10%/+20%
Power consumption at nominal voltage 50/60 Hz (~/=)	Rated power during continuous operation <sup>5)</sup>	4.7 VA/2.5 W
	Power consumption when idle <sup>6)</sup>	1.5 VA/0.7 W

<sup>1)</sup> Application support depending on hardware and software version in CASE VAV manual D100316836 (German), D100316957 (English), D100316878 (French)

<sup>2)</sup> Application support depending on hardware and software version in CASE VAV manual D100316836 (German), D100316957 (English), D100316878 (French)

<sup>3)</sup> Available measuring ranges depending on hardware/type

<sup>4)</sup> 24 V=: Analogue inputs that are not connected are rated 0 V. The nominal torque is achieved within the specified tolerances.

<sup>5)</sup> Power specified without operating units FCCP 200, EY-RU 3\*

<sup>6)</sup> Holding torque ASV205\*: 4 Nm  
ASV215\*: 8 Nm





**Parameters**

Integrated damper actuator	Angle of rotation <sup>7)</sup>	90°
	Admissible dimensions of damper shaft	∅ 8...16 mm, □ 6.5...12.7 mm
	Admissible damper shaft (hardness)	Max. 300 HV
	Surge-voltage resistance	500 V (EN 60730)
	Operating noise	< 35 dB (A)
Δp sensor	Measuring range Δp (gain = 1) <sup>8)</sup>	0...500 Pa
	Linearity error	2% (at 25 °C)
	Time constant	0.2 s
	Influence of position <sup>9)</sup>	< 1 Pa
	Reproducibility	0.2% FS
	Zero point stability	0.2% for 1 year
	Admissible positive pressure	±12.5 kPa
	Admissible operating pressure p <sub>stat</sub> <sup>10)</sup>	±7 kPa
	Low-pressure connections <sup>11)</sup>	∅ i = 3.5...6 mm

**Ambient conditions**

Operating temperature	0...55 °C
Storage and transport temperature	-20...55 °C
Air humidity	< 85% rh, no condensation

**Inputs/outputs**

Analogue inputs	0...10 V (R <sub>i</sub> = 100 kΩ)
Analogue outputs	0...10 V, load > 10 kΩ
Digital inputs <sup>12)</sup>	Closed 1 V=, 1 mA, open > 2 V=
Digital output	0.3 A at 24 V ~/=
Resistive input	0 to 50 °C Ni1000 (DIN 43760), NTC10k (10k3A1), Pt1000 (EN 60751)
Resolution	0.3 °C (Ni1000/Pt1000), 0.1 °C (NTC)
Measuring difference	+/- 0.6 °C
PWM	0.3 A at 24 V ~/= Period duration 1 s...15 minutes 0...100%

**Interfaces and communication**

RS-485 not electrically isolated	115 kBaud
Communication protocols	SAUTER Local Communication (SLC), BACnet MS/TP, ¼ load
Access method	Master/slave
Topology	Line
Number of participants <sup>13)</sup>	31 (32) with SLC
Bus termination	120 Ω (both ends)

**Construction**

Weight	0.8 kg
Fitting	Self-centring spindle adapter

**Standards and directives**

Type of protection	IP00, IP30 (EN 60529) (with protection set)
Protection class	III (EN 60730)

<sup>7)</sup> Maximum rotation angle 102° (without end stop)

<sup>8)</sup> Available measuring ranges depending on hardware/type

<sup>9)</sup> Zero adjustment recommended during commissioning

<sup>10)</sup> Short-term overload; zero adjustment of sensor is recommended

<sup>11)</sup> Recommended hardness of tubing < 40 Sha (e.g. silicone)

<sup>12)</sup> Digital inputs for external potential-free contacts (gold-plated recommended)

<sup>13)</sup> One participant is always also the parametering tool, hence the maximum number of 31 connectible devices

Conformity	Machine directive 2006/42/EC, appendix II 1.B
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3, EN 61000-6-4, EN 61000-6-2

### Overview of types

Type	Measuring range $\Delta p$	Running time for 90°	Rotational torque	Holding torque
ASV205BF132E	0...300 Pa	30, 45, 60, 75, 90, 105 s	5 Nm	4 Nm
ASV215BF132E	0...300 Pa	60, 75, 90, 105 s	10 Nm	8 Nm

- ⚡ For a running time of 105 s and an ambient temperature of  $\geq 55$  °C, the specified torque is reduced by 0.5 Nm.
- ⚡ Current-free holding torque by means of interlocking in gear unit.

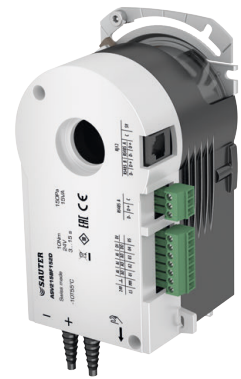
### Accessories

Type	Description
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.
XAFP100F001	Flow probe to measure the air volume in ventilation ducts
0300360001	USB-RS-485 converter
0297867001	Reference pressure container
0430360100	IP30 protection set
0430360200	Replacement LP connector
0372129001	Torsion protection

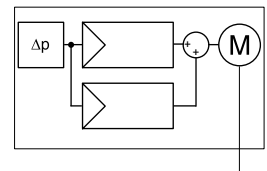
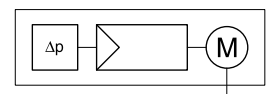
## ASV215BF152\*: VAV compact controller for laboratory and pharmaceutical applications

### Features

- Controlling the return air in fume cupboards and controlling the supply and return air in laboratories, clean rooms, hospital wards and operating theatres using a VAV box or a damper and flow probe
- Static measurement of differential pressure based on the capacitive method of measurement
- Zero point can be calibrated using software
- Adjustable end values of the differential pressure measuring range<sup>1)</sup>
  - 50...150 Pa
  - 100...300 Pa
- Can be used for measuring in areas with dirty or contaminated return air
- Brushless DC motor guarantees minimum energy consumption and a long service life
- Electromechanical, torque-based switch-off for safe operation
- Extremely simple installation due to self-centring shaft adapter
- Disengageable gear unit for manual adjustment and positioning of damper
- Easy programming of the following applications using SAUTER CASE Components:<sup>2)</sup>
  - Volume flow control
  - Room pressure control
  - Duct pressure control
  - Flow control for fume cupboards
- Efficient control algorithm for fast control loops
- Integrated second control loop for:<sup>3)</sup>
  - Room-pressure control: can be ideally combined with EGP 100 with symmetrical measuring range
  - Fume-cupboard control ideally combined with SVU 100, SGU 100 and FCCP 200
- 2 x RS-485 bus interface on RJ12 and connection terminal
  - Up to 31 subscribers in a segment with SLC (SAUTER Local Communication) protocol
  - Communication within network via BACnet MS/TP<sup>4)</sup>
  - Integration of EY-RU 3\*\* digital room operating units
  - FCCP 200 display and alarm unit for fume-cupboard control or room monitoring
- Input and output signals for integrating:
  - Setpoints and actual values
  - Analogue output
  - Priority control via switching contacts



ASV215BF152D



### Technical data

Power supply		
	Rotational torque	10 Nm
	Power supply <sup>5)</sup>	24 V~, ±20%, 50...60 Hz 24 V=, -10%/+20%
Power consumption at nominal voltage 50/60 Hz (~/=) after 3 s running time	Rated power during continuous operation	Approx. 19 VA/10 W (10 Nm) Approx. 20 VA/11 W with FCCP 200
	Power consumption when idle <sup>6)</sup>	Approx. 6 VA/2 W

<sup>1)</sup> Available measuring ranges depending on hardware/type

<sup>2)</sup> Application support depending on hardware and software version in CASE VAV manual

<sup>3)</sup> Application support depending on hardware and software version in CASE VAV manual

<sup>4)</sup> Support of BACnet MS/TP interface

<sup>5)</sup> 24 V=: Analogue inputs that are not connected are rated 0 V. The nominal torque is achieved within the specified tolerances.

<sup>6)</sup> Holding torque approx. 5 Nm



Parameters		
Integrated damper actuator	Rotational torque	10 Nm
	Holding torque <sup>7)</sup>	2 Nm
	Angle of rotation <sup>8)</sup>	90°
	Running time for 90° <sup>9)</sup>	3...15 s
	Admissible dimensions of damper shaft	∅ 8...16 mm, □ 6.5...12.7 mm
	Admissible damper shaft (hardness)	Max. 300 HV
	Surge-voltage resistance	500 V (EN 60730)
Δp sensor	Operating noise	< 49 dB (A) at 3 s
	Measuring range Δp (gain = 1)	0...150/300 Pa
	Pressure range, types D/E <sup>10)</sup>	
	Linearity error	2% FS
	Time constant	0.1 s
	Influence of position <sup>11)</sup>	Typically ±1 Pa
	Reproducibility	0.2% FS
	Zero point stability	0.2% FS (at 20 °C)
	Admissible positive pressure	±10 kPa
	Admissible operating pressure p <sub>stat</sub> <sup>12)</sup>	±3 kPa
	Low-pressure connections <sup>13)</sup>	∅ i = 3.5...6 mm
	Ambient conditions	
Operating temperature	0...55 °C	
Storage and transport temperature	-20...55 °C	
Air humidity	< 85% rh, no condensation	
Inputs/outputs		
Analogue inputs <sup>14)</sup>	0...10 V (R <sub>i</sub> = 100 kΩ)	
Digital inputs <sup>15)</sup>	Closed 1 V=, 1 mA, open > 2 V=	
Analogue outputs <sup>16)</sup>	0...10 V, load > 10 kΩ max. cable length 30 m max. adm. external voltage ±24 V	
Digital output	0.3 A at 24 V ~/=	
Interfaces and communication		
RS-485 not electrically isolated	115 kBaud	
Communication protocols <sup>17)</sup>	SAUTER Local Communication (SLC), BACnet MS/TP, ¼ load	
Access method	Master/slave	
Topology	Line	
Number of participants <sup>18)</sup>	31 (32) with SLC	
Bus termination	120 Ω (both ends)	
Construction		
Weight	0.8 kg	
Fitting	Self-centring spindle adapter	
Standards and directives		
Type of protection	IP00, IP30 (EN 60529) (with protection set)	
Protection class	III (EN 60730)	

<sup>7)</sup> Current-free holding torque by means of interlocking in gear unit

<sup>8)</sup> Maximum rotation angle 102° (without end stop)

<sup>9)</sup> Running time can be set via software

<sup>10)</sup> Available measuring ranges depending on hardware/type

<sup>11)</sup> Zero adjustment recommended during commissioning

<sup>12)</sup> Short-term overload; zero adjustment of sensor is recommended

<sup>13)</sup> Recommended hardness of tubing < 40 Sha (e.g. silicone)

<sup>14)</sup> Depending on the application, can be parameterised as an analogue input or output using SAUTER CASE Components

<sup>15)</sup> Digital inputs for external potential-free contacts (gold-plated recommended)

<sup>16)</sup> Depending on the application, can be parameterised as an analogue input or output using SAUTER CASE Components

<sup>17)</sup> Available protocols switched using software

<sup>18)</sup> One participant is always also the parametering tool, hence the maximum number of 31 connectible devices

Conformity	Machine directive 2006/42/EC, appendix II 1.B
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3, EN 61000-6-4, EN 61000-6-2

### Overview of types

Type	Measuring range $\Delta p$
ASV215BF152D	0...150 Pa
ASV215BF152E	0...300 Pa

### Accessories

Type	Description
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.
XAFP100F001	Flow probe to measure the air volume in ventilation ducts
0300360001	USB-RS-485 converter
0297867001	Reference pressure container
0430360100	IP30 protection set
0430360200	Replacement LP connector
0372129001	Torsion protection



FCCP200F010

International Design  
Award



Focus Open 2016  
Special Mention

## FCCP 200: Fume cupboard indicator and monitor

### Features

- Measured value display and indication of operating statuses for a range of ambient conditions such as pressure, temperature, relative humidity etc. in combination with an EY-RC 504/505 room automation station or an ASV 2\*5 VAV compact controller
- Monitoring fume cupboards as per EN 14175-2 to check that they are functioning correctly and that the ventilation is operated to provide maximum safety for the laboratory staff
  - Indication when the front sash is open > 500 mm
  - Switching the fume cupboard lighting on and off
  - Up to two function indicators for double-sided fume cupboards
  - Indication of day/night change-over
  - Audible alarm can be delayed or muted via configuration
- Demand-controlled regulation of fume cupboards as per EN 14175-6 in combination with the ASV 2\*5 VAV compact controller
- Function indicator with visual and audible notification as per EN 14175-2
- Storage of all defined parameters with protection from power failure
- Interface for easy configuration of the connected VAV ASV 2\*5
- Five freely configurable push-buttons<sup>1)</sup>
- Chemical-resistant glass surface
- Units that can be displayed: m/s, fps, l/s, m<sup>3</sup>/h, cfm, Pa, °C, °F, %rh, ppm

### Technical data

#### Power supply

Power supply	5 V, ±10%
Power consumption	0.4 VA

#### Parameters

Audible alarm	Sound pressure level	80 dB (A)
	Frequency	4 kHz
	Alarm duration <sup>2)</sup>	60 s
	Start-up delay	Adjustable from 0 to 3200 s
Optical alarm	Brightness	EN 842, punctiform
	Field of view	> 120°
Temperature sensor	Measuring range of temperature sensor <sup>3)</sup>	-5...50 °C

#### Admissible ambient conditions

Operating temperature	5...45 °C
Storage temperature	-20...80 °C
Humidity without condensation	< 5...85% rh

#### Construction

Dimensions W × H × D	169 × 36 × 12 mm
----------------------	------------------

#### Standards and directives

Protection class	III (EN 60730)
Protection class (when installed)	IP41 installed vertically
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4

<sup>1)</sup> In combination with the EY-RC 504/505 room automation station and CASE Engine.

<sup>2)</sup> Can be set using software.

<sup>3)</sup> After it is installed, the temperature sensor must be calibrated using CASE Engine software during the commissioning.



**Overview of types**

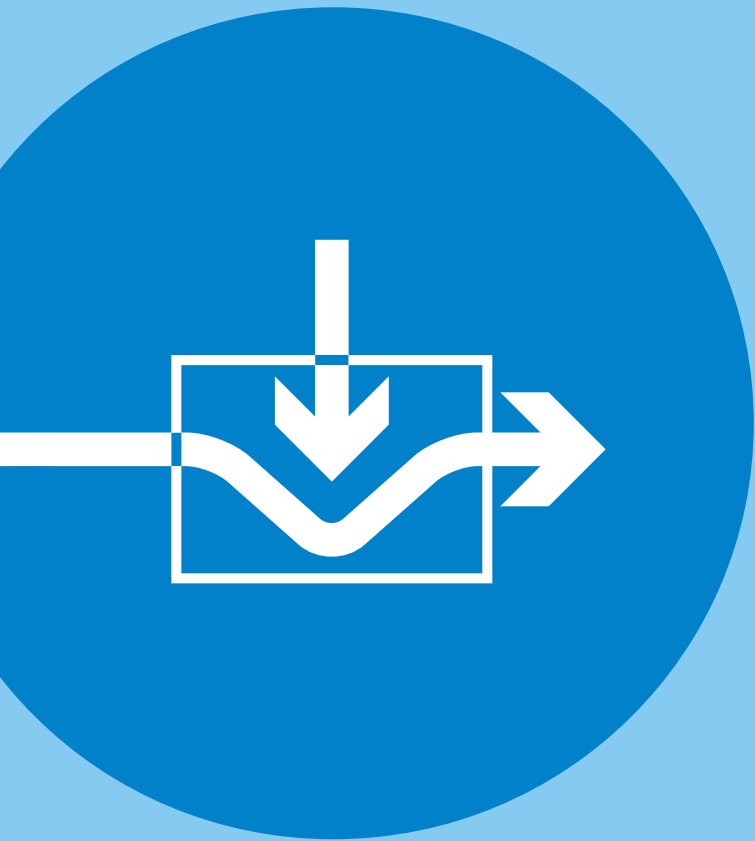
Type	Features
FCCP200F010	Fume cupboard monitor and indicator

**Accessories**

Type	Description
0300360001	USB-RS-485 converter
0430600100	USB-C RJ12 cable FCCP 200



# Valves, control valves, dampers, actuators



## A high degree of flexibility for optimum results.

SAUTER valves and actuators each come in a few basic versions that cover all needs for reliable and long-lasting control elements. The valve and the actuator are perfectly matched to each other as a basis for optimum control quality.

The new Smart Actuator allows autonomous control of heating, ventilation and air conditioning. Cloud-based applications and an app simplify commissioning as well as optimisation during operation.



# Valves, control valves, dampers, actuators

## Smart actuators

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# Valve specification – calculating made easy

## SAUTER valve slide rule

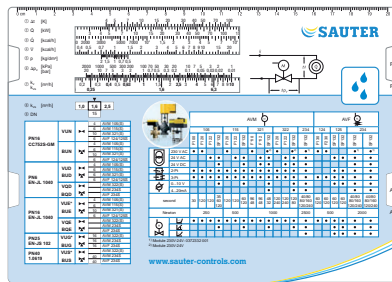
- [1] Use SAUTER's practical valve slide rule to specify the valve nominal diameter depending on the flow rate for liquids and saturated steam. You can order the slide rule at your sales partner or sales consultant.

## SAUTER VALVEDIM software

- [2] A tried and tested tool for convenient valve and actuator specification, SAUTER provides installers and project engineers with its SAUTER VALVEDIM PC software. The tool comprises three function levels:

1. Valve and actuator specification
  - using recommended values for a rough specification of the required versions and variables;
  - based on the existing or stipulated installation values for the definitive specification of the required versions and variables.
2. Selection of the valve and the suitable actuator based on characteristics.
3. Direct transfer of the results to the project documentation.

VALVEDIM is available from your SAUTER subsidiary or as a download at <https://www.sauter-controls.com/produkt/case-suite/>



[1]

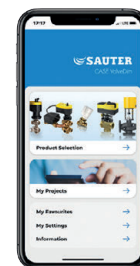


[2]

## SAUTER CASE ValveDim mobile app

- [3] With the new CASE ValveDim mobile app, finding the right parts and the ideal valve/actuator combinations is impressively convenient and very efficient: Intuitive operation makes it easier to search for individual products and combine them.

Selected valve/actuator combinations can be stored in projects. Personal lists with valve/actuator combinations can be exported from the app as a project table in PDF format so that they can be shared with contacts. What's more, CASE ValveDim can also be used offline.



[3]



## Valve specification – manual calculation

Here you will find all the necessary information for the manual valve specification.

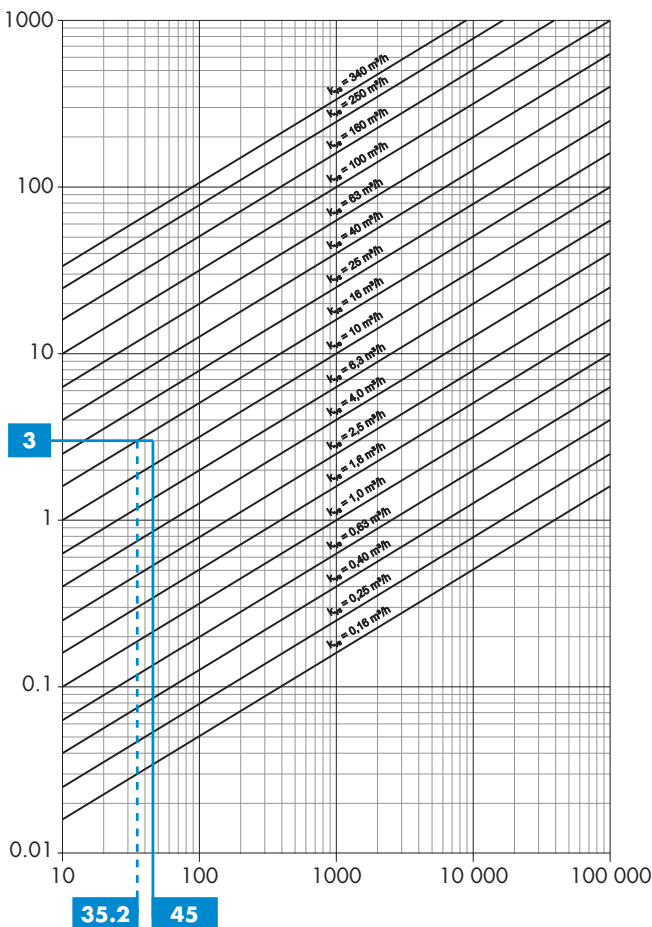
### [1] Variables, constants and formulas

Variable	Description	Value	Unit
$\dot{V}$	Volume flow		m <sup>3</sup> /h
$\dot{Q}_{to}$	Supplied heat per unit of time (heat flow)		kW, kJ/h
$\dot{Q}_{from}$	Supplied heat per unit of time (heat flow)		kW, kJ/h
$\Delta t$	Temperature difference		K
$c_w$	Specific thermal capacity of water	4,19 = 1,164 · 10 <sup>-3</sup>	kJ/(kg·K) kWh/(kg·K)
$\rho_w$	Density of water	Supposition: $\rho_w = const. = 1000$	kg/m <sup>3</sup>
$\Delta p_v$	Pressure difference across the valve		bar, kPa
$k_v$	Calculated flow rate for the valve		m <sup>3</sup> /h
$k_{vs}$	Actual flow rate for the valve at nominal stroke, selected according to table or chart		m <sup>3</sup> /h

### [2] Calculation formula for $k_v$

$$k_v = \dot{V} \cdot \sqrt{\frac{1 \text{ bar}}{\Delta p_v}}$$

### [3] Diagram



### [4] Calculations

The following are given:

$$\dot{Q}_{to} = 70 \text{ kW} \approx 250\,000 \text{ kJ/h}$$

$$\Delta t = 20 \text{ K}$$

$$\Delta p_v = 45 \text{ mbar} = 4.5 \text{ kPa (corresponds to 450 mm water column)}$$

To be found:

$$\dot{V}, k_v$$

Approximate calculation of  $\dot{V}$

$$\text{Assumption: } \dot{Q}_{to} = \dot{Q}_{from}$$

$$\dot{Q}_{to} = \dot{Q}_{from} = \dot{V} \cdot c_w \cdot \Delta t \cdot \rho_w$$

$$\Rightarrow \dot{V} = \frac{\dot{Q}_{to}}{c_w \cdot \Delta t \cdot \rho_w}$$

$$\Rightarrow \dot{V} = \frac{70}{1.164 \cdot 10^{-3} \cdot 20 \cdot 1000} \cdot \frac{\text{kW} \cdot (\text{kg} \cdot \text{K}) \cdot \text{m}^3}{\text{kWh} \cdot \text{K} \cdot \text{kg} \cdot \text{h}} \approx 3 \text{ m}^3/\text{h}$$

Calculation of  $k_v$

$$k_v = 3 \text{ m}^3/\text{h} \cdot \sqrt{\frac{1 \text{ bar}}{0.045 \text{ bar}}} \approx 14.1 \text{ m}^3/\text{h}$$

#### Determination of flow rate

Determination of  $k_v$  from the diagram

$$k_{vs} = 16 \text{ m}^3/\text{h}$$

Example plotted: Given are the volume flow (3 m<sup>3</sup>/h) and a desired  $\Delta p_v$  of 45 mbar, which results in a  $k_v$  value of 14.1 m<sup>3</sup>/h. The  $k_{vs}$  values entered are deliverable values. Selected: A valve with  $k_{vs} = 16 \text{ m}^3/\text{h}$ , which results in a pressure difference  $\Delta p_v$  of 35.2 mbar.

## AKM 115SA: Smart Actuator for ball valve

### Features

- Smart Actuator as an intelligent IoT solution for autonomous control of heating and air-conditioning applications in smart buildings
- Ready-made HVAC standard applications enable efficient installation and commissioning of small systems
- Applications are selected from the library via smartphone app and installed on the Smart Actuator
- BACnet, Bluetooth LE and WLAN interface for flexible system integration
- Commissioning, parameterisation and remote access to the system are conveniently carried out via a smartphone app
- As an IoT device, the cloud connection for remote access takes place via MQTT using TLS encryption
- Extensive diagnostic data from the actuator enables predictive maintenance of installations
- Enables creation of Smart Actuator networks with distributed intelligence
- Optionally, the Smart Actuator can be used flexibly in BA networks due to free programmability via CASE Suite
- Real-time clock for calendar functions and time programmes
- Two universal I/Os for connecting external sensors and actuators
- Direct connection of a room operating unit
- Flexibly expandable with up to two Smart Actuator SAIO 100 I/O modules for comprehensive control tasks
- Pre-assembled cables, with colour- and mechanically-coded connectors, allow fast and error-free wiring
- Fitting without tools using a bayonet ring made of glass-fibre reinforced plastic
- BLDC motor technology enables extensive diagnostic functions
- Intelligent angle of rotation adaptation and detection incl. feedback signal
- Electronic, torque-dependent cut-off
- Gear unit can be disengaged for manual adjustment
- For operating the 2- and 3-way ball valves VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI and BKTA, as well as 6-way ball valve B2KL



AKM 115SAF232



Smart Actuator app

### Technical data

#### Power supply

Power supply	24 VAC, -10%/+20%, 50...60 Hz 24 VDC, -10%/+20%
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#### Parameters

Surge-voltage resistance	500 V (EN 60730)
Rotational torque	8 Nm
Holding torque <sup>1)</sup>	8 Nm
Angle of rotation	90°
Response time	200 ms
Running time for 90°	35/60/120 sec.
Characteristic	Linear, (inverse) equal percentage, (inverse) quadratic, free characteristic
Operating noise (unloaded)	< 30 dB (A)

#### Ambient conditions

Media temperature <sup>2)</sup>	Max. 100 °C
Ambient temperature	-10...55 °C
Ambient humidity	5...85% rh, no condensation
Storage and transport temperature	-20...70 °C

<sup>1)</sup> Holding torque energised and de-energised

<sup>2)</sup> At media temperatures < 5 °C or > 100 °C, appropriate accessory must be used



Inputs/outputs		
Type of inputs	Number of universal I/O	2
	Analogue input U	0...10 V ( $R_i = 100 \text{ k}\Omega$ , $\pm 0.05 \text{ V}$ )
	Analogue input I	4...20 mA (with ext. resistor $500 \text{ }\Omega$ or accessory 053060311**)
	Digital input <sup>3)</sup>	Closed: $\leq 1 \text{ VDC}$ , 1 mA Open: $\geq 4 \text{ VDC}$
	Ni1000	-20...100 °C (DIN 43760)
	Pt1000	-20...100 °C (IEC 751)
	Resistance	200...3000 $\Omega$
Type of output	Analogue output U	0...10 V ( $\pm 0.1 \text{ V}$ )
Function		
Dynamic objects	BACnet data point objects	Max. 100 (from firmware 1.1.0b58)
	BACnet client links	16
	Control	6 loops
	Active COV subscription	64
	Time programmes	4 (Schedule)
	Calendar	3 (Calendar)
Architecture		
	Processor	ARM Cortex-M7 (528 MHz)
	RAM (memory)	1024 kB
	Flash	2 × 16 MB external, for data and system
	Flash encryption	128-bit AES
	Application data	Via CASE Engine or mobile app
	Operating system	Zephyr
	Cycle time	100 ms
	Mobile app	For commissioning and maintenance
	Cloud	Via MQTT to IoT hub
	Real-time clock	For time programmes and calendars
Interfaces, communication		
RS-485 A connection <sup>4)</sup>	Communication protocol	BACnet MS/TP, ¼ load
	Connection	2 × 3-pin connector, coded, daisy chain
	Termination/Pull-Up/Pull-Down	Internal, switchable via software
RS-485 B connection <sup>5)</sup>	Communication protocol	SLC master
	Use	2 × I/O module, 1 × ecoUnit
	Connection	5-pin connector, coded
	Termination	Internal, switchable via software
Bluetooth	Version	BLE 4.2
	Range	< 10 m
	Radiation	4 mW
WLAN	Standard	IEEE 802.11 b/g
Indicator/display	LED indicator	2 status LEDs (green/red and blue)
Construction		
	Fitting position	Connections at the bottom or side, not at the top
	Dimensions W × H × D	168 × 137 × 74 mm
	Weight	0.7 kg
	Housing	Lower section black, upper section yellow
	Housing material	Flame retardant plastic, PC/ABS
Standards, directives		
	Type of protection	IP54 (EN 60529)
	Protection class	III (IEC 60730-1)

<sup>3)</sup> Switching thresholds: 2.28 V (0 to 1) and 2.69 V (1 to 0) or 2.19 k $\Omega$  (0 to 1) and 2.69 k $\Omega$  (1 to 0)

<sup>4)</sup> Not electrically isolated

<sup>5)</sup> Not electrically isolated

CE/UKCA conformity <sup>6)</sup>	Environment class	3K3 (IEC 60721)
	RED 2014/53/EU (CE)	EN 60730-1:2011 EN 60730-2-14:1997 + A1:2001, A11:2005; A2:2008 EN 62479:2010 EN 301 489-1 V1.9.2 EN 61000-6-2:2005; AC:2005 EN 61000-6-3:2007 + A1:2011; AC 2012 EN 300 328 V2.2.2
	RER-2017 (UKCA)	See RED
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Features	Power consumption
AKM115SAF232	Smart Actuator for ball valve, RS-485	Max. 5 W / 10 VA (without peripherals)

 Power consumption: Without connected peripheral devices (room operating units, sensors, actuators or I/O modules)

### Accessories

Type	Description
SAIO100F020	I/O module, 5 × UI/AO, 3 × relay
0510420001	Adaptor required when temperature of the medium > 100 °C
0510240011	Adaptor required when temperature of the medium < 5 °C
05393601000	Dummy plug spare part set IP54
EY-PS031F011	Power supply unit, 110...240 VAC / 24 VDC, 1.25 A, 30 W, DIN rail mounting
EY-PS031F021	Power supply unit, 110...240 VAC / 24 VDC, 2.5 A, 60 W, DIN rail mounting
EY-PS031F041	Power supply unit, 110...240 VAC / 24 VDC, 4 A, 100 W, DIN rail mounting

 Order the device cables separately; see the section entitled "Accessories – power and connecting cables"

<sup>6)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues



AVM115SAF232



Smart Actuator app

## AVM 115SA: Smart Actuator for 2- and 3-way valves

### Features

- Smart Actuator as an intelligent IoT solution for autonomous control of heating and air-conditioning applications in smart buildings
- Ready-made HVAC standard applications enable efficient installation and commissioning of small systems
- Applications are selected from the library via smartphone app and installed on the Smart Actuator
- BACnet, Bluetooth LE and WLAN interface for flexible system integration
- Commissioning, parameterisation and remote access to the system are conveniently carried out via a smartphone app
- As an IoT device, the cloud connection for remote access takes place via MQTT using TLS encryption
- Extensive diagnostic data from the actuator enables predictive maintenance of installations
- Enables creation of Smart Actuator networks with distributed intelligence
- Optionally, the Smart Actuator can be used flexibly in BA networks due to free programmability via CASE Suite
- Real-time clock for calendar functions and time programmes
- Two universal I/Os for connecting external sensors and actuators
- Direct connection of a room operating unit
- Flexibly expandable with up to two Smart Actuator SAIO 100 I/O modules for comprehensive control tasks
- Pre-assembled cables, with colour- and mechanically-coded connectors, allow fast and error-free wiring
- Toolless assembly by means of automatic valve stem connection and brass cap nut
- BLDC motor technology enables extensive diagnostic functions
- Intelligent stroke adaptation and detection incl. feedback signal
- Electronic, torque-dependent cut-off
- Gear unit can be disengaged for manual adjustment
- For activation of 2-way and 3-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series

### Technical data

Power supply		
Power supply		24 VAC, -10%/+20%, 50...60 Hz 24 VDC, -10%/+20%
Parameters		
Surge-voltage resistance		500 V (EN 60730)
Actuating power		500 N
Actuator stroke		0...10 mm
Response time		200 ms
Running time		35/60/120 sec.
Characteristic		Linear, (inverse) equal percentage, (inverse) quadratic, free characteristic
Operating noise (unloaded)		< 30 dB (A)
Ambient conditions		
Media temperature <sup>1)</sup>		Max. 100 °C
Ambient temperature		-10...55 °C
Ambient humidity		5...85% rh, no condensation
Storage and transport temperature		-20...70 °C
Inputs/outputs		
Number of universal I/O		2

<sup>1)</sup> At media temperature > 100 °C, appropriate accessory must be used





Type of inputs	Analogue input U	0...10 V ( $R_i = 100 \text{ k}\Omega$ , $\pm 0.05 \text{ V}$ )
	Analogue input I	4...20 mA (with ext. resistor $500 \text{ }\Omega$ or accessory 053060311**)
	Digital input <sup>2)</sup>	Closed: $\leq 1 \text{ VDC}$ , 1 mA Open: $\geq 4 \text{ VDC}$
	Ni1000	-20...100 °C (DIN 43760)
	Pt1000	-20...100 °C (IEC 751)
	Resistance	200...3000 $\Omega$
Type of output	Analogue output U	0...10 V ( $\pm 0.1 \text{ V}$ )

<b>Function</b>		
	BACnet data point objects	Max. 100 (from firmware 1.1.0b58)
	BACnet client links	16
	Control	6 loops
	Active COV subscription	64
Dynamic objects	Time programmes	4 (Schedule)
	Calendar	3 (Calendar)

<b>Architecture</b>		
	Processor	ARM Cortex-M7 (528 MHz)
	RAM (memory)	1024 kB
	Flash	2 × 16 MB external, for data and system
	Flash encryption	128-bit AES
	Application data	Via CASE Engine or mobile app
	Operating system	Zephyr
	Cycle time	100 ms
	Mobile app	For commissioning and maintenance
	Cloud	Via MQTT to IoT hub
	Real-time clock	For time programmes and calendars

<b>Interfaces, communication</b>		
RS-485 A connection <sup>3)</sup>	Communication protocol	BACnet MS/TP, 1/4 load
	Connection	2 × 3-pin connector, coded, daisy chain
	Termination/Pull-Up/Pull-Down	Internal, switchable via software
RS-485 B connection <sup>4)</sup>	Communication protocol	SLC master
	Use	2 × I/O module, 1 × ecoUnit
	Connection	5-pin connector, coded
	Termination	Internal, switchable via software
Bluetooth	Version	BLE 4.2
	Range	< 10 m
	Radiation	4 mW
WLAN	Standard	IEEE 802.11 b/g
Indicator/display	LED indicator	2 status LEDs (green/red, blue)

<b>Construction</b>		
	Fitting position	Connections at the bottom or side, not at the top
	Dimensions W × H × D	168 × 119 × 74 mm
	Weight	0.7 kg
	Housing	Lower section black, upper section yellow
	Housing material	Flame retardant plastic, PC/ABS

<b>Standards, directives</b>		
	Type of protection	IP54 (EN 60529)
	Protection class	III (IEC 60730-1)
	Environment class	3K3 (IEC 60721)

<sup>2)</sup> Switching thresholds: 2.28 V (0 to 1) and 2.69 V (1 to 0) or 2.19 k $\Omega$  (0 to 1) and 2.69 k $\Omega$  (1 to 0)

<sup>3)</sup> Not electrically isolated

<sup>4)</sup> Not electrically isolated

CE/UKCA conformity <sup>5)</sup>	RED 2014/53/EU (CE)	EN 60730-1:2011 EN 60730-2-14:1997 + A1:2001, A11:2005; A2:2008 EN 62479:2010 EN 301 489-1 V1.9.2 EN 61000-6-2:2005; AC:2005 EN 61000-6-3:2007 + A1:2011; AC 2012 EN 300 328 V2.2.2
	RER-2017 (UKCA)	See RED
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Features	Power consumption
AVM115SAF232	Smart Actuator for globe valves, RS-485, BACnet MS/TP	Max. 5 W / 10 VA (without peripherals)

 Power consumption: Without connected peripheral devices (room operating units, sensors, actuators or I/O modules)

### Accessories

Type	Description
SAIO100F020	I/O module, 5 × UI/AO, 3 × relay
0372249001	Temperature adapter for AVM 321(S), required when temperature of the medium > 100...130 °C (recommended for temperatures < 10 °C) DN 15...50
0372273001	Adapter for Siemens valve VVG/VXG 44, 48
05393601000	Dummy plug spare part set IP54
EY-PS031F011	Power supply unit, 110...240 VAC / 24 VDC, 1.25 A, 30 W, DIN rail mounting
EY-PS031F021	Power supply unit, 110...240 VAC / 24 VDC, 2.5 A, 60 W, DIN rail mounting
EY-PS031F041	Power supply unit, 110...240 VAC / 24 VDC, 4 A, 100 W, DIN rail mounting

 Order the device cables separately; see the section entitled "Accessories – power and connecting cables"

<sup>5)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues

## ASM 115SA: Smart Actuator for ventilation dampers

### Features

- Smart Actuator as an intelligent IoT solution for autonomous control of heating and air-conditioning applications in smart buildings
- Ready-made HVAC standard applications enable efficient installation and commissioning of small systems
- Applications are selected from the library via smartphone app and installed on the Smart Actuator
- BACnet, Bluetooth LE and WLAN interface for flexible system integration
- Commissioning, parameterisation and remote access to the system are conveniently carried out via a smartphone app
- As an IoT device, the cloud connection for remote access takes place via MQTT using TLS encryption
- Extensive diagnostic data from the actuator enables predictive maintenance of installations
- Enables creation of Smart Actuator networks with distributed intelligence
- Optionally, the Smart Actuator can be used flexibly in BA networks due to free programmability via CASE Suite
- Real-time clock for calendar functions and time programmes
- Two universal I/Os for connecting external sensors and actuators
- Direct connection of a room operating unit
- Flexibly expandable with up to two Smart Actuator SAIO 100 I/O modules for comprehensive control tasks
- Pre-assembled cables, with colour- and mechanically-coded connectors, allow fast and error-free wiring
- Easy fitting using self-centring spindle adapters
- BLDC motor technology enables extensive diagnostic functions
- Intelligent angle of rotation adaptation and detection incl. feedback signal
- Electronic, torque-dependent cut-off
- Gear unit can be disengaged for manual adjustment



ASM115SAF232



Smart Actuator app

### Technical data

Power supply		
Power supply	24 VAC, -10%/+20%, 50...60 Hz	24 VDC, -10%/+20%
Parameters		
Surge-voltage resistance	500 V (EN 60730)	
Rotational torque	10 Nm	
Holding torque <sup>1)</sup>	10 Nm	
Angle of rotation	Max. 95°	
Admissible damper shaft	Ø 8...16 mm, □ 6.5...12.5 mm	
Admissible damper shaft (hardness)	Max. 300 HV	
Response time	200 ms	
Running time for 90°	35/60/120 sec.	
Characteristic	Linear, (inverse) equal percentage, (inverse) quadratic, free characteristic	
Operating noise (unloaded)	< 30 dB (A)	
Ambient conditions		
Ambient temperature	-10...55 °C	
Ambient humidity	5...85% rh, no condensation	
Storage and transport temperature	-20...70 °C	
Inputs/outputs		
Number of universal I/O	2	

<sup>1)</sup> Holding torque energised and de-energised



Type of inputs	Analogue input U	0...10 V ( $R_i = 100 \text{ k}\Omega$ , $\pm 0.05 \text{ V}$ )
	Analogue input I	4...20 mA (with ext. resistor $500 \text{ }\Omega$ or accessory 053060311**)
	Digital input <sup>2)</sup>	Closed: $\leq 1 \text{ VDC}$ , 1 mA Open: $\geq 4 \text{ VDC}$
	Ni1000	-20...100 °C (DIN 43760)
	Pt1000	-20...100 °C (IEC 751)
	Resistance	200...3000 $\Omega$
Type of output	Analogue output U	0...10 V ( $\pm 0.1 \text{ V}$ )
<b>Function</b>		
	BACnet data point objects	Max. 100 (from firmware 1.1.0b58)
	BACnet client links	16
	Control	6 loops
	Active COV subscription	64
Dynamic objects	Time programmes	4 (Schedule)
	Calendar	3 (Calendar)
<b>Architecture</b>		
	Processor	ARM Cortex-M7 (528 MHz)
	RAM (memory)	1024 kB
	Flash	2 × 16 MB external, for data and system
	Flash encryption	128-bit AES
	Application data	Via CASE Engine or mobile app
	Operating system	Zephyr
	Cycle time	100 ms
	Mobile app	For commissioning and maintenance
	Cloud	Via MQTT to IoT hub
	Real-time clock	For time programmes and calendars
<b>Interfaces, communication</b>		
RS-485 A connection <sup>3)</sup>	Communication protocol	BACnet MS/TP, ¼ load
	Connection	2 × 3-pin connector, coded, daisy chain
	Termination/Pull-Up/Pull-Down	Internal, switchable via software
RS-485 B connection <sup>4)</sup>	Communication protocol	SLC master
	Use	2 × I/O module, 1 × ecoUnit
	Connection	5-pin connector, coded
	Termination	Internal, switchable via software
Bluetooth	Version	BLE 4.2
	Range	< 10 m
	Radiation	4 mW
WLAN	Standard	IEEE 802.11 b/g
Indicator/display	LED indicator	2 status LEDs (green/red, blue)
<b>Construction</b>		
	Fitting position	Connections at the bottom or side, not at the top
	Dimensions W × H × D	168 × 62 × 74 mm
	Weight	0.7 kg
	Housing	Lower section black, upper section yellow
	Housing material	Flame retardant plastic, PC/ABS
<b>Standards, directives</b>		
	Type of protection	IP54 (EN 60529)
	Protection class	III (IEC 60730-1)
	Environment class	3K3 (IEC 60721)

<sup>2)</sup> Switching thresholds: 2.28 V (0 to 1) and 2.69 V (1 to 0) or 2.19 k $\Omega$  (0 to 1) and 2.69 k $\Omega$  (1 to 0)

<sup>3)</sup> Not electrically isolated

<sup>4)</sup> Not electrically isolated

CE/UKCA conformity <sup>5)</sup>	RED 2014/53/EU (CE)	EN 60730-1:2011 EN 60730-2-14:1997 + A1:2001, A11:2005; A2:2008 EN 62479:2010 EN 301 489-1 V1.9.2 EN 61000-6-2:2005; AC:2005 EN 61000-6-3:2007 + A1:2011; AC 2012 EN 300 328 V2.2.2
	RER-2017 (UKCA)	See RED
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Features	Power consumption
ASM115SAF232	Smart Actuator for dampers, RS-485, BACnet MS/TP	Max. 5 W / 10 VA (without peripherals)

 Power consumption: Without connected peripheral devices (room operating units, sensors, actuators or I/O modules)

### Accessories

Type	Description
SAIO100F020	I/O module, 5 × UI/AO, 3 × relay
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115
0372300001	Torsion protection, long (230 mm)
05393601000	Dummy plug spare part set IP54
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.
0372320001	Hexagon key as visualisation for position indicator
EY-PS031F011	Power supply unit, 110...240 VAC / 24 VDC, 1.25 A, 30 W, DIN rail mounting
EY-PS031F021	Power supply unit, 110...240 VAC / 24 VDC, 2.5 A, 60 W, DIN rail mounting
EY-PS031F041	Power supply unit, 110...240 VAC / 24 VDC, 4 A, 100 W, DIN rail mounting

 Order the device cables separately; see the section entitled "Accessories – power and connecting cables"

<sup>5)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues



SAIO100F010

## SAIO 100: I/O module for smart actuators

### Features

- Extends the inputs and outputs of the smart actuator for extensive control tasks
- Connection of sensors or actuators via five integrated universal inputs and outputs
- Three changeover relays for fan or pump control
- Connection to the smart actuator via plug-in I/O module cable (SLC)
- Direct connection of a room operating unit
- Housing according to IP54 enables use without cabinet
- Separate 24 V power supply for sensors and actuators with total power requirement up to 1 A

### Technical data

Power supply		
Power supply		24 VAC/DC (via smart actuator) 24 VAC/DC for terminals T4...T7 (via separate power supply)
Power consumption		1.2 VA at 24 VDC (without sensors and actuators)
Ambient conditions		
Ambient temperature		-10...55 °C
Ambient humidity		5...95% rh, no condensation
Storage and transport temperature		-20...70 °C
Inputs/outputs		
Number of universal I/O		5 (+1 from smart actuator)
Number of relays		3
Rating		10 A (resistive) 5 A (inductive)
Type		Change-over
Type of inputs		
Analogue input U		0...10 V ( $R_i = 100\text{ k}\Omega$ , $\pm 0.05\text{ V}$ )
Analogue input I		4...20 mA (with ext. resistor $500\ \Omega$ )
Digital input		Closed: 1 VDC, 1 mA Open: > 2 VDC
Ni1000		-20...100 °C (DIN 43760)
Pt1000		-20...100 °C (IEC 751)
Resistance		100...2500 $\Omega$ ( $\pm 25\ \Omega$ )
Type of output		
Analogue output U		0...10 V ( $\pm 0.4\text{ V}$ )
Interfaces, communication		
RS-485 connection		
Communication protocol		SLC slave
Use		1 × I/O module, 1 × ecoUnit
Connection		5-pin connector, coded
Termination		Internal, DIP switch
Indicator/display		
LED indicator		1 status LED (green, red)
Construction		
Fitting		On DIN rail 35 × 7.5/15 (EN 60715) or on supplied rail
Dimensions W × H × D		200 × 107 × 55 mm
Weight		0.5 kg
Housing		Lower section black, upper section yellow
Housing material		Flame retardant plastic, PC/ABS
Standards, directives		
Type of protection		IP54 (EN 60529)
Protection class		III (IEC 60730-1)
Environment class		3K3 (IEC 60721)



CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14

### Overview of types

Type	Features	Power consumption
SAIO100F020	I/O module for smart actuator, 6 pcs. UI/AO, 3 pcs. relay	Max. 1.7 W / 3.6 VA (without peripherals)

### Accessories

Type	Description
05393601000	Dummy plug spare part set IP54

 For power cables or connecting cables (053060\*\*\*\*), see order code in PDS 53.950





## Power and connecting cables for Smart Actuators

### Features

- For connection to the power supply, to cable temperature sensors, and for connecting the actuators
- Pre-assembled cables in various lengths from 0.5 to 30 metres
- Robust XLPE sheathed cables<sup>1)</sup> With mechanically and colour-coded connectors
- Silicone- and halogen-free
- Can also be laid under plaster, in and on masonry and non-reinforced concrete<sup>2)</sup>

### Technical data

Parameters		
	Bending radius	Min. 10 × outer diameter for fixed installation
Ambient conditions		
	Ambient temperature	Max. +70 °C
Construction		
	Material	Silicone- and halogen-free according to EN 60754-1/2 Flame retardant according to EN 60332-1-2
	Type	Conductor stranded bare copper wires, open ends ultrasonically welded
	Colour	Black (plug and sheath)
Standards, directives		
CE/UKCA conformity according to	RoHS Directive 2011/65/EU & 2015/863/EU Restriction of Hazardous Substances Regulations 2012 (RoHS UKCA)	

### Overview of types

Type	Cable type	Cable length	Connector type
05306020000	24 V power supply, open cable end	0.5 m	2-pin
05306020001	24 V power supply, open cable end	1.0 m	2-pin
05306020005	24 V power supply, open cable end	5.0 m	2-pin
05306020010	24 V power supply, open cable end	10.0 m	2-pin
05306020020	24 V power supply, open cable end	20.0 m	2-pin
05306020030	24 V power supply, open cable end	30.0 m	2-pin
05306020201	24 V power supply, Y-connector	1.0 m	2-pin
05306031001	I/O signals, open cable end, 3-core	1.0 m	3-pin
05306031005	I/O signals, open cable end, 3-core	5.0 m	3-pin
05306031010	I/O signals, open cable end, 3-core	10.0 m	3-pin
05306031020	I/O signals, open cable end, 3-core	20.0 m	3-pin
05306031030	I/O signals, open cable end, 3-core	30.0 m	3-pin
05306031105	I/O signals (I), open cable end, 3-core	5.0 m	3-pin
05306032001	I/O signals, cable temperature sensor Ni1000 (-35...100 °C) ready to plug in	1.0 m	3-pin
05306032005	I/O signals, cable temperature sensor Ni1000 (-35...100 °C) ready to plug in	5.0 m	3-pin
05306032010	I/O signals, cable temperature sensor Ni1000 (-35...100 °C) ready to plug in	10.0 m	3-pin

<sup>1)</sup> XLPE: Cross-linked polyethylene

<sup>2)</sup> National regulations must be observed





Type	Cable type	Cable length	Connector type
05306032020	I/O signals, cable temperature sensor Ni1000 (-35...100 °C) ready to plug in	20.0 m	3-pin
05306032101	I/O signals, cable temperature sensor Pt1000 (-50...180 °C) ready to plug in	1.0 m	3-pin
05306032105	I/O signals, cable temperature sensor Pt1000 (-50...180 °C) ready to plug in	5.0 m	3-pin
05306034000	RS-485, daisy chain, open cable end, 3-core	0.5 m	3-pin
05306034001	RS-485, daisy chain, open cable end, 3-core	1.0 m	3-pin
05306034005	RS-485, daisy chain, open cable end, 3-core	5.0 m	3-pin
05306034010	RS-485, daisy chain, open cable end, 3-core	10.0 m	3-pin
05306034020	RS-485, daisy chain, open cable end, 3-core	20.0 m	3-pin
05306034030	RS-485, daisy chain, open cable end, 3-core	30.0 m	3-pin
05306034100	RS-485, daisy chain, connection of two actuators, ready to plug in	0.5 m	3-pin
05306034101	RS-485, daisy chain, connection of two actuators, ready to plug in	1.0 m	3-pin
05306034105	RS-485, daisy chain, connection of two actuators, ready to plug in	5.0 m	3-pin
05306034110	RS-485, daisy chain, connection of two actuators, ready to plug in	10.0 m	3-pin
05306034120	RS-485, daisy chain, connection of two actuators, ready to plug in	20.0 m	3-pin
05306034130	RS-485, daisy chain, connection of two actuators, ready to plug in	30.0 m	3-pin
05306051000	I/O signals, open cable end, 3-core	0.5 m	5-pin
05306051001	I/O signals, open cable end, 3-core	1.0 m	5-pin
05306051005	I/O signals, open cable end, 3-core	5.0 m	5-pin
05306051010	I/O signals, open cable end, 3-core	10.0 m	5-pin
05306051020	I/O signals, open cable end, 3-core	20.0 m	5-pin
05306051030	I/O signals, open cable end, 3-core	30.0 m	5-pin
05306053000	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in	0.5 m	5-pin
05306053001	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in	1.0 m	5-pin
05306053005	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in	5.0 m	5-pin
05306053010	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in	10.0 m	5-pin
05306053020	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in	20.0 m	5-pin
05306053030	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in	30.0 m	5-pin
05306053500	SLC connection, open cable end, 5-core	0.5 m	5-pin
05306053501	SLC connection, open cable end, 5-core	1.0 m	5-pin
05306053505	SLC connection, open cable end, 5-core	5.0 m	5-pin
05306053510	SLC connection, open cable end, 5-core	10.0 m	5-pin
05306053520	SLC connection, open cable end, 5-core	20.0 m	5-pin
05306053530	SLC connection, open cable end, 5-core	30.0 m	5-pin

 Other models and lengths on request. For order numbers, see order code below

### Example

Order no.	Designation
05306020000	Power cable, 2-pin, 24 V power supply, open cable end, 2-core, 0.5 m

## Order code

(1) Product type	(2) Model	(3) Cable length
053060...	...200...	...00

 Not all theoretically possible combinations can be ordered

## (1) Product type

Order no.	Type
053060...	Power and connecting cables for Smart Actuator

## (2) Model

Order no.	Plug	Function and connection
...200...	2-pin	24 V power supply, open cable end
...201...	2-pin	24 V power supply, daisy chain
...202...	2-pin	24 V power supply, Y-connector
...310...	3-pin	I/O signals, 3-core open cable end
...510...	5-pin	I/O signals, 3-core open cable end
...311...	3-pin	I/O signals for current measurement with integrated 500 $\Omega$ resistor, 3-core open cable end
...320...	3-pin	I/O signals, cable temperature sensor Ni1000 (-35...100 °C), ready to plug in
...321...	3-pin	I/O signals, cable temperature sensor Pt1000 (-50...180 °C), ready to plug in
...340...	3-pin	RS-485, daisy chain, 3-core open cable end
...341...	3-pin	RS-485, daisy chain, connection of two actuators, ready to plug in
...530...	5-pin	I/O signals, connection of actuator with I/O module SAIO100, ready to plug in
...535...	5-pin	SLC connection, 5-core open cable end

## (3) Cable length

Order no.	Length (m)	Conductor cross-section (mm <sup>2</sup> ) <sup>3)</sup>
...00	0.5	0.5 / 0.75
...01	1.0	0.5 / 0.75
...05	5.0	0.5 / 0.75
...10	10.0	0.75
...20	20.0	0.75
...30	30.0	0.75

<sup>3)</sup> Conductor cross-section depends on cable type and cable length

# Unit valves

In combination with thermal actuators, unit valves are used to control radiators, air reheaters and recoolers as well as fan coil units.

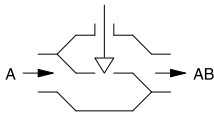
## Overview of unit valves



Type designation	VUL	BUL	VUT	BUT	BXL
<b>Application</b>					
Single-room control	•	•	•	•	•
Chilled ceiling, underfloor heating	•	•	•	•	•
Radiator	•	•	•	•	•
Underfloor device	•	•	•	•	•
<b>Version</b>					
2-way	•	–	•	–	–
3-way	–	•	–	•	•
Nominal diameter (DN)	10...20	10...20	10...20	10...20	25...40
Nominal pressure	PN 16	PN 16	PN 16	PN 16	PN 16
<b>Combination options with actuator</b>	AXM 217(S) AXT 301 AXS 315S AXF 217S	AXM 217(S) AXT 301 AXS 315S AXF 217S	AXM 217(S) AXT 301 AXS 315S AXF 217S	AXM 217(S) AXT 301 AXS 315S AXF 217S	AXM 217(S) AXT 301 AXS 315S AXF 217S
<b>Further information</b>	Page 146	Page 149	Page 154	Page 156	Page 159



VUL010F310



ValveDim app

## VUL: 2-way valve, PN 16

### Features

- Control of heating zones, air secondary treatment units and fan coil units in combination with unit valve actuators AXM 217(S), AXT 301 or AXS 315S
- Flat-sealing standard version or version with clamping-ring screw fitting for pipe  $\varnothing$  15 mm with DN 10
- Valve with male thread as per DIN EN ISO 228-1, class B
- Stuffing box can be replaced under system pressure
- Control passage A-AB is closed when the spindle is moved in
- Closing procedure against the pressure
- Valve body made of nickel-plated cast brass for DN 10 and gunmetal for DN 15 and DN 20
- Plug with EPDM soft seal
- Stainless-steel spindle
- Stuffing box with double O-ring seal

### Technical data

Parameters	
Nominal pressure	PN 16
Operating pressure	Max. 16 bar (up to 120 °C)
Operating temperature	2...120 °C
Valve characteristic	Equal-percentage
Valve stroke <sup>1)</sup>	4 mm
Leakage rate	0.002% of $K_{vs}$ value

### Ambient conditions

Operating temperature at valve	Max. 100 °C in combination with AXM 217(S), AXT 301 or AXS 315S
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### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	VDI/VDE 2173
PED 2014/68/EU	Fluid group II, No CE label (article 4.3)

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Connection	Weight
VUL010F340	DN 10	0.16 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.19 kg
VUL010F330	DN 10	0.4 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.18 kg
VUL010F320	DN 10	0.63 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.18 kg
VUL010F310	DN 10	1 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.18 kg
VUL010F300	DN 10	1.6 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.18 kg
VUL015F310	DN 15	2.5 m <sup>3</sup> /h	G $\frac{3}{4}$ " B	0.28 kg
VUL015F300	DN 15	3.5 m <sup>3</sup> /h	G $\frac{3}{4}$ " B	0.28 kg
VUL020F300	DN 20	4.5 m <sup>3</sup> /h	G1" B	0.33 kg
VUL010F630	DN 10	0.4 m <sup>3</sup> /h	Clamping ring vers. $\varnothing$ 15 mm	0.18 kg
VUL010F620	DN 10	0.63 m <sup>3</sup> /h	Clamping ring vers. $\varnothing$ 15 mm	0.18 kg
VUL010F610	DN 10	1 m <sup>3</sup> /h	Clamping ring vers. $\varnothing$ 15 mm	0.18 kg
VUL010F600	DN 10	1.6 m <sup>3</sup> /h	Clamping ring vers. $\varnothing$ 15 mm	0.18 kg

<sup>1)</sup> The valve stroke is limited by the actuator



## Accessories

Type	Description
0378133010	1 threaded sleeve, R $\frac{3}{8}$ , flat-sealing, with cap nut and flat seal, G $\frac{1}{2}$ - R $\frac{3}{8}$
0378133015	1 threaded sleeve, R $\frac{1}{2}$ , flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$ - R $\frac{1}{2}$
0378133020	1 threaded sleeve, R $\frac{3}{4}$ , flat-sealing, with cap nut and flat seal, G1 - R $\frac{3}{4}$
0378134010	1 solder nipple, $\varnothing$ 12, flat-sealing, with cap nut and flat seal, G $\frac{1}{2}$
0378134015	1 solder nipple, $\varnothing$ 15, flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$
0378134020	1 solder nipple, $\varnothing$ 22, flat-sealing, with cap nut and flat seal, G1
0378135010	1 clamping-ring screw fitting for pipe $\varnothing$ 15 mm, DN 10
0378145015	1 clamping-ring screw fitting for pipe $\varnothing$ 15 mm, DN 15, flat-sealing, G $\frac{3}{4}$
0378145020	1 clamping-ring screw fitting for pipe $\varnothing$ 22 mm, DN 20, flat-sealing, G1
0378128001	Stuffing box for VUL valves, can be replaced under pressure

## Combination of VUL with electric actuators

- i** **Warranty:** The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** **Definition of  $\Delta p_s$ :** Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve.
- i** **Definition of  $\Delta p_{max}$ :** Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

## Pressure differences with motorised actuators

Actuator	AXM217F200	AXM217F202	AXM217SF402 AXM217SF404
Page	171	171	173
Voltage	230 VAC	24 VAC/DC	24 VAC/DC
Control signal	2-/3-point	2-/3-point	0/2...10 V, 0...5 V, 5...10 V, 0/4...20 mA
Running time	13 s/mm	13 s/mm	8 s/mm
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VUL010F340 VUL010F330 VUL010F320 VUL010F630 VUL010F620	4.0	4.0	4.0
VUL010F310 VUL010F300 VUL010F610 VUL010F600	3.8	3.8	3.8
VUL015F310 VUL015F300 VUL020F300	1.1	1.1	1.1
Cannot be used to close with the pressure			

**Pressure differences with thermal actuators**

Actuator	AXT301F100 AXT301F110		AXT301F102 AXT301F112		AXT301F210	AXT301F212	AXT301HF110		AXT301HF112	
Page	164		164		164	164	164		164	
Voltage	230 VAC		24 VAC/DC		230 VAC	24 VAC/DC	230 VAC		24 VAC/DC	
Control signal	2-point		2-point		2-point	2-point	2-point		2-point	
Running time	48 s/mm		48 s/mm		48 s/mm	48 s/mm	52 s/mm		52 s/mm	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VULO10F340 VULO10F330 VULO10F320 VULO10F630 VULO10F620	4.0	6.0	4.0	6.0	4.0	4.0	4.0	6.0	4.0	6.0
VULO10F310 VULO10F300 VULO10F610 VULO10F600	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
VULO15F310 VULO15F300 VULO20F300	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Cannot be used to close with the pressure

**Pressure differences with thermal, continuous actuators**

Actuator	AXS315SF102		AXS315SF202
Page	167		167
Voltage	24 VAC/DC		24 VAC/DC
Control signal	0...10 V		0...10 V
Running time	30 s/mm		30 s/mm
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]
VULO10F340 VULO10F330 VULO10F320 VULO10F630 VULO10F620	4.0	6.0	4.0
VULO10F310 VULO10F300 VULO10F610 VULO10F600	4.0	4.0	4.0
VULO15F310 VULO15F300 VULO20F300	1.1	1.1	1.1

Cannot be used to close with the pressure

## BUL: 3-way unit valve, PN 16

### Features

- Ideally suited for unit valve actuators AXM 217(S), AXT 301 and AXS 315S
- Flat-sealing standard version or version with clamping-ring screw fitting for pipe  $\varnothing$  15 mm with DN 10
- Valve with male thread as per DIN EN ISO 228-1, class B
- Special model for fan coil units with cast-on by-pass T-piece
- Control passage A-AB is closed when the spindle is moved in
- Can be used as a control valve and, thanks to its tight-sealing third passage, as a distribution valve
- Nickel-plated valve body made of cast brass
- Plug with EPDM soft seal for control passage and mixing passage
- Stainless-steel spindle
- Stuffing box with double O-ring seal

### Technical data

Parameters	
Nominal pressure	PN 16
Operating pressure	Max. 16 bar (up to 120 °C)
Operating temperature	2...120 °C
Control passage valve characteristic	Equal-percentage
Mixing passage valve characteristic	Linear
Valve stroke	3.7 mm
leakage rate of control passage A-AB	0.0001% of $K_{vs}$ value
leakage rate of mixing passage B-AB	Approx. 0.1% of $K_{vs}$ value

Ambient conditions	
Operating temperature at valve	Max. 100 °C in combination with AXM 217(S), AXT 301 or AXS 315S

Standards, directives	
Pressure and temperature data	EN 764, EN 1333
Flow parameters	VDI/VDE 2173
PED 2014/68/EU	Fluid group II, No CE label (article 4.3)

### Overview of types

**i** The BUL 3-way valve must not be used as a 2-way valve

**i**  $K_{vs}$  value: The  $K_{vs}$  value of the mixing passage (B-AB) is reduced by approx. 30%

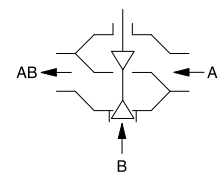
Type	Nominal diameter	$K_{vs}$ value	Connection	Weight
BUL010F330	DN 10	0.4 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.30 kg
BUL010F320	DN 10	0.63 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.30 kg
BUL010F310	DN 10	1 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.30 kg
BUL010F300	DN 10	1.6 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.30 kg
BUL015F310	DN 15	2.5 m <sup>3</sup> /h	G $\frac{3}{4}$ " B	0.33 kg
BUL015F300	DN 15	4 m <sup>3</sup> /h	G $\frac{3}{4}$ " B	0.33 kg
BUL020F300	DN 20	5 m <sup>3</sup> /h	G1" B	0.36 kg
BUL010F430	DN 10	0.4 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.38 kg
BUL010F420	DN 10	0.63 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.38 kg
BUL010F410	DN 10	1 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.38 kg
BUL010F400	DN 10	1.6 m <sup>3</sup> /h	G $\frac{1}{2}$ " B	0.38 kg
BUL015F410	DN 15	2.5 m <sup>3</sup> /h	G $\frac{3}{4}$ " B	0.42 kg
BUL015F400	DN 15	4 m <sup>3</sup> /h	G $\frac{3}{4}$ " B	0.42 kg



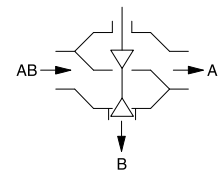
BUL015F310



BUL010F410



Control valve



Distribution valve



Type	Nominal diameter	$K_{vs}$ value	Connection	Weight
BULO20F400	DN 20	5 m <sup>3</sup> /h	G1" B	0.50 kg
BULO10F630	DN 10	0.4 m <sup>3</sup> /h	Clamping ring vers. Ø 15 mm	0.38 kg
BULO10F620	DN 10	0.63 m <sup>3</sup> /h	Clamping ring vers. Ø 15 mm	0.38 kg
BULO10F610	DN 10	1 m <sup>3</sup> /h	Clamping ring vers. Ø 15 mm	0.38 kg
BULO10F600	DN 10	1.6 m <sup>3</sup> /h	Clamping ring	0.38 kg

 BULO\*\*F4\*\*\*: Version with by-pass T-piece

### Accessories

Type	Description
0378133010	1 threaded sleeve, R <sup>3</sup> / <sub>8</sub> , flat-sealing, with cap nut and flat seal, G <sup>1</sup> / <sub>2</sub> - R <sup>3</sup> / <sub>8</sub>
0378133015	1 threaded sleeve, R <sup>1</sup> / <sub>2</sub> , flat-sealing, with cap nut and flat seal, G <sup>3</sup> / <sub>4</sub> - R <sup>1</sup> / <sub>2</sub>
0378133020	1 threaded sleeve, R <sup>3</sup> / <sub>4</sub> , flat-sealing, with cap nut and flat seal, G1 - R <sup>3</sup> / <sub>4</sub>
0378134010	1 solder nipple, Ø 12, flat-sealing, with cap nut and flat seal, G <sup>1</sup> / <sub>2</sub>
0378134015	1 solder nipple, Ø 15, flat-sealing, with cap nut and flat seal, G <sup>3</sup> / <sub>4</sub>
0378134020	1 solder nipple, Ø 22, flat-sealing, with cap nut and flat seal, G1
0378135010	1 clamping-ring screw fitting for pipe Ø 15 mm, DN 10
0378145015	1 clamping-ring screw fitting for pipe Ø 15 mm, DN 15, flat-sealing, G <sup>3</sup> / <sub>4</sub>
0378145020	1 clamping-ring screw fitting for pipe Ø 22 mm, DN 20, flat-sealing, G1
0378126001	Stuffing box for BUL valves
0378126002	Stuffing box for BUL valves as of manufacturing date 1501

### Combination of BUL with electric actuators

- i** **Warranty:** The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** **Definition of  $\Delta p_s$ :** Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve.
- i** **Definition of  $\Delta p_{max}$ :** Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Pressure differences with motorised actuators

Actuator	AXM217F200	AXM217F202	AXM217SF402 AXM217SF404
Page	171	171	173
Voltage	230 VAC	24 VAC/DC	24 VAC/DC
Control signal	2-/3-point	2-/3-point	0/2...10 V, 0...5 V, 5...10 V, 0/4...20 mA
Running time	48 s	48 s	48 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BULO10F330	1.7	1.7	1.7
BULO10F320			
BULO10F310			
BULO10F300			
BULO10F430			
BULO10F420			
BULO10F410			
BULO10F400			
BULO10F630			
BULO10F620			
BULO10F610			
BULO10F600			
BULO15F310	1.4	1.4	1.4
BULO15F410			
BULO15F300	1.2	1.2	1.2
BULO15F400			



Actuator	AXM217F200	AXM217F202	AXM217SF402 AXM217SF404
Page	171	171	173
BUL020F300 BUL020F400	1.0	1.0	1.0
As distribution valve	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]
BUL010F330 BUL010F320 BUL010F310 BUL010F300 BUL010F430 BUL010F420 BUL010F410 BUL010F400 BUL010F630 BUL010F620 BUL010F610 BUL010F600	1.9	1.9	1.9
BUL015F310 BUL015F300 BUL020F300 BUL015F410 BUL015F400 BUL020F400	1.2	1.2	1.2

**Pressure differences with thermal actuators**

Actuator	AXT301F100 AXT301F110		AXT301F102 AXT301F112		AXT301F210	AXT301F212	AXT301HF110		AXT301HF112	
Page	164		164		164	164	164		164	
Voltage	230 VAC		24 VAC/DC		230 VAC	24 VAC/DC	230 VAC		24 VAC/DC	
Control signal	2-point		2-point		2-point	2-point	2-point		2-point	
Running time	48 s/mm		48 s/mm		48 s/mm	48 s/mm	52 s/mm		52 s/mm	
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUL010F330 BUL010F320 BUL010F310 BUL010F300 BUL010F430 BUL010F420 BUL010F410 BUL010F400 BUL010F630 BUL010F620 BUL010F610 BUL010F600	1.7	1.8	1.7	1.8	1.7	1.7	1.7	1.8	1.7	1.8
BUL015F310 BUL015F410	1.4	1.5	1.4	1.5	1.4	1.4	1.4	1.5	1.4	1.5
BUL015F300 BUL015F400	1.2	1.3	1.2	1.3	1.2	1.2	1.2	1.3	1.2	1.3
BUL020F300 BUL020F400	1.0	1.1	1.0	1.1	1.0	1.0	1.0	1.1	1.0	1.1

Actuator	AXT301F100 AXT301F110		AXT301F102 AXT301F112		AXT301F210	AXT301F212	AXT301HF110		AXT301HF112	
Page	164		164		164	164	164		164	
As distribution valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUL010F330 BUL010F320 BUL010F310 BUL010F300 BUL010F430 BUL010F420 BUL010F410 BUL010F400 BUL010F630 BUL010F620 BUL010F610 BUL010F600	1.9	4.0	1.9	4.0	1.9	1.9	1.9	4.0	1.9	4.0
BUL015F310 BUL015F410	1.6	2.1	1.6	2.1	1.6	1.6	1.6	2.1	1.6	2.1
BUL015F300 BUL015F400	1.4	2.1	1.4	2.1	1.4	1.4	1.4	2.1	1.4	2.1
BUL020F300 BUL020F400	1.2	2.0	1.2	2.0	1.2	1.2	1.2	2.0	1.2	2.0

**Pressure differences with thermal, continuous actuators**

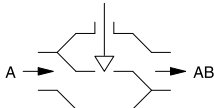
Actuator	AXS315SF102		AXS315SF202
Page	167		167
Voltage	24 VAC/DC		24 VAC/DC
Control signal	0...10 V		0...10 V
Running time	30 s/mm		30 s/mm
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]
BUL010F330 BUL010F320 BUL010F310 BUL010F300 BUL010F430 BUL010F420 BUL010F410 BUL010F400 BUL010F630 BUL010F620 BUL010F610 BUL010F600	1.7	1.8	1.7
BUL015F310 BUL015F410	1.4	1.5	1.4
BUL015F300 BUL015F400	1.2	1.3	1.2
BUL020F300 BUL020F400	1.0	1.1	1.0
As distribution valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]
BUL010F330 BUL010F320 BUL010F310 BUL010F300 BUL010F430 BUL010F420 BUL010F410 BUL010F400 BUL010F630 BUL010F620 BUL010F610 BUL010F600	1.9	4.0	1.9
BUL015F310 BUL015F410	1.6	2.1	1.6

Actuator	AXS315SF102		AXS315SF202
Page	167		167
BUL015F300 BUL015F400	1.4	2.1	1.4
BUL020F300 BUL020F400	1.1	1.2	1.2





VUT015F200



ValveDim app

## VUT: 2-way valve, PN 16

### Features

- Regulation of fan coil units, air secondary-treatment units, heating zones and two-pipe systems with heat exchanger in combination with AXM 217(S), AXT 301 or AXS 315S unit valve actuators
- Standard version flatsealing
- Adjustable Kvs value
- When the spindle is pushed in, the valve is closed
- Closing procedure against the pressure
- Valve with male thread as per DIN EN ISO 228-1, class B
- Valve body made of cast brass
- Stainless-steel spindle
- Plug with EPDM soft seal
- Stuffing box with O-ring seal
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	PN 16
Operating pressure	Max. 16 bar (up to 120 °C)
Operating temperature	2...120 °C
Valve characteristic	Almost linear
Leakage rate	≤ 0.0001% of K <sub>vs</sub> value

#### Ambient conditions

Operating temperature at valve	Max. 100 °C in combination with AXM 217(S), AXT 301 or AXS 315S
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#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534, page 3
PED 2014/68/EU	Fluid group II, No CE label (article 4.3)

### Overview of types

Type	Nominal diameter (DN)	K <sub>vs</sub> range	Valve stroke (mm)	Connection	Weight (kg)
VUT010F200	10	0.2...1.6 m <sup>3</sup> /h	3	G½ B	0.18
VUT010F210	10	0.2...1.0 m <sup>3</sup> /h	3	G½ B	0.18
VUT010F220	10	0.2...0.63 m <sup>3</sup> /h	3	G½ B	0.18
VUT015F200	15	1.0...3.5 m <sup>3</sup> /h	4	G¾ B	0.28
VUT015F210	15	0.3...2.5 m <sup>3</sup> /h	3	G¾ B	0.28
VUT020F200	20	4.5 m <sup>3</sup> /h	4	G1 B	0.33

### Accessories

Type	Description
0378133010	1 threaded sleeve, R¾, flat-sealing, with cap nut and flat seal, G½ - R¾
0378133015	1 threaded sleeve, R½, flat-sealing, with cap nut and flat seal, G¾ - R½
0378133020	1 threaded sleeve, R¾, flat-sealing, with cap nut and flat seal, G1 - R¾
0378134010	1 solder nipple, Ø 12, flat-sealing, with cap nut and flat seal, G½
0378134015	1 solder nipple, Ø 15, flat-sealing, with cap nut and flat seal, G¾
0378134020	1 solder nipple, Ø 22, flat-sealing, with cap nut and flat seal, G1



## Combination of VUT with electric actuators

- i** **Warranty:** The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** **Definition of  $\Delta p_s$ :** Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve.
- i** **Definition of  $\Delta p_{max}$ :** Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Pressure differences with motorised actuators

Actuator	AXM217F200	AXM217F202	AXM217SF402 AXM217SF404
Page	171	171	173
Voltage	230 VAC	24 VAC/DC	24 VAC/DC
Control signal	2-/3-point	2-/3-point	0/2...10 V, 0...5 V, 5...10 V, 0/4...20 mA
Laufzeit	13 s/mm	13 s/mm	8 s/mm
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VUT010F200 VUT010F210 VUT010F220	2.5	2.5	2.5
VUT015F200 VUT015F210	1.8	1.8	1.8
VUT020F200	1.0	1.0	1.0
Cannot be used to close with the pressure			

### Pressure differences with thermal actuators

Actuator	AXT301F100 AXT301F110	AXT301F102 AXT301F112	AXT301F210	AXT301F212	AXT301HF110	AXT301HF112				
Page	164	164	164	164	164	164				
Voltage	230 VAC	24 VAC/DC	230 VAC	24 VAC/DC	230 VAC	24 VAC/DC				
Control signal	2-point	2-point	2-point	2-point	2-point	2-point				
Laufzeit	48 s/mm	48 s/mm	48 s/mm	48 s/mm	52 s/mm	52 s/mm				
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VUT010F200 VUT010F210 VUT010F220	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
VUT015F200 VUT015F210	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
VUT020F200	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Cannot be used to close with the pressure										

### Pressure differences with thermal, continuous actuators

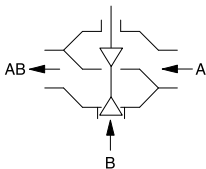
Actuator	AXS315SF102	AXS315SF202	
Page	167	167	
Voltage	24 VAC/DC	24 VAC/DC	
Control signal	0...10 V	0...10 V	
Laufzeit	30 s/mm	30 s/mm	
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
VUT010F200 VUT010F210 VUT010F220	2.5	2.5	2.5
VUT015F200 VUT015F210	1.8	1.8	1.8
VUT020F200	1.0	1.0	1.0
Cannot be used to close with the pressure			



BUT015F210



BUT015F400



## BUT: 3-way unit valve, PN 16 (el.)

### Features

- Regulation of fan coil units, air secondary-treatment units, heating zones and two-pipe systems with heat exchanger in combination with AXM 217(S), AXT 301 or AXS 315S unit valve actuators
- Standard version flatsealing
- Special model for fan coil units with cast-on by-pass T-piece
- Control passage closed when spindle is pushed in
- Used as a control valve
- Valve with male thread as per DIN EN ISO 228-1, class B
- Valve body in cast brass
- Stainless-steel spindle
- Plug with soft seal made of EPDM for control passage and mixing passage
- Stuffing box with O-ring seal
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	PN 16
Operating pressure	Max. 16 bar (up to 120 °C)
Operating temperature	2...120 °C
Control passage valve characteristic	Almost linear
Mixing passage valve characteristic	Linear (not reduced)
Leakage rate of control passage A-AB	0.0001% of $K_{vs}$
Leakage rate of mixing passage B-AB	Approx. 0.1% of $K_{vs}$

#### Ambient conditions

Operating temperature at valve	Max. 100 °C in combination with AXM 217(S), AXT 301 or AXS 315S
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#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	VDI/VDE 2173
PED 2014/68/EU	Fluid group II, No CE label (article 4.3)

### Overview of types

**i** The BUT control valve must not be used as a through valve or diverting valve; mixing passage is not reduced.

Type	Nominal diameter (DN)	Valve stroke (mm)	$K_{vs}$ value	Connection	Weight (kg)
BUT010F200	10	3	1 m <sup>3</sup> /h	G½ B	0.3
BUT010F400	10	3	1.6 m <sup>3</sup> /h	G½ B	0.38
BUT010F410	10	3	1 m <sup>3</sup> /h	G½ B	0.38
BUT010F420	10	3	0.63 m <sup>3</sup> /h	G½ B	0.38
BUT015F210	15	3	2.5 m <sup>3</sup> /h	G¾ B	0.33
BUT015F410	15	3	2.5 m <sup>3</sup> /h	G¾ B	0.42
BUT015F400	15	4	3.5 m <sup>3</sup> /h	G¾ B	0.42
BUT020F200	20	4	4.5 m <sup>3</sup> /h	G1 B	0.36
BUT020F400	20	4	4.5 m <sup>3</sup> /h	G1 B	0.5



ValveDim app



 BUTO\*\*F4\*\*\*: Version with bypass T-piece

## Accessories

Type	Description
0378133010	1 threaded sleeve, R $\frac{3}{8}$ , flat-sealing, with cap nut and flat seal, G $\frac{1}{2}$ - R $\frac{3}{8}$
0378133015	1 threaded sleeve, R $\frac{1}{2}$ , flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$ - R $\frac{1}{2}$
0378133020	1 threaded sleeve, R $\frac{3}{4}$ , flat-sealing, with cap nut and flat seal, G1 - R $\frac{3}{4}$
0378134010	1 solder nipple, $\varnothing$ 12, flat-sealing, with cap nut and flat seal, G $\frac{1}{2}$
0378134015	1 solder nipple, $\varnothing$ 15, flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$
0378134020	1 solder nipple, $\varnothing$ 22, flat-sealing, with cap nut and flat seal, G1
0378145015	1 clamping-ring screw fitting for pipe $\varnothing$ 15 mm, DN 15, flat-sealing, G $\frac{3}{4}$
0378145020	1 clamping-ring screw fitting for pipe $\varnothing$ 22 mm, DN 20, flat-sealing, G1

## Combination of BUT with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve. Data for a static pressure of 6 bar.
- i** *Definition for close/off pressure:* Max. admissible differential pressure when closing the valve. Calculation, see below.

## Pressure differences with motorised actuators

Actuator	AXM217F200	AXM217F202	AXM217SF402 AXM217SF404
Page	171	171	173
Voltage	230 VAC	24 VAC/DC	24 VAC/DC
Control signal	2-/3-point	2-/3-point	0/2...10 V, 0...5 V, 5...10 V, 0/4...20 mA
Laufzeit	13 s/mm	13 s/mm	8 s/mm
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BUT010F200 BUT010F400 BUT010F410 BUT010F420	1.7	1.7	1.7
BUT015F210 BUT015F410	1.4	1.4	1.4
BUT015F400	1.2	1.2	1.2
BUT020F200 BUT020F400	1.0	1.0	1.0
Cannot be used as distribution valve			

☛ Close/off pressure =  $\Delta p_{max} + 0.1 \text{ bar}$

#### Pressure differences with thermal actuators

Actuator	AXT301F100 AXT301F110		AXT301F102 AXT301F112		AXT301F210	AXT301F212	AXT301HF110		AXT301HF112	
Page	164		164		164	164	164		164	
Voltage	230 VAC		24 VAC/DC		230 VAC	24 VAC/DC	230 VAC		24 VAC/DC	
Control signal	2-point		2-point		2-point	2-point	2-point		2-point	
Laufzeit	33 s/mm		33 s/mm		33 s/mm	33 s/mm	40 s/mm		40 s/mm	
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BUT010F200 BUT010F400 BUT010F410 BUT010F420	1.5	1.8	1.5	1.8	1.5	1.5	1.5	1.8	1.5	1.8
BUT015F210 BUT015F410	1.2	1.5	1.2	1.5	1.2	1.2	1.2	1.5	1.2	1.5
BUT015F400	1.0	1.3	1.0	1.3	1.0	1.0	1.0	1.3	1.0	1.3
BUT020F200 BUT020F400	0.9	1.1	0.9	1.1	0.9	0.9	0.9	1.1	0.9	1.1

Cannot be used as distribution valve

☛ Close/off pressure =  $\Delta p_{max} + 0.3 \text{ bar}$

#### Pressure differences with thermal, continuous actuators

Actuator	AXS315SF102		AXS315SF202
Page	167		167
Voltage	24 VAC/DC		24 VAC/DC
Control signal	0...10 V		0...10 V
Laufzeit	30 s/mm		30 s/mm
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
BUT010F200 BUT010F400 BUT010F410 BUT010F420	1.7	1.8	1.7
BUT015F210 BUT015F410	1.4	1.5	1.4
BUT015F400	1.2	1.3	1.2
BUT020F200 BUT020F400	1.0	1.1	1.0

Cannot be used as distribution valve

☛ Close/off pressure =  $\Delta p_{max} + 0.1 \text{ bar}$



## BXL: 3-way unit valve, PN 16

### Features

- Ideally suited as control valve for unit valve actuators AXM 217(S), AXT 301 and AXS 315S
- Valve with male thread as per DIN EN ISO 228-1, class A
- Control passage A-AB open when the spindle is moved in
- Used as a control valve
- Valve body made of gunmetal
- Plug with EPDM soft seal
- Stainless-steel spindle
- Stuffing box with double O-ring seal
- Version with cap nut and flat seal

### Technical data

#### Parameters

Nominal pressure	PN 16
Operating pressure	Max. 16 bar at 130 °C
Operating temperature	2...130 °C
Control passage valve characteristic	Linear
Mixing passage valve characteristic	Complementary, reduced
Valve stroke	2.9 mm
Control passage leakage rate	Approx. 0.05% of $K_{vs}$ value
Mixing passage leakage rate	Approx. 0.2% of $K_{vs}$ value

#### Ambient conditions

Operating temperature at valve	Max. 100 °C in combination with AXM 217(S), AXT 301 or AXS 315S
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#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	VDI/VDE 2173
PED 2014/68/EU	Fluid group II, No CE label (article 4.3)

### Overview of types

**i** The BXL 3-way valve must not be used as a 2-way valve

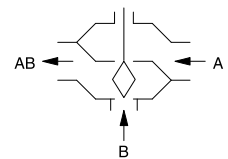
Type	Nominal diameter	$K_{vs}$ value	Weight
BXL025F200	DN 25	6.5 m <sup>3</sup> /h	1200 g
BXL040F200	DN 40	9.5 m <sup>3</sup> /h	2350 g

### Accessories

Type	Description
0361824025	3 threaded sleeves, R 1", flat-sealing
0361824040	3 threaded sleeves, R 5/4", flat-sealing
0361825028	3 solder nipple, Ø 28; flat-sealing, DN 25
0361825035	3 solder nipple, Ø 35; flat-sealing, DN 40
0361825042	3 solder nipple, Ø 42; flat-sealing, DN 40



BXL025F200



ValveDim app



### Combination of BXL with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve. Data for a static pressure of 6 bar.

#### Pressure differences with motorised actuators

Actuator	AXM217F200	AXM217F202	AXM217SF402 AXM217SF404
Page	171	171	173
Voltage	230 VAC	24 VAC/DC	24 VAC/DC
Control signal	2-/3-point	2-/3-point	0/2...10 V, 0...5 V, 5...10 V, 0/4...20 mA
Running time	13 s/mm	13 s/mm	8 s/mm
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BXL025F200	0.5	0.5	0.5
BXL040F200	0.2	0.2	0.2
Cannot be used as distribution valve			

#### Pressure differences with thermal actuators

Actuator	AXT301F100 AXT301F110	AXT301F102 AXT301F112	AXT301HF110	AXT301HF112
Page	164	164	164	164
Voltage	230 VAC	24 VAC/DC	230 VAC	24 VAC/DC
Control signal	2-point	2-point	2-point	2-point
Running time	48 s/mm	48 s/mm	52 s/mm	52 s/mm
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BXL025F200	0.5	0.5	0.5	0.5
BXL040F200	0.2	0.2	0.2	0.2
Cannot be used as distribution valve				

#### Pressure differences with thermal, continuous actuators

Actuator	AXS315SF102 AXS315SF202
Page	167
Voltage	24 VAC/DC
Control signal	0...10 V
Running time	30 s/mm
As control valve	$\Delta p_{max}$ [bar]
BXL025F200	0.5
BXL040F200	0.2
Cannot be used as distribution valve	

# Actuators for unit valves

SAUTER actuators for unit valves provide reliable and accurate control. Pulse-pause activation (with pulse widths of a few seconds) or continuous activation guarantees accurate control characteristic.

## Overview of actuators for unit valves



Type designation	AXS315SF102	AXS315SF202	AXT301F***	AXT301HF11*	AXT311F11*
<b>Technical data</b>					
Max. nominal stroke (mm)	6.5	6.5	5	4	6.5
Max. closing force (N)	125	125	100	100	125
Direction of closure	NC	NO	NC/NO	NC	NC
Running time	30 s/mm	30 s/mm	4.0 min.	3.5 min.	4.5 min.
Power supply (V)	24	24	24/230	24/230	24/230
<b>Method of operation</b>					
Stroke indicator	•	•	•	•	•
Thermal	•	•	•	•	•
Motor	–	–	–	–	–
<b>Control</b>					
2-point	–	–	•	•	•
3-point	–	–	–	–	–
Positioner (0...10 V)	•	•	–	–	–
Combination options with valve	VUL, BUL, VDL, VXL, VUT, BUT, BXL		VUL, BUL, VDL, VXL, VUT, BUT, BXL		
Further information	Page 166	Page 166	Page 163	Page 163	Page 163



Type designation	AXF 217S	AXM 217	AXM 217S
<b>Technical data</b>			
Max. nominal stroke (mm)	6	6.3	5.5
Max. pushing force (N)	160	120	120
Direction of closure	–	–	–
Running time	8 s/mm	13 s/mm	8 s/mm
Power supply (V)	24	24/230	24
<b>Method of operation</b>			
Stroke indicator	–	–	–
Status indicator	•	–	•
Thermal	–	–	–
Motor	•	•	•
Reset function	•	–	–
<b>Control</b>			
2-point	–	•	–
3-point	–	•	–
Positioner	•	–	•
Combination options with valve	VUL, BUL, VDL, VXL, VUT, BUT, BXL	VUL, BUL, VDL, VXL, VUT, BUT, BXL	VUL, BUL, VDL, VXL, VUT, BUT, BXL
Further information	Page 169	Page 171	Page 172

## AXT 301, 311: Thermal actuator for unit valves with stroke indicator

### Features

- Actuation of unit valves and valves in surface heating and cooling systems as well as fan coils
- Low-force fitting on the valve using adapter ring
- NC "normally closed" and NO "normally open" versions
- NC version with first-open function
- Adaptation to valve using plastic adapter M30 × 1.5 or M28 × 1.5
- Max. closing force 125 N
- With 230 V or 24 V thermal expansion element
- Large visible and tactile position indicator
- Low-noise and maintenance-free
- Contemporary design
- High functional quality and service life
- Version with integrated auxiliary contact
- Standard version with 1-metre cable permanently connected
- Version with 2 m or 5 m plug-in cable
- Can be mounted in any position, even suspended under the valve

### Technical data

#### Power supply

	Power supply 230 VAC	±10% 50...60 Hz
	Power supply 24 VAC/DC	+20%...-10%
	Power consumption during operation <sup>1)</sup>	Approx. 1 W
	Start-up current 230 VAC	< 550 mA after max. 100 ms
	Start-up current 24 VAC/DC	< 300 mA after max. 2 min.
AXT301HF110/112	Power for auxiliary contacts 230 V	5(1) A, 50/60 Hz
	Power for auxiliary contacts 24 V	3(1) A, 50/60 Hz
	Changeover point of auxiliary contact	For approx. 2 mm stroke

#### Ambient conditions

Ambient temperature	0...60 °C
Storage and transport temperature	-25...60 °C
Operating temperature at valve	Max. 100 °C
Air humidity	< 85% rh, no condensation

#### Construction

Housing	White (RAL 9003), surface structured according to VDI 3400 Ref. 27
Housing material	Polyamide
Power cable <sup>2)</sup>	PVC hose line (H03V2V2-F), Ø 0.75 mm <sup>2</sup> , fixed mounting, light grey (RAL 7035)
Weight	0.1 kg (with 1 m power cable)

#### Standards, directives

Type of protection	IP54
Protection class 230 V	II (EN 60730-1)
Protection class 24 V	III (EN 60730-1)

<sup>1)</sup> Power consumption after expansion element has reached steady temperature state

<sup>2)</sup> AXT301F100 and F102 without pre-assembled cable



AXT301F\*\*\*



AXT301HF11\*



AXT311F11\*



ValveDim app



CE/UKCA conformity <sup>3)</sup>	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-14
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-14
	EMC-D 2014/30/EU (CE)	EN 60730-1/-2/-14 (mode of operation 1, residential premises)
	EMC-2016 (UKCA)	EN 60730-1/-2/-14 (mode of operation 1, residential premises)
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Voltage	Stroke	Closing force	Running time	NC/NO	Cable length	Function
AXT301F110	230 VAC	5.0 mm	100 N	4.0 min	NC	1 m	-
AXT301F112	24 VAC/DC	5.0 mm	100 N	4.0 min	NC	1 m	-
AXT301F210	230 VAC	5.0 mm	100 N	4.0 min	NO	1 m	-
AXT301F212	24 VAC/DC	5.0 mm	100 N	4.0 min	NO	1 m	-
AXT301F100	230 VAC	5.0 mm	100 N	4.0 min	NC	Without cable	-
AXT301F102	24 VAC/DC	5.0 mm	100 N	4.0 min	NC	Without cable	-
AXT301HF110	230 VAC	4.0 mm	100 N	3.5 min	NC	1 m	Auxiliary contacts
AXT301HF112	24 VAC/DC	4.0 mm	100 N	3.5 min	NC	1 m	Auxiliary contacts
AXT311F110	230 VAC	6.5 mm	125 N	4.5 min	NC	1 m	-
AXT311F112	24 VAC/DC	6.5 mm	125 N	4.5 min	NC	1 m	-

⚡ AXT301F100/102: Connection cable available as optional accessory

⚡ AXT301F\*1\*: Including adapter ring 0550389K008 M30 × 1.5 for closing dimension 10.5 mm, pack of one

⚡ AXT311F11\*: Including adapter ring 0550389K008 M30 × 1.5 for closing dimension 8.5 mm in combination with Frese or Siemens PICV valves

### Accessories

**i** *Valve adapters:* The names of the manufacturers are provided for information purposes. Manufacturers may change the closing dimensions without prior notice.

Type	Delivery quantity	Description	Closing dimension
0550389K001	Set of 5	VA 10 adapter, plastic, light grey, M30 × 1.5 Suitable for: Dumser, Beulco (from 2005), Purmo, Strawa, Oventrop (also Cocon, Cocon 4, Hycoccon), Oventrop stainless steel distributor, Vescal (Metaplast), Cronatherm, eht Siegmund, Gampper, KaMo (H) before Sept. 2005, Aquatherm (brass distributor), Valvex brass distributor, Viega stainless steel distributor (Fonterra & pro Radiant), Thermotech, KaMo INOX distributor, Bianchi valves (series 401T & 403T) and brass distributor (series 332T), Unipipe (ECO distributor), CronaTech, Fränkische, Zehnder, ATS stainless steel distributor, Frese Optima (2.5 mm), Hesag/Herb (Profi-Line distributor), Luxor (CD distributor), TECE stainless steel (Strawa), Watts brass distributor (HKV-T), Tiemme valves, Watts (Vogel & Noot, Cosmo Objektline), Acome (Strawa), Multibeton HKV (Oventrop)	11 mm
0550389K101	Set of 100	Adapter like 0550389K001	11 mm
0550389K002	Set of 5	VA 16 adapter, plastic, red, M28 × 1.5 Suitable for: Polytherm (H), Buderus, Thermoval, KAN-Therm (brass distributor)	8.25 mm
0550389K102	Set of 100	Adapter like 0550389K002	8.25 mm
0550389K003	Set of 5	VA 17 adapter, plastic, dusty grey, M28 × 1.5 Suitable for: MMA (EDVH 25, FVXR 15, VXR 20), ICMA (BAS), industry technology Italy (DB VZ2)	11.5 mm
0550389K103	Set of 100	Adapter like 0550389K003	11.5 mm

<sup>3)</sup> Explanation of abbreviations in the "Additional technical information" section of this product data sheet and in the appendix to SAUTER product catalogues

Type	Delivery quantity	Description	Closing dimension
0550389K004	Set of 5	VA 26 adapter, plastic, dusty grey, M30 × 1.5 Suitable for: Giacomini	4 mm
0550389K104	Set of 100	Adapter like 0550389K004	4 mm
0550389K005	Set of 5	VA 50 adapter, plastic, dark grey, M30 × 1.5 Suitable for: Honeywell & Braukmann, Broen (type: Ballorex Dynamic), Böhnisch/SBK (before 1998), Cazzaniga, Reich, MNG (before 1998), Frese, Schütz, Seppelfricke, Cufix, Ka-Mo (from Sept. 2005), FAR (from 2007), Pantherm, Unicor, emcal (stainless steel from March 2013), Comap HKV module, black (H)	10 mm
0550389K105	Set of 100	Adapter like 0550389K005	10 mm
0550389K006	Set of 5	VA 64 adapter, plastic, pure white Suitable for: Pettinaroli	17.8 mm
0550389K106	Set of 100	Adapter like 0550389K006	17.8 mm
0550389K007	Set of 5	VA 78 adapter, plastic, pure white Suitable for: Danfoss RA, Oventrop type: V3D, GD & GDF, Jaga	28.8 mm
0550389K107	Set of 100	Adapter like 0550389K007	28.8 mm
0550389K008	Set of 5	VA 80 adapter, plastic, pure white, M30 × 1.5 Suitable for: Heimeier, Herb, Onda, IVAR, Thermoval, Schlösser (from 1993), Kermi, Cazzaniga, Oventrop, Multi-block (from 1997), Frank (from 2003), Athe-Therm (brass up to Feb. 2005), Athe-Therm (stainless steel), BHS distributor, Jupiter, Böhnisch/SBK (from 1998), Simplex, RBM, Emmeti, Cosmo, Watts, Roth, Delphis-Therm, GC distributor, Cuprotherm, Caleffi distributor series 670 (plastic), Wieland, Caleffi, SKV distributor, Aquatechnik Italy (Multirapid, before 2007, from 2009), Brugman, TKM, Bianchi, Jaga, Gomacal, Nereus angle valve DN 10, Strasshofer, Taco (Vogel & Noot, Cosmo stainless steel and CMV module distributor), Caleffi (with thread ring on manufacturer side), Watts, Vogel & Noot (Cosmo brass distributor), RDZ (brass distributor), VIR (series 9520), Herz regulating valve and distributor	10.5 mm
0550389K108	Set of 100	Adapter like 0550389K008	10.5 mm
0550389K009	Set of 5	VA 90 adapter, plastic, crimson, M30 × 1.5 Suitable for: Chemidro, TECE (plastic distributor), KWH Pipe, Prandelli (brass HKV), Athe-Therm (brass from Feb. 2005), Roth DE (H) (type: Universal HK2), Uponor stainless steel distributor, Reliance stainless steel, SAS brass distributor, Luxor, Tiemme brass distributor (series: 'Floor'), Honeywell VSMF, Afriso pro Calida EF1 (plastic)	11.5 mm
0550389K109	Set of 100	Adapter like 0550389K009	11.5 mm
0550389K010	Set of 5	VA 41 adapter, plastic, dark green, M30 × 1.5 Suitable for: Danfoss AB-QM (DN 10–DN 20) (4 mm actuator), Danfoss AB-QM (DN 25–DN 32) (5 mm actuator), RDZ (plastic distributor), Vescal (Cazzaniga), Frese Optima Compact and EVA (from 2016) + 5 mm actuator	9.5 mm
0550389K110	Set of 100	Adapter like 0550389K010	9,5 mm
0550600202	1x 2 metres	PVC flat cable H03V2V2H2-F, 2-core, 0.75 mm <sup>2</sup>	-
0550600212	1x 2 metres	Thermoplastic cable H03Z1Z1-F, 2-core, 0.75 mm <sup>2</sup> , halogen-free	-
0550600502	1x 5 metres	PVC flat cable H03V2V2H2-F, 2-core, 0.75 mm <sup>2</sup>	-
0550600512	1x 5 metres	Thermoplastic cable H03Z1Z1-F, 2-core, 0.75 mm <sup>2</sup> , halogen-free	-

☛ The cables for the AXT301F100 and AXT301F102 actuators must be ordered separately and can be fitted as required on site. It is not possible to install the cables at the factory

☛ Special covers to prevent theft or vandalism, for example, are available on request

## AXS 315S: Continuous thermal actuator for unit valves with stroke indicator



AXS315SF\*02



ValveDim app

### Features

- Actuation of unit valves and valves in surface heating and cooling systems as well as fan coils
- First-open function for low-force fitting on the valve using adapter ring
- NC “normally closed” and NO “normally open” versions
- NC version with first-open function
- Adaptation to valve using plastic adapter M30 × 1.5 or M28 × 1.5
- Max. closing force 125 N
- With 24 V thermal expansion element
- Large visible and tactile position indicator
- Low-noise and maintenance-free
- Contemporary design
- High functional quality and serviceable life
- Version with 1m, 2m or 5m plug-in cable
- PVC or halogen-free cable, with or without position feedback signal, available as an accessory
- Can be mounted in any position, even suspended under the valve

### Technical data

#### Power supply

Power supply 24 VAC	-10%, +20%, 50...60 Hz
Power supply 24 VDC	-20%...+20%
Power consumption during operation <sup>1)</sup>	1.2 W
Start-up current	< 320 mA after max. 2 minutes

#### Parameters

Stroke <sup>2)</sup>	6.5 mm
Closing force	125 N +5%
Running time <sup>3)</sup>	30 s/mm
Control signal	0...10 V
Control signal input resistance	100 kΩ
Position feedback signal	0...10 V (0.1 V resolution)
Position feedback signal output impedance	10 kΩ
Position feedback signal output current	0.1 mA (1 mA if shorted)
Output load impedance	100 kΩ...1000 kΩ

#### Ambient conditions

Ambient temperature	0...50 °C
Storage and transport temperature	-25...60 °C
Operating temperature at valve	Max. 100 °C
Air humidity	< 85% rh, no condensation

#### Construction

Housing	White (RAL 9003), surface structured according to VDI 3400 Ref. 27
Housing material	Polyamide
Power cable <sup>4)</sup>	Ø 0.22 mm <sup>2</sup> , 3- or 4-core, signal white (RAL 9003)
Weight	0.15 kg (without power cable)

<sup>1)</sup> Power consumption after expansion element has reached steady temperature state

<sup>2)</sup> Stroke, incl. 0.5 mm overstroke range; see “Initialisation”

<sup>3)</sup> Running time, see “Runtime behaviour”

<sup>4)</sup> Order the power cable separately








**Standards, directives**

	Type of protection	IP54
CE/UKCA conformity <sup>51</sup>	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-14
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-14
	EMC-D 2014/30/EU (CE)	EN 60730-1/-2/-14 (mode of operation 1, residential premises)
	EMC-2016 (UKCA)	EN 60730-1/-2/-14 (mode of operation 1, residential premises)
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

**Overview of types**

Type	Features
AXS315SF102	Actuator for unit valves with first-open function, normally closed (NC)
AXS315SF202	Actuator for unit valves, normally open (NO)

-  Order the power cable 0550600\*\*\* separately, see accessories
-  Includes adapter ring 0550389K010 suitable for SAUTER VUL, VDL, VUT, BUT and BXL valves
-  Adapter ring 0550389K008 suitable for SAUTER BUL valve must be ordered separately

**Accessories**

**i** The names of the manufacturers in the following list are provided for information purposes. Manufacturers may change the closing dimensions without prior notice.

Type	Delivery quantity	Description	Closing dimension
0550389K001	Set of 5	VA 10 adapter, plastic, light grey, M30 × 1.5 Suitable for: Dumser, Beulco (from 2005), Purmo, Strawa, Oventrop (also Cocon, Cocon 4, Hycoccon,), Oventrop stainless steel distributor, Vescal (Metaplast), Cronatherm, eht Siegmund, Gampper, KaMo (H) before Sept. 2005, Aquatherm (brass distributor), Valvex brass distributor, Viega stainless steel distributor (Fonterra & pro Radiant), Thermotech, KaMo INOX distributor, Bianchi valves (series 401T & 403T) and brass distributor (series 332T), Unipipe (ECO distributor), CronaTech, Fränkische, Zehnder, ATS stainless steel distributor, Frese Optima (2.5 mm), Hesag/Herb (Profi-Line distributor), Luxor (CD distributor), TECE stainless steel (Strawa), Watts brass distributor (HKV-T), Tiemme valves, Watts (Vogel & Noot, Cosmo Objektline), Acome (Strawa), Multibeton HKV (Oventrop)	11 mm
0550389K101	Set of 100	Adapter like 0550389K001	11 mm
0550389K002	Set of 5	VA 16 adapter, plastic, red, M28 × 1.5 Suitable for: Polytherm (H), Buderus, Thermoval, KAN-Therm (brass distributor)	8.25 mm
0550389K102	Set of 100	Adapter like 0550389K002	8.25 mm
0550389K003	Set of 5	VA 17 adapter, plastic, dusty grey, M28 × 1.5 Suitable for: MMA (EDVH 25, FVXR 15, VXR 20), ICMA (BAS), industry technology Italy (DB VZ2)	11.5 mm
0550389K103	Set of 100	Adapter like 0550389K003	11.5 mm
0550389K004	Set of 5	VA 26 adapter, plastic, dusty grey, M30 × 1.5 Suitable for: Giacomini	4 mm
0550389K104	Set of 100	Adapter like 0550389K004	4 mm

<sup>51</sup> Explanation of abbreviations in the "Additional technical information" section of this product data sheet and in the appendix to SAUTER product catalogues

Type	Delivery quantity	Description	Closing dimension
0550389K005	Set of 5	VA 50 adapter, plastic, dark grey, M30 × 1.5 Suitable for: Honeywell & Braukmann, Broen (type: Ballorex Dynamic), Böhnisch/SBK (before 1998), Cazzaniga, Reich, MNG (before 1998), Frese, Schütz, Seppelfricke, Cufix, Ka-Mo (from Sept. 2005), FAR (from 2007), Pantherm, Unicor, emcal (stainless steel from March 2013), Comap HKV module, black (H)	10 mm
0550389K105	Set of 100	Adapter like 0550389K005	10 mm
0550389K006	Set of 5	VA 64 adapter, plastic, pure white Suitable for: Pettinaroli	17.8 mm
0550389K106	Set of 100	Adapter like 0550389K006	17.8 mm
0550389K007	Set of 5	VA 78 adapter, plastic, pure white Suitable for: Danfoss RA, Oventrop type: V3D, GD & GDF, Jaga	28.8 mm
0550389K107	Set of 100	Adapter like 0550389K007	28.8 mm
0550389K008	Set of 5	VA 80 adapter, plastic, pure white, M30 × 1.5 Suitable for: Heimeier, Herb, Onda, IVAR, Thermoval, Schlösser (from 1993), Kermi, Cazzaniga, Oventrop, Multi-block (from 1997), Frank (from 2003), Athe-Therm (brass up to Feb. 2005), Athe-Therm (stainless steel), BHS distributor, Jupiter, Böhnisch/SBK (from 1998), Simplex, RBM, Emmeti, Cosmo, Watts, Roth, Delphis-Therm, GC distributor, Cuprotherm, Caleffi distributor series 670 (plastic), Wieland, Caleffi, SKV distributor, Aquatechnik Italy (Multirapid, before 2007, from 2009), Brugman, TKM, Bianchi, Jaga, Gomacal, Nereus angle valve DN 10, Strasshofer, Taco (Vogel & Noot, Cosmo stainless steel and CMV module distributor), Caleffi (with thread ring on manufacturer side), Watts, Vogel & Noot (Cosmo brass distributor), RDZ (brass distributor), VIR (series 9520), Herz regulating valve and distributor	10.5 mm
0550389K108	Set of 100	Adapter like 0550389K008	10.5 mm
0550389K009	Set of 5	VA 90 adapter, plastic, crimson, M30 × 1.5 Suitable for: Chemidro, TECE (plastic distributor), KWH Pipe, Prandelli (brass HKV), Athe-Therm (brass from Feb. 2005), Roth DE (H) (type: Universal HK2), Uponor stainless steel distributor, Reliance stainless steel, SAS brass distributor, Luxor, Tiemme brass distributor (series: 'Floor'), Honeywell VSMF, Afriso pro Calida EF1 (plastic)	11.5 mm
0550389K109	Set of 100	Adapter like 0550389K009	11.5 mm
0550389K010	Set of 5	VA 41 adapter, plastic, dark green, M30 × 1.5 Suitable for: Danfoss AB-QM (DN 10–DN 20) (4 mm actuator), Danfoss AB-QM (DN 25–DN 32) (5 mm actuator), RDZ (plastic distributor), Vescal (Cazzaniga), Frese Optima Compact and EVA (from 2016) + 5 mm actuator	9.5 mm
0550389K110	Set of 100	Adapter like 0550389K010	9.5 mm
0550600103	1x 1 metre	Power cable, 0...10 V, 3-core, 0.22 mm <sup>2</sup> , type LiYY, PVC	–
0550600203	1x 2 metres	Power cable, 0...10 V, 3-core, 0.22 mm <sup>2</sup> , type LiYY, PVC	–
0550600503	1x 5 metres	Power cable, 0...10 V, 3-core, 0.22 mm <sup>2</sup> , type LiYY, PVC	–
0550600113	1x 1 metre	Power cable, 0...10 V, 3-core, 0.22 mm <sup>2</sup> , type LiZ1Z1, halogen-free	–
0550600213	1x 2 metres	Power cable, 0...10 V, 3-core, 0.22 mm <sup>2</sup> , type LiZ1Z1, halogen-free	–
0550600513	1x 5 metres	Power cable, 0...10 V, 3-core, 0.22 mm <sup>2</sup> , type LiZ1Z1, halogen-free	–
0550600114	1x 1 metre	Power cable, 0...10 V, 4-core, 0.22 mm <sup>2</sup> , type LiZ1Z1, halogen-free, position feedback	–
0550600214	1x 2 metres	Power cable, 0...10 V, 4-core, 0.22 mm <sup>2</sup> , type LiZ1Z1, halogen-free, position feedback	–
0550600514	1x 5 metres	Power cable, 0...10 V, 4-core, 0.22 mm <sup>2</sup> , type LiZ1Z1, halogen-free, position feedback	–

 Special covers to prevent theft or vandalism, for example, are available on request

## AXF 217S: Motorised actuator for unit valves with positioner

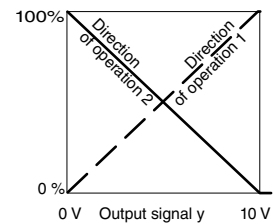
### Features

- Stepping motor with electronic activation and cut-out
- Attached to valve with M30 × 1.5 thread
- Version with direction of operation 1 (direct acting) or 2 (reverse acting), adjustable
- Adjustable valve strokes
- Automatic stroke adjustment
- Electrical reset function
- Maintenance-free gear unit
- Suitable for retrofitting existing installations using the appropriate adapters
- Status and diagnostic indicator via integrated bi-colour LED
- Fitting position vertically upright to horizontal, not suspended



AXF217SF404

AXF217SF405



### Technical data

#### Power supply

Power supply	24 V~ ±15%, 50...60 Hz 24 V= ±15%
Power consumption	5 VA while charging, 2,5 VA during operation, 1 W at standstill

#### Parameters<sup>1)</sup>

Direction of operation	1 or 2 (adjustable)
Nominal stroke	Max. 6 mm Automatic stroke adjustment
Running time	8 s/mm
Closing dimension	H0: 10 mm
Actuating power	160 N
Sound pressure level	< 30 dB (A)
Control signal	0(2)... 10 V; 5... 10 V; 0... 5 V $R_i > 100 \text{ k}\Omega$ ; 0(4)... 20 mA $R_i = 500 \Omega$
Feedback signal	0... 10 V=, ±5%
Charging time	150 s (supercapacitor)

#### Ambient conditions

Ambient temperature	0...50 °C, no condensation
Max. operating temperature at valve	95 °C
Storage and transport temperature	-20...65 °C
Ambient humidity	< 90% rh

#### Construction

Weight	0.2 kg
Housing	Two-piece, light grey (RAL 7035)
Housing material	Plastic
Thread	Nickel-plated brass M30 × 1.5
Power cable	1.50 m long, halogen-free 4 × 0.5 mm <sup>2</sup> , light grey, insertable

#### Standards, directives

Type of protection	IP54 (EN 60529)
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<sup>1)</sup> The direction of operation and the control voltage can be set using accessory 0550360010 (configurator); factory setting "1" (DA). Direction of operation 1: Control signal increasing = actuator moves out (valve VUT, VUL, VXL, VDL, BUL, BUT closes, valve BXL (control passage) opens). Direction of operation 2: Control signal increasing = actuator moves in (valve VUT, VUL, VXL, VDL, BUL, BUT opens, valve BXL (control passage) closes)



	Protection class	III (IEC 60730)
CE conformity according to	EMC Directive 2014/30/EU	60730-1, 60730-2-14

### Overview of types

Type	Features
AXF217SF404	Motorised actuator for unit valves with positioner, automatic stroke adjustment, electrical reset function:Spindle extends (EFSD)
AXF217SF405	Motorised actuator for unit valves with positioner, automatic stroke adjustment, electrical reset function:Spindle retracts (EFSU)

### Accessories

Type	Description
0550360010	Configurator for changing control signal, direction of operation, characteristic, direction of reset function



## AXM 217: Motorised actuator for unit valves

### Features

- Reliable actuation in efficient control systems
- For 2-point or 3-point controllers in conjunction with single-room control systems
- Stepping motor with electronic activation and cut-out
- Attached to valve with M30 × 1.5 thread
- Maintenance-free gear unit
- Suitable for retrofitting existing installations using the appropriate adapters
- Operating status indicated by integrated LED
- Fitting position vertically upright to horizontal, not suspended



AXM217F20



### Technical data

Parameters	
Nominal stroke	6.3 mm
Running time	13 s/mm
Actuating power <sup>1)</sup>	120 N
Sound pressure level	< 30 dB (A)

Ambient conditions	
Max. operating temperature at valve	90 °C
Ambient temperature	0...50 °C
Ambient humidity	< 75% rh

Construction	
Weight	0.15 kg
Housing	Two-piece, light grey RAL 7035
Housing material	Plastic
Thread	Nickel-plated brass M30 × 1.5
Power cable	1.50 m long, 3 × 0,5 mm <sup>2</sup> , light grey, insertable

Standards and directives	
Type of protection	IP43 (EN 60529)
EMC Directive 2014/30/EU	CE as per EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
Low-Voltage Directive 2014/35/EU	CE as per EN 60730-1 and EN 60730-2-14

### Overview of types

Type	Power supply	Power consumption	Protection class
AXM217F200	230 V~, ±10%, 50...60 Hz	6.5 VA, 2 W	II (IEC 60730)
AXM217F202	24 V~, ±15%, (50...60 Hz)	2.5 VA, 1.5 W	III (IEC 60730)

☛ AXM217F202: Voltage 24V= with relay circuit only

### Accessories

Type	Description
0550603001	Cable: 24 V, PVC, pluggable, 3 m long
0550603005	Cable: 24 V, halogen-free, pluggable, 3 m long

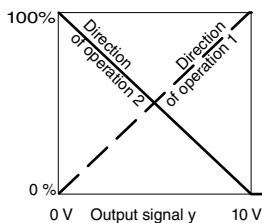
<sup>1)</sup> Actuating power min. 100 N, max. 150 N





AXM217SF402

AXM217SF404



## AXM 217S: Motorised actuator for unit valves with positioner

### Features

- Stepping motor with electronic activation and cut-out
- Attached to valve with M30 × 1.5 thread
- Version with direction of operation 1 (direct acting) or 2 (reverse acting), adjustable
- Adjustable valve strokes
- Automatic stroke adjustment (AXM217SF404)
- Maintenance-free gear unit
- Suitable for retrofitting existing installations using the appropriate adapters
- Status and diagnostic indicator via integrated bi-colour LED
- Fitting position vertically upright to horizontal, not suspended

### Technical data

Power supply	
Power supply	24 VAC/DC ±15 %, 50...60 Hz
Power consumption	2.5 VA / 1.5 W

Parameters <sup>1)</sup>	
Direction of operation	1 or 2 (adjustable)
Nominal stroke	3.2 mm, 4.3 mm, 5.5 mm (adjustable) Automatic stroke adjustment (F404)
Running time	8 s/mm
Sound pressure level	< 30 dB (A)
Control signal	0(2)...10 V; 5...10 V; 0...5 V R <sub>i</sub> > 100 kΩ; 0(4)...20 mA R <sub>i</sub> = 500 Ω

Ambient conditions	
Ambient temperature	0...50 °C, no condensation
Max. operating temperature at valve	95 °C
Storage and transport temperature	-20...65 °C
Ambient humidity	< 75% rh

Construction	
Weight	0.15 kg
Housing	Two-piece, light grey (RAL 7035)
Housing material	Plastic
Thread	Nickel-plated brass M30 × 1.5
Power cable	1.50 m long, 3 × 0.5 mm <sup>2</sup> , light grey, pluggable 3.0 m long, halogen-free (F404)

Standards, directives	
Type of protection	IP43 (EN 60529)
Protection class	III (IEC 60730)
CE conformity according to	EMC Directive 2014/30/EU 61000-6-1, 61000-6-2, 61000-6-3 and EN 61000-6-4

<sup>1)</sup> Direction of operation and control signal can be adjusted using DIP switches. Direction of operation 1: Control signal increasing = actuator moves out (valve VUT, VUL, VCL, VDL, BUL closes and valve BXL (control passage) opens). Direction of operation 2: Control signal increasing = actuator moves in (valve VUT, VUL, VCL, VDL, BUL opens and valve BXL (control passage) closes). Factory setting: Direction of operation 2 (RA)



### Overview of types

Type	Features	Actuating power
AXM217SF402	Motorised actuator for unit valves with positioner	120 N
AXM217SF404	Motorised actuator for unit valves with positioner and automatic stroke adjustment	160 N

💡 AXM217SF402: Actuating power min. 100 N, max. 150 N

### Accessories

Type	Description
0550603009	Cable: 24 V, PVC, pluggable, 3 m long
0550603010	Cable: 24 V, PVC, pluggable, 7 m long
0550603011	Cable: 24 V, halogen-free, pluggable, 3 m long
0550603012	Cable: 24 V, halogen-free, pluggable, 7 m long



# Regulating valves

SAUTER regulating valves provide flexible combinations for all requirements. The wide product range at SAUTER comprises threaded valves made of DZR cast brass and flanged valves made of grey cast iron, ductile cast iron or cast steel, ensuring that you will find products that suit your requirements perfectly. These regulating valves can be used for the continuous control of hot and cold water in closed circuits.

## Overview of regulating valves



Type designation	VUN	BUN	V6R	B6R
<b>Application</b>				
Preheater for ventilation & air-conditioning	•	•	•	•
Cooler for ventilation & air-conditioning	•	–	•	–
Steam humidifier for ventilation & air-conditioning	–	–	–	–
Reheater for ventilation & air-conditioning	•	•	•	•
Chilled ceiling, underfloor heating	•	•	–	–
Static heating	•	•	•	•
Cooling tower (open systems)	•	•	•	•
Multi-boiler system	•	–	•	–
Local heating	•	•	•	•
District heating	–	–	–	–
<b>Version</b>				
2-way	•	–	•	–
3-way	–	•	–	•
Female thread	–	–	•	•
Male thread	•	•	–	–
Nominal diameter (DN)	15...50	15...50	15...50	15...50
Nominal pressure	PN 16	PN 16	PN 16	PN 16
Combination options with actuator	AVM 105(S), AVM 115(S), AVF 124 AVF 125S AVM 321(S)	AVM 105(S), AVM 115(S), AVF 124 AVF 125S AVM 321(S)	AVM 234S, AVF 234S AVM 322(S)	AVM 234S, AVF 234S AVM 322(S)
Further information	Page 177	Page 180	Page 183	Page 186





Type designation	VUD	VQD	BUD	BQD
<b>Application</b>				
Preheater for ventilation & air-conditioning	•	•	•	•
Cooler for ventilation & air-conditioning	•	•	–	–
Steam humidifier for ventilation & air-conditioning	–	–	–	–
Reheater for ventilation & air-conditioning	•	•	•	•
Chilled ceiling, underfloor heating	•	•	•	•
Static heating	•	•	•	•
Cooling tower (open systems)	–	–	–	–
Multi-boiler system	•	•	•	•
Local heating	•	•	•	•
District heating	–	–	–	–
<b>Version</b>				
2-way	•	•	–	–
3-way	–	–	•	•
Flange	•	•	•	•
Nominal diameter (DN)	15...50	65...100	15...50	65...100
Nominal pressure	PN 6	PN 6	PN 6	PN 6
Combination options with actuator	AVM 105(S), AVM 115(S), AVM 321(S)	AVM 234S, AVM 322(S), AVF 234S	AVM 105(S), AVM 115(S), AVM 321(S)	AVM 234S, AVM 322(S), AVF 234S
Further information	Page 189	Page 192	Page 194	Page 197



Type designation	VUE	VQE	BUE	BQE
<b>Application</b>				
Preheater for ventilation & air-conditioning	•	•	•	•
Cooler for ventilation & air-conditioning	•	•	–	–
Steam humidifier for ventilation & air-conditioning	–	–	–	–
Reheater for ventilation & air-conditioning	•	•	•	•
Chilled ceiling, underfloor heating	•	•	•	•
Static heating	•	•	•	•
Cooling tower (open systems)	–	–	–	–
Multi-boiler system	•	•	•	•
Local heating	•	•	•	•
District heating	–	–	–	–
<b>Version</b>				
2-way	•	•	–	–
3-way	–	–	•	•
Flange	•	•	•	•
Nominal diameter (DN)	15...50	65...150	15...50	65...150
Nominal pressure	PN 16/10	PN 16	PN 16/10	PN 16
Combination options with actuator	AVM 105, AVM 115, AVM 321(S)	AVM 234S, AVM 322(S), AVF 234S	AVM 105, AVM 115, AVM 321(S)	AVM 234S, AVM 322(S), AVF 234S
Further information	Page 199	Page 203	Page 205	Page 209



Type designation	VUG	BUG	VUP
<b>Application</b>			
Preheater for ventilation & air-conditioning	•	•	•
Cooler for ventilation & air-conditioning	•	–	•
Steam humidifier for ventilation & air-conditioning	•	–	–
Reheater for ventilation & air-conditioning	•	•	•
Chilled ceiling, underfloor heating	–	–	–
Static heating	•	•	•
Cooling tower (open systems)	–	–	–
Multi-boiler system	•	•	•
Local heating	•	•	•
District heating	•	•	•
Steam	•	–	•
<b>Version</b>			
2-way	•	–	•
3-way	–	•	–
Flange	•	•	•
Nominal diameter (DN)	15...150	15...150	40...150
Nominal pressure	PN 25/16	PN 25/16	PN 25
Combination options with actuator	AVM 234S, AVF 234S, AVN 224S, AVM 322(S)	AVM 234S, AVF 234S, AVN 224S, AVM 322(S)	AVM 234S, AVF 234S, AVN 224S, AVM 322(S)
Further information	Page 212	Page 216	Page 220



Type designation	VUS	BUS
<b>Application</b>		
Preheater for ventilation & air-conditioning	•	•
Cooler for ventilation & air-conditioning	•	–
Steam humidifier for ventilation & air-conditioning	•	•
Reheater for ventilation & air-conditioning	•	•
Chilled ceiling, underfloor heating	–	–
Static heating	•	•
Cooling tower (open systems)	–	–
Multi-boiler system	•	•
Local heating	•	•
District heating	•	•
Steam	•	–
<b>Version</b>		
2-way	•	–
3-way	–	•
Flange	•	•
Nominal diameter (DN)	15...100	15...100
Nominal pressure	PN 40	PN 40
Combination options with actuator	AVM 234S, AVF 234S, AVM 322(S)	AVM 234S, AVF 234S, AVM 322(S)
Further information	Page 222	Page 225

## VUN: 2-way valve with male thread, PN 16

### Features

- Regulating valve free of silicone grease with male thread (DIN EN ISO 228-1) for cold or hot water in closed and open circuits
- In combination with valve actuators AVM 105(S), 115(S), 321(S) and AVF 124, 125S as a control unit
- Equal-percentage (F300) / linear (F200) characteristic, can be set with SUT valve actuators (SAUTER Universal Technology)
- The valve is closed when the spindle is moved out
- Closing procedure against the pressure or with the pressure
- Stainless-steel spindle
- Valve body and valve seat in dezincification-resistant (DZR) cast brass
- Plug made of dezincification-resistant cast brass (DZR) with EPDM sealing ring
- Stuffing box with wiper ring made of dezincification-resistant (DZR) cast brass and double O-ring seal made of EPDM

### Technical data

#### Parameters

Nominal pressure	16 bar
Control ratio	> 50:1
Valve characteristic	F200 = linear F3*0 = equal-percentage
Nominal stroke	8 mm
Leakage rate	≤ 0.02% of $K_{vs}$ value

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C
Operating pressure up to 120 °C	16 bar
Operating pressure up to 130 °C	13 bar

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Connection	Weight
VUN015F350	DN 15	0.4 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F340	DN 15	0.63 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F330	DN 15	1 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F320	DN 15	1.6 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F310	DN 15	2.5 m <sup>3</sup> /h	G1" B	0.82 kg
VUN015F300	DN 15	4 m <sup>3</sup> /h	G1" B	0.82 kg
VUN020F300	DN 20	6.3 m <sup>3</sup> /h	G1¼" B	1 kg
VUN025F300	DN 25	10 m <sup>3</sup> /h	G1½" B	1.3 kg
VUN032F300	DN 32	16 m <sup>3</sup> /h	G2" B	1.74 kg
VUN040F300	DN 40	22 m <sup>3</sup> /h	G2¼" B	2.52 kg
VUN050F300	DN 50	28 m <sup>3</sup> /h	G2¾" B	3.44 kg
VUN050F200	DN 50	40 m <sup>3</sup> /h	G2¾" B	3.44 kg

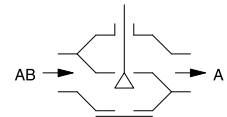
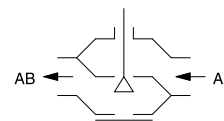
### Accessories

Type	Description
0361951015	Screw fitting for male thread with flat seal DN 15
0361951020	Screw fitting for male thread with flat seal DN 20
0361951025	Screw fitting for male thread with flat seal DN 25
0361951032	Screw fitting for male thread with flat seal DN 32

<sup>1)</sup> Use stuffing box heater at temperatures below 0 °C; use temperature adapter (accessory) at temperatures above 100 °C



VUN032F300



Type	Description
0361951040	Screw fitting for male thread with flat seal DN 40
0361951050	Screw fitting for male thread with flat seal DN 50
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adaptor required when temperature of the medium is 100...130 °C (recommended for temperatures <10 °C)
0372249002	Adaptor required when temperature of the medium is 130...150 °C
0378284100	Stuffing box heater 230V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

### Combination of VUN with electric actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

### Pressure differences

Actuator	AVM105F100	AVM105F120 AVM105F122	AVM105SF132	AVM115F120 AVM115F122	AVM115SF132
Page	230	230	233	231	233
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VUN015F350 VUN015F340 VUN015F330 VUN015F320 VUN015F310 VUN015F300	4.0	4.0	4.0	6.0	6.0
VUN020F300	4.0	4.0	4.0	5.0	5.0
VUN025F300	4.0	4.0	4.0	4.0	4.0
VUN032F300	3.0	3.0	3.0	3.5	3.5
VUN040F300	1.9	1.9	1.9	3.0	3.0
VUN050F300 VUN050F200	1.0	1.0	1.0	2.4	2.4
Cannot be used to close with the pressure					

Actuator	AVM321F110 AVM321F112	AVM321SF132	AVF124F130 AVF124F230	AVF125SF132 AVF125SF232		
Page	239	242	252	255		
Actuating power	1000 N	1000 N	500 N	500 N		
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	3-point	2-/3-pt., 0...10 V, 4...20 mA		
Running time	48/96 s	32/96 s	60/120 s	60/120 s		
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VUN015F350 VUN015F340 VUN015F330 VUN015F320 VUN015F310 VUN015F300	10.0	10.0	6.0	16.0	6.0	16.0
VUN020F300	10.0	10.0	5.0	12.0	5.0	12.0

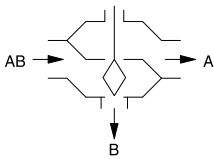
Actuator	AVM321F110 AVM321F112	AVM321SF132	AVF124F130 AVF124F230	AVF125SF132 AVF125SF232		
Page	239	242	252	255		
VUN025F300	10.0	10.0	4.0	8.0	4.0	8.0
VUN032F300	10.0	10.0	3.5	6.0	3.5	6.0
VUN040F300	6.0	6.0	3.0	3.5	3.0	3.5
VUN050F300 VUN050F200	4.0	4.0	2.4	2.4	2.4	2.4
Closes with the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VUN015F350 VUN015F340 VUN015F330 VUN015F320 VUN015F310 VUN015F300	6.0	6.0	4.0	16.0	4.0	16.0
VUN020F300	6.0	6.0	2.8	16.0	2.8	16.0
VUN025F300	5.0	5.0	2.8	8.0	2.8	16.0
VUN032F300	4.0	4.0	2.0	16.0	2.0	16.0
VUN040F300	2.5	2.5	1.5	16.0	1.5	16.0
VUN050F300 VUN050F200	2.0	2.0	0.8	16.0	0.8	16.0

☛ At temperatures above 100 °C, accessories are required

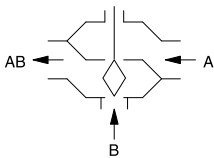




BUN032F300



Distribution valve



Control valve

## BUN: 3-way valve with male thread, PN 16

### Features

- Regulating valve free of silicone grease with male thread (DIN EN ISO 228-1) for cold and hot water in closed and open circuits
- In combination with valve actuators AVM 105(S), 115(S), 321(S) and AVF 124, 125S as a control unit
- Equal-percentage (F300) / linear (F200) characteristic, can be set with SUT valve actuators (SAUTER Universal Technology)
- The valve is closed when the spindle is moved out
- Can be used as a control valve or a distribution valve
- Stainless-steel spindle
- Valve body with valve seat made from dezincification-resistant cast brass (DZR)
- Plug made of dezincification-resistant cast brass (DZR) with EPDM sealing ring
- Stuffing box with wiper ring made from dezincification-resistant cast brass (DZR) and double O-ring seal made from EPDM

### Technical data

Parameters	
Nominal pressure	16 bar
Valve characteristic, control passage	F200 = linear F3*0 = equal percentage
Mixing passage valve characteristic	Linear
Control ratio	> 50:1
Control passage leakage rate	≤ 0.05% of $k_{vs}$ value
Mixing passage leakage rate	≤ 1% of $K_{vs}$ value
Nominal stroke	8 mm

Ambient conditions	
Operating temperature <sup>1)</sup>	- 10...130 °C
Operating pressure up to 120 °C	16 bar
Operating pressure up to 130 °C	13 bar

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Connection	Weight
BUN015F330	DN 15	1 m <sup>3</sup> /h	G1" B	0.82 kg
BUN015F320	DN 15	1.6 m <sup>3</sup> /h	G1" B	0.82 kg
BUN015F310	DN 15	2.5 m <sup>3</sup> /h	G1" B	0.82 kg
BUN015F300	DN 15	4 m <sup>3</sup> /h	G1" B	0.82 kg
BUN020F300	DN 20	6.3 m <sup>3</sup> /h	G1¼" B	1 kg
BUN025F300	DN 25	10 m <sup>3</sup> /h	G1½" B	1.3 kg
BUN032F300	DN 32	16 m <sup>3</sup> /h	G2" B	1.74 kg
BUN040F300	DN 40	22 m <sup>3</sup> /h	G2¼" B	2.52 kg
BUN050F300	DN 50	28 m <sup>3</sup> /h	G2¾" B	3.44 kg
BUN050F200	DN 50	40 m <sup>3</sup> /h	G2¾" B	3.44 kg

### Accessories

Type	Description
0361951015	Screw fitting for male thread with flat seal DN 15
0361951020	Screw fitting for male thread with flat seal DN 20
0361951025	Screw fitting for male thread with flat seal DN 25
0361951032	Screw fitting for male thread with flat seal DN 32

<sup>1)</sup> Use stuffing box heater at temperatures below 0 °C; use temperature adapter (accessory) at temperatures above 100 °C



Type	Description
0361951040	Screw fitting for male thread with flat seal DN 40
0361951050	Screw fitting for male thread with flat seal DN 50
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adaptor required when temperature of the medium is 100...130 °C (recommended for temperatures <10 °C)
0372249002	Adaptor required when temperature of the medium is 130...150 °C
0378284100	Stuffing box heater 230V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

## Combination of BUN with electric actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

### Pressure differences

Actuator	AVM105F100	AVM105F120 AVM105F122	AVM105SF132	AVM115F120 AVM115F122	AVM115SF132
Page	230	230	233	231	233
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BUN015F330	4.0	4.0	4.0	6.0	6.0
BUN015F320					
BUN015F310					
BUN015F300					
BUN020F300	4.0	4.0	4.0	5.0	5.0
BUN025F300	3.0	3.0	3.0	4.0	4.0
BUN032F300	2.0	2.0	2.0	3.7	3.7
BUN040F300	1.2	1.2	1.2	2.7	2.7
BUN050F300	0.8	0.8	0.8	1.8	1.8
BUN050F200					

Cannot be used as distribution valve

Actuator	AVM321F110 AVM321F112	AVM321SF132	AVF124F130 AVF124F230	AVF125SF132 AVF125SF232		
Page	239	242	252	255		
Actuating power	1000 N	1000 N	500 N	500 N		
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	3-point	2-/3-point, 0...10 V, 4...20 mA		
Running time	48/96 s	32/96 s	60/120 s	60/120 s		
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BUN015F330	10.0	10.0	6.0	16.0	6.0	16.0
BUN015F320						
BUN015F310						
BUN015F300						
BUN020F300	10.0	10.0	5.0	9.5	5.0	9.5
BUN025F300	10.0	10.0	4.0	6.5	4.0	6.5
BUN032F300	10.0	10.0	3.7	4.3	3.7	4.3
BUN040F300	6.0	6.0	2.7	2.7	2.7	2.7

Actuator	AVM321F110 AVM321F112	AVM321SF132	AVF124F130 AVF124F230	AVF125SF132 AVF125SF232		
Page	239	242	252	255		
BUN050F300 BUN050F200	4.0	4.0	1.8	1.8	1.8	1.8
As distribution valve	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUN015F330 BUN015F320 BUN015F310 BUN015F300	6.0	6.0	4.0	16.0	4.0	16.0
BUN020F300	6.0	6.0	2.8	16.0	2.8	16.0
BUN025F300	5.0	5.0	2.8	16.0	2.8	16.0
BUN032F300	4.0	4.0	2.0	16.0	2.0	16.0
BUN040F300	2.5	2.5	1.5	16.0	1.5	16.0
BUN050F300 BUN050F200	2.0	2.0	0.8	16.0	0.8	16.0

☛ At temperatures above 100 °C, accessories are required



## V6R: 2-way valve with female thread, PN 16 (el.)

### Features

- Regulating valve free of silicone grease with female thread DIN EN ISO 228-1 G for the control of cold/hot water in closed and open circuits
- In combination with valve actuators AVM 322, AVM 322S, AVM 234S, AVF 234S
- Equal-percentage or linear characteristic, can be set with SUT valve actuators (SAUTER Universal Technology) to linear or equal-percentage
- Control passage A-AB closed when the spindle is moved out
- Closing procedure against the pressure or with the pressure
- Valve body and seat made of gunmetal
- Stainless-steel spindle
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM



V6R15F300



### Technical data

#### Parameters

Control ratio	> 50:1
Leakage rate	≤ 0.05% of $K_{vs}$ value
Valve stroke	14 mm
Nominal pressure	16 bar

#### Ambient conditions

Operating temperature <sup>1)</sup>	-15...130 °C
Operating pressure up to 120 °C	16 bar
Operating pressure up to 130 °C	13 bar

#### Standards, directives

Pressure and temperature data	DIN 2401
Flow parameters	VDI/VDE 2173

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Valve characteristic	Materials for valve plug	Type of connection	Weight
V6R15F350	DN 15	0.4 m <sup>3</sup> /h	Equal-percentage	Stainless steel	G½"	1.2 kg
V6R15F340	DN 15	0.63 m <sup>3</sup> /h	Equal-percentage	Stainless steel	G½"	1.2 kg
V6R15F330	DN 15	1 m <sup>3</sup> /h	Equal-percentage	Stainless steel	G½"	1.2 kg
V6R15F320	DN 15	1.6 m <sup>3</sup> /h	Equal-percentage	Stainless steel	G½"	1.2 kg
V6R15F310	DN 15	2.5 m <sup>3</sup> /h	Equal-percentage	Brass	G½"	1.2 kg
V6R15F300	DN 15	4 m <sup>3</sup> /h	Equal-percentage	Brass	G½"	1.2 kg
V6R15F200	DN 15	4 m <sup>3</sup> /h	Linear	Brass	G½"	1.2 kg
V6R25F310	DN 25	6.3 m <sup>3</sup> /h	Equal-percentage	Brass	G1"	1.6 kg
V6R25F300	DN 25	10 m <sup>3</sup> /h	Equal-percentage	Brass	G1"	1.6 kg
V6R25F210	DN 25	6.3 m <sup>3</sup> /h	Linear	Brass	G1"	1.6 kg
V6R25F200	DN 25	10 m <sup>3</sup> /h	Linear	Brass	G1"	1.6 kg
V6R40F310	DN 40	16 m <sup>3</sup> /h	Equal-percentage	Brass	G1½"	3.4 kg
V6R40F300	DN 40	25 m <sup>3</sup> /h	Equal-percentage	Brass	G1½"	3.4 kg
V6R40F210	DN 40	16 m <sup>3</sup> /h	Linear	Brass	G1½"	3.4 kg
V6R40F200	DN 40	25 m <sup>3</sup> /h	Linear	Brass	G1½"	3.4 kg
V6R50F300	DN 50	35 m <sup>3</sup> /h	Equal-percentage	Brass	G2"	4.6 kg
V6R50F200	DN 50	35 m <sup>3</sup> /h	Linear	Brass	G2"	4.6 kg

<sup>1)</sup> At temperatures below 0 °C, use stuffing box heater (accessory)



**Accessories**

Type	Description
0217268001	Stuffing box heater 15 W, 24 V
0217268004	Stuffing box heater 15 W, 230 V
0360391015	Screw fitting, DN 15, incl. seal, 2 pcs. required
0360391025	Screw fitting, DN 25, incl. seal, 2 pcs. required
0360391040	Screw fitting incl. seal, 2 pcs. required, Rp1½ - G1½
0360391050	Screw fitting incl. seal, 2 pcs. required, Rp2 - G2
0360427000	Stuffing box, complete with O-ring, max. 130 °C

☛ **0217268\*\*\*** Stuffing box heater 15 W, light alloy housing, IP54, 3 × 0.75 mm<sup>2</sup> power cable, earth connector, length 1 m, ferrule

**Combination of V6R with electrical actuators**

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

**Pressure differences**

Actuator	AVM234SF132	AVF234SF132 AVF234SF232	AVM322F120 AVM322F122	AVM322SF132
Page	250	257	239	242
Actuating power	2500 N	2000 N	1000 N	1000 N
Control signal	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point	2-/3-point, 0...10 V, 4...20 mA
Running time	28/56/84 s	28/56/84 s	120/240 s	120/80 s
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
V6R15F350 V6R15F340 V6R15F330 V6R15F320 V6R15F310 V6R15F300 V6R15F200 V6R25F310 V6R25F300 V6R25F210 V6R25F200	4.0	4.0	16.0	4.0
V6R40F310 V6R40F300 V6R40F210 V6R40F200	3.0	3.0	11.5	3.0
V6R50F300 V6R50F200	2.0	2.0	8.6	2.0
Closes with the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
V6R15F350 V6R15F340 V6R15F330 V6R15F320 V6R15F310 V6R15F300 V6R15F200	3.0	3.0	16.0	4.0
V6R25F310 V6R25F300 V6R25F210 V6R25F200	2.0	2.0	16.0	4.0

Actuator	AVM234SF132	AVF234SF132 AVF234SF232	AVM322F120 AVM322F122	AVM322SF132	
Page	250	257	239	242	
V6R40F310 V6R40F300 V6R40F210 V6R40F200	1.5	1.5	16.0	3.0	3.0
V6R50F300 V6R50F200	1.0	1.0	16.0	2.0	2.0

☛ Accessories required: Mounting set 0372338001 for AVM 234 and AVF 234

☛ Accessories required: Mounting set 0510240012 for AVM 322(S)





B6R25F300



ValveDim app

## B6R: 3-way valve with female thread, PN 16 (el.)

### Features

- Regulating valve free of silicone grease with female thread DIN EN ISO 228-1 G for the control of cold/hot water in closed and open circuits
- In combination with valve actuators AVM 322, AVM 322S, AVM 234S, AVF 234S
- Equal-percentage or linear characteristic, can be set with SUT valve actuators (SAUTER Universal Technology) to linear or equal-percentage
- Control passage A-AB closed when the spindle is moved out
- Can be used as a control valve or a distribution valve
- Valve body and seat made of gunmetal
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM
- Stainless-steel spindle

### Technical data

#### Parameters

Control ratio	> 50:1
Leakage rate of control passage A-AB	≤ 0.05% of $K_{vs}$ value
Leakage rate of mixing passage B-AB	≤ 1% of $K_{vs}$ value
Valve stroke	14 mm
Mixing passage valve characteristic	Linear

#### Ambient conditions

Operating temperature <sup>1)</sup>	-15...130 °C
Operating pressure up to 120 °C	16 bar
Operating pressure up to 130 °C	13 bar

#### Standards, directives

Pressure and temperature data	DIN 2401
Flow parameters	VDI/VDE 2173

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Valve characteristic	Materials for valve plug	Type of connection	Weight
B6R15F330	DN 15	1 m <sup>3</sup> /h	Equal-percentage	Stainless steel	G½"	1.2 kg
B6R15F320	DN 15	1.6 m <sup>3</sup> /h	Equal-percentage	Stainless steel	G½"	1.2 kg
B6R15F310	DN 15	2.5 m <sup>3</sup> /h	Equal-percentage	Brass	G½"	1.2 kg
B6R15F300	DN 15	4 m <sup>3</sup> /h	Equal-percentage	Brass	G½"	1.2 kg
B6R15F200	DN 15	4 m <sup>3</sup> /h	Linear	Brass	G½"	1.2 kg
B6R25F310	DN 25	6.3 m <sup>3</sup> /h	Equal-percentage	Brass	G1"	1.6 kg
B6R25F300	DN 25	10 m <sup>3</sup> /h	Equal-percentage	Brass	G1"	1.6 kg
B6R25F210	DN 25	6.3 m <sup>3</sup> /h	Linear	Brass	G1"	1.6 kg
B6R25F200	DN 25	10 m <sup>3</sup> /h	Linear	Brass	G1"	1.6 kg
B6R40F310	DN 40	16 m <sup>3</sup> /h	Equal-percentage	Brass	G1½"	3.4 kg
B6R40F300	DN 40	25 m <sup>3</sup> /h	Equal-percentage	Brass	G1½"	3.4 kg
B6R40F210	DN 40	16 m <sup>3</sup> /h	Linear	Brass	G1½"	3.4 kg
B6R40F200	DN 40	25 m <sup>3</sup> /h	Linear	Brass	G1½"	3.4 kg
B6R50F300	DN 50	35 m <sup>3</sup> /h	Equal-percentage	Brass	G2"	4.6 kg
B6R50F200	DN 50	35 m <sup>3</sup> /h	Linear	Brass	G2"	4.6 kg

<sup>1)</sup> At temperatures below 0 °C, use stuffing box heater (accessory)



## Accessories

Type	Description
0217268001	Stuffing box heater 15 W, 24 V
0217268004	Stuffing box heater 15 W, 230 V
0360391015	Screw fitting, DN 15, incl. seal, 3 pcs. required
0360391025	Screw fitting, DN 25, incl. seal, 3 pcs. required
0360391040	Screw fitting, DN 40, incl. seal, 3 pcs. required
0360391050	Screw fitting, DN 50, incl. seal, 3 pcs. required
0360427000	Stuffing box, complete with o-ring, max. 130 °C
0360429000	Adhesive label for distribution valve

☛ **0217268\*\*\*** Stuffing box heater 15 W, light alloy housing, IP54, 3 × 0.75 mm<sup>2</sup> power cable, earth connector, length 1 m, ferrule

☛ **0360429** Sheet with 21 adhesive labels for flow change; see combinations

## Combination of B6R with electrical actuators

**i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*

**i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*

**i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

## Pressure differences

Actuator	AVM234SF132	AVF234SF132 AVF234SF232	AVM322F120 AVM322F122	AVM322SF132
Page	250	257	239	242
Actuating power	2500 N	2000 N	1000 N	1000 N
Control signal	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point	2-/3-point, 0...10 V, 4...20 mA
Running time	28/56/84 s	28/56/84 s	120/240 s	120/80 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
B6R15F330 B6R15F320 B6R15F310 B6R15F300 B6R15F200 B6R25F310 B6R25F300 B6R25F210 B6R25F200	4.0	4.0	16.0	4.0
B6R40F310 B6R40F300 B6R40F210 B6R40F200	3.0	3.0	11.5	3.0
B6R50F300 B6R50F200	2.0	2.0	8.6	2.0
As distribution valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
B6R15F330 B6R15F320 B6R15F310 B6R15F300 B6R15F200	3.0	3.0	16.0	4.0
B6R25F310 B6R25F300 B6R25F210 B6R25F200	2.0	2.0	16.0	4.0

Actuator	AVM234SF132	AVF234SF132 AVF234SF232		AVM322F120 AVM322F122	AVM322SF132
Page	250	257		239	242
B6R40F310 B6R40F300 B6R40F210 B6R40F200	1.5	1.5	16.0	3.0	3.0
B6R50F300 B6R50F200	1.0	1.0	16.0	2.0	2.0

⚡ Accessories required: Mounting set 0372338001 for AVM 234 and AVF 234

⚡ Accessories required: Mounting set 0510240012 for AVM 322(S)



## VUD: 2-way flanged valve, PN 6 (el.)

### Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 105(S), AVM 115(S), AVM 321(S) and AVF 124 and AVF 125(S) as a control unit
- Not suitable for steam or drinking water or potentially explosive atmospheres
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, painted black
- Characteristic can be set with SUT (SAUTER Universal Technology) valve actuators to linear, equal-percentage or quadratic
- The valve is closed when the spindle is moved out
- Closing procedure against the pressure or with the pressure
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of brass with glass-fibre reinforced PTFE sealing ring
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM

### Technical data

#### Parameters

Nominal pressure	PN 6
Connection	Flange as per EN 1092-2, form B
Valve characteristic, control passage F200	Linear
Valve characteristic, control passage F300	Equal-percentage
Control ratio from valve	> 50:1
Stuffing box	2 EPDM O-rings
Leakage rate	≤ 0.05% of $K_{vs}$ value
Valve stroke	8 mm

#### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	Up to 120 °C; 6 bar At 150 °C; 5.4 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)
Pressure Equipment Directive	97/23/EC (fluid group II) No CE label Article 3.3

### Overview of types

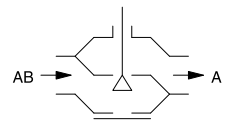
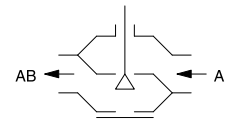
Type	Nominal diameter	$K_{vs}$ value	Weight
VUD015F320	DN 15	1.6 m <sup>3</sup> /h	3.2 kg
VUD015F310	DN 15	2.5 m <sup>3</sup> /h	3.2 kg
VUD015F300	DN 15	4 m <sup>3</sup> /h	3.2 kg
VUD020F300	DN 20	6.3 m <sup>3</sup> /h	4.1 kg
VUD025F300	DN 25	10 m <sup>3</sup> /h	4.7 kg

<sup>1)</sup> Humidity must not exceed 75%

<sup>2)</sup> At temperatures below 0 °C, use stuffing box heater. Use adapter (accessory) at temperatures above 100 °C



VUD032F300



Type	Nominal diameter	$K_{vs}$ value	Weight
VUD032F300	DN 32	16 m <sup>3</sup> /h	7.3 kg
VUD040F300	DN 40	22 m <sup>3</sup> /h	8.6 kg
VUD050F300	DN 50	28 m <sup>3</sup> /h	11.2 kg
VUD050F200	DN 50	40 m <sup>3</sup> /h	11.2 kg

### Accessories

Type	Description
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Temperature adapter for AVM 321(S), required when temperature of the medium > 100...130 °C (recommended for temperatures < 10 °C) DN 15...50
0372249002	Adaptor required when temperature of the medium is 130...150 °C, DN 15...50
0378284100	Stuffing box heater 230 VAC, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 VAC, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

### Combination of VUD with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Combination of VUD with electric actuator, actuating power 250 N, 500 N

Actuator	AVM105F100	AVM105F120 AVM105F122	AVM105SF132	AVM115F120 AVM115F122	AVM115SF132
Page	230	230	233	231	233
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VUD015F320 VUD015F310 VUD015F300 VUD020F300	4.0	4.0	4.0	6.0	6.0
VUD025F300	2.8	2.8	2.8	6.0	6.0
VUD032F300	2.1	2.1	2.1	5.2	5.2
VUD040F300	1.2	1.2	1.2	3.3	3.3
VUD050F300 VUD050F200	0.9	0.9	0.9	2.0	2.0

Cannot be used to close with the pressure



**Combination of VUD with electric actuator with spring return, actuating power 500 N**

Actuator	AVF124F130 AVF124F230		AVF125SF132 AVF125SF232	
Page	252		255	
Actuating power	500 N		500 N	
Control signal	3-point		2-/3-pt., 0...10 V, 4...20 mA	
Running time	60/120 s		60/120 s	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VUD015F320 VUD015F310 VUD015F300 VUD020F300 VUD025F300	6.0	6.0	6.0	6.0
VUD032F300	5.2	5.2	5.2	5.2
VUD040F300	3.3	3.3	3.3	3.3
VUD050F300 VUD050F200	2.0	2.0	2.0	2.0
Closes with the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VUD015F320 VUD015F310 VUD015F300 VUD020F300	6.0	6.0	6.0	6.0
VUD025F300	5.0	6.0	5.0	6.0
VUD032F300	4.0	6.0	4.0	6.0
VUD040F300	2.5	6.0	2.5	6.0
VUD050F300 VUD050F200	1.5	6.0	1.5	6.0

☼ At temperatures above 100 °C, accessories are required

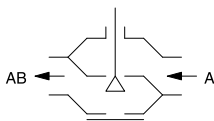
**Combination of VUD with electric actuator, actuating power 1000 N**

Actuator	AVM321F110 AVM321F112		AVM321SF132	
Page	239		242	
Actuating power	1000 N		1000 N	
Control signal	2-/3-point		2-/3-point, 0...10 V, 4...20 mA	
Running time	48/96 s		32/96 s	
Closes against the pressure	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
VUD015F320 VUD015F310 VUD015F300 VUD020F300 VUD025F300 VUD032F300 VUD040F300	6.0		6.0	
VUD050F300 VUD050F200	4.0		4.0	
Closes with the pressure	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
VUD015F320 VUD015F310 VUD015F300 VUD020F300	6.0		6.0	
VUD025F300	5.0		5.0	
VUD032F300	4.0		4.0	
VUD040F300	2.5		2.5	
VUD050F300 VUD050F200	1.5		1.5	

☼ At temperatures above 100 °C, accessories are required



VQD



## VQD: 2-way flanged valve, PN 6

### Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 322(S), AVM 234S and AVF 234S as control unit
- Not suitable for steam or drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, painted black
- Characteristic can be set with SUT (SAUTER Universal Technology) valve actuators to linear, equal-percentage or quadratic
- The valve is closed when the spindle is moved out
- Closing procedure against the pressure
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of stainless steel with metal-to-metal seal
- Stuffing box made of stainless steel with wiper ring and double O-ring seal made of EPDM

### Technical data

#### Parameters

Nominal pressure	PN 6
Connection	Flange as per EN 1092-2, form B
Valve characteristic	Equal-percentage
Control ratio from valve	> 30:1
Stuffing box	2 EPDM O-rings
Leakage rate	Class III as per DIN EN 60534-4 (0.001 x $K_{vs}$ )
Valve stroke	20 mm (DN 65...80) 40 mm (DN 100)

#### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	Up to 120 °C 6 bar At 150 °C 5.4 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534, (page 3)
Pressure Equipment Directive	2014/68/EU (fluid group II) No CE label as per article 4.3

#### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Weight
VQD065F300	DN 65	63 m <sup>3</sup> /h	18.0 kg
VQD080F300	DN 80	100 m <sup>3</sup> /h	25.3 kg
VQD100F300	DN 100	160 m <sup>3</sup> /h	37.1 kg

<sup>1)</sup> Humidity must not exceed 75%

<sup>2)</sup> At temperatures below 0 °C, use stuffing box heater



## Accessories

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0378284100	Stuffing box heater 230 VAC, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 VAC, 15 W for medium below 0 °C
0378369101	Complete replacement stuffing box for DN 65...150

## Combination of VQD with electric actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

## Combination of VQD with electric actuator, actuating power 1000 N

Actuator	AVM322F120 AVM322F122	AVM322SF132
Page	239	242
Actuating power	1000 N	1000 N
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA
Running time	120/240 s	120/80 s
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VQD065F300	2.5	2.5
VQD080F300	1.5	1.5
Cannot be used to close with the pressure		

 Maximum media temperature: 100 °C

## Combination of VQD with electric actuator, actuating power 2500 N, 2000 N

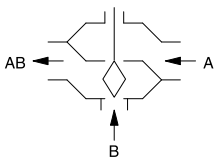
Actuator	AVF234SF132 AVF234SF232	AVM234SF132	
Page	257	250	
Actuating power	2000 N	2500 N	
Control signal	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	
Running time for DN 65, DN 80	40/80/120 s	40/80/120 s	
Running time for DN 100...150	80/160/240 s	80/160/240 s	
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
VQD065F300	3.0	5.1	1.2
VQD080F300	3.0	3.4	3.0
VQD100F300	2.0	2.2	2.0
Cannot be used to close with the pressure			

 Spring return: AVF234SF132 normally closed (NC); AVF234SF232 normally open (NO)

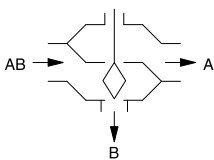
 At temperatures above 130 °C, accessories are required



BUD032F300



Control valve



Distribution valve

## BUD: 3-way flanged valve, PN 6 (el.)

### Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 105(S), AVM 115(S), AVM 321(S) and AVF 124 and AVF 125(S) as a control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B, for PN 16 and PN 10
- Regulating valve, free of silicone grease, painted black
- Characteristic can be set with SUT valve actuators to linear, equal-percentage or quadratic
- The control passage is closed when the spindle is moved out
- Used as control valve or as distribution valve
- Valve body with seat made of grey cast iron
- Stainless-steel spindle
- Plug made of brass with glass-fibre reinforced PTFE sealing ring
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM

### Technical data

#### Parameters

Nominal pressure	PN 6
Connection	Flange as per EN 1092-2, form B
Valve characteristic, control passage F200	Linear
Valve characteristic, control passage F300	Equal-percentage
Mixing passage valve characteristic	Linear
Control ratio from valve	> 50:1
Stuffing box	2 EPDM O-rings
Control passage leakage rate	< 0.05% of $K_{vs}$ value
Mixing passage leakage rate	< 1% of $K_{vs}$ value
Valve stroke	8 mm

#### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	Up to 120 °C; 6 bar At 150 °C; 5.4 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)
PED 2014/68/EU	Fluid group II, liquid or steam pressure, no CE label as per article 4.3

#### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Weight
BUD015F320	DN 15	1.6 m <sup>3</sup> /h	3200 g
BUD015F310	DN 15	2.5 m <sup>3</sup> /h	3200 g
BUD015F300	DN 15	4 m <sup>3</sup> /h	3200 g
BUD020F300	DN 20	6.3 m <sup>3</sup> /h	4100 g

<sup>1)</sup> Humidity must not exceed 75%

<sup>2)</sup> At temperatures below 0 °C, use a stuffing box heater. Use adapter (accessory) at temperatures above 100 °C



Type	Nominal diameter	$K_{vs}$ value	Weight
BUD025F300	DN 25	10 m <sup>3</sup> /h	4700 g
BUD032F300	DN 32	16 m <sup>3</sup> /h	7100 g
BUD040F300	DN 40	22 m <sup>3</sup> /h	8400 g
BUD050F300	DN 50	28 m <sup>3</sup> /h	10900 g
BUD050F200	DN 50	40 m <sup>3</sup> /h	11200 g

### Accessories

Type	Description
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adapter required when temperature of the medium is 100...130 °C (recommended for temperatures <10 °C)
0372249002	Adapter required when temperature of the medium is 130...150 °C
0378284100	Stuffing box heater 230 V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

### Combination of BUD with electric actuators

**i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*

**i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*

**i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

### Combination of BUD with electric actuator, actuating power 250 N, 500 N

Actuator	AVM105F100	AVM105F120 AVM105F122	AVM105SF132	AVM115F120 AVM115F122	AVM115SF132
Page	230	230	233	231	233
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BUD015F320	4.0	4.0	4.0	6.0	6.0
BUD015F310					
BUD015F300					
BUD020F300					
BUD025F300	2.8	2.8	2.8	6.0	6.0
BUD032F300	2.1	2.1	2.1	5.2	5.2
BUD040F300	1.2	1.2	1.2	3.3	3.3
BUD050F300	0.9	0.9	0.9	2.0	2.0
BUD050F200					

Cannot be used as distribution valve

**Combination of BUD with electric actuator with spring return, actuating power 500 N**

Actuator	AVF124F130 AVF124F230		AVF125SF132 AVF125SF232	
Page	252		255	
Actuating power	500 N		500 N	
Control signal	3-point		2-/3-pt., 0...10 V, 4...20 mA	
Running time	60/120 s		60/120 s	
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUD015F320 BUD015F310 BUD015F300 BUD020F300 BUD025F300	6.0	6.0	6.0	6.0
BUD032F300	5.2	5.2	5.2	5.2
BUD040F300	3.3	3.3	3.3	3.3
BUD050F300 BUD050F200	2.0	2.0	2.0	2.0
As distribution valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUD015F320 BUD015F310 BUD015F300 BUD020F300	6.0	6.0	6.0	6.0
BUD025F300	5.0	6.0	5.0	6.0
BUD032F300	4.0	6.0	4.0	6.0
BUD040F300	2.5	6.0	2.5	6.0
BUD050F300 BUD050F200	1.5	6.0	1.5	6.0

 At temperatures above 100 °C, accessories are required

**Combination of BUD with electric actuator, actuating power 1000 N**

Actuator	AVM321F110 AVM321F112		AVM321SF132	
Page	239		242	
Actuating power	1000 N		1000 N	
Control signal	2-/3-point		2-/3-point, 0...10 V, 4...20 mA	
Running time	48/96 s		32/96 s	
As control valve	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
BUD015F320 BUD015F310 BUD015F300 BUD020F300 BUD025F300 BUD032F300 BUD040F300	6.0		6.0	
BUD050F300 BUD050F200	4.0		4.0	
As distribution valve	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
BUD015F320 BUD015F310 BUD015F300 BUD020F300	6.0		6.0	
BUD025F300	5.0		5.0	
BUD032F300	4.0		4.0	
BUD040F300	2.5		2.5	
BUD050F300 BUD050F200	1.5		1.5	

 At temperatures above 100 °C, accessories are required

## BQD: 3-way flanged valve, PN 6

### Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 322(S), AVM 234S and AVF 234S as control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, painted black
- Equal-percentage control passage characteristic, can be set with SUT (SAUTER Universal Technology) valve actuators to linear or quadratic
- Mixing passage, linear characteristic
- The control passage is closed when the spindle is moved out
- Used as control valve or as distribution valve
- Valve body with seat made of grey cast iron
- Stainless-steel spindle
- Plug made of stainless steel with metal-to-metal seal
- Stuffing box made of stainless steel with wiper ring and double O-ring seal made of EPDM

### Technical data

Parameters		
Nominal pressure		PN 6
Connection		Flange as per EN 1092-2, form B
Control passage valve characteristic		Equal-percentage
Mixing passage valve characteristic		Linear
Control ratio from valve		> 30:1
Stuffing box		2 EPDM O-rings
Leakage rate		Class III as per DIN EN 60534-4 (0.001 x K <sub>vs</sub> )
Valve stroke		20 mm (DN 65...80) 40 mm (DN 100)

### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	Up to 120 °C 6 bar At 150 °C 5.4 bar Between 120 °C and 150 °C, a linear interpolation can be performed

### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534, (page 3)
Pressure Equipment Directive	2014/68/EU (fluid group II) No CE label as per article 4.3

### Overview of types

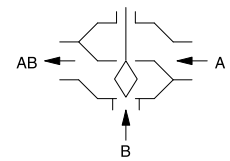
Type	Nominal diameter	K <sub>vs</sub> value	Weight
BQD065F300	DN 65	63 m <sup>3</sup> /h	14.8 kg
BQD080F300	DN 80	100 m <sup>3</sup> /h	21 kg
BQD100F300	DN 100	160 m <sup>3</sup> /h	31 kg

<sup>1)</sup> Humidity must not exceed 75%

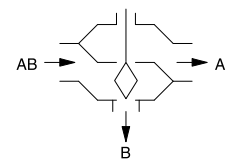
<sup>2)</sup> At temperatures below 0 °C, use a stuffing box heater



BQD



Control valve



Distribution valve



**Accessories**

Type	Description
0372336180	Adapter (required when temperature of the medium is 130...150 °C)
0378284100	Stuffing box heater 230 V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 V~, 15 W for medium below 0 °C
0378369101	Complete replacement stuffing box

**Combination of BQD with electric actuators**

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

**Combination of BQD with electric actuator, actuating power 1000 N**

Actuator	AVM322F120 AVM322F122	AVM322SF132
Page	239	242
Actuating power	1000 N	1000 N
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA
Running time	120/240 s	120/80 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BQD065F300	2.5	2.5
BQD080F300	1.5	1.5
As distribution valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BQD065F300	1.0	1.0
BQD080F300	0.7	0.7

 At media temperature above 100 °C, accessories are required.

**Combination of BQD with electric actuator, actuating power 2500 N, 2000 N**

Actuator	AVF234SF132 AVF234SF232	AVM234SF132	
Page	257	250	
Actuating power	2000 N	2500 N	
Control signal	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	
Running time for DN 65, DN 80	40/80/120 s	40/80/120 s	
Running time for DN 100...150	80/160/240 s	80/160/240 s	
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
BQD065F300	3.0	5.1	3.0
BQD080F300	3.0	3.4	3.0
BQD100F300	2.0	2.2	2.0
As distribution valve	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
BQD065F300	1.0	6.0	1.0
BQD080F300	0.8	6.0	0.8
BQD100F300	0.5	6.0	0.5

 At temperatures above 130 °C, accessories are required



## VUE: 2-way flanged valve, PN 16/10 (el.)

### Features

- Continuous control of cold/hot water and low-pressure steam up to 115 °C in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 105(S), AVM 115(S), AVM 321(S) and AVF 124 and AVF 125(S) as a control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B, for PN 16 and PN 10
- Regulating valve, free of silicone grease, painted black
- Characteristic can be set with SUT (SAUTER Universal Technology) valve actuators to linear, equal-percentage or quadratic
- The valve is closed when the spindle is moved out
- Closing procedure against the pressure or with the pressure
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of brass with glass-fibre reinforced PTFE sealing ring
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM

### Technical data

#### Parameters

Nominal pressure	PN 16/10
Connection	Flange as per EN 1092-2, form B
Valve characteristic, control passage F200	Linear
Valve characteristic, control passage F300	Equal-percentage
Control ratio from valve	> 50:1
Stuffing box	2 EPDM O-rings
Leakage rate	< 0.05% of $K_{vs}$ value
Valve stroke	8 mm

#### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	PN 16: Up to 120 °C, 16 bar At 150 °C, 14.4 bar PN 10: Up to 120 °C, 10 bar At 150 °C, 9 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)
Pressure Equipment Directive	97/23/EC (fluid group II) No CE label Article 3.3

### Overview of types

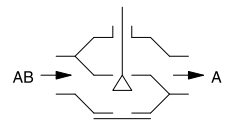
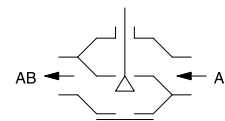
Type	Nominal diameter	$K_{vs}$ value	Weight
VUE015F350	DN 15	0.4 m <sup>3</sup> /h	3.2 kg
VUE015F340	DN 15	0.63 m <sup>3</sup> /h	3.2 kg

<sup>1)</sup> Humidity must not exceed 75%.

<sup>2)</sup> At temperatures below 0 °C, use a stuffing box heater. Use adapter (accessory) at temperatures above 100 °C



VUE032F300



ValveDim app



Type	Nominal diameter	$K_{vs}$ value	Weight
VUE015F330	DN 15	1 m <sup>3</sup> /h	3.2 kg
VUE015F320	DN 15	1.6 m <sup>3</sup> /h	3.2 kg
VUE015F310	DN 15	2.5 m <sup>3</sup> /h	3.2 kg
VUE015F300	DN 15	4 m <sup>3</sup> /h	3.2 kg
VUE020F300	DN 20	6.3 m <sup>3</sup> /h	4.1 kg
VUE025F300	DN 25	10 m <sup>3</sup> /h	4.7 kg
VUE032F300	DN 32	16 m <sup>3</sup> /h	7.3 kg
VUE040F300	DN 40	22 m <sup>3</sup> /h	8.6 kg
VUE050F300	DN 50	28 m <sup>3</sup> /h	11.2 kg
VUE050F200	DN 50	40 m <sup>3</sup> /h	11.2 kg

### Accessories

Type	Description
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adapter required when temperature of the medium is 100...130 °C (recommended for temperatures <10 °C)
0372249002	Adapter required when temperature of the medium is 130...150 °C
0378284100	Stuffing box heater 230 V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

### Combination of VUE with electric actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

### Combination of VUE with electric actuator, actuating power 250 N, 500 N

Actuator	AVM105F100	AVM105F120 AVM105F122	AVM105SF132	AVM115F120 AVM115F122	AVM115SF132
Page	230	230	233	231	233
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VUE015F350	4.0	4.0	4.0	6.0	6.0
VUE015F340					
VUE015F330					
VUE015F320					
VUE015F310					
VUE015F300					
VUE020F300	2.8	2.8	2.8	6.0	6.0
VUE025F300					
VUE032F300					
VUE040F300	1.4	1.4	1.4	3.3	3.3
VUE050F300	0.9	0.9	0.9	2.0	2.0
VUE050F200					
Cannot be used to close with the pressure					

**Combination of VUE with electric actuator with spring return, actuating power 500 N**

Actuator	AVF124F130 AVF124F230		AVF125SF132 AVF125SF232	
Page	252		255	
Actuating power	500 N		500 N	
Control signal	3-point		2-/3-pt., 0...10 V, 4...20 mA	
Running time	60/120 s		60/120 s	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VUE015F350 VUE015F340 VUE015F330 VUE015F320 VUE015F310 VUE015F300	6.0	16.0	6.0	16.0
VUE020F300	6.0	11.0	6.0	11.0
VUE025F300	6.0	6.8	6.0	6.8
VUE032F300	5.2	5.2	5.2	5.2
VUE040F300	3.3	3.3	3.3	3.3
VUE050F300 VUE050F200	2.0	2.0	2.0	2.0
Closes with the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VUE015F350 VUE015F340 VUE015F330 VUE015F320 VUE015F310 VUE015F300 VUE020F300	6.0	16.0	6.0	16.0
VUE025F300	5.0	16.0	5.0	16.0
VUE032F300	4.0	16.0	4.0	16.0
VUE040F300	2.5	16.0	2.5	16.0
VUE050F300 VUE050F200	1.5	16.0	1.5	16.0

☼ At temperatures above 100 °C, accessories are required

**Combination of VUE with electric actuator, actuating power 1000 N**

Actuator	AVM321F110 AVM321F112		AVM321SF132	
Page	239		242	
Actuating power	1000 N		1000 N	
Control signal	2-/3-point		2-/3-point, 0...10 V, 4...20 mA	
Running time	48/96 s		32/96 s	
Closes against the pressure	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
VUE015F350 VUE015F340 VUE015F330 VUE015F320 VUE015F310 VUE015F300 VUE020F300 VUE025F300 VUE032F300	10.0		10.0	
VUE040F300	6.0		6.0	
VUE050F300 VUE050F200	4.0		4.0	

Actuator	AVM321F110 AVM321F112	AVM321SF132
Page	239	242
Closes with the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]
VUE015F350	6.0	6.0
VUE015F340		
VUE015F330		
VUE015F320		
VUE015F310		
VUE015F300		
VUE020F300		
VUE025F300	5.0	6.0
VUE032F300	4.0	6.0
VUE040F300	2.5	2.5
VUE050F300	1.5	1.5
VUE050F200		

💡 At temperatures above 100 °C, accessories are required

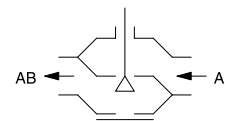
## VQE: 2-way flanged valve, PN 16

### Features

- Continuous control of cold and hot water and low-pressure steam up to 115 °C in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 322(S), AVM 234S and AVF 234S as control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, painted black
- Characteristic can be set with SUT (SAUTER Universal Technology) valve actuators to linear, equal-percentage or quadratic
- The valve is closed when the spindle is moved out
- Closing procedure against the pressure
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of stainless steel with metal-to-metal seal
- Stuffing box made of stainless steel with wiper ring and double O-ring seal made of EPDM



VQE



### Technical data

#### Parameters

Nominal pressure	PN 16
Connection	Flange as per EN 1092-2, form B
Valve characteristic	Equal-percentage
Control ratio from valve	> 30:1
Stuffing box	2 EPDM O-rings
Leakage rate	Class III as per DIN EN 60534-4 (0.001 x K <sub>vs</sub> )
Valve stroke	20 mm (DN 65, 80) 40 mm (DN 100...150)

#### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	Up to 120 °C 16 bar At 150 °C 14.4 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534-3
Pressure Equipment Directive	2014/68/EU (fluid group II) No CE label as per article 4.3

### Overview of types

Type	Nominal diameter	K <sub>vs</sub> value	Weight
VQE065F300	DN 65	63 m <sup>3</sup> /h	23.8 kg
VQE080F300	DN 80	100 m <sup>3</sup> /h	30.2 kg
VQE100F300	DN 100	160 m <sup>3</sup> /h	41.3 kg
VQE125F300	DN 125	220 m <sup>3</sup> /h	62 kg
VQE150F300	DN 150	320 m <sup>3</sup> /h	89 kg

<sup>1)</sup> Humidity must not exceed 75%

<sup>2)</sup> At temperatures below 0 °C, use a stuffing box heater. Use adapter (accessory) at temperatures above 130 °C



### Accessories

Type	Description
0372336180	Adapter (required when temperature of the medium is 130...150 °C)
0378284100	Stuffing box heater 230 V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 V~, 15 W for medium below 0 °C
0378369101	Complete replacement stuffing box

### Combination of VQE with electric actuators

- i** Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.
- i** Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Combination of VQE with electric actuators, actuating power 1000 N

Actuator	AVM322F120 AVM322F122	AVM322SF132
Page	239	242
Actuating power	1000 N	1000 N
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA
Running time	120/240 s	120/80 s
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VQE065F300	2.5	2.5
VQE080F300	1.5	1.5
Cannot be used to close with the pressure		

 At media temperature above 100 °C, accessories are required.

### Combination of VQE with electric actuators, actuating power 2500 N, 2000 N

Actuator	AVF234SF132 AVF234SF232	AVM234SF132	
Page	257	250	
Actuating power	2000 N	2500 N	
Control signal	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	
Running time for DN 65, DN 80	40/80/120 s	40/80/120 s	
Running time for DN 100...150	80/160/240 s	80/160/240 s	
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]
VQE065F300	3.0	5.1	3.0
VQE080F300	3.0	3.4	3.0
VQE100F300	2.0	2.2	2.0
VQE125F300	1.4	1.4	1.5
VQE150F300	1.0	1.1	1.0
Cannot be used to close with the pressure			

 Spring return: AVF234SF132 normally closed (NC); AVF234SF232 normally open (NO)

 At temperatures above 130 °C, accessories are required

## BUE: 3-way flanged valve, PN 16/10 (el.)

### Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 105(S), AVM 115(S), AVM 321(S) and AVF 124 and AVF 125(S) as a control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B, for PN 16 and PN 10
- Regulating valve, free of silicone grease, painted black
- Equal-percentage characteristic with F300, can be set with SUT valve actuators (SAUTER Universal Technology) to linear or quadratic
- Valve passage A-AB is closed when the spindle is moved out
- Can be used as a control valve or a distribution valve
- Valve body and seat made of grey cast iron
- Stainless-steel spindle
- Plug made of brass with glass-fibre reinforced PTFE sealing ring
- Stuffing box made of brass with wiper ring and double O-ring seal made of EPDM

### Technical data

#### Parameters

Connection	PN 16/10
Connection	Flange as per EN 1092-2, form B
Valve characteristic, control passage F200	Linear
Valve characteristic, control passage F300	Equal-percentage
Mixing passage valve characteristic	Linear
Control ratio from valve	> 50:1
Stuffing box	2 EPDM O-rings
Control passage leakage rate	< 0.05% of $K_{vs}$ value
Mixing passage leakage rate	< 1% of $K_{vs}$ value
Valve stroke	8 mm

#### Ambient conditions<sup>1)</sup>

Operating temperature <sup>2)</sup>	-10...150 °C
Operating pressure	PN 16: Up to 120 °C, 16 bar At 150 °C, 14.4 bar PN 10: Up to 120 °C, 10 bar At 150 °C, 9 bar Between 120 °C and 150 °C, a linear interpolation can be performed

#### Standards, directives

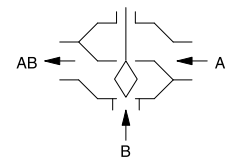
Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)
Pressure Equipment Directive	97/23/EC (fluid group II) No CE label Article 3.3

<sup>1)</sup> Humidity must not exceed 75%

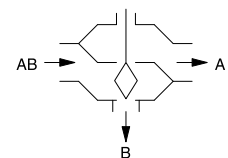
<sup>2)</sup> At temperatures below 0 °C, use a stuffing box heater. Use adapter (accessory) at temperatures above 100 °C



BUE032F300



Control valve



Distribution valve



**Overview of types**

Type	Nominal diameter	$K_{vs}$ value	Weight
BUE015F330	DN 15	1 m <sup>3</sup> /h	3.2 kg
BUE015F320	DN 15	1.6 m <sup>3</sup> /h	3.2 kg
BUE015F310	DN 15	2.5 m <sup>3</sup> /h	3.2 kg
BUE015F300	DN 15	4 m <sup>3</sup> /h	3.2 kg
BUE020F300	DN 20	6.3 m <sup>3</sup> /h	4.1 kg
BUE025F300	DN 25	10 m <sup>3</sup> /h	4.7 kg
BUE032F300	DN 32	16 m <sup>3</sup> /h	7.1 kg
BUE040F300	DN 40	22 m <sup>3</sup> /h	8.4 kg
BUE050F300	DN 50	28 m <sup>3</sup> /h	11.2 kg
BUE050F200	DN 50	40 m <sup>3</sup> /h	11.2 kg

**Accessories**

Type	Description
0372240001	Manual adjustment for valves with 8 mm stroke
0372249001	Adapter required when temperature of the medium is 100...130 °C (recommended for temperatures <10 °C)
0372249002	Adapter required when temperature of the medium is 130...150 °C
0378284100	Stuffing box heater 230 V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 V~, 15 W for medium below 0 °C
0378368001	Complete replacement stuffing box for DN 15...50

**Combination of BUE with electric actuators**

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

**Combination of BUE with electric actuator, actuating power 250 N, 500 N**

Actuator	AVM105F100	AVM105F120 AVM105F122	AVM105SF132	AVM115F120 AVM115F122	AVM115SF132
Page	230	230	233	231	233
Actuating power	250 N	250 N	250 N	500 N	500 N
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	35/60/120 s	120 s	60/120 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300	4.0	4.0	4.0	6.0	6.0
BUE025F300	2.8	2.8	2.8	6.0	6.0
BUE032F300	2.1	2.1	2.1	5.2	5.2
BUE040F300	1.4	1.4	1.4	3.3	3.3
BUE050F300 BUE050F200	0.9	0.9	0.9	2.0	2.0

Cannot be used as distribution valve



**Combination of BUE with electric actuator with spring return, actuating power 500 N**

Actuator	AVF124F130 AVF124F230		AVF125SF132 AVF125SF232	
Page	252		255	
Actuating power	500 N		500 N	
Control signal	3-point		2-/3-pt., 0...10 V, 4...20 mA	
Running time	60/120 s		60/120 s	
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUE015F330 BUE015F320 BUE015F310 BUE015F300	6.0	16.0	6.0	16.0
BUE020F300	6.0	11.0	6.0	11.0
BUE025F300	6.0	6.8	6.0	6.8
BUE032F300	5.2	5.2	5.2	5.2
BUE040F300	3.3	3.3	3.3	3.3
BUE050F300 BUE050F200	2.0	2.0	2.0	2.0
As distribution valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BUE020F300	6.0	16.0	6.0	16.0
BUE025F300	5.0	16.0	5.0	16.0
BUE032F300	4.0	16.0	4.0	16.0
BUE040F300	2.5	16.0	2.5	16.0
BUE050F300 BUE050F200	1.5	16.0	1.5	16.0

🔧 Spring return:  $18 \pm 10$  s

🔧 At temperatures above 100 °C, accessories are required

**Combination of BUE with electric actuator, actuating power 1000 N**

Actuator	AVM321F110 AVM321F112		AVM321SF132	
Page	239		242	
Actuating power	1000 N		1000 N	
Control signal	2-/3-point		2-/3-point, 0...10 V, 4...20 mA	
Running time	48/96 s		32/96 s	
As control valve	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300 BUE025F300 BUE032F300	10.0		10.0	
BUE040F300	6.0		6.0	
BUE050F300 BUE050F200	4.0		4.0	
As distribution valve	$\Delta p_{\max}$ [bar]		$\Delta p_{\max}$ [bar]	
BUE015F330 BUE015F320 BUE015F310 BUE015F300 BUE020F300	6.0		6.0	
BUE025F300	6.0		5.0	
BUE032F300	6.0		4.0	
BUE040F300	2.5		2.5	
BUE050F300 BUE050F200	1.5		1.5	

☛ *At temperatures above 100 °C, accessories are required*



## BQE: 3-way flanged valve, PN 16

### Features

- Continuous control of cold and hot water in closed circuits
- Water quality as per VDI 2035
- In combination with valve actuators AVM 322(S), AVM 234S and AVF 234S as control unit
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, painted black
- Equal-percentage control passage characteristic, can be set with SUT (SAUTER Universal Technology) valve actuators to linear or quadratic
- Mixing passage, linear characteristic
- The control passage is closed when the spindle is moved out
- Used as control valve or as distribution valve
- Valve body with seat made of grey cast iron
- Spindle and plug made of stainless steel; plug with metal-to-metal seal
- Stuffing box made of stainless steel with wiper ring and double O-ring seal made of EPDM

### Technical data

Parameters	
Nominal pressure	PN 16
Connection	Flange as per EN 1092-2, form B
Control passage valve characteristic	Equal-percentage
Mixing passage valve characteristic	Linear
Control ratio from valve	> 30:1
Stuffing box	2 EPDM O-rings
Leakage rate	Class III as per DIN EN 60534-4 ( $0.001 \times K_{vs}$ )
Valve stroke	20 mm (DN 65, 80) 40 mm (DN 100...150)

### Ambient conditions

Operating temperature <sup>1)</sup>	-10...150 °C
Operating pressure	Up to 120 °C 16 bar At 150 °C 14.4 bar Between 120 °C and 150 °C, a linear interpolation can be per- formed
Air humidity	Max. 75% rh, no condensation

### Standards, directives

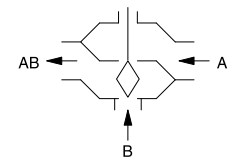
Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534, (page 3)
Pressure Equipment Directive	2014/68/EU (fluid group II) With CE label

### Overview of types

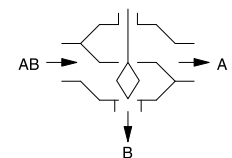
Type	Nominal diameter	$K_{vs}$ value	Weight
BQE065F300	DN 65	63 m <sup>3</sup> /h	19 kg
BQE080F300	DN 80	100 m <sup>3</sup> /h	24 kg
BQE100F300	DN 100	160 m <sup>3</sup> /h	34 kg
BQE125F300	DN 125	220 m <sup>3</sup> /h	52 kg
BQE150F300	DN 150	320 m <sup>3</sup> /h	76 kg



BQE



Control valve



Distribution valve



ValveDim app

<sup>1)</sup> At temperatures below 0 °C, use a stuffing box heater. Use adapter at temperatures above 130 °C (see accessories)



**Accessories**

Type	Description
0372336180	Adapter (required when temperature of the medium is 130...150 °C)
0378284100	Stuffing box heater 230 V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 V~, 15 W for medium below 0 °C
0378369101	Complete replacement stuffing box

**Combination of BQE with electric actuators**

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

**Combination of BQE with electric actuators, actuating power 1000 N**

Actuator	AVM322F120 AVM322F122	AVM322SF132
Page	239	242
Actuating power	1000 N	1000 N
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA
Running time	120/240 s	120/80 s
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BQE065F300	2.5	2.5
BQE080F300	1.5	1.5
As distribution valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BQE065F300	1.0	1.0
BQE080F300	0.7	0.7

 At media temperature above 100 °C, accessories are required.

**Combination of BQE with electric actuators, actuating power 2000 N and 2500 N**

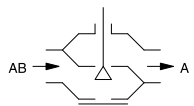
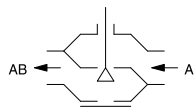
Actuator	AVM234SF132	AVF234SF132 AVF234SF232	
Page	250	257	
Actuating power	2500 N	2000 N	
Control signal	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	
Running time for DN 65, DN 80	40/80/120 s	40/80/120 s	
Running time for DN 100...150	80/160/240 s	80/160/240 s	
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BQE065F300	3.0	3.0	5.1
BQE080F300	3.0	3.0	3.4
BQE100F300	2.0	2.0	2.2
BQE125F300	1.5	1.4	1.4
BQE150F300	1.0	1.0	1.1
As distribution valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BQE065F300	1.0	1.0	16.0
BQE080F300	0.8	0.8	16.0
BQE100F300			
BQE125F300	0.5	0.5	16.0
BQE150F300			

💡 *At temperatures above 130 °C, accessories are required.*





VUG032F304



ValveDim app



## VUG: 2-way flanged valve, PN 25/16 (el.)

### Features

- Continuous control of cold and hot water in closed circuits, and of steam
- In combination with valve actuators AVM 322(S), AVM 234S, AVN 234S and AVF 234S as a control unit
- Water quality as per VDI 2035
- Valve with flange connection as per EN 1092-2, seal form B
- Nominal pressure 25 bar (VUG065F316: 16 bar)
- Not suitable for drinking water
- Standard compliance for control units according to DIN EN 14597 (VUG065F316 does not have TÜV approval)
- Regulating valve, free of silicone grease, painted black
- Equal-percentage characteristic, can be set with SUT (SAUTER Universal Technology) valve actuators to linear or quadratic
- The valve is closed when the spindle is moved out
- Closing procedure against the pressure or with the pressure
- Valve body made of ductile cast iron; seat and spindle made of stainless steel
- Plugs of nominal diameter DN 15...50 made of stainless steel with glass-fibre-reinforced PTFE sealing ring
- Plugs of nominal diameter DN 65...150 made of stainless steel with metal-to-metal seal
- Maintenance-free stuffing box in brass with spring-loaded PTFE washer

### Technical data

#### Parameters

Nominal pressure	PN 16/25
Connection	Flange as per EN 1092-2, form B
Valve characteristic	Equal-percentage
Control ratio from valve	> 50:1
Leakage rate at max. $\Delta p_s$	$\leq 0.05\%$ of $K_{vs}$ value

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...200 °C
Operating pressure <sup>2)</sup>	PN 16: -16 bar at 30...120 °C 14 bar at 200 °C PN 25: 25 bar at 30...120 °C 21.7 bar at 200 °C

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534
Test mark <sup>3)</sup>	TÜV ID: 14392

<sup>1)</sup> For cold water applications from -20...30 °C, the VUG\*\*\*F3\*\*S versions with a stuffing box containing silicone (e.g. VUG015F304S) must be used.

The VUG\*\*\*F3\*\*S valves do not comply with the standard for control units as per DIN EN 14597. VUG\*\*\*F3\*\*S are only available up to DN 125. VUG\*\*\*F3\*\*S do not have TÜV approval and must not be combined with AVN224 actuators.

Use stuffing box heater at temperatures below 0 °C; use the relevant intermediate piece (accessory) at temperatures above 130 °C or 180 °C. Down to -10 °C, as per AD code of practice W 10, use water with anti-freeze and brine solution.

<sup>2)</sup> For operating pressures, see diagram "Pressure / temperature assignment"

<sup>3)</sup> VUG065F316 does not have TÜV approval. The valve does not bear the test centre identification number and falls under category I of the Pressure Equipment Directive. The valve can be used with the AVN224SF\*\*\* actuator, but not as a safety device.

Use stuffing box heater at temperatures below 0 °C; use the relevant intermediate piece (accessory) at temperatures above 130 °C or 180 °C. Down to -10 °C, as per AD code of practice W 10, use water with anti-freeze and brine solution. For use as per DIN EN 14597.

When the VUG065F316 is combined with the AVN224S actuator, the permissible media temperature is > 0 °C.

PED 2014/68/EU (CE) Fluid group II, liquid or steam pressure  
 PESR-2016 (UKCA) Fluid group II, liquid or steam pressure

### Overview of types

Type	Nominal diameter	K <sub>V5</sub> value	Valve stroke	Connection	Weight	Approval
VUG015F374	DN 15	0.16 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F364	DN 15	0.25 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F354	DN 15	0.4 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F344	DN 15	0.63 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F334	DN 15	1 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F324	DN 15	1.6 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F314	DN 15	2.5 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG015F304	DN 15	4 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
VUG020F304	DN 20	6.3 m <sup>3</sup> /h	20 mm	PN 25/16	5 kg	CE, TÜV
VUG025F304	DN 25	10 m <sup>3</sup> /h	20 mm	PN 25/16	5.6 kg	CE, TÜV
VUG032F304	DN 32	16 m <sup>3</sup> /h	20 mm	PN 25/16	9.1 kg	CE, TÜV
VUG040F304	DN 40	25 m <sup>3</sup> /h	20 mm	PN 25/16	11.2 kg	CE, TÜV
VUG050F304	DN 50	40 m <sup>3</sup> /h	20 mm	PN 25/16	13.8 kg	CE, TÜV, UKCA
VUG065F316	DN 65	63 m <sup>3</sup> /h	40 mm	PN 16	25 kg	CE, UKCA
VUG065F304	DN 65	63 m <sup>3</sup> /h	40 mm	PN 25	25 kg	CE, TÜV, UKCA
VUG080F304	DN 80	100 m <sup>3</sup> /h	40 mm	PN 25/16	37 kg	CE, TÜV, UKCA
VUG100F304	DN 100	160 m <sup>3</sup> /h	40 mm	PN 25	50 kg	CE, TÜV, UKCA
VUG125F304	DN 125	250 m <sup>3</sup> /h	40 mm	PN 25	75 kg	CE, TÜV, UKCA
VUG150F304	DN 150	340 m <sup>3</sup> /h	40 mm	PN 25	100 kg	CE, TÜV

☛ VUG with DN 150: Not used in the United Kingdom of Great Britain and Northern Ireland (UK)

### Markets for valve-actuator combinations

	AVM322F120 AVM322F122	AVM322SF132 AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132	AVN224SF232
VUG015F374					
VUG015F364					
VUG015F354					
VUG015F344					
VUG015F334					
VUG015F324					
VUG015F314					
VUG015F304					
VUG020F304	1, 3	1, 3	1, 3	2, 3, 4	2, 3
VUG025F304					
VUG032F304					
VUG040F304					
VUG050F304					
VUG065F304					
VUG080F304					
VUG100F304					
VUG125F304					
VUG065F316	1, 3	1, 3	1, 3	2, 3	2, 3
VUG150F304	2, 3	2, 3	2, 3	2, 3, 4	2, 3

Key:

- 1 Intended for the United Kingdom of Great Britain and Northern Ireland (UK)
- 2 Combination not allowed in UK
- 3 Intended for the European Union (EU) for control functions
- 4 Approval in the EU for safety functions. Cat. IV of the PED. TÜV certificate

**Accessories**

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0372336240	Adapter (required when temperature of the medium is 180...200 °C)
0378284100	Stuffing box heater 230 VAC, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 VAC, 15 W for medium below 0 °C
0378384001	Torsion protection DN 65...150
0560260001	Stuffing box for VUG/BUG for cold water application with grease containing silicone

**Combination of VUG with electric actuators**

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_r$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

**Pressure differences**

Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132 AVN224SF232		
Page	239	242	250	257	260		
Actuating power	1000 N	1000 N	2500 N	2000 N	1100 N		
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA		
Running time for DN 15...50	120/240 s	80/120 s	40/80/120 s	40/80/120 s	40/80/120 s		
Running time for DN 65...150	-	-	80/160/240 s	80/160/240 s	80/160/240 s		
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VUG015F374 VUG015F364 VUG015F354 VUG015F344 VUG015F334 VUG015F324 VUG015F314 VUG015F304 VUG020F304	16.0	16.0	16.0	16.0	25.0	16.0	25.0
VUG025F304	15.2	15.2	16.0	16.0	25.0	16.0	17.0
VUG032F304	9.4	9.4	16.0	16.0	21.0	10.5	10.5
VUG040F304	6.1	6.1	16.0	13.5	13.5	6.5	6.5
VUG050F304	4.0	4.0	11.0	8.5	8.5	4.0	4.0
VUG065F316	-	-	7.1	5.6	5.6	-	-
VUG065F304	-	-	7.1	5.6	5.6	3.0	3.0
VUG080F304	-	-	4.7	3.4	3.4	2.0	2.0
VUG100F304	-	-	3.0	2.2	2.2	1.1	1.1
VUG125F304	-	-	2.0	1.6	1.6	0.8	0.8
VUG150F304	-	-	1.5	1.2	1.2	0.6	0.6



Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132 AVN224SF232		
Page	239	242	250	257	260		
Closes with the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VUG015F374	6.0	6.0	6.0	6.0	25.0	6.0	25.0
VUG015F364							
VUG015F354							
VUG015F344							
VUG015F334							
VUG015F324							
VUG015F314							
VUG015F304							
VUG020F304							
VUG025F304							
VUG032F304							
VUG040F304	5.5	5.5	6.0	6.0	25.0	6.0	25.0
VUG050F304	3.5	3.5	6.0	6.0	25.0	4.0	25.0
VUG065F316	-	-	4.5	4.5	25.0	-	-
VUG065F304	-	-	4.5	4.5	25.0	2.6	25.0
VUG080F304	-	-	3.5	3.4	25.0	1.7	25.0
VUG100F304	-	-	3.0	2.2	25.0	1.1	25.0
VUG125F304	-	-	2.0	1.6	25.0	0.8	25.0
VUG150F304	-	-	1.5	1.0	25.0	0.6	25.0

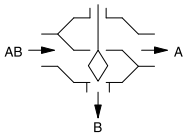
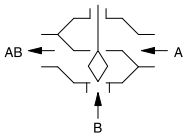
☛ At temperatures above 130 °C, accessories are required

☛ Combination with AVN 224S: with safety function as per DIN EN 14597





BUG032F304



ValveDim app



## BUG: 3-way flanged valve, PN 25/16 (el.)

### Features

- Continuous control of cold and hot water in closed circuits
- In combination with valve actuators AVM 322(S), AVM 234S, AVN 234S and AVF 234S as a control unit
- Water quality as per VDI 2035
- Valve with flange connection as per EN 1092-2, seal form B
- Nominal pressure 25 bar (BUG065F316: 16 bar)
- Not suitable for drinking water
- Standard compliance for control units according to DIN EN 14597 (BUG065F316 does not have TÜV approval)
- Regulating valve, free of silicone grease, painted black
- Equal-percentage characteristic, can be set with SUT valve actuators to linear or quadratic
- The control passage is closed when the spindle is moved out
- Can be used as a control valve or a distribution valve
- Valve body made of ductile cast iron
- Stainless-steel seat and spindle
- Plugs of nominal diameter DN 15...50 made of stainless steel with glass-fibre-reinforced PTFE sealing ring
- Plugs of nominal diameter DN 65...150 made of stainless steel with metal-to-metal seal
- Maintenance-free stuffing box in brass with spring-loaded PTFE washer

### Technical data

#### Parameters

Nominal pressure	PN 16/25	
Connection	Flange as per EN 1092-2, form B	
Control ratio	> 50: 1	
Control passage valve characteristic	Equal-percentage	
Mixing passage valve characteristic	Linear	
Leakage rate at max. Δps	Control passage leakage rate	≤ 0.05% of $K_{vs}$ value
	Mixing passage leakage rate	≤ 1.0% of $K_{vs}$ value

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...200 °C
Operating pressure <sup>2)</sup>	PN 16:
	16 bar at 30...120 °C
	14 bar at 200 °C
	PN 25:
25 bar at 30...120 °C	
21.7 bar at 200 °C	

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534

<sup>1)</sup> For cold water applications from -20...30 °C, use versions BUG\*\*\*F3\*\*S with a stuffing box containing silicone (e.g.: BUG015F304S). The BUG\*\*\*F3\*\*S valves do not comply with the standard for control units as per DIN EN 14597. BUG\*\*\*F3\*\*S are only available up to DN 125. BUG\*\*\*F3\*\*S do not have TÜV approval and must not be combined with AVN224 actuators.

Use stuffing box heater at temperatures below 0 °C; use the relevant intermediate piece (accessory) at temperatures above 130 °C or 180 °C. Down to -10 °C, as per AD code of practice W 10, use water with anti-freeze and brine solution.

<sup>2)</sup> For operating pressures, see diagram "Pressure / temperature assignment"

Test mark <sup>3)</sup>	TÜV ID: 18388
PED 2014/68/EU (CE)	Fluid group II, liquid or steam pressure
PESR-2016 (UKCA)	Fluid group II, liquid or steam pressure

### Overview of types

Type	Nominal diameter	K <sub>VS</sub> value	Valve stroke	Connection	Weight	Approval
BUG015F334	DN 15	1 m <sup>3</sup> /h	20 mm	PN 25/16	3.1 kg	CE, TÜV
BUG015F324	DN 15	1.6 m <sup>3</sup> /h	20 mm	PN 25/16	3.1 kg	CE, TÜV
BUG015F314	DN 15	2.5 m <sup>3</sup> /h	20 mm	PN 25/16	3.1 kg	CE, TÜV
BUG015F304	DN 15	4 m <sup>3</sup> /h	20 mm	PN 25/16	3.1 kg	CE, TÜV
BUG020F304	DN 20	6.3 m <sup>3</sup> /h	20 mm	PN 25/16	4 kg	CE, TÜV
BUG025F304	DN 25	10 m <sup>3</sup> /h	20 mm	PN 25/16	4.7 kg	CE, TÜV
BUG032F304	DN 32	16 m <sup>3</sup> /h	20 mm	PN 25/16	7.2 kg	CE, TÜV
BUG040F304	DN 40	25 m <sup>3</sup> /h	20 mm	PN 25/16	9.2 kg	CE, TÜV
BUG050F304	DN 50	40 m <sup>3</sup> /h	20 mm	PN 25/16	11.9 kg	CE, TÜV UKCA
BUG065F316	DN 65	63 m <sup>3</sup> /h	40 mm	PN 16	26.8 kg	CE, UKCA
BUG065F304	DN 65	63 m <sup>3</sup> /h	40 mm	PN 25	27.1 kg	CE, TÜV UKCA
BUG080F304	DN 80	100 m <sup>3</sup> /h	40 mm	PN 25/16	36.3 kg	CE, TÜV UKCA
BUG100F304	DN 100	160 m <sup>3</sup> /h	40 mm	PN 25	53 kg	CE, TÜV UKCA
BUG125F304	DN 125	250 m <sup>3</sup> /h	40 mm	PN 25	79.1 kg	CE, TÜV UKCA
BUG150F304	DN 150	340 m <sup>3</sup> /h	40 mm	PN 25	108.7 kg	CE, TÜV

☛ BUG with DN 150: Not used in the United Kingdom of Great Britain and Northern Ireland (UK)

### Markets for valve-actuator combinations

	AVM322F120 AVM322F122	AVM322SF132 AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132	AVN224SF232
BUG015F334					
BUG015F324					
BUG015F314					
BUG015F304					
BUG020F304					
BUG025F304					
BUG032F304	1, 3	1, 3	1, 3	2, 3, 4	2, 3
BUG040F304					
BUG050F304					
BUG065F304					
BUG080F304					
BUG100F304					
BUG125F304					
BUG065F316	1, 3	1, 3	1, 3	2, 3	2, 3
BUG150F304	2, 3	2, 3	2, 3	2, 3, 4	2, 3

- Key:
- 1 Intended for the United Kingdom of Great Britain and Northern Ireland (UK)
  - 2 Combination not allowed in UK
  - 3 Intended for the European Union (EU) for control functions
  - 4 Approval in the EU for safety functions. Cat. IV of the PED. TÜV certificate

<sup>3)</sup> BUG065F316 does not have TÜV approval. The valve does not bear the test centre identification number and falls under category I of the Pressure Equipment Directive. The valve can be used with the AVN224SF\*\*\* actuator, but not as a safety device.

Use stuffing box heater at temperatures below 0 °C; use the relevant intermediate piece (accessory) at temperatures above 130 °C or 180 °C. Down to -10 °C, as per AD code of practice W 10, use water with anti-freeze and brine solution. For use as per DIN EN 14597.

When the BUG065F316 is combined with the AVN224S actuator, the permissible media temperature is > 0 °C.

**Accessories**

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0372336240	Adapter (required when temperature of the medium is 180...200 °C)
0378284100	Stuffing box heater 230 VAC, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24 VAC, 15 W for medium below 0 °C
0378384001	Torsion protection DN 65...150
0560260001	Stuffing box for VUG/BUG for cold water application with grease containing silicone

**Combination of BUG with electric actuators**

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

**Pressure differences**

Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132 AVN224SF232		
Page	239	242	250	257	260		
Actuating power	1000 N	1000 N	2500 N	2000 N	1100 N		
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA		
Running time for DN 15...50	120/240 s	80/120 s	40/80/120 s	40/80/120 s	40/80/120 s		
Running time for DN 65...150	-	-	80/160/240 s	80/160/240 s	80/160/240 s		
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BUG015F334 BUG015F324 BUG015F314 BUG015F304 BUG020F304	16.0	16.0	16.0	16.0	25.0	16.0	25.0
BUG025F304	15.2	15.2	16.0	16.0	25.0	16.0	17.0
BUG032F304	9.4	9.4	16.0	16.0	21.0	10.5	10.5
BUG040F304	6.1	6.1	16.0	13.5	13.5	6.5	6.5
BUG050F304	4.0	4.0	11.0	8.5	8.5	4.0	4.0
BUG065F316	-	-	7.1	5.6	5.6	-	-
BUG065F304	-	-	7.1	5.6	5.6	3.0	3.0
BUG080F304	-	-	4.7	3.4	3.4	2.0	2.0
BUG100F304	-	-	3.0	2.2	2.2	1.1	1.1
BUG125F304	-	-	2.0	1.6	1.6	0.8	0.8
BUG150F304	-	-	1.5	1.2	1.2	0.6	0.6
As distribution valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BUG015F334 BUG015F324 BUG015F314 BUG015F304 BUG020F304 BUG025F304 BUG032F304	6.0	6.0	6.0	6.0	25.0	6.0	25.0
BUG040F304	5.5	5.5	4.0	6.0	25.0	6.0	25.0
BUG050F304	3.5	3.5	6.0	6.0	25.0	4.0	25.0
BUG065F316	-	-	4.5	4.5	25.0	-	-
BUG065F304	-	-	4.5	4.5	25.0	2.6	25.0
BUG080F304	-	-	3.5	3.4	25.0	1.7	25.0

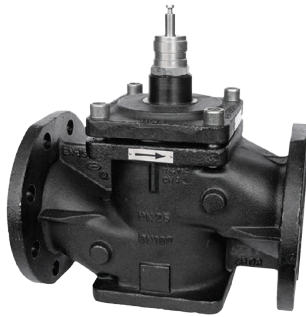
Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132 AVN224SF232		
Page	239	242	250	257	260		
BUG100F304	-	-	3.0	2.2	25.0	1.1	25.0
BUG125F304	-	-	2.0	1.6	25.0	0.8	25.0
BUG150F304	-	-	1.0	1.0	25.0	0.6	25.0

☛ At temperatures above 130 °C, accessories are required

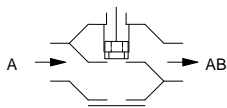
☛ Combination with AVN 224S: with safety function as per DIN EN 14597



## VUP: Pressure-relieved 2-way flanged valve, PN 25 (el.)



VUP040F304



### Features

- Continuous control of cold and hot water in closed circuits, and of steam
- In combination with valve actuators AVM 322(S), AVM 234S, AVF 234S and AVN 224S as a control unit
- Water quality as per VDI 2035
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, with pressure compensation, galvanised and painted black
- Equal-percentage characteristic, can be set with SUT (SAUTER Universal Technology) valve actuators to linear or quadratic
- The valve is closed when the spindle is moved in
- Valve body made of ductile cast iron
- Valve seat, plug and spindle made of stainless steel
- Closing procedure only against the pressure
- Maintenance-free stuffing box in brass with spring-loaded PTFE-FKM-PTFE washer

### Technical data

#### Parameters

Nominal pressure	PN 25
Connection	Flange as per EN 1092-2, form B
Valve characteristic	Equal-percentage
Control ratio	> 100:1
Leakage rate at max. $\Delta p_s$	< 0.05% of $K_{vs}$ value

#### Admissible ambient conditions

Operating temperature <sup>1)</sup>	-20...200 °C
Operating pressure	Up to 120 °C, 25 bar Up to 200 °C, 20 bar

#### Standards and directives

Test mark	TÜV ID: 06973
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### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Valve stroke	Weight
VUP040F304	DN 40	25 m <sup>3</sup> /h	14 mm	10000 g
VUP050F304	DN 50	40 m <sup>3</sup> /h	25 mm	14000 g
VUP065F304	DN 65	63 m <sup>3</sup> /h	25 mm	18000 g
VUP080F304	DN 80	100 m <sup>3</sup> /h	25 mm	25500 g
VUP100F304	DN 100	160 m <sup>3</sup> /h	40 mm	36500 g
VUP125F304	DN 125	250 m <sup>3</sup> /h	40 mm	56500 g
VUP150F304	DN 150	350 m <sup>3</sup> /h	40 mm	84500 g

### Accessories

Type	Description
0372336180	Adaptor (required when temperature of the medium is 130...180 °C)
0372336240	Adaptor (required when temperature of the medium is 180...200 °C)
0378284100	Stuffing box heater 230V~, 15 W for medium below 0 °C
0378284102	Stuffing box heater 24V~, 15 W for medium below 0 °C

<sup>1)</sup> Use stuffing box heater at temperatures below 0 °C; use the relevant adaptor (accessory) at temperatures above 130 °C or 180 °C.

Valve combined with AVN 224S: For use as per DIN EN 14597, the admissible media temperature is > 0 °C.



Type	Description
0378356001	Replacement pack for stuffing box DN 40...80
0378357001	Replacement pack for stuffing box DN 100...150

## Combination of VUP with electrical actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

## Pressure differences

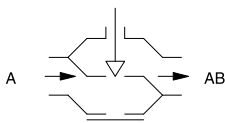
Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	AVN224SF132 AVN224SF232		
Page	239	242	250	257	260		
Actuating power	1000 N	1000 N	2500 N	2000 N	1100 N		
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA		
Running time for DN 40	84/168 s	56/84 s	28/56/84 s	28/56/84 s	28/56/84 s		
Running time for DN 50...80	-	-	50/100/150 s	50/100/150 s	50/100/150 s		
Running time for DN 100...150	-	-	80/160/240 s	80/160/240 s	80/160/240 s		
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VUP040F304	25.0	25.0	25.0	25.0	25.0	25.0	25.0
VUP050F304	-	-	25.0	25.0	25.0	20.0	25.0
VUP065F304	-	-	25.0	25.0	25.0	16.0	17.0
VUP080F304	-	-	25.0	25.0	25.0	12.0	15.0
VUP100F304	-	-	25.0	20.0	22.0	9.0	12.0
VUP125F304	-	-	19.0	14.0	20.0	6.0	6.0
VUP150F304	-	-	15.0	10.0	15.0	4.0	4.0

Cannot be used to close with the pressure

 Combination with AVN 224S: with safety function as per DIN EN 14597



VUS040F305



ValveDim app

## VUS: 2-way flanged valve, PN 40 (el.)

### Features

- Continuous control of cold, warm and hot water in closed circuits, and of steam
- In combination with valve actuators AVM 322(S), AVM 234S and AVF 234S as control unit
- Water quality as per VDI 2035
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, matt black
- Equal-percentage characteristic, can be set with SUT valve actuators to linear or quadratic
- The valve is closed when the spindle is moved in. Closing procedure only against the pressure
- Valve body made of cast steel; spindle, seat and plug of stainless steel
- Maintenance-free stuffing box, made of stainless steel, with spring-loaded PTFE washer up to 220 °C, with graphite seal up to 260 °C

### Technical data

#### Parameters

Nominal pressure	PN 40
Operating pressure	40 bar at -10...50 °C 36.3 bar at 120 °C 29.4 bar at 220 °C 27.8 bar at 260 °C
Connection	Flange as per EN 1092-2, form B
Valve characteristic	Equal-percentage
Control ratio	> 50: 1
Leakage rate	≤ 0.05% of $K_{vs}$ value

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...260 °C
-------------------------------------	--------------

#### CE/UKCA conformity<sup>2)</sup>

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534
PED 2014/68/EU (CE)	VdTÜV pressure information sheet 100, sheet 1, cat. IV EN 12952-11, EN 12953-9
PESR-2016 (UKCA)	Article 4.3 AD 2000 Rulebook

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Valve stroke	Weight
VUS015F375	DN 15	0.16 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F365	DN 15	0.25 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F355	DN 15	0.4 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F345	DN 15	0.63 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F335	DN 15	1 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F325	DN 15	1.6 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F315	DN 15	2.5 m <sup>3</sup> /h	20 mm	5.1 kg
VUS015F305	DN 15	4 m <sup>3</sup> /h	20 mm	5.1 kg
VUS020F305	DN 20	6.3 m <sup>3</sup> /h	20 mm	5.9 kg
VUS025F305	DN 25	10 m <sup>3</sup> /h	20 mm	6.8 kg
VUS032F305	DN 32	16 m <sup>3</sup> /h	20 mm	8.4 kg

<sup>1)</sup> No stuffing box heater required down to -10 °C. Above 130 °C or 180 °C, use the relevant adapter (accessory). Above 200 °C and up to 260 °C, use stuffing box with graphite seal (accessory)

<sup>2)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues





Type	Nominal diameter	K <sub>vs</sub> value	Valve stroke	Weight
VUS040F305	DN 40	25 m <sup>3</sup> /h	20 mm	10.6 kg
VUS050F305	DN 50	40 m <sup>3</sup> /h	20 mm	13.2 kg
VUS065F305	DN 65	63 m <sup>3</sup> /h	30 mm	18.6 kg
VUS080F305	DN 80	100 m <sup>3</sup> /h	30 mm	25.1 kg
VUS100F305	DN 100	160 m <sup>3</sup> /h	30 mm	36.4 kg

## CE/UKCA conformity

	EU		UK	
	PED 2014/68/EU	Label	PESR-2016 (UKCA)	Label
VUS015F375	Art. 4.3	Without CE	Art. 8.3	Without UKCA
VUS015F365				
VUS015F355				
VUS015F345				
VUS015F335				
VUS015F325				
VUS015F315				
VUS015F305				
VUS020F305				
VUS025F305				
VUS032F305				
VUS040F305	Category I	CE	Category I	UKCA
VUS050F305				
VUS065F305				
VUS080F305				
VUS100F305				

## Accessories

Type	Description
0372336180	Adaptor (required when temperature of the medium is 130...180 °C)
0372336240	Adaptor (required when temperature of the medium is 180...260 °C)
0378373001	Stuffing box with graphite seal for temperatures of 220...260 °C; DN 15...50
0378373002	Stuffing box with graphite seal for temperatures of 220...260 °C; DN 65...100

### Combination of VUS with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

#### Pressure differences

Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232		
Page	239	242	250	257		
Actuating power	1000 N	1000 N	2500 N	2000 N		
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA		
Running time for DN 15...50	120/240 s	80/120 s	40/80/120 s	40/80/120 s		
Running time for DN 65...100	-	-	60/120/180 s	60/120/180 s		
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	
VUS015F375 VUS015F365 VUS015F355 VUS015F345 VUS015F335 VUS015F325 VUS015F315 VUS015F305 VUS020F305	35.0	35.0	40.0	40.0	25.0	
VUS025F305	17.4	17.4	37.8	29.6	25.0	
VUS032F305	12.2	12.2	28.7	22.5	21.0	
VUS040F305	6.2	6.2	16.4	12.8	13.5	
VUS050F305	3.7	3.7	10.5	8.2	8.5	
VUS065F305	-	-	6.1	4.7	5.6	
VUS080F305	-	-	3.9	3.0	3.4	
VUS100F305	-	-	1.5	1.5	2.2	

Cannot be used to close with the pressure

 At temperatures above 130 °C, accessories are required

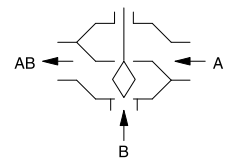
## BUS: 3-way flanged valve, PN 40 (el.)

### Features

- Continuous control of cold/warm/hot water in HVAC installations in closed circuits
- In combination with valve actuators AVM 322(S), AVM 234S and AVF 234S as control unit
- Water quality as per VDI 2035
- Not suitable for drinking water
- Valve with flange connection as per EN 1092-2, seal form B
- Regulating valve, free of silicone grease, matt black
- Control passage, linear characteristic, DN 15...100; adjustable with SUT (SAUTER Universal Technology) valve actuators to equal-percentage
- Mixing passage, linear characteristic
- The control passage is closed when the spindle is moved out
- For use only as a control valve
- Valve body made of cast steel
- Stainless-steel seat and plug
- Stainless-steel spindle
- Maintenance-free stuffing box, made of stainless steel, with spring-loaded PTFE washer up to 220 °C, with graphite seal up to 260 °C



BUS015F2\*5



### Technical data

Parameters	
Nominal pressure	PN 40
Operating pressure	40 bar at -10...50 °C 36.3 bar at 120 °C 29.4 bar at 220 °C 27.8 bar at 260 °C
Connection	Flange as per EN 1092-2, form B
Control ratio	> 30: 1
Mixing passage valve characteristic	Linear
Control passage leakage rate	≤ 0.05% of $K_{vs}$ value
Mixing passage leakage rate	≤ 1.0% of $K_{vs}$ value

### Ambient conditions

Operating temperature <sup>1)</sup>	-10...260 °C
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### CE/UKCA conformity<sup>2)</sup>

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534
PED 2014/68/EU (CE)	Fluid group II (liquids only)
PESR-2016 (UKCA)	Fluid group II (liquids only)

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Control passage valve characteristic	Valve stroke	Weight
BUS015F225	DN 15	1.6 m <sup>3</sup> /h	Linear	20 mm	7.2 kg
BUS015F215	DN 15	2.5 m <sup>3</sup> /h	Linear	20 mm	7.2 kg
BUS015F205	DN 15	4 m <sup>3</sup> /h	Linear	20 mm	7.2 kg
BUS020F205	DN 20	6.3 m <sup>3</sup> /h	Linear	20 mm	8.4 kg

<sup>1)</sup> No stuffing box heater required down to -10 °C. At temperatures below -10 °C and down to -60 °C, use special version with bellows seal (available on request, only to DN 100). Application: Water with anti-freeze (glycol up to 55% and brine solution), max. operating pressure 30 bar. Above 130 °C or 180 °C, use the relevant adapter (accessory). Above 220 °C and up to 260 °C, use stuffing box with graphite seal (accessory)

<sup>2)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues



ValveDim app



Type	Nominal diameter	$K_{vs}$ value	Control passage valve characteristic	Valve stroke	Weight
BUS025F205	DN 25	10 m <sup>3</sup> /h	Linear	20 mm	9.4 kg
BUS032F205	DN 32	16 m <sup>3</sup> /h	Linear	20 mm	12.4 kg
BUS040F205	DN 40	25 m <sup>3</sup> /h	Linear	20 mm	15.5 kg
BUS050F205	DN 50	40 m <sup>3</sup> /h	Linear	20 mm	19.2 kg
BUS065F205	DN 65	63 m <sup>3</sup> /h	Linear	30 mm	27.6 kg
BUS080F205	DN 80	100 m <sup>3</sup> /h	Linear	30 mm	36.5 kg
BUS100F205	DN 100	160 m <sup>3</sup> /h	Linear	30 mm	61.2 kg

### CE/UKCA conformity

	EU		UK	
	PED 2014/68/EU	Label	PESR-2016 (UKCA)	Label
BUS015F225 BUS015F215 BUS015F205 BUS020F205 BUS025F205 BUS032F205	Art. 4.3	Without CE	Art. 8.3	Without UKCA
BUS040F205 BUS050F205 BUS065F205 BUS080F205 BUS100F205	Category I	CE	Category I	UKCA

### Accessories

Type	Description
0372336180	Adaptor (required when temperature of the medium is 130...180 °C)
0372336240	Adaptor (required when temperature of the medium is 180...260 °C)
0378373001	Stuffing box with graphite seal for temperatures of 220...260 °C; DN 15...50
0378373002	Stuffing box with graphite seal for temperatures of 220...260 °C; DN 65...100

### Combination of BUS with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Pressure differences

Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	
Page	239	242	250	257	
Actuating power	1000 N	1000 N	2500 N	2000 N	
Control signal	2-/3-point	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	2-/3-point, 0...10 V, 4...20 mA	
Running time for DN 15...50	120/240 s	80/120 s	40/80/120 s	40/80/120 s	
Running time for DN 65...100	-	-	60/120/180 s	60/120/180 s	
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
BUS015F225 BUS015F215 BUS015F205	35.0	35.0	40.0	40.0	40.0
BUS020F205	35.0	35.0	40.0	34.7	40.0
BUS025F205	17.4	17.4	37.8	29.6	37.0

Actuator	AVM322F120 AVM322F122	AVM322SF132	AVM234SF132	AVF234SF132 AVF234SF232	
Page	239	242	250	257	
BUS032F205	12.2	12.2	27.0	21.1	27.0
BUS040F205	6.2	6.2	16.4	12.8	16.0
BUS050F205	3.7	3.7	10.5	8.2	10.0
BUS065F205	-	-	6.1	4.7	6.1
BUS080F205	-	-	3.9	3.0	3.9
BUS100F205	-	-	2.5	1.9	2.5

Cannot be used as distribution valve

☛ At temperatures above 130 °C, accessories are required



# Valve actuators

SAUTER actuators adapt themselves automatically to the valve. Their accurate control provides a high degree of energy efficiency and a low noise level. Furthermore, they can adjust the regulating valves themselves. To save energy, it is possible to include an electric cut-off. SAUTER valve actuators can be used for controllers with a switching or continuous output.

## Overview of valve actuators



Type designation	AVM 105, 115	AVM 105S, 115S	AVM 215	AVM 215S
<b>Technical data</b>				
Max. nominal stroke (mm)	8	8	8...20 mm	10...20 mm
Max. pushing force (N)	250, 500	250, 500	500	500
Running time s	30, 120	35, 60, 120	7.5	7.5
Power supply (V)	24/230	24	230 V~	24 V~/=
<b>Control</b>				
2-point	•	•	•	•
3-point	•	•	•	•
Positioner	–	•	–	•
Spring return	–	–	–	–
Combination options with valve	VUN/BUN, VUD/BUD, VUE/BUE	VUN/BUN, VUD/BUD, VUE/BUE	VUG/BUG, VUS/BUS to DN 025	VUG/BUG, VUS/BUS to DN 025
Further information	Page 230	Page 232	Page 234	Page 236



Type designation	AVM 321, 322	AVM 321S, 322S
<b>Technical data</b>		
Max. nominal stroke (mm)	8, 20	8, 20
Max. pushing force (N)	1000	1000
Running time	6, 12 s/mm	4, 12 s/mm
Power supply (V)	24 / 230	24 / (230)
<b>Control</b>		
2-point	•	•
3-point	•	•
Positioner	–	•
Spring return	–	–
Combination options with valve	VUD/BUD/VQD/BQD, VUE/BUE/VQE/BQE, VUG/BUG VUN/BUN, VUS/BUS, VUP, V6R/B6R	VUD/BUD/VQD/BQD, VUE/BUE/VQE/BQE, VUG/BUG, VUN/BUN, VUS/BUS, VUP, V6R/B6R
Further information	Page 238	Page 241



Type designation	AVM 234S	AVF 234S	AVN 224S
<b>Technical data</b>			
Max. nominal stroke (mm)	40	40	40
Max. pushing force (N)	2500	2000	1100
Running time	2, 4, 6, s/mm	2, 4, 6 s/mm	2, 4, 6 s/mm
Power supply (V)	24 / (230)	24 / (230)	24 / (230)
<b>Control</b>			
2-point	•	•	•
3-point	•	•	•
Positioner	•	•	•
Spring return	–	•	•
Combination options with valve	VQD/BQD, VQE/BQE, VUG/BUG, VUS/BUS, VUP, V6R/B6R	VQD/BQD, VQE/BQE, VUG/BUG, VUS/BUS, VUP, V6R/B6R	VQE/BQE, VUG/BUG, VUS/BUS, VUP, V6R/B6R
Further information	Page 249	Page 256	Page 259



AVM1\*5F\*\*\*



## AVM 105, 115: Valve actuator

### Features

- Activation of 2-way and 3-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series
- For controllers with a switching (2-/3-point) output
- Synchronous motor with electronic control unit and time-dependent cut-off
- Direction of operation can be selected directly on the cable
- Maintenance-free gearbox with magnetic coupling
- Gear unit can be disengaged to position the valve by hand (hexagon key provided)
- Connection with valve spindle performed automatically
- Cap nut for valve fitting made of brass
- Fitting vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 230 VAC	±15%, 50...60 Hz

#### Parameters

Actuator stroke <sup>1)</sup>	0...8 mm
Response time	200 ms

#### Ambient conditions

Ambient temperature	-10...55 °C
Media temperature	Max. 100 °C
Ambient humidity	5...95% rh, no condensation

#### Function

Control	2-/3-point
---------	------------

#### Construction

Weight	0.7 kg
Housing	Lower section black, upper section yellow
Housing material	Flame-retardant plastic
Power cable	1.2 m long, 3 × 0.75 mm <sup>2</sup>

#### Standards, directives

Type of protection	IP54 (EN 60529), horizontal
Protection class 24 V	III (EN 60730)
Protection class 230 V	II (EN 60730)

#### CE conformity according to

EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Low-Voltage Directive 2014/35/EU	EN 60730-1 EN 60730-2-14 Over-voltage category III Degree of contamination II
Directive 2006/95/EC	EEC (II B)
Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

### Overview of types

Type	Voltage	Actuating power	Running time	Power consumption
AVM105F100	230 V~	250 N	30.0 s	2.4 W, 4.5 VA
AVM105F120	230 V~	250 N	120.0 s	2.0 W, 4.0 VA

<sup>1)</sup> Stroke 10 mm for AVM115F901





Type	Voltage	Actuating power	Running time	Power consumption
AVM105F122	24 V~	250 N	120.0 s	1.6 W, 1.7 VA
AVM115F120	230 V~	500 N	120.0 s	2.0 W, 4.0 VA
AVM115F122	24 V~	500 N	120.0 s	1.6 W, 1.7 VA
AVM115F901	230 V~	500 N	160.0 s	2.0 W, 4.0 VA

☛ AVM115F901: For SAUTER Valveco VCL040 and VCL050, inverse scale, inverse connection

### Accessories

Type	Description
0372145001	Auxiliary change-over contacts, single
0372145002	Auxiliary change-over contacts, double
0372249001	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 100... 130 °C
0372273001	Adapter for Siemens valve VVG/VXG 44, 48
0372286001	Potentiometer 130 Ω
0372286002	Potentiometer 1000 Ω
0372286003	Potentiometer, 5000 Ω
0372320001	Hexagon key as visualisation for position indicator

☛ Auxiliary change-over contacts: Infinitely variable 0...100%, admissible load 5(2) A, 24...230 V

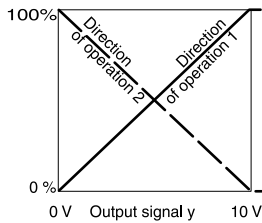
☛ Potentiometers: Only one potentiometer or one set of auxiliary contacts can be fitted for each actuator



## AVM 105S, 115S: Valve actuator with SAUTER Universal Technology (SUT)



AVM1\*5SF\*\*\*



### Features

- Activation of 2-way and 3-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series
- For controllers with a switching (2- and 3-point) or continuous (0...10 V) output
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit and electronic, force-dependent cut-off
- Automatic recognition of applied control signal (continuous or switched)
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/equal-percentage) can be set on the actuator
- Automatic adaptation to valve stroke
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the valve by hand (hexagon key provided)
- Connection with valve spindle performed automatically after control voltage is applied
- Brass cap nut for fitting the valve
- Fitting vertically upright to horizontal, not suspended

### Technical data

Power supply		
	Power supply 24 VAC	±20%, 50...60 Hz
	Power supply 24 VDC	-10...20%
Parameters		
	Actuator stroke <sup>1)</sup>	0...8 mm
	Response time	200 milliseconds
Positioner	Control signal	0...10 V, R <sub>i</sub> > 100 kΩ
	Positional feedback signal	0...10 V, load > 10 kΩ
	Starting point U <sub>0</sub>	0 or 10 V
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	200 mV
Ambient conditions		
	Ambient temperature	-10...55 °C
	Ambient humidity	5...95% rh, no condensation
	Media temperature	Max. 100 °C
Construction		
	Weight	0.7 kg
	Housing	Lower section black, upper section yellow
	Housing material	Fire-retardant plastic
	Power cable	1.2 m, 5 × 0.75 mm <sup>2</sup>
Standards, directives		
	Type of protection	IP54 (EN 60529), horizontal
	Protection class	III (IEC 60730)
CE conformity	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3, EN 61000-6-4

<sup>1)</sup> Stroke 10 mm for AVM115SF901



### Overview of types

Type	Voltage	Actuating power	Running time	Power consumption
AVM105SF132	24 V~/=	250 N	35/60/120 s	4.8 W, 8.5 VA
AVM115SF132	24 V~/=	500 N	60/120 s	4.9 W, 8.7 VA
AVM115SF901	24 V~/=	500 N	80/160 s	4.9 W, 8.7 VA

☛ AVM105SF132, AVM115SF132: Equal-percentage characteristic, can be converted to linear

☛ AVM115SF901: For SAUTER Valveco VCL040 and VCL050, inverse scale, inverse connection

### Accessories

Type	Description
0313529001	Split-range unit for adjusting sequences, fitted in separate junction box
0372145001	Auxiliary change-over contacts, single
0372145002	Auxiliary change-over contacts, double
0372249001	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 100... 130 °C
0372249002	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 130... 150 °C
0372273001	Adapter for Siemens valve VVG/VXG 44, 48
0372286001	Potentiometer 130 Ω
0372286002	Potentiometer 1000 Ω
0372286003	Potentiometer, 5000 Ω

☛ Auxiliary change-over contacts: Infinitely variable 0...100%, admissible load 5(2) A, 24...230 V

☛ Potentiometers: Only one potentiometer or one set of auxiliary contacts can be fitted for each actuator





AVM215F120R



## AVM 215: Valve actuator

### Features

- Actuation of 2- and 3-way valves
- For controllers with a switching (2-/3-point) output
- Synchronous motor with electronic control unit and cut-off
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the valve by hand with the provided hexagon key (load-free)
- Connection with valve spindle performed semi-automatically
- Fitting vertically upright to horizontal, not suspended

### Technical data

Power supply		
Power supply	230 V~ ±15%, 50...60 Hz	
Parameters		
Actuator stroke	8...20 mm	
Response time	200 ms	
Ambient conditions		
Ambient temperature	-10...55 °C	
Media temperature	Max. 100 °C	
Ambient humidity	5...85% rh, no condensation	
Function		
Control	2-/3-point	
Construction		
Weight	1 kg	
Housing	Lower section black, upper section yellow	
Housing material	Flame-retardant plastic	
Power cable	1.2 m long, 3 × 0.75 mm <sup>2</sup>	
Standards and directives		
Type of protection	IP54 (EN 60529), horizontal	
Protection class	230 V: II (EN 60730)	
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14 Over-voltage category III Degree of contamination II
	Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

### Overview of types

Type	Voltage	Actuating power	Running time	Power consumption
AVM215F120R	230 V~	400 N	7.5 s/mm	3.2 W 7.0 VA

### Accessories

Type	Description
0510390029	Mounting set for SAUTER VDL valves with 15 mm stroke, thread DN 40 and DN 50 for AVM215(S)F***R
0510390030	Mounting set for SAUTER VU*/BU* valves with 8 mm stroke for AVM215(S)F***R
0510390031	Mounting set for SAUTER VU*/BU* valves with 20 mm stroke for AVM215(S)F***R



Type	Description
0510390032	Mounting set for SAUTER V6*/B6* and VX*/BX* valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390033	Mounting set for IMI TA-Fusion valves, thread DN 32 to DN 50 for AVM215(S)F***R
0510390034	Mounting set for IMI TA-Fusion valves, thread DN 65 to DN 80 for AVM215(S)F***R
0510390035	Mounting set for IMI CV valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390036	Mounting set for IMI KTM 512 valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390037	Mounting set for IMI KTM 512 valves, thread DN 65 to DN 100 for AVM215(S)F***R
0510390038	Mounting set for Frese valves up to 20 mm stroke, flange DN 50 to DN 80 for AVM215(S)F***R
0510390039	Mounting set for Danfoss VFS/VL/VF valves: thread DN 15 to DN 50, VEFS2: DN 25 to DN 50 for AVM215(S)F***R
0510390040	Mounting set for Danfoss VRB/VRG valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390060	Adapter set for AVM 2*5 for Schneider V241/V341
0510480003	Dual auxiliary switch unit for valve actuators AVM215(S), AVM321(S) with 8 mm stroke
0510480004	Dual auxiliary switch unit
0372320001	Hexagon key as visualisation for position indicator

☛ Auxiliary change-over contacts: infinitely variable 0...100%, admissible load 3(1.5) A, 24...230 V

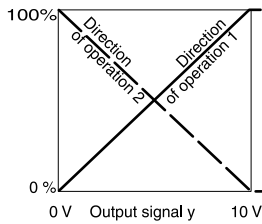
☛ Accessory 0510390029 can also be used for SAUTER Valveco compact DN 40 and DN 50



## AVM 215S: Valve actuator with SAUTER Universal Technology (SUT)



AVM215SF132



### Features

- Actuation of 2- and 3-way valves
- For controllers with a switching (2- and 3-point) or continuous (0...10 V) output
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit and electronic, force-dependent cut-off
- Automatic recognition of applied control signal (continuous or switched)
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/equal-percentage) can be set on the actuator
- Automatic adaptation to valve stroke
- Direction of operation can be selected directly on the cable
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the valve by hand with the hexagon key provided (load-free)
- Connection with valve spindle performed semi-automatically after control voltage is applied
- Fitting vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	-10...20%

#### Parameters

	Actuator stroke	8...20 mm
	Response time	200 milliseconds
Positioner	Control signal	0...10 V, $R_i > 100 \text{ k}\Omega$
	Position feedback signal	0...10 V, load $> 10 \text{ k}\Omega$
	Starting point $U_0$	0 or 10 V
	Control span $\Delta U$	10 V
	Switching range $X_{sh}$	200 mV

#### Ambient conditions

Ambient temperature	-10...55 °C
Ambient humidity	5...85% rh, no condensation
Media temperature	Max. 100 °C

#### Construction

Weight	1 kg
Housing	Lower section black, upper section yellow
Housing material	Flame-retardant plastic
Power cable	1.2 m, $5 \times 0.5 \text{ mm}^2$

#### Standards, directives

	Type of protection	IP54 (EN 60529), horizontal
	Protection class	III (IEC 60730)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3, EN 61000-6-4



### Overview of types

Type	Voltage	Actuating power	Running time	Power consumption
AVM215SF132R	24 VAC/DC	500 N	7.5 s/mm 15 s/mm	3.5 W, 6.6 VA 2.7 W, 5.3 VA
AVM215SF132-7	24 V~/=	500 N	7.5 s/mm	3.5 W, 6.6 VA

☛ AVM215SF132-7 including adapter set for VDL flanged valves DN 50, DN 65 and DN 80

### Accessories

Type	Description
0510390029	Mounting set for SAUTER VDL valves with 15 mm stroke, thread DN 40 and DN 50 for AVM215(S)F***R
0510390030	Mounting set for SAUTER VU*/BU* valves with 8 mm stroke for AVM215(S)F***R
0510390031	Mounting set for SAUTER VU*/BU* valves with 20 mm stroke for AVM215(S)F***R
0510390032	Mounting set for SAUTER V6*/B6* and VX*/BX* valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390033	Mounting set for IMI TA-Fusion valves, thread DN 32 to DN 50 for AVM215(S)F***R
0510390034	Mounting set for IMI TA-Fusion valves, thread DN 65 to DN 80 for AVM215(S)F***R
0510390035	Mounting set for IMI CV valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390036	Mounting set for IMI KTM 512 valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390037	Mounting set for IMI KTM 512 valves, thread DN 65 to DN 100 for AVM215(S)F***R
0510390038	Mounting set for Frese valves up to 20 mm stroke, flange DN 50 to DN 80 for AVM215(S)F***R
0510390039	Mounting set for Danfoss VFS/VL/VF valves: thread DN 15 to DN 50, VEFS2: DN 25 to DN 50 for AVM215(S)F***R
0510390040	Mounting set for Danfoss VRB/VRG valves, thread DN 15 to DN 50 for AVM215(S)F***R
0510390060	Adapter set for AVM 2*5 for Schneider V241/V341
0510480003	Dual auxiliary switch unit for valve actuators AVM215(S), AVM321(S) with 8 mm stroke
0510480004	Dual auxiliary switch unit
0372320001	Hexagon key as visualisation for position indicator

☛ Auxiliary change-over contacts: infinitely variable 0...100%, admissible load 3(1.5) A, 24...230 V

☛ Accessory 0510390029 can also be used for SAUTER Valveco compact DN 40 and DN 50



AVM32\*F1\*\*



## AVM 321, 322: Valve actuator

### Features

- In ventilation air conditioning units<sup>1)</sup> for actuation of 2- and 3-way valves of type series AVM 321: VUD, VUE, VUN, BUD, BUE, BUN and AVM 322: V6R, VQD, VQE, VUG, VUP, VUS, B6R, BQD, BQE, BUG, BUS
- For controllers with a switching output (2-point or 3-point control)
- Synchronous motor with electronic control unit and load-dependent cut-off
- Direction of operation and running time can be set using coding switches
- Crank handle for external manual adjustment with motor cut-off
- Low operating noise
- Simple assembly onto valve; spindle is automatically connected after nominal voltage is applied
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Electrical parallel operation of five actuators
- Three-piece housing made of flame-retardant yellow/black plastic and seals with type of protection IP54
- Maintenance-free gearbox made of plastic; threaded spindle and gearbox base-plates made of steel
- Patented actuator-valve coupling
- Mounting column made of aluminium
- Fixing bracket made of cast light alloy for valve fitting with 20 mm stroke and made of plastic for valve fitting with 8 mm stroke
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Two break-out cable inlets for metric cable gland made of plastic M20 × 1.5
- Fitting vertically upright to horizontal, not suspended

### Technical data

Power supply	
Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	-10...20%
Power supply 230 VAC	±15%
Power consumption <sup>2)</sup>	< 2.4 W, < 4.0 VA (at nominal voltage, with movement)
Parameters	
Nominal force <sup>3)</sup>	1000 N
Operating noise <sup>4)</sup>	< 30 dB (A) at nominal force
Response time	> 200 ms
Media temperature <sup>5)</sup>	0...100 °C
Ambient conditions	
Operating temperature	-10...55 °C
Storage and transport temperature	-40...80 °C
Humidity without condensation	5...85% rh
Standards, directives	
Type of protection	IP54 (EN 60529)
Protection class	II (EN 60730), III (EN 60730)

<sup>1)</sup> To be used outside HVAC applications only after consultation with the manufacturer

<sup>2)</sup> For power consumption in combination with accessory 0500570001, see section "Power consumption at nominal voltage"

<sup>3)</sup> Actuating power 1000 N under nominal conditions (24 V or 230 V, 25 °C ambient temperature, 50 Hz). With boundary conditions (19.2 V~ / 28.8 V~ / 21. V= / 28.8 V=, -10 °C / 55 °C, 60 Hz) and running time, the actuating/tensile force is minimised to 800 N

<sup>4)</sup> Operating noise with the slowest running time, measuring distance 1 m

<sup>5)</sup> At media temperature > 100 °C appropriate accessory must be used (temperature adapter); at media temperature < 0 °C appropriate accessory must be used (stuffing box heater)





CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14 (AVM32*F110 and F120)
	Over-voltage categories	III
	Degree of contamination	II
	Max. altitude	2000 m
	Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

### Overview of types

Type	Voltage	Nominal stroke	Running time	Power consumption	Dimensions W x H x D	Weight
AVM322F120	230 V~	20 mm	6 (12) s/mm	< 2.4 W, < 4.0 VA	160 × 241 × 88 mm	1.6 kg
AVM322F122	24 V~/=	20 mm	6 (12) s/mm	< 2.0 W, < 3.0 VA	160 × 241 × 88 mm	1.6 kg
AVM321F110	230 V~	8 mm	12 (6) s/mm	< 2.4 W, < 4.0 VA	160 × 187 × 88 mm	1.5 kg
AVM321F112	24 V~/=	8 mm	12 (6) s/mm	< 2.0 W, < 3.0 VA	160 × 187 × 88 mm	1.5 kg

- ☛ AVM32\*F1\*2: CSA-certified actuators on request (only for devices with supply voltage 24 V~/=). Accessory is not CSA-certified.
- ☛ Power consumption: at nominal voltage and with movement; for more power consumption data, see table "Power consumption for supply voltage".

### Accessories

#### AVM 321, 322

Type	Description
0500570001	Energy module for reset function for valve actuators AVM321S/AVM322S and AVM321F112/AVM322F122
0510600001	Cable module, 1.2 m, 3-wire, PVC
0510600002	Cable module, 1.2 m, 3-wire, halogen-free
0510600003	Cable module, 1.2 m, 6-wire, PVC
0510600004	Cable module, 1.2 m, 6-wire, halogen-free
0510600005	Cable module, 5 m, 3-wire, PVC
0510600006	Cable module, 5 m, 3-wire, halogen-free
0510600007	Cable module, 5 m, 6-wire, PVC
0510600008	Cable module, 5 m, 6-wire, halogen-free

#### AVM 321

Type	Description
0372249001	Temperature adapter for AVM 321(S), required when temperature of the medium > 100...130 °C (recommended for temperatures < 10 °C) DN 15...50
0372249002	Adaptor required when temperature of the medium is 130...150 °C, DN 15...50
0510480003	Dual auxiliary switch unit for valve actuators AVM215(S), AVM321(S) with 8 mm stroke

#### AVM 322

Type	Description
0372336180	Adaptor for media temperature above 100 °C to 150 °C for AVM322(S)
0372336240	Adaptor for media temperature above 130 °C to 200 °C for AVM322(S)
0510240012	Mounting set for SAUTER V6** / B6** and VX*/BX* valves with 14 mm stroke for AVM322(S)
0510390006	Mounting set for Siemens valves with 20 mm stroke, spindle diameter 10 mm for AVM322(S)
0510390007	Mounting set for Johnson Controls valves up to 20 mm stroke for AVM322(S)
0510390008	Mounting set for Honeywell valves up to 20 mm stroke for AVM322(S)
0510390009	Mounting set for LDM valves up to 20 mm stroke for AVM322(S)
0510390010	Mounting set for ITT-Dräger valves up to 20 mm stroke for AVM322(S)

Type	Description
0510390012	Mounting set for Belimo valves up to 20 mm stroke for AVM322(S)
0510390028	Adapter set for non-SAUTER valves (Frese), stroke 20 mm
0510480004	Double auxiliary contact

⚡ Accessory is not CSA-certified.



## AVM 321S, 322S: Valve actuator

### Features

- In ventilation and air conditioning units for actuating 2- and 3-way valves of type series AVM 321S: VUD, VUE, VUN, BUD, BUE, BUN and AVM 322S: V6R, VQD, VQE, VUG, VUP, VUS, B6R, BQD, BQE, BUG, BUS
- For controllers with constant output (0...10 V / 4...20 mA) or switching output (2-point or 3-point control)
- BLDC motor (brushless DC) with SUT (SAUTER Universal Technology) electronic control unit of the third generation and electronic load-dependent cut-off
- Automatic detection of applied control signal (continuous or switching), operating indicator using bi-colour LED
- Automatic adaptation to the stroke of the valve, between 8 and 20 mm
- Low operating noise
- With the built-in absolute distance measurement system, the position is always maintained in the case of power failure
- The direction of operation, characteristic (linear/equal percentage), running time and control signal (voltage/current) can be adjusted via coding switches
- Integrated forced operation can be set via coding switches (with selectable direction of operation)
- Easy re-initialisation using a coding switch
- Crank handle for external manual adjustment with motor cut-off
- Simple assembly onto valve; spindle is automatically connected after control voltage is applied
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Electrical parallel operation of five actuators
- Parameterisation option via the BUS interface
- Three-piece housing made of flame-retardant yellow/black plastic and seals with type of protection IP54
- Maintenance-free gearbox made of plastic; threaded spindle and gearbox base-plates made of steel
- Patented actuator-valve coupling
- Mounting column made of aluminium
- Fixing bracket made of cast light alloy for valve fitting with 20 mm stroke and made of plastic for valve fitting with 8 mm stroke
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Two break-out cable inlets for metric cable glands made of plastic M20 × 1.5
- Fitting vertically upright to horizontal, not suspended
- Nominal actuating power 1000 N



AVM32\*SF132



### Technical data

Power supply		
Power supply 24 VAC		±20%, 50...60 Hz
Power supply 24 VDC		-10...20%
Power supply 230 VAC		±15%
Power consumption <sup>1)</sup>		< 1.7 W, < 3.5 VA (at nominal voltage, with movement)
Parameters		
Nominal force <sup>2)</sup>		1000 N
Operating noise <sup>3)</sup>		< 30 dB (A) at nominal force
Response time		> 200 ms

<sup>1)</sup> For power consumption in combination with accessory 0500570001, see section "Power consumption at nominal voltage"

<sup>2)</sup> Actuating power 1000 N under nominal conditions (24 V, 25 °C ambient temperature, 50 Hz). With boundary conditions (19.2 V~ / 28.8 V~ / 21.6 V= / 28.8 V=, -10 °C / 55 °C, 60 Hz) and running time, the actuating/tensile force is minimised to 800 N

<sup>3)</sup> Noise level at the slowest running time, measuring distance 1 m



Media temperature <sup>4)</sup>	0...100 °C
Nominal voltage	
Characteristic	Linear/equal percentage
Control signal $y^5)$	0...10 V, $R_i \geq 50 \text{ k}\Omega$ 4...20 mA, $R_i \leq 50 \Omega$
Positional feedback signal $y_0$	0...10 V, load $\geq 5 \text{ k}\Omega$
Starting point $U_0$	0 or 10 V
Starting point $I_0$	4 or 20 mA
Control span $\Delta U$	10 V
Control span $\Delta I$	16 mA
Hysteresis $X_{sh}$	160 mV 0.22 mA

#### Ambient conditions


Operating temperature	-10...55 °C
Storage and transport temperature	-40...80 °C
Air humidity without condensation	5...85% rh

#### Standards, directives

	Type of protection	IP54 (EN 60529)
	Protection class	III (EN 60730-1), EN 60730-2-14
CE conformity according to	EMC Directive 2014/30/EU	EN 610000-6-1, EN 610000-6-2, EN 610000-6-3, EN 610000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14 (AVM32*F110 and F120)
	Over-voltage categories	III
	Degree of contamination	II
	Max. altitude	2000 m
	Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

#### Overview of types

Type	Voltage	Nominal stroke	Running time	Dimensions W x H x D	Weight
AVM321SF132	24 V~/=	8 mm	12 (4) s/mm	160 x 187 x 88 mm	1.5 kg
AVM322SF132	24 V~/=	20 mm	6 (4) s/mm	160 x 241 x 88 mm	1.6 kg

 CSA-certified actuators on request (only for devices with supply voltage 24 V~/=). Accessory is not CSA-certified.

#### Accessories

AVM 321S, 322S

Type	Description
0500570003	Constant 230 V module for valve actuators AVM321S and AVM322S
0500420001	Split-range unit module for setting sequences for valve actuators AVM321S and AVM322S
0500420002	4...20 mA feedback module
0500570001	Energy module for reset function for valve actuators AVM321S/AVM322S and AVM321F112/AVM322F122
0510600001	Cable module, 1.2 m, 3-wire, PVC
0510600002	Cable module, 1.2 m, 3-wire, halogen-free
0510600003	Cable module, 1.2 m, 6-wire, PVC
0510600004	Cable module, 1.2 m, 6-wire, halogen-free
0510600005	Cable module, 5 m, 3-wire, PVC
0510600006	Cable module, 5 m, 3-wire, halogen-free

<sup>4)</sup> At media temperature > 100 °C appropriate accessory must be used (temperature adapter); at media temperature < 0 °C appropriate accessory must be used (stuffing box heater)

<sup>5)</sup> Positional feedback signal: also for 2- or 3-point, depending on type of connection

Type	Description
0510600007	Cable module, 5 m, 6-wire, PVC
0510600008	Cable module, 5 m, 6-wire, halogen-free

## AVM 321S

Type	Description
0372249001	Temperature adapter for AVM 321(S), required when temperature of the medium > 100...130 °C (recommended for temperatures < 10 °C) DN 15...50
0372249002	Adaptor required when temperature of the medium is 130...150 °C, DN 15...50
0510480003	Dual auxiliary switch unit for valve actuators AVM215(S), AVM321(S) with 8 mm stroke

## AVM 322S

Type	Description
0500240001	Adaptor for media temperature above 100 °C to 150 °C for AVM322(S)
0500240002	Adaptor for media temperature above 130 °C to 200 °C for AVM322(S)
0510240012	Mounting set for SAUTER V6** / B6** and VX*/BX* valves with 14 mm stroke for AVM322(S)
0510390006	Mounting set for Siemens valves with 20 mm stroke, spindle diameter 10 mm for AVM322(S)
0510390007	Mounting set for Johnson Controls valves up to 20 mm stroke for AVM322(S)
0510390008	Mounting set for Honeywell valves up to 20 mm stroke for AVM322(S)
0510390009	Mounting set for LDM valves up to 20 mm stroke for AVM322(S)
0510390010	Mounting set for ITT-Dräger valves up to 20 mm stroke for AVM322(S)
0510390012	Mounting set for Belimo valves up to 20 mm stroke for AVM322(S)
0510390028	Adapter set for non-SAUTER valves (Frese), stroke 20 mm
0510480004	Double auxiliary contact

💡 Accessory is not CSA-certified.

💡 The CASE Components configuration tool can be downloaded from the CASE Suite product page (GZS 100, 150) on the SAUTER homepage.





AVM322F12\*R

## AVM 322-R: Retrofit actuator

### Features

- In ventilation and air conditioning units<sup>1)</sup> For actuation of 2- and 3-way valves
- For controllers with a switching output (2-point or 3-point control)
- Synchronous motor with electronic control unit and load-dependent cut-off
- Direction of operation and positioning time can be set using coding switches
- Crank handle for external manual adjustment with motor cut-off
- Low operating noise
- Simple assembly onto valve; spindle is automatically connected after nominal voltage is applied
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Electrical parallel operation of five actuators
- Three-piece housing made of flame-retardant yellow/black plastic and seals with type of protection IP54
- Maintenance-free gearbox made of plastic; threaded spindle and gearbox base-plates made of steel
- Patented actuator-valve coupling
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Two break-out cable inlets for metric cable gland made of plastic M20 × 1.5
- Fitting position vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	-10...20%
Power supply 230 VAC	±15%
Power consumption <sup>2)</sup>	< 2.4 W, < 4.0 VA (at nominal voltage, with movement)

#### Parameters

Nominal force <sup>3)</sup>	1000 N
Operating noise <sup>4)</sup>	< 30 dB (A) at nominal force
Response time	> 200 ms
Media temperature <sup>5)</sup>	0...100 °C max.

#### Ambient conditions

Operating temperature	-10...55 °C
Storage and transport temperature	-40...80 °C
Humidity without condensation	5...85% rh

#### Construction

Dimensions W × H × D	160 × 114 × 88
Weight	0.94

#### Standards and directives

Type of protection	IP54 (EN 60529)
Protection class	II (EN 60730), III (EN 60730)

<sup>1)</sup> To be used outside HVAC applications only after consultation with the manufacturer

<sup>2)</sup> For power consumption in combination with accessory 0500570001, see section "Power consumption at nominal voltage"

<sup>3)</sup> Actuating power 1000 N under nominal conditions (24 V or 230 V, 25 °C ambient temperature, 50 Hz). With boundary conditions (19.2 V~ / 28.8 V~ / 21.6 V~ / 28.8 V~, -10 °C / 55 °C, 60 Hz) and positioning time, the actuating/tensile force is minimised to 800 N

<sup>4)</sup> Operating noise with the slowest positioning time, measuring distance 1 m

<sup>5)</sup> At media temperature > 100 °C appropriate accessory must be used (temperature adapter); at media temperature < 0 °C appropriate accessory must be used (stuffing box heater)



CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2:14 (AVM322F120R)
	Over-voltage categories	III
	Degree of contamination	II
	Max. altitude	2,000 m
	Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

### Overview of types

Type	Voltage	Nominal stroke	Running time	Power consumption
AVM322F120R	230 V~	20 mm	6 (12) s/mm	< 2.4 W, < 4.0 VA
AVM322F122R	24 V~/=	20 mm	6 (12) s/mm	< 2.4 W, < 4.0 VA

 Power consumption: at nominal voltage and with movement; for more power consumption data, see table "Power consumption for supply voltage"

### Accessories

Type	Description
0500240001	Adaptor for media temperature above 100 °C to 150 °C for AVM322(S)
0500240002	Adaptor for media temperature above 130 °C to 200 °C for AVM322(S)
0500570001	Energy module for reset function for valve actuators AVM321S/AVM322S and AVM321F112/AVM322F122
0510390020	Mounting set for SAUTER VU*/BU* and VQ*/BQ* valves with 20 mm stroke for AVM322(S)***R
0510390021	Mounting set for SAUTER V6*/B6* and VX*/BX* valves with 14 mm stroke for AVM322(S)***R
0510390022	Mounting set for Siemens valves with 20 mm stroke, spindle diameter 10 mm for AVM322(S)***R
0510390023	Mounting set for Johnson Controls valves up to 20 mm stroke for AVM322(S)***R
0510390024	Mounting set for Honeywell valves up to 20 mm stroke for AVM322(S)***R
0510390025	Mounting set for LDM valves up to 20 mm stroke for AVM322(S)***R
0510390026	Mounting set for ITT-Dräger valves up to 20 mm stroke for AVM322(S)***R
0510390027	Mounting set for Belimo valves up to 20 mm stroke for AVM322(S)***R
0510390028	Mounting set for Frese valves up to 20 mm stroke, flange DN 50 to DN 80 for AVM322(S)***R
0510390041	Mounting set for SAUTER VDL valves with 15 mm stroke, thread DN 40 and DN 50 for AVM322(S)***R
0510390061	Mounting set for Schneider V241/V341 valves, DN 15 to DN 50 for AVM322(S)***R
0510480004	Dual auxiliary switch unit



AVM322SF132R

## AVM 322S-R: Retrofit actuator

### Features

- In ventilation and air conditioning units<sup>1)</sup> For actuation of 2- and 3-way valves
- For controllers with constant output (0...10 V / 4...20 mA) or switching output (2-point or 3-point control)
- BLDC motor (brushless DC) with SUT (SAUTER Universal Technology) electronic control unit of the third generation and electronic load-dependent cut-off
- Automatic detection of applied control signal (continuous or switching), operating indicator using bi-colour LED
- Automatic adaptation to the stroke of the valve, between 8 and 20 mm
- Low operating noise
- With the built-in absolute distance measurement system, the position is always maintained in the case of power failure
- The direction of operation, characteristic (linear/equal percentage), positioning time and control signal (voltage/current) can be adjusted via coding switches
- Integrated forced operation can be set via coding switches (with selectable direction of operation)
- Easy re-initialisation using a coding switch
- Crank handle for external manual adjustment with motor cut-off
- Simple assembly onto valve; spindle is automatically connected after control voltage is applied
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Electrical parallel operation of five actuators
- Parameterisation option via the BUS interface
- Three-piece housing made of flame-retardant yellow/black plastic and seals with type of protection IP54
- Maintenance-free gearbox made of plastic; threaded spindle and gearbox base-plates made of steel
- Patented actuator-valve coupling
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Two break-out cable inlets for metric cable glands made of plastic M20 × 1.5
- Fitting position vertically upright to horizontal, not suspended
- Nominal actuating power 1000 N

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	-10...20%
Power supply 230 VAC	±15%
Power consumption <sup>2)</sup>	< 1.7 W, < 3.5 VA (at nominal voltage, with movement)

#### Parameters

Positioning time (s/mm)	6 (4)
Nominal force <sup>3)</sup>	1000 N
Nominal stroke	20 mm
Operating noise <sup>4)</sup>	< 30 dB (A) at nominal force
Response time	> 200 ms
Media temperature <sup>5)</sup>	0...100 °C

<sup>1)</sup> To be used outside HVAC applications only after consultation with the manufacturer

<sup>2)</sup> For power consumption in combination with accessory 0500570001, see section "Power consumption at nominal voltage"

<sup>3)</sup> Actuating power 1000 N under nominal conditions (24 V, 25 °C ambient temperature, 50 Hz); With boundary conditions (19.2 V~ / 28.8 V~ / 21.6 V= / 28.8 V=, -10 °C / 55 °C, 60 Hz) and positioning time, the actuating/tensile force is minimised to 800 N

<sup>4)</sup> Noise level with the slowest positioning time, measuring distance 1m

<sup>5)</sup> At media temperature > 100 °C appropriate accessory must be used (temperature adapter); at media temperature < 0 °C appropriate accessory must be used (stuffing box heater)





Nominal voltage	24 V~/=
Characteristic	Linear/equal percentage
Control signal y <sup>6)</sup>	0...10 V, R <sub>i</sub> ≥ 50 kΩ 4...20 mA, R <sub>i</sub> ≤ 50 Ω
Positional feedback signal y <sub>0</sub>	0...10 V, load ≥ 5 kΩ
Starting point U <sub>0</sub>	0 or 10 V
Starting point I <sub>0</sub>	4 or 20 mA
Control span ΔU	10 V
Control span ΔI	16 mA
Hysteresis X <sub>sh</sub>	160 mV 0.22 mA

**Ambient conditions**

Operating temperature	-10...55 °C
Storage and transport temperature	-40...80 °C
Air humidity without condensation	5...85% rh

**Construction**

Dimensions W × H × D	160 × 114 × 88
Weight	0.94

**Standards and directives**

	Type of protection	IP54 (EN 60529)
	Protection class	II (EN 60730-1), EN 60730-2-14
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Over-voltage categories	III
	Degree of contamination	II
	Max. altitude	2,000 m
	Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

**Overview of types**

Type	Voltage	Nominal stroke	Running time	Power consumption
AVM322SF132R	24 V~/=	20 mm	6 (4) s/mm	< 1.7 W, < 3.5 VA

**Accessories**

Type	Description
0500240001	Adaptor for media temperature above 100 °C to 150 °C for AVM322(S)
0500240002	Adaptor for media temperature above 130 °C to 200 °C for AVM322(S)
0500420001	Split-range unit module for setting sequences for valve actuators AVM321S and AVM322S
0500420002	4...20 mA feedback module for valve actuators AVM321S and AVM322S
0500570001	Energy module for reset function for valve actuators AVM321S/AVM322S and AVM321F112/AVM322F122
0500570003	Constant 230 V module for valve actuators AVM321S and AVM322S
0510390020	Mounting set for SAUTER VU*/BU* and VQ*/BQ* valves with 20 mm stroke for AVM322(S)***R
0510390021	Mounting set for SAUTER V6*/B6* and VX*/BX* valves with 14 mm stroke for AVM322(S)***R
0510390022	Mounting set for Siemens valves with 20 mm stroke, spindle diameter 10 mm for AVM322(S)***R
0510390023	Mounting set for Johnson Controls valves up to 20 mm stroke for AVM322(S)***R
0510390024	Mounting set for Honeywell valves up to 20 mm stroke for AVM322(S)***R
0510390025	Mounting set for LDM valves up to 20 mm stroke for AVM322(S)***R
0510390026	Mounting set for ITT-Dräger valves up to 20 mm stroke for AVM322(S)***R
0510390027	Mounting set for Belimo valves up to 20 mm stroke for AVM322(S)***R
0510390028	Mounting set for Frese valves up to 20 mm stroke, flange DN 50 to DN 80 for AVM322(S)***R

<sup>6)</sup> Positional feedback signal: also for 2- or 3-point, depending on type of connection

Type	Description
0510390041	Mounting set for SAUTER VDL valves with 15 mm stroke, thread DN 40 and DN 50 for AVM322(S)***R
0510390061	Mounting set for Schneider V241/V341 valves, DN 15 to DN 50 for AVM322(S)***R
0510480004	Dual auxiliary switch unit

💡 Accessory is not CSA-certified.

💡 The CASE Components configuration tool can be downloaded from the CASE Suite product page (GZS 100, 150) on the SAUTER homepage.



## AVM 234S: SUT valve actuator with positioner

### Features

- Activation of 2-way and 3-way valves of the VQD/BQD and VQE/BQE series, as well as VUG/BUG, VUS/BUS, VUP, V6R/B6R and VDL
- For controllers with constant output (0...10 V or 4...20 mA) or switching output (2-point or 3-point control)
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit and electronic, force-dependent cut-off
- Simple assembly with valve; spindle is automatically connected after control voltage is applied (patented system)
- Automatic detection of applied control signal (constant or switched); indicated by two LEDs
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Automatic adaptation to the stroke of the valve (min. valve stroke 8 mm, max. valve stroke 49 mm). The measured stroke is saved and is not lost even in the event of a power failure
- Direction of operation can be selected via screw terminals when making the electrical connection
- Crank handle for external manual adjustment with motor cut-off and as trigger for a re-initialisation
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Power supply 230 V with module or direct connection for 24 VAC / 24 VDC; continuous activation also admissible with 230 V
- Maintenance-free gear unit made of sintered steel; gearbox base-plate made of steel
- Mounting column made of stainless steel; mounting bracket made of cast light alloy for fitting the valve
- Electrical connections (max. 2.5 mm<sup>2</sup>) with screw terminals
- Three pre-scored cable inlets for M20 × 1.5 (2×) and M16 × 1.5
- Fitting vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	±15%
Power supply 230 VAC	±15%, 50...60 Hz (with accessories)
Power consumption <sup>1)</sup>	24 VAC/24 VDC 10 W/20 VA 230 VAC (with accessories) 13 W/28 VA

#### Parameters

Running time	2/4/6 s/mm
Actuator stroke	0...49 mm
Response time for 3-point	200 milliseconds
Control signal 1	0...10 V, R <sub>i</sub> > 100 kΩ
Control signal 2	4...20 mA, R <sub>i</sub> = 50 Ω
Position feedback signal	0...10 V, load > 10 kΩ
Starting point U <sub>0</sub>	0 or 10 V
Control span ΔU	10 V
Switching range X <sub>sh</sub>	300 mV

#### Ambient conditions

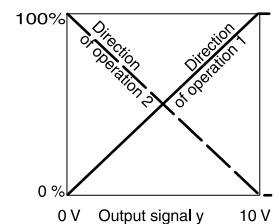
Ambient temperature	-10...55 °C
Ambient humidity	< 95% rh, no condensation
Media temperature <sup>2)</sup>	Max. 120 °C

<sup>1)</sup> Choose transformers for this value, otherwise malfunctions may occur

<sup>2)</sup> For higher temperatures of the medium (180 °C or 240 °C), use an adapter (see accessories)



AVM234SF132



ValveDim app



Construction		
Weight		4.1 kg
Housing		Two-part, yellow
Housing material		Flame-retardant plastic
Standards, directives		
Type of protection		IP66 (EN 60529)
Protection class		III (IEC 60730)
Over-voltage categories		III
Degree of contamination		III
CE/UKCA conformity <sup>3)</sup>	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-14
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-14
	EMC-D 2014/30/EU (CE)	EN 61000-6-2, EN 61000-6-4
	EMC-2016 (UKCA) <sup>4)</sup>	EN 61000-6-2, EN 61000-6-4
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000:2018
	RoHS-2012 (UKCA)	EN IEC 63000:2018

### Overview of types

**i** Actuator for valves: VQD/BQD, VQE/BQE, VUG/BUG, VUP, VUS/BUS

**i** Actuator with mounting set (see accessories) for valves: V6R, B6R

Type	Voltage	Actuating power	Running time	Power consumption
AVM234SF132	24 VAC/DC	2500 N	2/4/6 s/mm	10 W, 20 VA
AVM234SF132-5	24 VAC/DC	2500 N	2/4/6 s/mm	10 W, 20 VA
AVM234SF132-6	24 VAC/DC	2500 N	2/4/6 s/mm	10 W, 20 VA
AVM234SF132-7	24 VAC/DC	1700 N	2/4/6 s/mm	10 W, 20 VA

### Accessories

Type	Description
0313529001	Split-range unit for setting sequences

Modules can be added for 2-point/3-point and continuous activation; additional power 2 VA

Type	Description
0372332001	230 V ±15%, supply voltage
0372332002	100 V ±15%, supply voltage

Auxiliary change-over contacts (2 each) 12...250 VAC

Type	Description
0372333001	Auxiliary change-over contacts (sets of 2), 12...250 VAC, infinitely variable, min. 100 mA and 12 V permissible load 6(2) A
0372333002	Auxiliary change-over contacts (sets of 2), 12...250 VAC, gold-plated contacts, from 1 mA, to max. 30 V, wider range 3(1) A

Potentiometers

Type	Description
0372334001	Potentiometer, 2000 Ω, 1 W, 24 V
0372334006	Potentiometer, 1000 Ω, 1 W, 24 V

Adapters for high temperatures

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0372336240	Adapter (required when temperature of the medium is 180...200 °C)

<sup>3)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues

<sup>4)</sup> EN 61000-6-2: (HF immunity limitation. Feedback signal between 80 MHz and 1000 MHz criterion B, otherwise criterion A)

Mounting set for AVM234SF132 on SAUTER valves (no adapter needed for 0372338 002)

Type	Description
0372338001	V/B6 to DN 50, V/BXD, V/BXE, to DN 50, stroke 14 mm
0372338002	V/B6 DN 65...150, V/BXD, V/BXE from DN 65, stroke 40 mm
0372338003	Conversion kit from AV*2*4SF132-5 to standard actuator AV*2*4SF132
0372338004	Conversion kit from AV*2*4SF132-6 to standard actuator AV*2*4SF132

Adapter set for non-SAUTER valves

Type	Description
0372376010	Siemens with 20 mm stroke or 10 mm spindle diameter
0372376014	Siemens with 40 mm stroke or 14 mm spindle diameter
0372376015	Siemens VXF32, PN 10, DN 100...150; VXF22, PN 6, DN 100
0372377001	Johnson Controls DN 15...150, 14, 25, 40 mm stroke, spindle diameter 10, 12, 14 mm
0372378001	Honeywell with 20 mm stroke
0372378002	Honeywell with 38 mm stroke
0372386001	LDM type RY113 R/M
0372389001	ITT-Dräger, DN 15...32
0372389002	ITT-Dräger, DN 40...50
0378263001	End stop (needed for V/BXD, V/BXE DN 15...50, V/B6 DN 15 with $kvs \leq 1 \text{ m}^3/\text{h}$ )
0386263001	Cable gland M16 × 1.5
0386263002	Cable gland M20 × 1.5
0372461001	Forced operation for AV×2×4S
0372387001	SAUTER Satchwell VZF1727 mounting set
0510390052	Adapter set for non-SAUTER valves (Frese), stroke 20 mm
0510390053	Adapter set for non-SAUTER valves (Frese), stroke 40/43 mm

☛ Adapter: Not needed for version AV\*2\*4SF132-6





AVF124F130



AVF124F130



AVF124F230

## AVF 124: Valve actuator with spring return

### Features

- Activation of 2- and 3-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series, DN 15 to DN 50.
- For controllers with a switching output (3-point control)
- Spring return moves the unit to the end position in the event of a power failure or when a limit controller is activated
- Stepping motor with electronic control unit and electronic, force-dependent cut-off
- Maintenance-free gear unit
- LED display
- Coding switch for changing the running time
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Cable inlet M20 × 1.5
- Fitting vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply	230 V~, ±15%, 50...60 Hz
Power consumption	4 W, 7.6 VA

#### Parameters

Running time of motor	60/120 s
Running time of spring	18 s ±10
Actuating power	500 N
Actuator stroke	0...8 mm
Response time	200 ms

#### Ambient conditions

Ambient temperature	5...60 °C
Media temperature	Max. 100 °C
Ambient humidity	< 95% rh, no condensation

#### Construction

Weight	2.4 kg
Housing	Lower section black, cover transparent
Housing material	Fire-retardant plastic
Materials for gearbox and fitting bracket	Pressure-cast zinc

#### Standards and directives

Type of protection <sup>1)</sup>	IP54 as per EN 60529
Protection class	II (IEC 60730)
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	III
Software	A (EN 60730)
Mode of operation	Type 1 AA (200 ms, EN 60730)

#### Overview of types

Type	Voltage	Nominal stroke	Running time	Power consumption	Reset function
AVF124F130	230 V~	8 mm	60/120 s	4 W, 7.6 VA	Spindle retracted
AVF124F230	230 V~	8 mm	60/120 s	4 W, 7.6 VA	Spindle extended



<sup>1)</sup> Type of protection IP54 only with cable gland

☛ AVF124F130: Valve normally closed (NC) with: VUD, BUD, VUE, BUE, VUN, BUN

☛ AVF124F230: Valve normally open (NO) with: VUD, BUD, VUE, BUE, VUN, BUN

### Accessories

Type	Description
0370881001	Auxiliary change-over contacts, single
0372249001	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 100... 130 °C
0372249002	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 130... 150 °C
0372460001	Cable screw fitting (plastic M20 × 1,5) incl. locking nut and seal

☛ Auxiliary change-over contacts: Infinitely variable, admissible load 2(1) A, 12...250 V~, min. load 250 mA, 12 V~





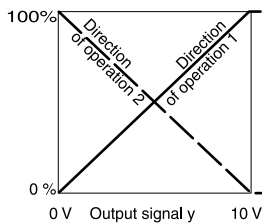
AVF125SF132



AVF125SF132



AVF125SF232



## AVF 125S: SUT valve actuator with spring return

### Features

- Activation of 2-way and 3-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series
- For controllers with switching (2- and 3-point) or continuous output (0...10 V, 4...20 mA)
- Spring return moves the unit to the end position in the event of a power failure or when a limit controller is activated
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit and electronic, force-dependent cut-off
- Automatic recognition of applied control signal (continuous or switched)
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Direction of operation can be selected via screw terminals when making the electrical connection
- Maintenance-free gear unit
- LED display
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Cable inlet M20 × 1.5
- Fitting vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply	24 V~, ±20%, 50...60 Hz
Power consumption	5 W, 8.4 VA
Power consumption on starting <sup>1)</sup>	30 VA (max. 1 s)

#### Parameters

Running time of motor	60/120 s
Running time of spring	18 s ±10
Actuating power	500 N
Actuator stroke	0...8 mm

#### Positioner

Control signal 1	0...10 V, R <sub>i</sub> = 100 kΩ
Control signal 2	4...20 mA, R <sub>i</sub> = 50 Ω
Positional feedback signal	0...10 V; load > 2.5 kΩ
Starting point U <sub>0</sub>	0 or 10 V
Control span ΔU	10 V
Switching range X <sub>sh</sub>	200 mV

#### Ambient conditions

Ambient temperature	-10...55 °C
Ambient humidity	< 95% rh, no condensation
Media temperature	Max. 100 °C

#### Construction

Weight	2.4 kg
Housing	Lower section black, cover transparent
Housing material	Fire-retardant plastic
Materials for gearbox and fitting bracket	Pressure-cast zinc

#### Standards and directives

Type of protection <sup>2)</sup>	IP54 as per EN 60529
Protection class	III (IEC 60730)

<sup>1)</sup> Only in the event of a restart or after a spring return

<sup>2)</sup> Type of protection IP54 only with M20 cable gland





EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Software	A (EN 60730)
Mode of operation	Type 1 AA (200 ms, EN 60730)
Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

### Overview of types

**i** For valves with equal-percentage characteristic; can be changed to linear

Type	Voltage	Nominal stroke	Running time	Power consumption	Reset function
AVF125SF132	24 V~	8 mm	60/120 s	5 W, 8.4 VA	Spindle retracted
AVF125SF232	24 V~	8 mm	60/120 s	5 W, 8.4 VA	Spindle extended

☛ AVF125SF132: Actuator spindle normally retracted; valve normally closed (NC) with: VUD, BUD, VUE, BUE, VUN, BUN

☛ AVF125SF232: Actuator spindle normally extended; valve normally open (NO) with: VUD, BUD, VUE, BUE, VUN, BUN

### Accessories

Type	Description
0313529001	Split-range unit for adjusting sequences, fitted in separate junction box
0370881001	Auxiliary change-over contacts, single
0372249001	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 100... 130 °C
0372249002	Temperature adapter for AVM1x5(S), AVF12x(S), AVM321(S), media temperature > 130... 150 °C
0372460001	Cable screw fitting (plastic M20 × 1,5) incl. locking nut and seal

☛ Auxiliary change-over contacts: Infinitely variable, admissible load 2(1) A, 12...250 V~, min. load 250 mA, 12 V~



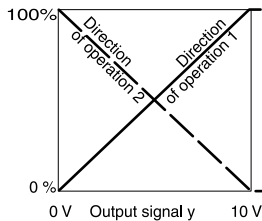
AVF234SF132



AVF234SF132



AVF234SF232



ValveDim app



## AVF 234S: SUT valve actuator with spring return

### Features

- Activation of 2-way and 3-way valves of the VQD/BQD, VQE/BQE, VUG/BUG, VUP, VUS/BUS and V6R/B6R series
- For controllers with switching (2- and 3-point) and continuous (0...10 V, 4...20 mA) output
- Spring return moves to end position in the event of a power failure/interruption or when a limit controller is activated
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit and electronic, force-dependent cut-off
- Simple assembly with valve; spindle is automatically connected after control voltage is applied (patented system)
- Automatic detection of applied control signal (constant or switched); indicated by two LEDs
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Automatic adaptation to the stroke of the valve (min. valve stroke 8 mm, max. valve stroke 49 mm). The measured stroke is saved and is not lost even in the event of a power failure
- Direction of operation can be selected via screw terminals when making the electrical connection
- Crank handle for external manual adjustment with motor cut-off and as trigger for a re-initialisation
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Power supply 230 V with module or direct connection for 24 VAC or 24 VDC; continuous activation also admissible with 230 V
- Maintenance-free gear unit made of sintered steel; gearbox base-plate made of steel
- Spring pack and mounting column made of stainless steel; mounting bracket made of cast light alloy for valve fitting
- Electrical connections (max. 2.5 mm<sup>2</sup>) with screw terminals
- Three pre-scored cable inlets for M20 × 1.5 (2×) and M16 × 1.5
- Fitting vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	±15%
Power supply 230 VAC	±15%, 50...60 Hz (with accessories)
Power consumption <sup>1)</sup>	24 VAC/24 VDC 10 W, 20 VA 230 VAC (with accessories) 13 W/28 VA

#### Parameters

Running time of motor	2/4/6 s/mm
Running time of spring <sup>2)</sup>	15...30 s
Actuating power	2000 N
Response time for 3-point	200 ms
Number of spring returns	> 40 000
Positioner	
Control signal 1	0...10 V, R <sub>i</sub> = 100 kΩ
Control signal 2	4...20 mA, R <sub>i</sub> = 50 Ω
Positional feedback 0...10 V	0...10 V, load > 10 kΩ
Starting point U <sub>0</sub>	0 V or 10 V
Control span ΔU	10 V
Switching range X <sub>sh</sub>	300 mV

<sup>1)</sup> Choose transformers for this value, otherwise malfunctions may occur

<sup>2)</sup> Return time equates to a stroke of 14...40 mm and does not depend on the set running time

**Ambient conditions**

Ambient temperature	-10...55 °C
Ambient humidity	< 95% rh, no condensation
Media temperature <sup>3)</sup>	Max. 130 °C (180 °C or 240 °C with accessories)

**Construction**

Weight	5.6 kg
Housing	Two-part, yellow
Housing material	Flame-retardant plastic

**Standards, directives**

	Type of protection	IP66 (EN 60529)
	Protection class	III (IEC 60730)
	Over-voltage categories	III
	Degree of contamination	III
CE/UKCA conformity <sup>4)</sup>	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-14
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-14
	EMC-D 2014/30/EU (CE)	EN 61000-6-2, EN 61000-6-4
	EMC-2016 (UKCA) <sup>5)</sup>	EN 61000-6-2, EN 61000-6-4
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000:2018
	RoHS-2012 (UKCA)	EN IEC 63000:2018

**Overview of types**

Type	Voltage	Stroke	Running time	Power consumption	Direction of operation of spring
AVF234SF132	24 VAC/DC	14...40 mm	2/4/6 s/mm	10 W, 20 VA	Spindle retracted
AVF234SF132-5	24 VAC/DC	14 mm	2/4/6 s/mm	10 W, 20 VA	Spindle retracted
AVF234SF232	24 VAC/DC	0...40 mm	2/4/6 s/mm	10 W, 20 VA	Spindle extended

☛ AVF234SF132: Valve normally closed (NC) with: VQD/BQD, VQE/BQE, VUG/BUG, BUS; valve normally open (NO) with: VUS, VUP

☛ AVF234SF132-5: Valve normally closed (NC) with: V6R, B6R

☛ AVF234SF232: Valve normally open (NO) with: VQD/BQD, VQE/BQE, VUG/BUG, BUS; valve normally closed (NC) with: VUS, VUP

**Accessories**

Type	Description
0313529001	Split-range unit for setting sequences

Modules can be added for 2-point/3-point and continuous activation; additional power 2 VA

Type	Description
0372332001	230 V ±15%, supply voltage
0372332002	100 V ±15%, supply voltage

Auxiliary change-over contacts (2 each) 12...250 VAC

Type	Description
0372333001	Auxiliary change-over contacts (sets of 2), 12...250 VAC, infinitely variable, min. 100 mA and 12 V permissible load 6(2) A
0372333002	Auxiliary change-over contacts (sets of 2), 12...250 VAC, gold-plated contacts, from 1 mA, to max. 30 V, wider range 3(1) A

<sup>3)</sup> An adapter is needed for higher temperatures (180 °C or 240 °C) (see accessories)

<sup>4)</sup> Explanation of abbreviations in "Additional technical data" section

<sup>5)</sup> EN 61000-6-2: HF immunity, limitation of feedback signal between 80 MHz and 1000 MHz criterion B, otherwise criterion A

## Potentiometers

Type	Description
0372334001	Potentiometer, 2000 $\Omega$ , 1 W, 24 V
0372334006	Potentiometer, 1000 $\Omega$ , 1 W, 24 V

## Adapters for high temperatures

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0372336240	Adapter (required when temperature of the medium is 180...200 °C)

Mounting set for AVF234SF\*32 onto SAUTER valves (no adapter needed for 0372338 002)

Type	Description
0372338001	V/B6 to DN 50, V/BXD, V/BXE, to DN 50, stroke 14 mm
0372338002	V/B6 DN 65...150, V/BXD, V/BXE from DN 65, stroke 40 mm
0372338003	Conversion kit from AV*2*4SF132-5 to standard actuator AV*2*4SF132
0372338004	Conversion kit from AV*2*4SF132-6 to standard actuator AV*2*4SF132

## Adapter set for non-SAUTER valves

Type	Description
0372376010	Siemens with 20 mm stroke or 10 mm spindle diameter
0372376014	Siemens with 40 mm stroke or 14 mm spindle diameter
0372376015	Siemens VXF32, PN 10, DN 100...150; VXF22, PN 6, DN 100
0372377001	Johnson Controls DN 15...150, 14, 25, 40 mm stroke, spindle diameter 10, 12, 14 mm
0372378001	Honeywell with 20 mm stroke
0372378002	Honeywell with 38 mm stroke
0372386001	LDM type RY113 R/M
0372389001	ITT-Dräger, DN 15...32
0372389002	ITT-Dräger, DN 40...50
0378263001	End stop (needed for V/BXD, V/BXE DN 15...50, V/B6 DN 15 with $kvs \leq 1 \text{ m}^3/\text{h}$ )
0386263001	Cable gland M16 $\times$ 1.5
0386263002	Cable gland M20 $\times$ 1.5
0372387001	SAUTER Satchwell VZF1727 mounting set
0372461001	Forced operation for AV*2*4S
0510390052	Adapter set for non-SAUTER valves (Frese), stroke 20 mm
0510390053	Adapter set for non-SAUTER valves (Frese), stroke 40/43 mm

💡 Adapter: Not needed for version AV\*2\*4SF132-6

💡 Potentiometer 130  $\Omega$ : This potentiometer must only be used as a voltage divider.

## AVN 224S: SUT valve actuator with safety function

### Features

- Actuation of 2-way or 3-way valves of type series VUG/BUG and VUP as per DIN EN 14597
- For controllers with constant output (0...10 V or 4...20 mA) and switching output (2-point or 3-point control)
- Valve actuator with safety function (as per DIN EN 14597) and pushing force of 1100 N, in normally closed (NC) or normally open (NO) version
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit and electronic, force-dependent cut-off
- Simple assembly with valve; spindle is automatically connected after control voltage is applied (patented system)
- Automatic recognition of applied control signal (constant or switched); indicated by two LEDs
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Automatic adaptation to the valve stroke (min. valve stroke 8 mm, max. valve stroke 49 mm); the measured stroke is stored and is not lost in the event of a power failure
- Direction of operation can be selected via screw terminals when making the electrical connection
- Push-buttons on outside of housing for manual adjustment with motor cut-off and as trigger for re-initialisation
- Numerous adapters enable the unit to be fitted onto non-SAUTER valves
- Maintenance-free gear unit made of sintered steel; gearbox base-plate made of steel
- Spring pack and mounting column made of stainless steel; mounting bracket made of cast light alloy for valve fitting
- Electrical connections (max. 2.5 mm<sup>2</sup>) with screw terminals
- Three break-out cable inlets for M20 × 1.5 (2×) and M16 × 1.5
- Fitting vertically upright to horizontal, not suspended

The following features and certifications do **not** apply to the United Kingdom of Great Britain and Northern Ireland (UK):

- TÜV certification

The product is not designed for use in the United Kingdom.

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	±15%
Power supply 230 VAC	±15%, 50...60 Hz (with accessories)
Power consumption	24 VAC/24 VDC 10 W, 18 VA 230 VAC (with accessories) 11 W / 24 VA

#### Parameters

Running time of motor	2/4/6 s/mm
Running time of spring <sup>1)</sup>	15...30 s
Actuating power	1100 N
Number of spring returns	> 40 000
Response time for 3-point	200 ms
Control signal 1	0...10 V, R <sub>i</sub> = 100 kΩ
Control signal 2	4...20 mA, R <sub>i</sub> = 50 Ω
Position feedback signal	0...10 V, load > 10 kΩ
Starting point U <sub>0</sub>	0 V or 10 V
Control span ΔU	10 V

#### Positioner



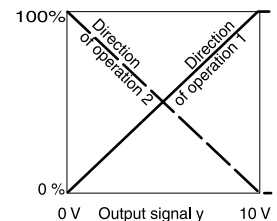
AVN224SF132



AVN224SF132



AVN224SF232



ValveDim app



<sup>1)</sup> Spring return time equates to a stroke of 14...40 mm and does not depend on the set running time

Switching range  $X_{sh}$  300 mV**Ambient conditions**

Ambient temperature	-10...55 °C
Ambient humidity	< 95% rh, no condensation
Media temperature	Max. 130 °C

**Construction**

Weight	5.6 kg
Housing	Two-part, yellow
Housing material	Flame-retardant plastic

**Standards, directives**

Type of protection	IP66 (EN 60529)
Protection class	III (IEC 60730)
EMC Directive 2014/30/EU <sup>2)</sup>	EN 61000-6-2, EN 61000-6-4
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	III
PED 2014/68/EU, cat. IV <sup>3)</sup>	Category IV, fluid group II, liquid or steam pressure modules B+D
Test mark <sup>4)</sup>	TÜV ID: 18388

**Overview of types**

Type	Voltage	Nominal stroke	Running time	Power consumption	Direction of operation of spring
AVN224SF132	24 VAC/DC	40 mm	2/4/6 s/mm	10 W, 18 VA	Spindle retracted
AVN224SF232	24 VAC/DC	40 mm	2/4/6 s/mm	10 W, 18 VA	Spindle extended

☛ AVN224SF132: Valve normally closed (NC) with: VUG, BUG (as per DIN EN 14597); valve normally open (NO) with: VUP

☛ AVN224SF232: Valve normally open (NO) with: VUG, BUG; valve normally closed (NC) with: VUP (as per DIN EN 14597)

**Accessories**

Type	Description
0313529001	Split-range unit for setting sequences

Modules can be added for 2-point/3-point and continuous activation; additional power 2 VA

Type	Description
0372332001	230 V ±15%, supply voltage
0372332002	100 V ±15%, supply voltage

Auxiliary change-over contacts (2 each) 12...250 VAC

Type	Description
0372333001	Auxiliary change-over contacts (sets of 2), 12...250 VAC, infinitely variable, min. 100 mA and 12 V permissible load 6(2) A
0372333002	Auxiliary change-over contacts (sets of 2), 12...250 VAC, gold-plated contacts, from 1 mA, to max. 30 V, wider range 3(1) A

Potentiometers

Type	Description
0372334001	Potentiometer, 2000 Ω, 1 W, 24 V
0372334006	Potentiometer, 1000 Ω, 1 W, 24 V

<sup>2)</sup> EN 61000-6-2: HF immunity, limitation of feedback signal between 80 MHz and 1000 MHz criterion B, otherwise criterion A

<sup>3)</sup> Only for VUP, VUG and BUG valves. See PDS for the valves.

<sup>4)</sup> For the United Kingdom of Great Britain and Northern Ireland (UK): Use is not permitted.

## Adapters for high temperatures

Type	Description
0372336180	Intermediate piece (required when temperature of the medium is 130...180 °C)
0372336240	Adapter (required when temperature of the medium is 180...200 °C)

## Mounting set for AVN224SF\*32 onto SAUTER valves (no adapter needed for 0372338 002)

Type	Description
0372338001	V/B6 to DN 50, V/BXD, V/BXE, to DN 50, stroke 14 mm
0372338002	V/B6 DN 65...150, V/BXD, V/BXE from DN 65, stroke 40 mm
0372338003	Conversion kit from AV*2*4SF132-5 to standard actuator AV*2*4SF132
0372338004	Conversion kit from AV*2*4SF132-6 to standard actuator AV*2*4SF132

## Adapter set for non-SAUTER valves

Type	Description
0372376010	Siemens with 20 mm stroke or 10 mm spindle diameter
0372376014	Siemens with 40 mm stroke or 14 mm spindle diameter
0372377001	Johnson Controls DN 15...150, 14, 25, 40 mm stroke, spindle diameter 10, 12, 14 mm
0372378001	Honeywell with 20 mm stroke
0372378002	Honeywell with 38 mm stroke
0372386001	LDM type RY113 R/M
0372389001	ITT-Dräger, DN 15...32
0372389002	ITT-Dräger, DN 40...50
0378263001	End stop (needed for V/BXD, V/BXE DN 15...50, V/B6 DN 15 with $kvs \leq 1 \text{ m}^3/\text{h}$ )
0386263001	Cable gland M16 × 1.5
0386263002	Cable gland M20 × 1.5
0372387001	SAUTER Satchwell VZF1727 mounting set
0372461001	Forced operation for AVx2xS
0510390052	Adapter set for non-SAUTER valves (Frese), stroke 20 mm
0510390053	Adapter set for non-SAUTER valves (Frese), stroke 40/43 mm

💡 Adapter: Not needed for version AV\*2\*4SF132-6

💡 Potentiometer 130 Ω: This potentiometer must only be used as a voltage divider.



# Dynamic regulating valves

The automatic hydronic balancing of water distribution networks using dynamic SAUTER valves provides correct supply to air-conditioning, cooling and heating devices. These include fan coil units, chilled ceilings, central underfloor heating systems, remote heating, air recirculation devices and plant segments. SAUTER Valveco and eValveco prevent under- or oversupply and the resulting temperature variations caused by pressure changes in the distribution network.

## Overview of dynamic regulating valves



Type designation	UVC 106 eValveco	UVC102MF065...100 eValveco
<b>Application</b>		
Preheater for ventilation / air-conditioning, cooler	–	•
Chilled ceiling, underfloor heating	•	–
Static heating	–	•
District heating	–	–
<b>Version</b>		
2-way	–	•
3-way	–	–
6-way	•	–
Female thread	–	–
Male thread	•	–
Flange	–	•
Temperature measurement	•	•
Electronic control	•	•
Nominal pressure	PN 16	PN 16
<b>Communication</b>		
Interfaces	–	Bluetooth
Protocols	Modbus RTU, BACnet MS/TP	Modbus RTU, BACnet MS/TP
Combination options with actuator	integrated	integrated
Further information	Page 264	Page 266





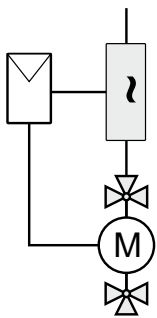
Type designation	VDL 010...032 Valveco compact	VDL 040, 050 Valveco compact	VDL 050...100 Valveco flange
<b>Application</b>			
Preheater for ventilation / air-conditioning, cooler	•	•	•
Chilled ceiling, underfloor heating	•	•	–
Static heating	•	•	•
District heating	–	–	•
<b>Version</b>			
2-way	•	•	•
3-way	–	–	–
6-way	–	–	–
Female thread	–	•	–
Male thread	•	–	–
Flange	–	–	•
Temperature measurement	–	–	–
Electronic control	–	–	–
Nominal pressure	PN 25	PN 25	PN 16
Combination options with actuator	AXM 217(S) AXT 301, 311, AXS 315S AXF 217S, AVM 215(S)	AXM 217(S) AXT 301, 311, AXS 315S AXF 217S, AVM 215(S)	AVM 215, AVM 234
Further information	Page 269	Page 269	Page 274

## UVC 106: Dynamic flow control system with 6-way ball valve, eValveco



UVC106MF0\*5

UVC106BF0\*5



ValveDim app

### Features

- Patented pressure-independent, variable flow control (EP 2307938)
- Integrated flow measurement with feedback
- Easy integration into every building management system
- Variable flow rate setpoint for heating and cooling modes
- For climate ceilings with changeover (4-pipe)
- Integration into the building management system via BACnet MS/TP or Modbus/RTU with RS-485 interface

### Technical data

#### Electronic power supply

Power supply	24 VAC, $\pm 20\%$ , 50 Hz
Rated power during continuous operation	3 W (4 VA)
Power consumption when idle	1.5 W (2 VA)
Peak inrush current	5 A [3 ms]
Input signal	$X_s$ : 0...10 VDC (0.17 mA), split-range 0.5...4.5 VDC heating 5.5...9.5 VDC cooling $R_i \geq 60 \text{ k}\Omega$
Feedback signal <sup>1)</sup>	$X_f$ : 0...10 VDC (max. 2 mA)
Feedback signal resolution	Approx. 100 mV

#### Parameters

Setpoint adjustment	Analogue ( $Y_1$ ) or via Modbus/RTU or BACnet MS/TP
Type of sensor	TTM ultrasonic sensor, no moving parts
Unit of measurement <sup>2)</sup>	[m <sup>3</sup> /h], l/s, l/min, gpm (UK), gpm (US)
Measuring accuracy	$\pm 3\%$ of actual value
Minimum controllable flow <sup>3)</sup>	3 l/h
Readiness for operation	3...5 minutes after switching on
Nominal pressure	PN16
Differential pressure $\Delta p$ <sup>4)</sup>	Max. 2 bar (200 kPa)
Medium <sup>5)</sup>	Water (glycol-free)
Media temperature	5...90 °C
Leakage rate in % of $K_{vs}$	0.001 %
Control characteristic	Equal-percentage (factory setting) or linear
Operating noise (unloaded) <sup>6)</sup>	< 30 dB (A)

#### Interfaces, communication

BMS integration	Interface	STP cable, 1 × 2-wire, twisted
	Protocol	Modbus/RTU, slave (MF) or BACnet MS/TP (BF)
	Connection <sup>7)</sup>	RS-485, 2-core twisted (with shared lead)
	Cable type	Shielded 2-core cable, STP or FTP

<sup>1)</sup> In relation to the measured actual flow.

<sup>2)</sup> Unit in [ ]: Factory setting

<sup>3)</sup> In relation to the measured actual flow

<sup>4)</sup> No minimum differential pressure required

<sup>5)</sup> In accordance with VDI 2035 sheet 2

<sup>6)</sup> Measuring distance 1 m, actuator not under load

<sup>7)</sup> Not electrically isolated



Baud rate <sup>8)</sup>	9600, 19200, 38400 baud
Terminating resistor	At both ends 120 Ω

**Construction**

Power cable	PVC cable, 7 × 0.5 mm <sup>2</sup> (length 1 m)
Housing material	Flow sensor: ABS Actuator: Flame retardant plastic 6-way ball valve: CW617N Flow meter: CW617N
Connection	DN 15 ISO228/1: 5 × G <sup>1</sup> / <sub>2</sub> " + 1 × G <sup>3</sup> / <sub>4</sub> " (male thread) DN 25 ISO228/1: 6 × G1" (male thread)

**Ambient conditions**

Ambient temperature	10...45 °C
Storage temperature	-20...50 °C
Ambient humidity	Max. 85% rh, non-condensing

**Standards and directives**

	Type of protection <sup>9)</sup>	IP54 (EN 60529), horizontal
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1 (2007) EN 61000-6-3 (2007) (A1: 2011 / AC: 2012)
	PED 2014/68/EU	Fluid group II, no CE label (Art. 4.3)

**Overview of types**

Type	Description	Protocol	Flow range	K <sub>vs</sub> value	Weight
UVC106MF015	Flow control valve with 6-way ball valve, DN 15	Modbus/RTU	0...1400 l/h	1.4 m <sup>3</sup>	2.5 kg
UVC106BF015	Flow control valve with 6-way ball valve, DN 15	BACnet MS/TP	0...1400 l/h	1.4 m <sup>3</sup>	2.5 kg
UVC106MF025	Flow control valve with 6-way ball valve, DN 25	Modbus/RTU	0...2500 l/h	2.5 m <sup>3</sup>	4 kg
UVC106BF025	Flow control valve with 6-way ball valve, DN 25	BACnet MS/TP	0...2500 l/h	2.5 m <sup>3</sup>	4 kg

**Accessories**

Type	Description
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284025	Screw fitting in brass, flat-sealing, female thread/male thread for DN 25
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25

<sup>8)</sup> Factory setting: 38400 baud, 8 data bits, even parity, 1 stop bit

<sup>9)</sup> See fitting instructions P100017045

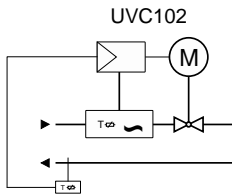
## UVC102MF065...100: Dynamic flow control system with 2-way valve and energy monitoring, eValveco



UVC102MF065



UVC102MF100



### Features

- Patented pressure-independent variable flow control
- Dynamic hydronic balancing at full and partial load
- Integrated flow measurement with feedback and temperature measurement
- Energy monitoring
- Remote commissioning and troubleshooting
- Bluetooth interface for commissioning and maintenance via smartphone app
- Available as 2-way globe valve, version DN 65...DN 100

### Technical data

#### Power supply

Power supply 24 VAC	±10%, 50 Hz
Power supply 24 VDC	±10%
Power consumption	DN 65: 6.5 W / 8 VA DN 80: 9.5 W / 11 VA DN 100: 13.5 W / 19 VA
Power consumption when idle	DN 65: 5.5 W / 6 VA DN 80: 8.5 W / 9 VA DN 100: 8.5 W / 9 VA
Input signal	Y <sub>1</sub> : 0...10 V= (0.17 mA) R <sub>i</sub> ≥ 60 kΩ
Feedback signal <sup>1)</sup>	X <sub>1</sub> : 0...10 V= (max. 2 mA)
Additional sensor input	Y <sub>2</sub> : 0...10 V= (0.17 mA)
Feedback signal resolution	Approx. 100 mV

#### Parameters

Volume flow control	Setpoint adjustment <sup>2)</sup>	Analogue (Y <sub>1</sub> ) or via Modbus RTU (can be switched to BACnet MS/TP)	
	Type of sensor	TTM ultrasonic sensor, no moving parts	
	Unit of measurement <sup>3)</sup>	[m <sup>3</sup> /h], l/s, l/min, gpm (UK)	
	Readiness for operation	5...10 min. after switching on	
	Control characteristic <sup>4)</sup>	[Equal percentage] or linear	
	Control accuracy	5% of setpoint	
	Measuring accuracy	±3% (in relation to the measured actual flow)	
	Actuator running time	4 s/mm	
	Valve	Nominal pressure	PN 16 (16 bar)
		Medium	Water (glycol-free)
Media quality		According to VDI 2035	
Media temperature <sup>5)</sup>		5...130 °C	
Leakage rate		Class III as per DIN EN 60534-4 (0.001 × k <sub>v5</sub> )	
Temperature sensor	Type of sensor	2 × Pt1000 as per EN 60751, class B	
	Cable length	2 m per sensor	

#### Interfaces, communication

Wireless	Bluetooth (max. range 10 m)
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ValveDim app



<sup>1)</sup> In relation to the measured actual flow

<sup>2)</sup> In relation to the measured actual flow

<sup>3)</sup> Factory setting in [ ]

<sup>4)</sup> Factory setting in [ ]

<sup>5)</sup> For media temperatures above 100 °C, use temperature adapter (DN 65 and DN 80).

Electric wiring (incl. bus connection)	PVC cable, 7 × 0.5 mm <sup>2</sup> , cable length 2 m
Protocol	Modbus RTU/TCP, slave BACnet MS/TP, slave
Connection <sup>6)</sup>	RS-485 twisted pair cable with shared lead
Cable type	Shielded 2-core cable, STP or FTP
Baud rate <sup>7)</sup>	9600, 19 200 or [38 400] 1 start bit Parity [even]/odd/no parity 8 data bits 1 stop bit
Topology	Multi-drop bus, max. length 1000 m
Terminating resistor	At both ends 120 Ω
Indicator/display	Status LEDs

**Construction**

Material of water-bearing parts	Brass, bronze, EPDM, stainless steel (1.4401, 1.4122, 1.4301), thermoplastic, ceramic
Material of flow meter housing	Steel, polypropylene
Material of actuator housing	Flame-retardant plastic
Connections	PN16, flange as per EN 1092-2 type 21

**Ambient conditions**

Operating temperature	10...45 °C
Storage and transport temperature	-20...50 °C
Air humidity	5...85% rh (non-condensing)
Maintenance / calibration	Maintenance-free / factory calibrated
Max. altitude	2000 m above sea level

**Standards, directives**

	Type of protection	IP54 (EN 60529), horizontal
	Protection class	III
CE conformity according to	Measuring Instruments Directive 2014/32/EU	EN 1434-4:2007
	EMC Directive 2014/30/EU	Volume flow sensor: EN 61000-3-2, EN 61000-3-3 EN 61000-6-1, EN 61000-6-3 AVM234: EN 61000-6-2, EN 61000-6-4 AVM322: EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	PED 2014/68/EU	Fluid group II, no CE label
	Low-Voltage Directive 2014/35/EU	AVM 322 and AVM 234 EN 60730-1, EN 60730-2-14
	Pressure and temperature data	EN 764, EN 1333
	Flow parameters	EN 60534

**Overview of types**

Type	Nominal diameter	Volume flow range	Volume flow at 30 kPa pressure drop	K <sub>vs</sub> value	Weight
UVC102MF065	DN 65	0.175...48.8 m <sup>3</sup> /h	26.7 m <sup>3</sup> /h	48.8 m <sup>3</sup> /h	37.4 kg
UVC102MF080	DN 80	0.280...70.7 m <sup>3</sup> /h	38.7 m <sup>3</sup> /h	70.7 m <sup>3</sup> /h	46.1 kg
UVC102MF100	DN 100	0.420...118.7 m <sup>3</sup> /h	65 m <sup>3</sup> /h	118.7 m <sup>3</sup> /h	69.5 kg

<sup>6)</sup> Not electrically isolated<sup>7)</sup> Standard factory setting in [ ]

**Accessories**

UVC102MF065, UVC102MF080

Type	Description
0510480004	Dual auxiliary switch unit
0500240001	Adaptor for media temperature above 100 °C to 150 °C for AVM322(S)
0378369101	Complete replacement stuffing box for DN 65...150

UVC102MF100

Type	Description
0372333001	Auxiliary change-over contacts (sets of 2), 12...250 VAC, infinitely variable, min. 100 mA and 12 V permissible load 6(2) A
0372333002	Auxiliary change-over contacts (sets of 2), 12...250 VAC, gold-plated contacts, from 1 mA, to max. 30 V, wider range 3(1) A
0378369101	Complete replacement stuffing box for DN 65...150

**Flow rate**

	DN [mm]	$K_{vs}$ [m <sup>3</sup> /h]	$V_{Min}$ [m <sup>3</sup> /h]	$V_5$ [m <sup>3</sup> /h]	$V_{10}$ [m <sup>3</sup> /h]	$V_{20}$ [m <sup>3</sup> /h]	$V_{30}$ [m <sup>3</sup> /h]	$V_{Max}$ [m <sup>3</sup> /h]
UVC102MF065	65	48.8	0.175	10.9	15.4	21.8	26.7	48.8
UVC102MF080	80	70.7	0.280	15.8	22.3	31.6	38.7	70.7
UVC102MF100	100	118.7	0.420	26.5	37.5	53.0	65.0	118.7

 $\Delta p$  Maximum closing pressure $V_{Min}$  Minimum controllable flow $K_{vs}$  Actual flow rate with valve fully open and 1 bar (100 kPa) pressure difference $V_5$  Flow range at  $\Delta p$  5 kPa $V_{10}$  Flow range at  $\Delta p$  10 kPa $V_{20}$  Flow range at  $\Delta p$  20 kPa $V_{30}$  Flow range at  $\Delta p$  30 kPa $V_{Max}$  Maximum controllable flow. The maximum flow is reached at a differential pressure of 1 bar (100 kPa). The target flow can be set to a value that is equal to or less than the maximum flow

## VDL 010...050: 2-way regulating valve for dynamic hydronic balancing, PN 25, Valveco compact

### Features

- Dynamic volume flow control in closed water circuits in conjunction with AXM 217(S), AXT 301, 311 or AXS 315S unit valve actuators
- Range 30...11500 l/h
- Easy to preset the max. required volume flow
- Automatic flow regulation
- Versions with and without pressure measurement nipple
- The valve is closed when the spindle is moved in
- Closing procedure against the pressure
- Slight adaptation of the proven SAUTER actuator technology
- Regulating valve with male (DN 10...DN 32) or female thread (DN 40 and DN 50) according to DIN EN ISO 228-1
- Flat-sealing regulating valve
- Differential pressure across the control unit is kept constant; valve authority 1
- Valve body and plug made of dezincification-resistant (DZR) brass
- Stainless-steel spindle
- Temperature range of medium 0...120 °C

### Technical data

#### Parameters

Nominal pressure	PN 25
Operating pressure	Max. 25 bar (up to 120 °C)
Operating temperature	0...120 °C
Valve characteristic	Linear
Leakage rate	0.01%

#### Ambient conditions

Operating temperature at valve	Max. 100 °C in combination with AXM 217(S), AXT 301, 311, AXS 315S or AVM 215(S)
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#### Standards, directives

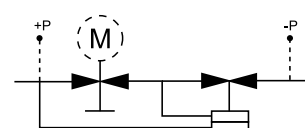
Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534, page 3
PED 2014/68/EU	Fluid group II, No CE label (article 4.3)

### Overview of types

Type	Nominal diameter (DN)	Volume flow range (l/h)	Control range min $\Delta p$ ...max $\Delta p$ (kPa)	Valve stroke (mm)	Connection / tolerance class	Pressure measurement nipple	Weight (kg)
VDL010F200	10	65...370	14...800	5	G½" B	–	0.36
VDL010F201	10	65...370	14...800	5	G½" B	•	0.45
VDL010F210	10	30...200	14...800	2.5	G½" B	–	0.36
VDL010F211	10	30...200	14...800	2.5	G½" B	•	0.45
VDL015F200	15	100...575	14...800	2.5	G¾" B	–	0.38
VDL015F200H	15	220...1330	8...800	5	G¾" B	–	0.38
VDL015F201	15	100...575	14...800	2.5	G¾" B	•	0.47
VDL015F210	15	65...370	14...800	5	G¾" B	–	0.38
VDL015F201H	15	220...1330	8...800	5	G¾" B	•	0.47
VDL015F211	15	65...370	14...800	5	G¾" B	•	0.47



VDL015F210



VDL040F201



ValveDim app



Type	Nominal diameter (DN)	Volume flow range (l/h)	Control range min $\Delta p$ ...max $\Delta p$ (kPa)	Valve stroke (mm)	Connection / tolerance class	Pressure measurement nipple	Weight (kg)
VDL015F220	15	30...200	14...800	2.5	G $\frac{3}{4}$ " B	–	0.38
VDL015F221	15	30...200	14...800	2.5	G $\frac{3}{4}$ " B	•	0.47
VDL020F200	20	220...1330	15...800	5	G1" B	–	0.4
VDL020F201	20	220...1330	15...800	5	G1" B	•	0.5
VDL020F210	20	160...990	15...800	4	G1" B	–	0.4
VDL020F210H	20	300...1800	8...800	5.5	G1" B	–	0.4
VDL020F211	20	160...990	15...800	4	G1" B	•	0.5
VDL020F211H	20	300...1800	8...800	5.5	G1" B	•	0.5
VDL020F220	20	100...575	14...800	2.5	G1" B	–	0.4
VDL020F221	20	100...575	14...800	2.5	G1" B	•	0.5
VDL025F200	25	600...3609	8...800	5.5	G 1 $\frac{1}{4}$ " B	–	1.02
VDL025F201	25	600...3609	8...800	5.5	G 1 $\frac{1}{4}$ " B	•	1.12
VDL025F210	25	280...1800	8...800	5.5	G 1 $\frac{1}{4}$ " B	–	0.51
VDL025F211	25	280...1800	8...800	5.5	G 1 $\frac{1}{4}$ " B	•	0.62
VDL032F200	32	550...4001	8...800	5.5	G 1 $\frac{1}{2}$ " B	–	1.17
VDL032F201	32	550...4001	8...800	5.5	G 1 $\frac{1}{2}$ " B	•	1.27
VDL040F201	40	1370...9500	8...800	15	G 1 $\frac{1}{2}$ " B	•	3.28
VDL050F201	50	1400...11500	8...800	15	G2" B	•	3.71

☛ DN 10...DN 32 valves with male thread  
DN 40 and DN 50 valves with female thread

### Accessories

Type	Description
0378133010	1 threaded sleeve, R $\frac{3}{8}$ , flat-sealing, with cap nut and flat seal, G $\frac{1}{2}$ - R $\frac{3}{8}$
0378133015	1 threaded sleeve, R $\frac{1}{2}$ , flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$ - R $\frac{1}{2}$
0378133020	1 threaded sleeve, R $\frac{3}{4}$ , flat-sealing, with cap nut and flat seal, G1 - R $\frac{3}{4}$
0378134010	1 solder nipple, $\varnothing$ 12, flat-sealing, with cap nut and flat seal, G $\frac{1}{2}$
0378134015	1 solder nipple, $\varnothing$ 15, flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$
0378134020	1 solder nipple, $\varnothing$ 22, flat-sealing, with cap nut and flat seal, G1
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0510390029	Mounting set for SAUTER VDL valves with 15 mm stroke, thread DN 40 and DN 50 for AVM215(S)F***R
0361951015	Screw fitting for male thread with flat seal, G1 - Rp $\frac{1}{2}$
0361951020	Screw fitting for male thread with flat seal, G1 $\frac{1}{4}$ - Rp $\frac{3}{4}$
0361951025	Screw fitting for male thread with flat seal, G1 $\frac{1}{2}$ - Rp1
0360391040	Screw fitting incl. seal, 2 pcs. required, Rp1 $\frac{1}{2}$ - G1 $\frac{1}{2}$
0360391050	Screw fitting incl. seal, 2 pcs. required, Rp2 - G2
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50



## Combination of VDL with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Pressure differences with motorised actuators

Actuator	AXM217F200		AXM217F202		AXM217SF402 AXM217SF404	
Page	171		171		173	
Voltage	230 VAC		24 VAC/DC		24 VAC/DC	
Control signal	2-/3-point		2-/3-point		0/2...10 V, 0...5 V, 5...10 V, 0/4...20 mA	
Laufzeit	13 s/mm		13 s/mm		8 s/mm	
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VDL010F200	8.0	6.0	8.0	6.0	8.0	6.0
VDL010F201						
VDL010F210						
VDL010F211						
VDL015F200						
VDL015F200H						
VDL015F201						
VDL015F210						
VDL015F210H						
VDL015F211						
VDL015F220						
VDL015F221						
VDL020F200						
VDL020F201						
VDL020F210						
VDL020F210H						
VDL020F211						
VDL020F211H						
VDL020F220						
VDL020F221						
VDL025F210						
VDL025F211						
VDL025F200	8.0	8.0	8.0	8.0	8.0	8.0
VDL025F201						
VDL032F200						
VDL032F201						

Cannot be used to close with the pressure

Actuator	AVM215F120R		AVM215SF132R	
Page	234		237	
Voltage	230 VAC		24 VAC/DC	
Control signal	2-/3-pt.		0...10 V	
Laufzeit	7.5 s/mm		7.5 s/mm	
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VDL040F201	8.0	8.0	8.0	8.0
VDL050F201				

Cannot be used to close with the pressure

**Pressure differences with thermal actuators**

Actuator	AXT301F100 AXT301F110		AXT301F102 AXT301F112		AXT301HF110		AXT301HF112	
Page	164		164		164		164	
Voltage	230 VAC		24 VAC/DC		230 VAC		24 VAC/DC	
Control signal	2-point		2-point		2-point		2-point	
Laufzeit	33 s/mm		33 s/mm		40 s/mm		40 s/mm	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VDL010F200								
VDL010F201								
VDL010F210								
VDL010F211								
VDL015F200								
VDL015F200H								
VDL015F201								
VDL015F210								
VDL015F201H								
VDL015F211								
VDL015F220	8.0	6.0	8.0	6.0	8.0	6.0	8.0	6.0
VDL015F221								
VDL020F200								
VDL020F201								
VDL020F210								
VDL020F210H								
VDL020F211								
VDL020F211H								
VDL020F220								
VDL020F221								
VDL025F210								
VDL025F211								
VDL025F200	8.0	8.0	8.0	8.0	8.0	6.0	8.0	6.0
VDL025F201								
VDL032F200								
VDL032F201								

Cannot be used to close with the pressure

☛ In combination with AXT301HF110, the following valves only open up to approx. 60%, including a closing safety tolerance of 0.8 mm: VDL010F20\*, VDL015F21\*, VDL015F20\*H, VDL020F20\*, VDL020F21\*, VDL020F21\*H, VDL025F20\*, VDL025F21\*, VDL032F20\*

#### Pressure differences with thermal, continuous actuators

Actuator	AXS315SF102		AXS315SF202		AXT311F110		AXT311F112	
Page	167		167		164		164	
Voltage	24 VAC/DC		24 VAC/DC		230 VAC		24 VAC/DC	
Control signal	0...10 V		0...10 V		2-point		2-point	
Laufzeit	30 s/mm		30 s/mm		52 s/mm		52 s/mm	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	
VDL010F200								
VDL010F201								
VDL010F210								
VDL010F211								
VDL015F200								
VDL015F200H								
VDL015F201								
VDL015F210								
VDL015F201H								
VDL015F211								
VDL015F220	8.0	6.0	8.0	8.0	6.0	8.0	6.0	
VDL015F221								
VDL020F200								
VDL020F201								
VDL020F210								
VDL020F210H								
VDL020F211								
VDL020F211H								
VDL020F220								
VDL020F221								
VDL025F210								
VDL025F211								
VDL025F200								
VDL025F201	8.0	8.0	8.0	8.0	8.0	8.0	8.0	
VDL032F200								
VDL032F201								

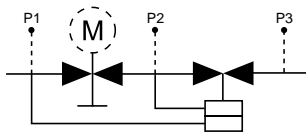
Cannot be used to close with the pressure

☛ In combination with AXT311F11\*, the white spindle extension must be removed from the following valves before fitting:  
VDL010F20\*, VDL015F21\*, VDL015F20\*H, VDL020F20\*, VDL020F21\*H, VDL025F20\*, VDL025F21\*, VDL032F20\*

## VDL 050... 100: 2-way regulating valve for dynamic hydronic balancing, PN 16, Valveco flange



VDL065F501



### Features

- Regulating valve with three functions: Control, preset maximum volume flow, automatic flow regulation
- Control of low and mean temperature domestic hot water, cooled water, water with anti-freeze in closed circuits<sup>1)</sup>
- Volume flow range: 3.7...90.9 m<sup>3</sup>/h
- Easy to preset the max. required volume flow
- All types with three pressure measurement nipples
- The valve is closed when the spindle is moved in
- Closing procedure against the pressure
- Simple connection to SAUTER actuators AVM 215 for DN 50...80 and AVM 234 for DN 100
- Regulating valve with flange connection (DN 50...DN 100) according to EN ISO 7005-2
- Flat-sealing regulating valve
- Differential pressure across the control unit is kept constant; valve authority 1
- Valve body DN 50...80 made of grey cast iron (GJL-250); DN 100 made of ductile cast iron (GJS-400)
- Stainless-steel spindle

### Technical data

#### Parameters

Nominal pressure	16 bar
Volume flow setting range	3.7...90.9 m <sup>3</sup> /h
Maximum operating pressure	PN 16 (EN 1333)
Connection	Flange as per ISO 7005-2
Valve characteristic	Linear (VDI/VDE 2173)
Control ratio	1:100
Leakage rate	Max. 0.01% of the volume flow with the valve fully open (Class IV, EN 1349)

#### Ambient conditions

Operating temperature for valve	1...120 °C
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#### Construction

Pressure measurement nipple	3 pcs, G <sup>1</sup> / <sub>4</sub> inch, suitable for 2 × 40 mm probes
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#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534, page 3
PED 2014/68/EU <sup>2)</sup>	Fluid group 2 as per Art. 13 Pressure equipment as per Art. 1.1
EAC Directive	All types EAC-compliant (Eurasian conformity)

### Overview of types

Type	Nominal diameter (DN)	Volume flow range	Control range min Δp...max Δp (kPa)	Valve stroke (mm)	Weight (kg)
VDL050F501	50	3.7...14.3	13...600	20	15
VDL050F501H	50	5.7...24.6	30...600	20	15
VDL065F501	65	4.5...24.4	28...600	20	19

<sup>1)</sup> Water quality must comply with VDI 2035, water with anti-freeze permissible

<sup>2)</sup> No special valve test required at operating temperature ≤ 110 °C. This also applies to valves with PS × DN < 1000. In both cases, the valves do not have a CE label



ValveDim app



Type	Nominal diameter (DN)	Volume flow range	Control range min $\Delta p_{\dots} \max \Delta p$ (kPa)	Valve stroke (mm)	Weight (kg)
VDL065F501H	65	6.4...37.7	30...600	20	19
VDL080F501	80	6.8...35.7	18...600	20	28
VDL080F501H	80	8.5...49.0	22...600	20	28
VDL100F501	100	12.2...69.6	18...600	40	46
VDL100F501H	100	14.8...90.9	20...600	40	46

Type	Fluid group 2	Average flow accuracy	
VDL050F501	No CE marking as per PED, Article 4.3	$\pm 10\%$ of $\Delta p_{\min}$ up to 70 kPa	$\pm 5\%$ at 70...600 kPa
VDL050F501H			
VDL065F501	With CE marking as per PED, Article 14.2 (conformity assessment procedure: Category I, Module A)	$\pm 10\%$ of $\Delta p_{\min}$ up to 105 kPa	$\pm 5\%$ at 150...600 kPa
VDL065F501H			
VDL080F501			
VDL080F501H			
VDL100F501	With CE marking as per PED, Article 14.2	$\pm 10\%$ of $\Delta p_{\min}$ up to 105 kPa	$\pm 5\%$ at 150...600 kPa
VDL100F501H			

### Combination of VDL with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve.
- i** *Definition of  $\Delta p_{\max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.
- i** *Definition of  $\Delta p_{\min}$ :* Minimum differential pressure across the control passage of the valve for the differential pressure regulator to operate reliably.

### Pressure differences

Actuator	AVM215SF132-7		AVM234SF132-7	
Page	237		250	
Voltage	24 V~/=		24 VAC/DC	
Control signal	0...10 V		0...10 V	
Running time	7.5 s/mm		2/4/6 s/mm	
Actuating power	500 N		1700 N	
Media temperature	Max. 120 °C		Max. 120 °C	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VDL050F501	6.0	7.0	-	-
VDL050F501H				
VDL065F501				
VDL065F501H				
VDL080F501				
VDL080F501H	-	-	6.0	6.0
VDL100F501				
VDL100F501H	Cannot be used to close with the pressure			

# Ball valves

The body of the ball valves from SAUTER is made of top-quality DZR brass. This enables the continuous control of cold or hot water in closed circuits, such as in domestic hot water systems. The dezincification-resistant, chrome-plated brass ball with its polished surface ensures the best possible control precision.

## Overview of regulating ball valves



Type designation	VKR	VKRA	BKR	BKRA
Application				
Single-room control	•	•	•	•
Preheater for ventilation & air-conditioning	•	•	•	•
Preheater, cooler for ventilation & air-conditioning	•	•	•	•
Reheater for ventilation & air-conditioning	•	•	•	•
Chilled ceiling	•	•	•	•
Static heating	•	•	•	•
Multi-boiler system	•	•	•	•
Local heating	•	•	•	•
Version				
2-way	•	•	–	–
3-way	–	–	•	•
Female thread	•	–	•	–
Male thread	–	•	–	•
Nominal diameter (DN)	15...50	15...50	15...50	15...50
Nominal pressure	PN 40	PN 40	PN 40	PN 40
Combination options with actuator	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)
Further information	Page 278	Page 282	Page 286	Page 289

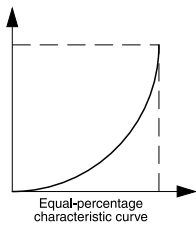
## Overview of cutoff and changeover ball valves



Type designation	VKAI	VKAA	BKLI	BKTI	BKTA
<b>Application</b>					
Single-room control	•	•	•	•	•
Preheater for ventilation & air-conditioning	•	•	•	•	•
Preheater, cooler for ventilation & air-conditioning	•	•	•	•	•
Reheater for ventilation & air-conditioning	•	•	•	•	•
<b>Version</b>					
2-way	•	•	–	–	–
3-way	–	–	•	•	•
Female thread	•	–	•	•	–
Male thread	–	•	–	–	•
Nominal diameter (DN)	15...50	15...50	15...50	15...50	15...50
Nominal pressure	PN 40	PN 40	PN 40	PN 40	PN 40
<b>Combination options with actuator</b>	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)	AKM 105(S) AKM 115(S) AKM 115SA AKF 112 AKF 113(S)
<b>Further information</b>	Page 292	Page 294	Page 297	Page 300	Page 303



VKR040F300



## VKR: 2-way regulating ball valve with female thread, PN 40

### Features

- 2-way regulating ball valve for continuous control of cold and hot water in closed circuits
- In combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S) as a control unit
- Equal-percentage ball valve characteristic; control contour in the ball directly integrated
- Characteristic can be set with SUT rotary actuator (SAUTER Universal Technology) to linear or quadratic
- Spindle with large sliding surface and PTFE glide ring
- Low torque due to collar mounted on O-ring
- Ball valve with female thread as per ISO 7/1 Rp or NPT
- Body made of DZR (dezincification-resistant) cast brass
- Spindle made of DZR brass with PTFE glide ring
- Ball made of DZR brass, chrome-plated and polished surface
- Spindle seal with double O-ring made of EPDM
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	40 bar
Valve characteristic	Equal-percentage
Control ratio of ball valve	500:1
Control ratio with actuator	> 50:1
Leakage rate	Watertight as per EN 60534-4 L/1, better than class 4
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C)

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)

### Overview of types

Type	Nominal diameter	Connection ISO 7/1 Rp	K <sub>vs</sub> value	Weight
VKR015F350-FF	DN 15	Rp 1/2"	1 m <sup>3</sup> /h	0.29 kg
VKR015F340-FF	DN 15	Rp 1/2"	1.6 m <sup>3</sup> /h	0.29 kg
VKR015F330-FF	DN 15	Rp 1/2"	2.5 m <sup>3</sup> /h	0.29 kg
VKR015F320-FF	DN 15	Rp 1/2"	4 m <sup>3</sup> /h	0.29 kg
VKR015F310-FF	DN 15	Rp 1/2"	6.3 m <sup>3</sup> /h	0.29 kg
VKR015F300-FF	DN 15	Rp 1/2"	10 m <sup>3</sup> /h	0.29 kg
VKR020F320-FF	DN 20	Rp 3/4"	4 m <sup>3</sup> /h	0.32 kg
VKR020F310-FF	DN 20	Rp 3/4"	6.3 m <sup>3</sup> /h	0.32 kg
VKR020F300-FF	DN 20	Rp 3/4"	10 m <sup>3</sup> /h	0.32 kg
VKR025F320-FF	DN 25	Rp 1"	6.3 m <sup>3</sup> /h	0.49 kg
VKR025F310-FF	DN 25	Rp 1"	10 m <sup>3</sup> /h	0.49 kg
VKR025F300-FF	DN 25	Rp 1"	16 m <sup>3</sup> /h	0.49 kg
VKR032F320-FF	DN 32	Rp 1 1/4"	10 m <sup>3</sup> /h	0.73 kg

<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.





Type	Nominal diameter	Connection ISO 7/1 Rp	$K_{vs}$ value	Weight
VKRO32F310-FF	DN 32	Rp 1¼"	16 m³/h	0.73 kg
VKRO32F300-FF	DN 32	Rp 1¼"	25 m³/h	0.73 kg
VKRO40F320-FF	DN 40	Rp 1½"	16 m³/h	1.1 kg
VKRO40F310-FF	DN 40	Rp 1½"	25 m³/h	1.1 kg
VKRO40F300-FF	DN 40	Rp 1½"	40 m³/h	1.1 kg
VKRO50F320-FF	DN 50	Rp 2"	25 m³/h	1.76 kg
VKRO50F310-FF	DN 50	Rp 2"	40 m³/h	1.76 kg
VKRO50F300-FF	DN 50	Rp 2"	63 m³/h	1.76 kg

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284020	Screw fitting in brass, flat-sealing, female thread/male thread for DN 20
0560284025	Screw fitting in brass, flat-sealing, female thread/male thread for DN 25
0560284032	Screw fitting in brass, flat-sealing, female thread/male thread for DN 32
0560284040	Screw fitting in brass, flat-sealing, female thread/male thread for DN 40
0560284050	Screw fitting in brass, flat-sealing, female thread/male thread for DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

☛ 1 unit delivered in each case, unless otherwise specified. See last page for dimensions and scope of delivery of accessories.



### Combination of VKR with electric actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_p$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the ball valve) at which the actuator reliably closes the ball valve using the return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.*

#### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKR015F350-FF VKR015F340-FF VKR015F330-FF VKR015F320-FF VKR015F310-FF VKR015F300-FF VKR020F320-FF VKR020F310-FF VKR020F300-FF VKR025F320-FF VKR025F310-FF VKR025F300-FF	1.8	1.8	3.5	3.5
VKR032F320-FF VKR032F310-FF VKR032F300-FF VKR040F320-FF VKR040F310-FF VKR040F300-FF VKR050F320-FF VKR050F310-FF VKR050F300-FF	1.2	1.2	2.4	2.4
Cannot be used to close with the pressure				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKR015F350-FF VKR015F340-FF VKR015F330-FF VKR015F320-FF VKR015F310-FF VKR015F300-FF VKR020F320-FF VKR020F310-FF VKR020F300-FF VKR025F320-FF VKR025F310-FF VKR025F300-FF	1.8	3.5	3.5	3.5

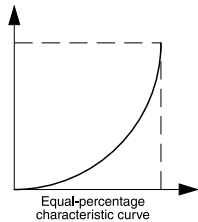
Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
VKR032F320-FF VKR032F310-FF VKR032F300-FF VKR040F320-FF VKR040F310-FF VKR040F300-FF VKR050F320-FF VKR050F310-FF VKR050F300-FF	1.2	2.4	2.4	2.4
Cannot be used to close with the pressure				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
VKR015F350-FF VKR015F340-FF VKR015F330-FF VKR015F320-FF VKR015F310-FF VKR015F300-FF VKR020F320-FF VKR020F310-FF VKR020F300-FF VKR025F320-FF VKR025F310-FF VKR025F300-FF	3.5	5.4	3.5	5.4	3.5	5.4	3.5	5.4
VKR032F320-FF VKR032F310-FF VKR032F300-FF VKR040F320-FF VKR040F310-FF VKR040F300-FF VKR050F320-FF VKR050F310-FF VKR050F300-FF	2.4	3.5	2.4	3.5	2.4	3.5	2.4	3.5
Cannot be used to close with the pressure								





VKRA\*\*F300



## VKRA: 2-way regulating ball valve with male thread, PN 40

### Features

- 2-way regulating ball valve for continuous control of cold and hot water in closed circuits
- In combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S) as a control unit
- Equal-percentage ball valve characteristic; control contour in the ball directly integrated
- Characteristic can be set with SUT rotary actuator (SAUTER Universal Technology) to linear or quadratic
- Spindle with large sliding surface and PTFE glide ring
- Low torque due to collar mounted on O-ring
- Ball valve with male thread as per ISO 228-1 (G x" B)
- Body made of DZR (dezincification-resistant) cast brass
- Spindle made of DZR brass with PTFE glide ring
- Ball made of DZR brass, chrome-plated and polished surface
- Spindle seal with double O-ring made of EPDM
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	40 bar
Valve characteristic	Equal-percentage
Control ratio of ball valve	500:1
Control ratio with actuator	> 50:1
Leakage rate	Waterproof as per EN 60534-4 L/1, better than class 5
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	Liquids: 40 bar (-10...50 °C), 35 bar Gases: 20 bar

#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534 (page 3)

### Overview of types

Type	Nominal diameter	Connection ISO 228-1	K <sub>vs</sub> value	Weight
VKRA015F350	DN 15	G 1" B	1 m <sup>3</sup> /h	360 g
VKRA015F340	DN 15	G 1" B	1.6 m <sup>3</sup> /h	360 g
VKRA015F330	DN 15	G 1" B	2.5 m <sup>3</sup> /h	360 g
VKRA015F320	DN 15	G 1" B	4 m <sup>3</sup> /h	360 g
VKRA015F310	DN 15	G 1" B	6.3 m <sup>3</sup> /h	360 g
VKRA020F320	DN 20	G 1¼" B	4 m <sup>3</sup> /h	440 g
VKRA020F310	DN 20	G 1¼" B	6.3 m <sup>3</sup> /h	440 g
VKRA020F300	DN 20	G 1¼" B	10 m <sup>3</sup> /h	440 g
VKRA025F320	DN 25	G 1½" B	6.3 m <sup>3</sup> /h	570 g
VKRA025F310	DN 25	G 1½" B	10 m <sup>3</sup> /h	570 g
VKRA025F300	DN 25	G 1½" B	16 m <sup>3</sup> /h	570 g
VKRA032F320	DN 32	G 2" B	10 m <sup>3</sup> /h	840 g
VKRA032F310	DN 32	G 2" B	16 m <sup>3</sup> /h	840 g

<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.



Type	Nominal diameter	Connection ISO 228-1	$K_{vs}$ value	Weight
VKRA032F300	DN 32	G 2" B	25 m <sup>3</sup> /h	840 g
VKRA040F320	DN 40	G 2¼" B	16 m <sup>3</sup> /h	1290 g
VKRA040F310	DN 40	G 2¼" B	25 m <sup>3</sup> /h	1290 g
VKRA040F300	DN 40	G 2¼" B	40 m <sup>3</sup> /h	1290 g
VKRA050F320	DN 50	G 2¾" B	25 m <sup>3</sup> /h	1980 g
VKRA050F310	DN 50	G 2¾" B	40 m <sup>3</sup> /h	1980 g
VKRA050F300	DN 50	G 2¾" B	63 m <sup>3</sup> /h	1980 g

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0361951015	Screw fitting for male thread with flat seal, G1 - Rp½
0361951020	Screw fitting for male thread with flat seal, G1¼ - Rp¾
0361951025	Screw fitting for male thread with flat seal, G1½ - Rp1
0361951032	Screw fitting for male thread with flat seal DN 32
0361951040	Screw fitting for male thread with flat seal DN 40
0361951050	Screw fitting for male thread with flat seal DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

### Combination of VKRA with electric actuators

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the ball valve) at which the actuator reliably closes the ball valve using the return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.*

### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKRA015F350	1.8	1.8	3.5	3.5
VKRA015F340				
VKRA015F330				
VKRA015F320				
VKRA015F310				
VKRA020F320				
VKRA020F310				
VKRA020F300				
VKRA025F320				
VKRA025F310				
VKRA025F300				

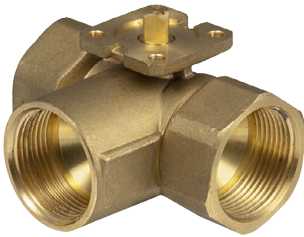
Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
VKRA032F320 VKRA032F310 VKRA032F300 VKRA040F320 VKRA040F310 VKRA040F300 VKRA050F320 VKRA050F310 VKRA050F300	1.2	1.2	2.4	2.4
Cannot be used to close with the pressure				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKRA015F350 VKRA015F340 VKRA015F330 VKRA015F320 VKRA015F310 VKRA020F320 VKRA020F310 VKRA020F300 VKRA025F320 VKRA025F310 VKRA025F300	1.8	3.5	3.5	3.5
VKRA032F320 VKRA032F310 VKRA032F300 VKRA040F320 VKRA040F310 VKRA040F300 VKRA050F320 VKRA050F310 VKRA050F300	1.2	2.4	2.4	2.4
Cannot be used to close with the pressure				

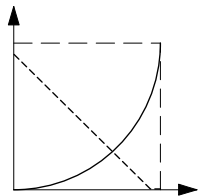
Actuator	AKF112F120	AKF112F122	AKF113F122	AKF113SF122				
Page	317	317	317	318				
Torque	7 Nm	7 Nm	7 Nm	7 Nm				
Control signal	2-point	2-point	3-point	0...10 V				
Running time	90 s	90 s	90 s	90 s				
Operating voltage	230 VAC	24 VAC/DC	24 VAC/DC	24 VAC/DC				
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VKRA015F350 VKRA015F340 VKRA015F330 VKRA015F320 VKRA015F310 VKRA020F320 VKRA020F310 VKRA020F300 VKRA025F320 VKRA025F310 VKRA025F300	3.5	5.4	3.5	5.4	3.5	5.4	3.5	5.4

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
VKRA032F320								
VKRA032F310								
VKRA032F300								
VKRA040F320								
VKRA040F310	2.4	3.5	2.4	3.5	2.4	3.5	2.4	3.5
VKRA040F300								
VKRA050F320								
VKRA050F310								
VKRA050F300								
Cannot be used to close with the pressure								





BKR025F310



--- Characteristic of mixing passage: linear  
 — Characteristic of control passage: =%

## BKR: 3-way regulating ball valve with female thread, PN 40

### Features

- 3-way regulating ball valve for continuous control of cold and hot water in closed circuits
- In combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S) as a control unit
- Control contour in the ball directly integrated
- Control passage characteristic can be set to linear or quadratic with SUT rotary actuator
- Low torque due to collar mounted on O-ring
- Spindle with large sliding surface and PTFE ring
- Ball valve with female thread as per ISO 7/1 Rp or NPT
- Body made of DZR (dezincification-resistant) cast brass
- Spindle made of DZR brass with PTFE glide ring
- Ball made of DZR brass, chrome-plated and polished surface
- Spindle seal with double O-ring made of EPDM
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	40 bar
$K_{vs}$ value, mixing passage	-10...-30% through the control passage
Control passage valve characteristic	Equal-percentage
Mixing passage valve characteristic	Linear
Control ratio of ball valve	500:1
Control ratio with actuator	Approx. 50:1
Control passage leakage rate	Watertight as per EN 60534-4 L/1, better than class 4
Mixing passage leakage rate	< 1%
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C)

### Overview of types

Type	Nominal diameter	Connection ISO 7/1 Rp	$K_{vs}$ value, control passage	Weight
BKR015F340-FF	DN 15	Rp 1/2"	1.6 m <sup>3</sup> /h	0.31 kg
BKR015F330-FF	DN 15	Rp 1/2"	2.5 m <sup>3</sup> /h	0.31 kg
BKR015F320-FF	DN 15	Rp 1/2"	4 m <sup>3</sup> /h	0.31 kg
BKR015F310-FF	DN 15	Rp 1/2"	6.3 m <sup>3</sup> /h	0.33 kg
BKR020F320-FF	DN 20	Rp 3/4"	4 m <sup>3</sup> /h	0.4 kg
BKR020F310-FF	DN 20	Rp 3/4"	6.3 m <sup>3</sup> /h	0.4 kg
BKR025F310-FF	DN 25	Rp 1"	10 m <sup>3</sup> /h	0.63 kg
BKR032F310-FF	DN 32	Rp 1 1/4"	16 m <sup>3</sup> /h	0.97 kg
BKR040F310-FF	DN 40	Rp 1 1/2"	25 m <sup>3</sup> /h	1.4 kg
BKR050F310-FF	DN 50	Rp 2"	40 m <sup>3</sup> /h	2.67 kg


<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.





## Accessories

Type	Description
0510240001	Assembly kit for VK***/BK*** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284020	Screw fitting in brass, flat-sealing, female thread/male thread for DN 20
0560284025	Screw fitting in brass, flat-sealing, female thread/male thread for DN 25
0560284032	Screw fitting in brass, flat-sealing, female thread/male thread for DN 32
0560284040	Screw fitting in brass, flat-sealing, female thread/male thread for DN 40
0560284050	Screw fitting in brass, flat-sealing, female thread/male thread for DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

 1 unit delivered in each case, unless otherwise specified. See last page for dimensions and scope of delivery of accessories.

## Combination of BKR with electric actuators

**i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.

**i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.

## Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKR015F340-FF BKR015F330-FF BKR015F320-FF BKR015F310-FF BKR020F320-FF BKR020F310-FF BKR025F310-FF	1.8	1.8	2.0	2.0
BKR032F310-FF BKR040F310-FF BKR050F310-FF	1.2	1.2	2.0	2.0

Cannot be used as distribution valve

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]
BKRO15F340-FF BKRO15F330-FF BKRO15F320-FF BKRO15F310-FF BKRO20F320-FF BKRO20F310-FF BKRO25F310-FF	1.8	2.0	2.0	2.0
BKRO32F310-FF BKRO40F310-FF BKRO50F310-FF	1.2	2.0	2.0	2.0
Cannot be used as distribution valve				

Actuator	AKF112F120	AKF112F122	AKF113F122	AKF113SF122				
Page	317	317	317	318				
Torque	7 Nm	7 Nm	7 Nm	7 Nm				
Control signal	2-point	2-point	3-point	0...10 V				
Running time	90 s	90 s	90 s	90 s				
Operating voltage	230 VAC	24 VAC/DC	24 VAC/DC	24 VAC/DC				
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BKRO15F340-FF BKRO15F330-FF BKRO15F320-FF BKRO15F310-FF BKRO20F320-FF BKRO20F310-FF BKRO25F310-FF	2.0	5.4	2.0	5.4	2.0	5.4	2.0	5.4
BKRO32F310-FF BKRO40F310-FF BKRO50F310-FF	2.0	3.5	2.0	3.5	2.0	3.5	2.0	3.5
Cannot be used as distribution valve								

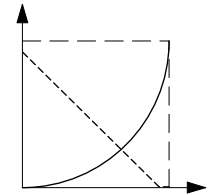
## BKRA: 3-way regulating ball valve with male thread, PN 40

### Features

- 3-way regulating ball valve for continuous control of cold and hot water in closed circuits
- As a control unit in combination with valve actuators AKM105(S), 115(S), 115SA and AKF112, 113(S)
- Control contour in the ball directly integrated
- Control passage characteristic can be set to linear or quadratic with SUT rotary actuator
- Low torque due to collar mounted on O-ring
- Spindle with large sliding surface and PTFE ring
- Ball valve with male thread as per ISO 228-1 (G x" B)
- Body made of DZR (dezincification-resistant) cast brass
- Spindle made of DZR brass with PTFE glide ring
- Ball made of DZR brass, chrome-plated and polished surface
- Spindle seal with double O-ring made of EPDM
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035



BKRA\*\*F3\*O



-- Characteristic of mixing passage: linear  
 — Characteristic of control passage: =%

### Technical data

#### Parameters

Nominal pressure	40 bar
$K_{vs}$ value, mixing passage	- 10...-30% through the control passage
Valve characteristic, control passage	Equal-percentage
Mixing passage valve characteristic	Linear
Control ratio of ball valve	500:1
Control ratio with actuator	Approx. 50:1
Control passage leakage rate	Watertight as per EN 60534-4 L/1, better than class 4
Mixing passage leakage rate	< 1% of the $K_{vs}$ value
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C) Gases: 20 bar

### Overview of types

Type	Nominal diameter	Connection ISO 228-1	$K_{vs}$ value, control passage	Weight
BKRA015F340	DN 15	G 1" B	1.6 m <sup>3</sup> /h	0.41 kg
BKRA015F330	DN 15	G 1" B	2.5 m <sup>3</sup> /h	0.41 kg
BKRA015F320	DN 15	G 1" B	4 m <sup>3</sup> /h	0.41 kg
BKRA015F310	DN 15	G 1" B	6.3 m <sup>3</sup> /h	0.45 kg
BKRA020F320	DN 20	G 1 1/4" B	4 m <sup>3</sup> /h	0.52 kg
BKRA020F310	DN 20	G 1 1/4" B	6.3 m <sup>3</sup> /h	0.4 kg
BKRA025F310	DN 25	G 1 1/2" B	10 m <sup>3</sup> /h	0.75 kg
BKRA032F310	DN 32	G 2" B	16 m <sup>3</sup> /h	1.2 kg
BKRA040F310	DN 40	G 2 1/4" B	25 m <sup>3</sup> /h	1.84 kg
BKRA050F310	DN 50	G 2 3/4" B	40 m <sup>3</sup> /h	2.83 kg

<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.



### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0361951015	Screw fitting for male thread with flat seal, G1 - Rp½
0361951020	Screw fitting for male thread with flat seal, G1¼ - Rp¾
0361951025	Screw fitting for male thread with flat seal, G1½ - Rp1
0361951032	Screw fitting for male thread with flat seal DN 32
0361951040	Screw fitting for male thread with flat seal DN 40
0361951050	Screw fitting for male thread with flat seal DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

### Combination of BKRA with electric actuators

**i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.

**i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKRA015F340 BKRA015F330 BKRA015F320 BKRA015F310 BKRA020F320 BKRA020F310 BKRA025F310	1.8	1.8	2.0	2.0
BKRA032F310 BKRA040F310 BKRA050F310	1.2	1.2	2.0	2.0
Cannot be used as distribution valve				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]
BKRA015F340 BKRA015F330 BKRA015F320 BKRA015F310 BKRA020F320 BKRA020F310 BKRA025F310	1.8	2.0	2.0	2.0
BKRA032F310 BKRA040F310 BKRA050F310	1.2	2.0	2.0	2.0
Cannot be used as distribution valve				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
As control valve	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BKRA015F340 BKRA015F330 BKRA015F320 BKRA015F310 BKRA020F320 BKRA020F310 BKRA025F310	2.0	5.4	2.0	5.4	2.0	5.4	2.0	5.4
BKRA032F310 BKRA040F310	2.0	3.5	2.0	3.5	2.0	3.5	2.0	3.5
BKRA050F310	1.0	3.5	2.0	3.5	2.0	3.5	2.0	3.5
Cannot be used as distribution valve								



VKAI040F300



## VKAI: 2-way cut-off ball valve with female thread, PN 40

### Features

- 2-way cut-off ball valve for use in closed circuits in heating, ventilation and air conditioning systems
- As a cut-off device and control unit for 2-point control in combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S)
- Fast cut-off in six seconds with the AKM115SF152 valve actuator
- Low torque due to collar mounted on O-ring
- Ball valve with female thread as per ISO 7/1 Rp
- Body made of dezincification-resistant cast brass
- Ball made of dezincification-resistant brass, chrome-plated and polished surface
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	40 bar
Leakage rate	0.0001 x $K_{vs}$ value
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C)

### Overview of types

Type	Nominal diameter (DN)	Connection ISO 7/1 Rp	$K_{vs}$ value	Weight
VKAI015F300	DN 15	Rp 1/2"	15 m <sup>3</sup> /h	275 g
VKAI020F300	DN 20	Rp 3/4"	22 m <sup>3</sup> /h	370 g
VKAI025F300	DN 25	Rp 1"	22 m <sup>3</sup> /h	456 g
VKAI032F300	DN 32	Rp 1 1/4"	35 m <sup>3</sup> /h	700 g
VKAI040F300	DN 40	Rp 1 1/2"	68 m <sup>3</sup> /h	1120 g
VKAI050F300	DN 50	Rp 2"	96 m <sup>3</sup> /h	1750 g

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284020	Screw fitting in brass, flat-sealing, female thread/male thread for DN 20
0560284025	Screw fitting in brass, flat-sealing, female thread/male thread for DN 25
0560284032	Screw fitting in brass, flat-sealing, female thread/male thread for DN 32
0560284040	Screw fitting in brass, flat-sealing, female thread/male thread for DN 40
0560284050	Screw fitting in brass, flat-sealing, female thread/male thread for DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32

<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.



Type	Description
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

## Combination of VKAI with electric actuators

**i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*

**i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.*

### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKAI015F300 VKAI020F300 VKAI025F300	1.8	1.8	3.5	3.5
VKAI032F300 VKAI040F300 VKAI050F300	1.2	1.2	2.4	2.4
-				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKAI015F300 VKAI020F300 VKAI025F300	1.8	3.5	3.5	3.5
VKAI032F300 VKAI040F300 VKAI050F300	1.2	2.4	2.4	2.4
-				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VKAI015F300 VKAI020F300 VKAI025F300	3.5	5.4	3.5	5.4	3.5	5.4	3.5	5.4
VKAI032F300 VKAI040F300 VKAI050F300	2.4	5.4	2.4	5.4	2.4	5.4	2.4	5.4
-								



VKAAO\*\*F300



## VKAA: 2-way cut-off ball valve with male thread, PN 40

### Features

- 2-way cut-off ball valve for use in closed circuits in heating, ventilation and air conditioning systems
- As a cut-off device and control unit for 2-point control in combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S)
- Fast changeover in six seconds with the AKM115SF152 valve actuator
- Low torque due to collar mounted on O-ring
- Ball valve with male thread as per ISO 228-1 (G x" B)
- Body made of dezincification-resistant cast brass
- Ball made of dezincification-resistant brass, chrome-plated and polished surface
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035

### Technical data

Parameters	
Nominal pressure	40 bar
Leakage rate	Waterproof as per EN 60534-4 L/1, better than class 5
Angle of rotation	90°
Ambient conditions	
Operating temperature	-10...130 °C, no condensation
Operating pressure	Liquids: 40 bar (-10...50 °C) 35 bar (130 °C) Gases: 20 bar

### Overview of types

Type	Nominal diameter (DN)	Connection ISO 228-1	K <sub>vs</sub> value	Weight
VKAA015F300	DN 15	G 1" B	9 m <sup>3</sup>	360 g
VKAA020F300	DN 20	G 1¼" B	17 m <sup>3</sup>	550 g
VKAA025F300	DN 25	G 1½" B	22 m <sup>3</sup>	570 g
VKAA032F300	DN 32	G 2" B	35 m <sup>3</sup>	840 g
VKAA040F300	DN 40	G 2¼" B	68 m <sup>3</sup>	1290 g
VKAA050F300	DN 50	G 2¾" B	96 m <sup>3</sup>	1980 g

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0361951015	Screw fitting for male thread with flat seal, G1 - Rp½
0361951020	Screw fitting for male thread with flat seal, G1¼ - Rp¾
0361951025	Screw fitting for male thread with flat seal, G1½ - Rp1
0361951032	Screw fitting for male thread with flat seal DN 32
0361951040	Screw fitting for male thread with flat seal DN 40
0361951050	Screw fitting for male thread with flat seal DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32





Type	Description
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

### Combination of VKAA with electric actuators

**i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*

**i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.*

**i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.*

### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKAA015F300 VKAA020F300 VKAA025F300	1.8	1.8	3.5	3.5
VKAA032F300 VKAA040F300 VKAA050F300	1.2	1.2	2.4	2.4
-				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
VKAA015F300 VKAA020F300 VKAA025F300	1.8	3.5	3.5	3.5
VKAA032F300 VKAA040F300 VKAA050F300	1.2	2.4	2.4	2.4
-				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
VKAA015F300 VKAA020F300 VKAA025F300	3.5	5.4	3.5	5.4	3.5	5.4	3.5	5.4

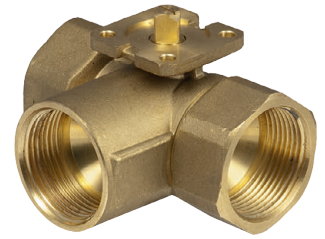
Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
VKAA032F300								
VKAA040F300	2.4	5.4	2.4	5.4	2.4	5.4	2.4	5.4
VKAA050F300								
-								



## BKLI: 3-way changeover ball valve (L) with female thread, PN 40

### Features

- 3-way changeover ball valve with L-bore for use in closed circuits in heating, ventilation and air conditioning systems
- For changing over volume flows in combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S).
- Fast changeover in six seconds with the AKM115SF152 valve actuator
- Low torque due to collar mounted on O-ring
- Spindle with friction ring and double O-ring seal
- Ball valve with female thread as per ISO 7/1 Rp
- Body made of dezincification-resistant cast brass
- Ball made of dezincification-resistant brass, chrome-plated and polished surface
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035



BKLI025F300



### Technical data

#### Parameters

Nominal pressure	40 bar
Leakage rate, through passage	0.0001 x $K_{vs}$ value
Leakage rate, bypass	0.0001 x $K_{vs}$ value
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C)

### Overview of types

Type	Nominal diameter (DN)	Connection ISO 7/1 Rp	$K_{vs}$ value, control passage	Weight
BKLI015F300	DN 15	Rp 1/2"	5 m <sup>3</sup> /h	306 g
BKLI020F300	DN 20	Rp 3/4"	9 m <sup>3</sup> /h	375 g
BKLI025F300	DN 25	Rp 1"	9 m <sup>3</sup> /h	604 g
BKLI032F300	DN 32	Rp 1 1/4"	13 m <sup>3</sup> /h	949 g
BKLI040F300	DN 40	Rp 1 1/2"	25 m <sup>3</sup> /h	1364 g
BKLI050F300	DN 50	Rp 2"	37 m <sup>3</sup> /h	2215 g

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284020	Screw fitting in brass, flat-sealing, female thread/male thread for DN 20
0560284025	Screw fitting in brass, flat-sealing, female thread/male thread for DN 25
0560284032	Screw fitting in brass, flat-sealing, female thread/male thread for DN 32
0560284040	Screw fitting in brass, flat-sealing, female thread/male thread for DN 40
0560284050	Screw fitting in brass, flat-sealing, female thread/male thread for DN 50

<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.



Type	Description
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

### Combination of BKLI with electric actuators

**i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.

**i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.

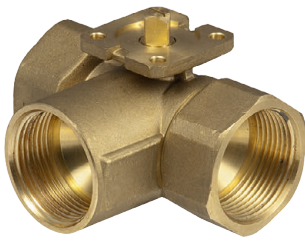
### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKLI015F300 BKLI020F300 BKLI025F300	1.8	1.8	2.0	2.0
BKLI032F300 BKLI040F300 BKLI050F300	1.2	1.2	2.0	2.0
-				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKLI015F300 BKLI020F300 BKLI025F300	1.8	2.0	2.0	2.0
BKLI032F300 BKLI040F300 BKLI050F300	1.2	2.0	2.0	2.0
-				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BKLI015F300	2.0	5.4	2.0	5.4	2.0	5.4	2.0	5.4
BKLI020F300								
BKLI025F300								
BKLI032F300								
BKLI040F300								
BKLI050F300								
-								





BKTi025F300



## BKTi: 3-way changeover ball valve (T) with female thread, PN 40

### Features

- 3-way changeover ball valve with T-bore for use in closed circuits in heating, ventilation and air conditioning systems
- For changing over volume flows in combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S)
- Fast changeover in six seconds with the AKM115SF152 valve actuator
- Low torque due to collar mounted on O-ring
- Spindle with friction ring and double O-ring seal
- Ball valve with female thread as per ISO 7/1 Rp
- Body made of dezincification-resistant cast brass
- Ball made of dezincification-resistant brass, chrome-plated and polished surface
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035

### Technical data

#### Parameters

Nominal pressure	40 bar
Leakage rate, through passage	0.0001 x $K_{vs}$ value
Leakage rate, bypass	< 0.01 x $K_{vs}$ value
Angle of rotation	90°

#### Ambient conditions

Operating temperature <sup>1)</sup>	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C)

### Overview of types

Type	Nominal diameter	Connection ISO 7/1 Rp	$K_{vs}$ value, control passage	Weight
BKTi015F300	DN 15	Rp 1/2"	12 m <sup>3</sup> /h	306 g
BKTi020F300	DN 20	Rp 3/4"	16 m <sup>3</sup> /h	375 g
BKTi025F300	DN 25	Rp 1"	16 m <sup>3</sup> /h	604 g
BKTi032F300	DN 32	Rp 1 1/4"	25 m <sup>3</sup> /h	949 g
BKTi040F300	DN 40	Rp 1 1/2"	49 m <sup>3</sup> /h	1364 g
BKTi050F300	DN 50	Rp 2"	73 m <sup>3</sup> /h	2215 g

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284020	Screw fitting in brass, flat-sealing, female thread/male thread for DN 20
0560284025	Screw fitting in brass, flat-sealing, female thread/male thread for DN 25
0560284032	Screw fitting in brass, flat-sealing, female thread/male thread for DN 32
0560284040	Screw fitting in brass, flat-sealing, female thread/male thread for DN 40
0560284050	Screw fitting in brass, flat-sealing, female thread/male thread for DN 50



<sup>1)</sup> At operating temperatures <5 °C and >100 °C, the appropriate accessories must be used.

Type	Description
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

### Combination of BKTI with electric actuators

**i** Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.

**i** Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.

### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKTI015F300 BKTI020F300 BKTI025F300	1.8	1.8	2.0	2.0
BKTI032F300 BKTI040F300 BKTI050F300	1.2	1.2	2.0	2.0
-				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKTI015F300 BKTI020F300 BKTI025F300	1.8	2.0	2.0	2.0
BKTI032F300 BKTI040F300 BKTI050F300	1.2	2.0	2.0	2.0
-				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BKTi015F300	2.0	5.4	2.0	5.4	2.0	5.4	2.0	5.4
BKTi020F300								
BKTi025F300								
BKTi032F300								
BKTi040F300								
BKTi050F300								
-								





## BKTA: 3-way changeover ball valve (T) with male thread, PN 40

### Features

- 3-way changeover ball valve with T-bore for use in closed circuits in heating, ventilation and air conditioning systems
- For changing over volume flows in combination with valve actuators AKM 105(S), 115(S), 115SA and AKF 112, 113(S)
- Fast changeover in six seconds with the AKM115SF152 valve actuator
- Low torque due to collar mounted on O-ring
- Spindle with friction ring and double O-ring seal
- Ball valve with male thread as per ISO 228-1 (G x" B)
- Body made of dezincification-resistant cast brass
- Ball made of dezincification-resistant brass, chrome-plated and polished surface
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035



BKTA0\*\*F300



### Technical data

#### Parameters

Nominal pressure	40 bar
Leakage rate, through passage	Waterproof as per EN 60534-4 L/1, better than class 4
Leakage rate, bypass	< 1% of the $K_{vs}$ value
Angle of rotation	90°

#### Ambient conditions

Operating temperature	-10...130 °C, no condensation
Operating pressure	40 bar (-10...50 °C) 35 bar (130 °C) Gases: 20 bar

### Overview of types

Type	Nominal diameter	Connection ISO 228-1	$K_{vs}$ value, control passage	Weight
BKTA015F300	DN 15	G 1" B	8 m <sup>3</sup> /h	450 g
BKTA020F300	DN 20	G 1¼" B	13 m <sup>3</sup> /h	680 g
BKTA025F300	DN 25	G 1½" B	13 m <sup>3</sup> /h	750 g
BKTA032F300	DN 32	G 2" B	25 m <sup>3</sup> /h	1200 g
BKTA040F300	DN 40	G 2¼" B	49 m <sup>3</sup> /h	1840 g
BKTA050F300	DN 50	G 2¾" B	73 m <sup>3</sup> /h	2830 g

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B
0510240011	Adaptor required when temperature of the medium < 5 °C
0510420001	Adaptor required when temperature of the medium > 100 °C
0361951015	Screw fitting for male thread with flat seal, G1 - Rp½
0361951020	Screw fitting for male thread with flat seal, G1¼ - Rp¾
0361951025	Screw fitting for male thread with flat seal, G1½ - Rp1
0361951032	Screw fitting for male thread with flat seal DN 32
0361951040	Screw fitting for male thread with flat seal DN 40
0361951050	Screw fitting for male thread with flat seal DN 50
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15



Type	Description
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25
0560332032	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 32
0560332040	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 40
0560332050	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 50

### Combination of BKTA with electric actuators

- i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the ball valve.
- i** *Definition of  $\Delta p_r$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after the valve) at which the actuator reliably closes the valve by means of a return spring.

### Pressure differences

Actuator	AKM105F100 AKM105F120	AKM105F122	AKM115F120	AKM115F122
Page	311	311	311	311
Rotational torque	4 Nm	4 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point
Running time	30/120 s	30/120 s	120 s	120 s
Operating voltage	230 VAC	24 VAC	230 VAC	24 VAC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKTA015F300 BKTA020F300 BKTA025F300	1.8	1.8	2.0	2.0
BKTA032F300 BKTA040F300 BKTA050F300	1.2	1.2	2.0	2.0
-				

Actuator	AKM105SF132	AKM115SF132	AKM115SAF232	AKM115SF152
Page	314	314	133	316
Rotational torque	4 Nm	8 Nm	8 Nm	7 Nm
Control signal	2-/3-point, 0...10 V	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP	2-/3-point, 0...10 V, 4...20 mA
Running time	35/60/120 s	35/60/120 s	35/60/120 s	6 s
Operating voltage	24 VAC/DC	24 VAC/DC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
BKTA015F300 BKTA020F300 BKTA025F300	1.8	2.0	2.0	2.0
BKTA032F300 BKTA040F300 BKTA050F300	1.2	2.0	2.0	2.0
-				

Actuator	AKF112F120		AKF112F122		AKF113F122		AKF113SF122	
Page	317		317		317		318	
Torque	7 Nm		7 Nm		7 Nm		7 Nm	
Control signal	2-point		2-point		3-point		0...10 V	
Running time	90 s		90 s		90 s		90 s	
Operating voltage	230 VAC		24 VAC/DC		24 VAC/DC		24 VAC/DC	
	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_s$ [bar]
BKTA015F300	2.0	5.4	2.0	5.4	2.0	5.4	2.0	5.4
BKTA020F300								
BKTA025F300								
BKTA032F300								
BKTA040F300								
BKTA050F300								
-								



# 6-way ball valves

The 6-way ball valve from SAUTER is a compact and precise alternative for regulating heated/chilled ceilings and fan coils in four-pipe systems. It doubles as a regulating and changeover ball valve. While conventional solutions operate with up to four 2-way valves, four actuators and two controllers, now only one 6-way ball valve and an actuator are required. Their compact construction enables the devices to be installed in false ceilings without difficulty.

## Overview of 6-way ball valves

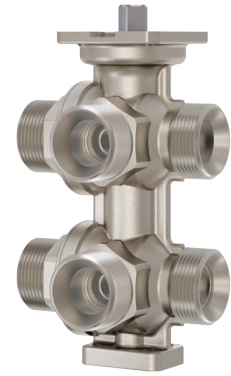


Type designation	B2KL
Application	
Single-room control	•
Preheater for ventilation & air-conditioning	•
Preheater, cooler for ventilation & air-conditioning	•
Reheater for ventilation & air-conditioning	•
Chilled ceiling	•
Static heating	•
Multi-boiler system	•
Local heating	•
Version	
Nominal pressure	PN 16
Combination options with actuator	AKM 115(S) AKM 115SA AKF 112 AKF 113(S)
Further information	Page 307

## B2KL: 6-way ball valve with male thread, PN 16

### Features

- 6-way ball valve for changeover or continuous control of heating and cooling circuits in a 4-pipe system
- Body made of moulded brass CW602N (dezincification-resistant) or CW617N
- With male thread as per ISO 228
- $K_{vs}$  selection with exchangeable orifice plates
- In combination with valve actuators AKM 115(S), 115SA and AKF 112, 113(S) as a control unit
- Strainer and screw fitting available as accessories
- Water quality as per VDI 2035



B2KL015F400



### Technical data

#### Parameters

Nominal pressure	PN 16
Valve characteristic	Quasi-linear
Leakage rate	Class A as per EN 12266-1
Total angle of rotation	90° (valve closed at 45°)

#### Ambient conditions

Operating temperature	5...90 °C
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#### Standards, directives

Pressure and temperature data	EN 764, EN 1333
Flow parameters	EN 60534
PED 2014/68/EU	Fluid group II, liquid No CE label as per article 4.3

### Overview of types

Type	Nominal diameter	Connection	$K_{vs}$ value without orifice plate	Material	Weight
B2KL015F400	DN 15	G 3/4" B	1.25 m <sup>3</sup> /h	Moulded brass CW617N	980 g
B2KL015F401	DN 15	G 3/4" B	1.25 m <sup>3</sup> /h	Moulded brass CW602N	980 g
B2KL020F411	DN 20	G 3/4" B	2.8 m <sup>3</sup> /h	Moulded brass CW602N	1870 g

☛  $K_{vs}$  value without orifice plate.  $K_{vs}$  values can be adapted using orifice plates.

### Orifice plates for setting the $K_{vs}$ value

Orifice plate set for B2KL DN15	Part number
$K_{vs}$ value	0589540001
0.25 m <sup>3</sup> /h	Supplied with the 6-way ball valve
0.4 m <sup>3</sup> /h	
0.63 m <sup>3</sup> /h	
1 m <sup>3</sup> /h	

Orifice plate set for B2KL DN20	Part number
$K_{vs}$ value	0589540002
0.7 m <sup>3</sup> /h	Supplied with the 6-way ball valve
1 m <sup>3</sup> /h	
1.6 m <sup>3</sup> /h	
2.1 m <sup>3</sup> /h	



**Accessories**

Type	Description
0378133015	1 threaded sleeve, R $\frac{1}{2}$ , flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$ - R $\frac{1}{2}$
0378134015	1 solder nipple, $\varnothing$ 15, flat-sealing, with cap nut and flat seal, G $\frac{3}{4}$
0580240002	Insulation shell for 6-way ball valve DN 15
0580240003	Insulation shell for 6-way ball valve DN 20
0560284015	Screw fitting in brass, flat-sealing, female thread/male thread for DN 15
0560284020	Screw fitting in brass, flat-sealing, female thread/male thread for DN 20
0580090001	Pliers for changing orifice plate on 6-way ball valve DN 15 and DN 20
0580240001	Fitting bracket for 6-way ball valve DN 15 and DN 20
0560332015	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.5 mm, DN 15
0560332020	Strainer in gun metal, -10...150 °C, mesh aperture 0.8 mm, DN 20
0560332025	Strainer in gun metal (bronze), -10...150 °C, mesh aperture 0.8 mm, DN 25

**Combination of B2KL with electrical actuators**

- i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*
- i** *Definition of  $\Delta p_s$ : Maximum admissible pressure drop in the event of a malfunction (pipe break after the ball valve) at which the actuator reliably closes the ball valve using the return spring.*
- i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.*

**Pressure differences**

Actuator	AKM115F120	AKM115F122	AKM115SF132	AKM115SAF232
Page	311	311	314	133
Rotational torque	8 Nm	8 Nm	8 Nm	8 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point, 0...10 V	0...10 V, BACnet MS/TP
Running time	120 s	120 s	35/60/120 s	35/60/120 s
Operating voltage	230 VAC	24 VAC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
B2KL015F400 B2KL015F401 B2KL020F411	2.0	2.0	2.0	2.0
-				

Actuator	AKF112F120	AKF112F122	AKF113F122	AKF113SF122
Page	317	317	317	318
Torque	7 Nm	7 Nm	7 Nm	7 Nm
Control signal	2-point	2-point	3-point	0...10 V
Running time	90 s	90 s	90 s	90 s
Operating voltage	230 VAC	24 VAC/DC	24 VAC/DC	24 VAC/DC
	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
B2KL015F400 B2KL015F401 B2KL020F411	2.0	2.0	2.0	2.0
-				

# Actuators for ball valves

SAUTER actuators for ball valves adapt themselves automatically to the ball valves and enable them to be controlled accurately. The actuators are switched off as a function of the torque. These SAUTER actuators are suitable for operating two- and three-way ball valves. Furthermore, they can be used for controllers with switching or continuous outputs.

## Overview of actuators for ball valves



Type designation	AKM 105, 115	AKM105SF132 AKM115SF132	AKM115SAF232	AKM115SF152
<b>Technical data</b>				
Adjustable characteristic	Equal-percentage	Equal-percentage, linear, quadratic	Equal-percentage, linear, quadratic	Equal-percentage, linear, quadratic
Running time (s)	30/120	35/60/120	35/60/120	6
Return time (s)	–	–	–	–
Power supply (V)	24, 230	24	24	24
<b>Control</b>				
2-point	•	•	–	•
3-point	•	•	–	•
BACnet MS/TP	–	–	•	–
Positioner	–	•	•	•
High-speed	–	–	–	•
Spring return	–	–	–	–
Combination options with ball valve	VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA, B2KL	VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA, B2KL	VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA, B2KL	VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA
Further information	Page 311	Page 313	Page 131	Page 315



Type designation	AKF 112, 113	AKF 113S
<b>Technical data</b>		
Adjustable characteristic	–	–
Running time (s)	90	90
Return time (s)	15	15
Power supply (V)	24, 230	24, 230
<b>Control</b>		
2-point	•	•
3-point	•	•
BACnet MS/TP	–	–
Positioner	–	•
High-speed	–	–
Spring return	•	•
Combination options with ball valve	VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA, B2KL	VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA, B2KL
Further information	Page 317	Page 318



## AKM 105, 115: Rotary actuator for ball valve

### Features

- For operating 2- and 3-way ball valves VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA and 6-way ball valve B2KL
- For controllers with a switching output (2-/3-point control)
- Assembly with ball valves without the use of tools
- Synchronous motor with electronic activation and cut-out
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the ball valve manually (using the lever)
- Bracket and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve
- Fitting vertically upright to horizontal, not suspended



AKM115F12



### Technical data

#### Power supply

Power supply 230 VAC	±15%, 50...60 Hz
Power supply 24 VAC	±20%, 50...60 Hz

#### Parameters

Power cable	1.2 m, 3 × 0.75 mm <sup>2</sup>
Response time	Min. 200 ms
Angle of rotation	90°

#### Ambient conditions

Ambient temperature	-10...55 °C
Ambient humidity	5...95% rh, no condensation
Media temperature <sup>1)</sup>	Max. 100 °C

#### Function

Control	2-/3-point
---------	------------

#### Construction

Weight	0.7 kg
Housing	Lower section black, upper section yellow
Housing material	Fire-retardant plastic

#### Standards and directives

Type of protection <sup>2)</sup>	IP54 (EN 60529), horizontal
Protection class 24 V	III (EN 60730)
Protection class 230 V	II (EN 60730)
Over-voltage categories	III
Degree of contamination	II

CE conformity according to	Directive 2006/95/EC	EN 60730-1/EN 60730-2-14
	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4

### Overview of types

Type	Voltage	Running time	Rotational torque	Power consumption
AKM105F100	230 VAC	30.0 s	4 Nm	2.4 W, 4.5 VA
AKM105F120	230 VAC	120.0 s	4 Nm	2.0 W, 4.0 VA
AKM105F122	24 VAC	120.0 s	4 Nm	1.6 W, 1.7 VA
AKM115F120	230 VAC	120.0 s	8 Nm	2.0 W, 4.0 VA
AKM115F122	24 VAC	120.0 s	8 Nm	1.6 W, 1.7 VA

<sup>1)</sup> At media temperatures < 5 °C or > 100 °C, appropriate accessory must be used

<sup>2)</sup> See fitting instructions P100001578



**Accessories**

Type	Description
0510420001	Adaptor required when temperature of the medium > 100 °C
0510240011	Adaptor required when temperature of the medium < 5 °C
0510480001	Auxiliary change-over contacts, single
0510480002	Auxiliary change-over contacts, double

☛ Auxiliary change-over contacts: Infinitely variable 0...100%, admissible load 5(2) A, 24...230 V



## AKM 105S, 115S: Rotary actuator with SAUTER Universal Technology (SUT) for ball valve

### Features

- For operating 2- and 3-way ball valves VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA and 6-way ball valve B2KL
- For controllers with constant output (0...10 V) or switching output (2-/3-point control)
- Assembly with ball valve without the use of tools
- Stepping motor with SAUTER Universal Technology (SUT) electronic control unit
- Electronic force-dependent motor cut-off
- Automatic recognition of applied control signal (continuous or switched)
- Coding switch for selecting characteristic and running time (35 s, 60 s, 120 s)
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Direction of operation can be selected directly on the cable
- Maintenance-free gear unit
- Gear unit can be disengaged in order to position the ball valve manually (using the lever)
- Bracket and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve

### Technical data

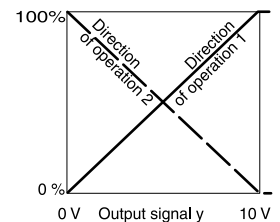
Power supply		
Power supply 24 VAC		±20%, 50...60 Hz
Power supply 24 VDC		-10%...20%
Power consumption		4.9 W, 8.7 VA
Parameters		
	Running time <sup>1)</sup>	35/60/120 s
	Angle of rotation	90°
	Response time	200 ms
	Power cable	1.2 m, 5 × 0.5 mm <sup>2</sup>
Positioner		
	Positioning signal y	0...10 V, R <sub>i</sub> > 100 kΩ
	Position feedback signal	0...10 V, load > 10 kΩ
	Starting point U <sub>0</sub>	0 V or 10 V
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	200 mV
Ambient conditions		
	Media temperature <sup>2)</sup>	Max. 100 °C
	Ambient temperature	-10...55 °C
	Ambient humidity	5...95% rh, no condensation
Construction		
	Fitting	Vertically upright to horizontal, not suspended
	Weight	0.7 kg
	Housing	Lower section black, upper section yellow
	Housing material	Flame-retardant plastic
Standards, directives		
	Type of protection	IP54 as per EN 60529
	Protection class	III as per IEC 60730
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3 EN 61000-6-4

<sup>1)</sup> For a running time of 35 s, the torque is halved

<sup>2)</sup> At media temperatures < 5 °C or > 100 °C, appropriate accessory must be used



AKM115SF132



**Overview of types**

Type	Voltage	Rotational torque	Running time	Power consumption
AKM105SF132	24 VAC/DC	4 Nm	35/60/120 s	4.9 W, 8.7 VA
AKM115SF132	24 VAC/DC	8 Nm	35/60/120 s	4.9 W, 8.7 VA

**Accessories**

Type	Description
0313529001	Split-range unit for setting sequences
0510420001	Adaptor required when temperature of the medium > 100 °C
0510240011	Adaptor required when temperature of the medium < 5 °C
0510480001	Auxiliary change-over contacts, single
0510480002	Auxiliary change-over contacts, double

💡 Auxiliary change-over contacts: Infinitely variable 0...100%, admissible load 5(2) A, 24...230 V



## AKM 115S F152: High-speed rotary actuator with SAUTER Universal Technology (SUT) for ball valve

### Features

- For operating 2- and 3-way ball valves VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA and 6-way ball valve B2KL
- For controllers with constant output (0...10 V / 4...20 mA) or switching output (2-/3-point control)
- Assembly with ball valve without the use of tools
- Brushless motor with electronic activation and cut-out
- Intelligent adaptation of rotation angle, incl. feedback adjustment
- Electronic force-dependent cut-off
- Direction of rotation selected with DIP switch
- Pulse length correction in 3-point operation, i.e. internal adjustment of start-up time
- Gear unit can be disengaged in order to position the ball valve manually (using the lever)
- Maintenance-free
- Bracket and bayonet ring made of glass-fibre-reinforced plastic for fitting onto ball valve



AKM115SF152



### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	-10%...20%
Power consumption	6.5 W, 9 VA (at nominal voltage)

#### Parameters

Rotational torque	8 Nm
Operating noise (unloaded)	< 49 dB(A)
Response time	10 ms
Angle of rotation	90°
Running time	6.0 s
Characteristic	linear

#### Positioner

Positioning signal $y$	0...10 V / 2...10 V, $R_i = 100 \text{ k}\Omega$ , 0...20 mA / 4...20 mA, $R_i = 500 \Omega$
Positional feedback signal $y_0$	0...10 V, load > 10 k $\Omega$
Starting point $U_0$	0 or 10 V / 2 or 10 V
Starting point $I_0$	0 or 20 mA / 4 or 20 mA
Control span $\Delta U$	10 V
Switching range $X_{sh}$	100 mV
Control span $\Delta I$	20 mA
Switching range $X_{sh}$	0.1 mA

#### Ambient conditions

Operating temperature	-20...55 °C
Media temperature <sup>1)</sup>	Max. 100 °C
Storage and transport temperature	-30...65 °C
Ambient humidity	5...85% rh, no condensation

#### Construction

Fitting	Vertically upright to horizontal
Dimensions W × H × D	70 × 138 × 127 mm
Weight	0.7 kg
Housing	Lower section black, upper section yellow
Housing material	Fire-retardant plastic
Power cable	1.2 m, 6 × 0.5 mm <sup>2</sup>

<sup>1)</sup> At media temperature > 100 °C, appropriate accessory must be used



#### Standards and directives

	Type of protection	IP54 (EN 60529), horizontal
	Protection class	III (EN 60730)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4

#### Overview of types

Type	Voltage	Rotational torque	Running time	Power consumption
AKM115SF152	24 VAC/DC	7 Nm	6 s	6.5 W, 9 VA

#### Accessories

Type	Description
0313529001	Split-range unit for setting sequences
0510420001	Adaptor required when temperature of the medium > 100 °C
0510240011	Adaptor required when temperature of the medium < 5 °C



## AKF 112, 113: Rotary actuator with spring return for control ball valves

### Features

- For operating 2- and 3-way ball valves VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA and 6-way ball valve B2KL
- For controllers with a switching output (2-/3-point control)
- Returns to the starting position in the event of a power failure or the activation of a safety device
- Electronic torque-dependent cut-off
- Direction of rotation can be selected during fitting



AKF112F122



### Technical data

#### Power supply

Power supply 230 VAC	±10%, 50...60 Hz
Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24...48 V=	±20%

#### Parameters

Rotational torque and holding torque	7 Nm
Angle of rotation	Max. 95°
Power cable	0.9 m, 0.75 mm <sup>2</sup> (fixed to housing)
Running time for 90° motor	90 s
Running time for 90° spring	15 s

#### Ambient conditions

Ambient temperature	-32...55 °C
Ambient humidity	5...95% rh

#### Construction

Weight	1.2 kg
Housing	Two-piece
Housing material	Cast aluminium

#### Standards and directives

	Type of protection	IP54 as per EN 60529 IP42 depending on fitting position
	Protection class 230 V	II (EN 60730)
	Protection class 24 V	III (EN 60730)
CE conformity according to Only for AKF120F120	EMC Directive 2014/30/EU	EN 61000-6-2, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
	Over-voltage categories	III
	Degree of contamination	II

### Overview of types

Type	Power consumption	Control function	Voltage
AKF112F120	4.5 W, 7.0 VA	2-point	230 VAC
AKF112F122	3.5 W, 5.0 VA	2-point	24 VAC / 24...48 VDC
AKF113F122	3.5 W, 5.0 VA	3-point	24 VAC / 24...48 VDC

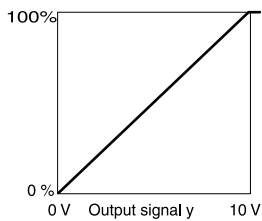
### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B





AKF113SF122



## AKF 113S: Rotary actuator with spring return and positioner

### Features

- For operating 2- and 3-way ball valves VKR, VKRA, BKR, BKRA, VKAI, VKAA, BKLI, BKTI, BKTA and 6-way ball valve B2KL
- For controllers with a continuous output (0...10 V)
- Returns to the starting position in the event of a power failure or the activation of a safety device
- Electronic torque-dependent cut-off
- Direction of rotation can be selected during fitting

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24...48 V=	±20%
Rated power during continuous operation	3.5 W, 5 VA
Power consumption when idle	2.5 W, 2.5 VA

#### Parameters

Positioner	Positioning signal y	0...10 V, $R_i = 100 \text{ k}\Omega$
	Position feedback signal	0...10 V (0...100%)
	Admissible load	> 10 $\text{k}\Omega$
	Starting point $U_0$	0 V
	Control span $\Delta U$	10 V
	Switching range $X_{sh}$	0.2 V
	Rotational torque and holding torque	7 Nm
Angle of rotation	Max. 95°	
Power cable	0.9 m, 4 × 0.75 mm <sup>2</sup> (fixed to housing)	
Running time for 90° motor	90 s	
Running time for 90° spring	15 s	

#### Ambient conditions

Ambient temperature	-32...55 °C
Ambient humidity	< 95% rh

#### Construction

Weight	1.3 kg
Housing	Two-piece
Housing material	Cast aluminium

#### Standards and directives

Type of protection	IP54 as per EN 60529
Protection class	III as per IEC 60730
CE conformity according to	EMC Directive 2014/30/EU EN 61000-6-2, EN 61000-6-3

### Overview of types

Type	Features
AKF113SF122	Rotary actuator with spring return and positioner

### Accessories

Type	Description
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B





# Control valves and butterfly valves

SAUTER control valves are used to control heating and cooling systems. The 3-way version is suitable for controlling and change-over functions, while the 4-way version is employed for higher temperatures in the return circuit. SAUTER butterfly valves are very versatile and are used for control and shut-off functions. Because they close absolutely tightly, they reduce energy consumption.

## Overview of control valves and butterfly valves



Type designation	M3R, M4R	MH32F, MH42F	DEF
<b>Application</b>			
Preheater for ventilation & air-conditioning	•	•	–
Static heating	•	•	–
Cooling tower	–	–	•
Multi-boiler system	–	–	•
<b>Version</b>			
Control valve	•	•	–
Butterfly valve	–	–	•
<b>Technical data</b>			
Nominal diameter (DN)	15...50	20...150	25...200
Nominal pressure	PN 10	PN 6	PN 16
Combination options with actuator	AR30 W, ASM 105, 115, 124 ADM 322(S)	AR30 W, ASM 105, 115, 124 ADM 322(S)	AR30 W, A44 W, ASF 122, 123 ASM 124(S) ASM 134(S) ADM 322(S)
Further information	Page 320	Page 322	Page 324



M3R015F200



M3R0\*\*F200



M4R0\*\*F200

## M3R, M4R: Control valve with threaded connection, PN 10

### Features

- M3R: 3-way valves with nominal diameters DN 15...50
- M4R: 4-way valves with nominal diameters DN 20...50
- Used in combination with the ADM 322 and ASM 105, 115, 124 motorised actuators
- Manual adjustment by means of lever and end stops
- Body, cover, front gate and spindle made of brass

### Technical data

#### Parameters

Nominal pressure	10 bar
Angle of rotation	90°
Valve characteristic	Linear
Leakage rate	< 0.1%

#### Ambient conditions

Operating temperature	2...110 °C
Operating pressure	Max. 10 bar

### Overview of types

Type	Nominal diameter	K <sub>vs</sub> value	Weight
M3R015F200	DN 15 (Rp½)	2.5 m³/h	0.8 kg
M3R020F200	DN 20 (Rp¾)	6 m³/h	0.7 kg
M3R025F200	DN 25 (Rp1)	12 m³/h	1.2 kg
M3R032F200	DN 32 (Rp1¼)	18 m³/h	1.2 kg
M3R040F200	DN 40 (Rp1½)	26 m³/h	2.2 kg
M3R050F200	DN 50 (Rp2)	40 m³/h	2.3 kg
M4R020F200	DN 20 (Rp¾)	6 m³/h	0.8 kg
M4R025F200	DN 25 (Rp1)	12 m³/h	1.2 kg
M4R032F200	DN 32 (Rp1¼)	18 m³/h	1.3 kg
M4R040F200	DN 40 (Rp1½)	26 m³/h	2.3 kg
M4R050F200	DN 50 (Rp2)	40 m³/h	2.5 kg

### Accessories

Type	Description
0510240013	ADM322 mounting kit with M3R, M4R, MH32, MH42
0361977001	Assembly materials for M3R, M4R, MH32F, MH42F with ASM 124
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115



## Combination of M3R/M4R with electric actuators

**i** *Warranty:* The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.

**i** *Definition of  $\Delta p_s$ :* Maximum admissible pressure drop in the event of a malfunction (pipe break after control valve) at which the actuator reliably closes the valve by means of a return spring.

**i** *Definition of  $\Delta p_{max}$ :* Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the valve.

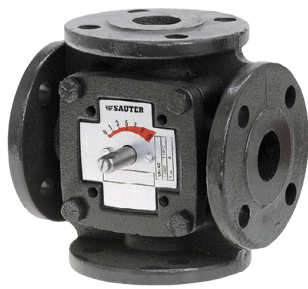
Actuator	ASM105F100	ASM105F120	ASM105F122	ASM105SF132	ASM115F120	ASM115F122	ASM115SF132
Page	334	334	334	336	334	334	336
Rotational torque	5 Nm	5 Nm	5 Nm	5 Nm	10 Nm	10 Nm	10 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	120 s	35/60/120 s	120 s	120 s	60/120 s
Operating voltage	230 V~	230 V~	24 V~	24 V =/~	230 V~	24 V~	24 V =/~
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
M3R015F200	2.0	2.0	2.0	2.0	-	-	-
M3R020F200 M4R020F200	1.0	1.0	1.0	1.0	-	-	-
M3R025F200 M3R032F200 M3R040F200 M3R050F200 M4R025F200 M4R032F200 M4R040F200 M4R050F200	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Cannot be used as distribution valve

Actuator	ADM322F120 ADM322F122 ADM322HF120 ADM322HF122 ADM322PF120 ADM322PF122	ADM322SF122 ADM322SF152	ASM124F120 ASM124F122	ASM124SF132
Page	330	332	340	345
Torque	15 Nm	15 Nm	18 Nm	15 Nm
Control signal	3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	120 s	30/60/120 s	120 s	60/120 s
Operating voltage	24 V~/= / 230 V	24 VAC/DC	24 V=~/ / 230 V	24 V=~/ / 230 V
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
M3R015F200	2.0	2.0	-	-
M3R020F200 M3R025F200 M4R020F200 M4R025F200	1.0	1.0	-	-
M3R032F200 M3R040F200 M3R050F200 M4R032F200 M4R040F200 M4R050F200	1.0	1.0	1.0	1.0

Cannot be used as distribution valve

**⚡** *Accessories required:* Assembly materials; see accessories. With ASM 124, it is not possible to fit auxiliary contacts or a potentiometer



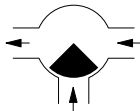
MH32F40F200



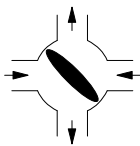
MH32F\*\*F200



MH42F\*\*F200



3-way control valve



4-way control valve

## MH32F, MH42F: Control valve with flange connection, PN 6

### Features

- MH32F: 3-way valves with nominal diameters DN 20...150
- MH42F: 4-way valves with nominal diameters DN 32...50
- Can be combined with motorised actuators ADM 322 and ASM 105, 115, 124
- Manual adjustment via lever
- Body made of grey cast iron; brass gate
- Spindle made of brass up to DN 25 and stainless steel from DN 32
- Stuffing box with double O-ring guarantees the tightness of the seal at the spindle

### Technical data

#### Parameters

Nominal pressure	6 bar
Angle of rotation	90°
Valve characteristic	Linear

#### Ambient conditions

Operating temperature	2...110 °C
Operating pressure	Max. 6 bar

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Leakage rate in % of $K_{vs}$	Weight
MH32F20F200	DN 20	12 m <sup>3</sup> /h	1 %	2.7 kg
MH32F25F200	DN 25	18 m <sup>3</sup> /h	1 %	3.5 kg
MH32F32F200	DN 32	28 m <sup>3</sup> /h	1 %	4.6 kg
MH32F40F200	DN 40	44 m <sup>3</sup> /h	1 %	5.6 kg
MH32F50F200	DN 50	66 m <sup>3</sup> /h	1 %	7.9 kg
MH32F65F200	DN 65	100 m <sup>3</sup> /h	1 %	9.2 kg
MH32F80F200	DN 80	150 m <sup>3</sup> /h	1 %	14.2 kg
MH32F100F200	DN 100	225 m <sup>3</sup> /h	1 %	19 kg
MH32F125F200	DN 125	310 m <sup>3</sup> /h	1 %	25.8 kg
MH32F150F200	DN 150	420 m <sup>3</sup> /h	1 %	35.5 kg
MH42F32F200	DN 32	28 m <sup>3</sup> /h	1.5 %	5.7 kg
MH42F40F200	DN 40	44 m <sup>3</sup> /h	1.5 %	7.1 kg
MH42F50F200	DN 50	66 m <sup>3</sup> /h	1.5 %	8.3 kg

💡 MH32F20...25: 3-way valve: Zinc cover, brass spindle

💡 MH32F32...150: 3-way valve: Cover made of grey cast iron, spindle made of stainless steel

💡 MH42F32...50: 4-way valve: Cover made of grey cast iron, spindle made of stainless steel

### Accessories

Type	Description
0360392020	Welding flange, DN 20, smooth, PN 6, incl. asbestos-free seal
0360392025	Welding flange, DN 25, smooth, PN 6, incl. asbestos-free seal
0360392032	Welding flange, DN 32, smooth, PN 6, incl. asbestos-free seal
0360392040	Welding flange, DN 40, smooth, PN 6, incl. asbestos-free seal
0360392050	Welding flange, DN 50, smooth, PN 6, incl. asbestos-free seal
0360392065	Welding flange, DN 65, smooth, PN 6, incl. asbestos-free seal
0360392080	Welding flange, DN 80, smooth, PN 6, incl. asbestos-free seal
0360392100	Welding flange, DN 100, smooth, PN 6, incl. asbestos-free seal
0360392125	Welding flange, DN 125, smooth, PN 6, incl. asbestos-free seal
0360392150	Welding flange, DN 150, smooth, PN 6, incl. asbestos-free seal



Type	Description
0361977001	Assembly materials for M3R, M4R, MH32F, MH42F with ASM 124
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115
0510240013	ADM322 mounting kit with M3R, M4R, MH32, MH42

## Combination of MH32F/MH42F with electric actuators

**i** *Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.*

**i** *Definition of  $\Delta p_s$ : Max. admissible pressure drop in the event of a malfunction (pipe break after control valve) at which the actuator reliably closes the control valve using the return spring.*

**i** *Definition of  $\Delta p_{max}$ : Maximum admissible pressure drop in control mode at which the actuator reliably opens and closes the control valve.*

### Pressure differences

Actuator	ASM105F100	ASM105F120	ASM105F122	ASM105SF132	ASM115F120	ASM115F122	ASM115SF132
Page	334	334	334	336	334	334	336
Rotational torque	5 Nm	5 Nm	5 Nm	5 Nm	10 Nm	10 Nm	10 Nm
Control signal	2-/3-point	2-/3-point	2-/3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point	2-/3-point, 0...10 V
Running time	30 s	120 s	120 s	35/60/120 s	120 s	120 s	60/120 s
Operating voltage	230 V~	230 V~	24 V~	24 V =/~	230 V~	24 V~	24 V =/~
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
MH32F20F200 MH32F25F200 MH32F32F200 MH32F40F200	1.0	1.0	1.0	1.0	1.0	1.0	1.0
MH32F50F200 MH32F65F200 MH32F80F200	-	-	-	-	0.5	0.5	0.5

Cannot be used as distribution valve

Actuator	ADM322F120 ADM322F122 ADM322HF120 ADM322HF122 ADM322PF120 ADM322PF122	ADM322SF122 ADM322SF152	ASM124F120 ASM124F122	ASM124SF132
Page	330	332	340	345
Torque	15 Nm	15 Nm	18 Nm	15 Nm
Control signal	3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	120 s	30/60/120 s	120 s	60/120 s
Operating voltage	24 V ~/= / 230 V	24 VAC/DC	24 V =/~ / 230 V	24 V =/~ / 230 V
As control valve	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
MH32F20F200 MH32F25F200 MH32F32F200 MH32F40F200 MH42F32F200 MH42F40F200	1.0	1.0	1.0	1.0
MH32F50F200 MH32F65F200 MH32F80F200 MH32F100F200 MH32F125F200 MH32F150F200 MH42F50F200	0.5	0.5	0.5	0.5

Cannot be used as distribution valve

**\*** *Accessories required: Assembly materials; see accessories. With ASM 124, it is not possible to fit auxiliary contacts or a potentiometer*



DEF100F200



## DEF: Tight-sealing butterfly valve, PN 16

### Features

- For cutting off and regulating water and low-pressure steam up to 110 °C
- Butterfly valve with 3-way brass bearing bush as spindle bearing
- Fits PN 6, PN 10 and PN 16 flanges
- Can be combined with motorised actuators of the ADM 322 and A44W type or damper actuators with spring return of the ASM 124, 134 and ASF 122, 123 type
- Damper body made of grey cast iron
- Collar made of ethylene-propylene rubber
- Butterfly disc made of stainless steel
- Spindle made of stainless steel with two O-rings

### Technical data

#### Parameters

Nominal pressure	16 bar
Valve characteristic	Linear
Angle of rotation	90°
Leakage rate <sup>1)</sup>	< 0,0001% of the $K_{vs}$ value

#### Ambient conditions

Operating temperature	-10...130 °C
Maximum operating pressure	16 bar

### Overview of types

Type	Nominal diameter	$K_{vs}$ value	Weight
DEF025F200	DN 25	36 m <sup>3</sup> /h	1 kg
DEF032F200	DN 32	40 m <sup>3</sup> /h	1.15 kg
DEF040F200	DN 40	50 m <sup>3</sup> /h	2.75 kg
DEF050F200	DN 50	85 m <sup>3</sup> /h	3.05 kg
DEF065F200	DN 65	215 m <sup>3</sup> /h	4.05 kg
DEF080F200	DN 80	420 m <sup>3</sup> /h	4.3 kg
DEF100F200	DN 100	800 m <sup>3</sup> /h	4.85 kg
DEF125F200	DN 125	1010 m <sup>3</sup> /h	7.2 kg
DEF150F200	DN 150	2100 m <sup>3</sup> /h	9.5 kg
DEF200F200	DN 200	4000 m <sup>3</sup> /h	12 kg

### Accessories

Type	Description
0361632***	Two welding flanges, complete PN 6 as per EN 1092-1 DN 25, DN 32, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200
0361633***	Two welding flanges, complete PN 10 (DN 25...100) as per EN 1092-1 and PN 16 (DN 25...200) as per EN 1092-1 DN 25, DN 32, DN 40, DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200
0361634200	2 welding flanges complete PN 10 (DN 200) as per EN 1092-1
0378110001	Assembly parts; DEF DN 25...65 for A44
0378111001	Assembly parts; DEF DN 80...125 for A44
0378112001	Assembly parts; DEF DN 150...200 for A44
0378113001	Assembly parts; DEF DN 25...100 for ASF122/123
0372455001	Assembly part; DEF DN25...65 for ASM 124/134
0372455002	Assembly part; DEF DN80...100 for ASM 124; DN125 for ASM 134
0372455003	Assembly part; DEF DN150...200 for ASM 134

<sup>1)</sup> At  $\Delta p$  1.5 bar



Type	Description
0510240014	ADM322 fitting kit with DEF DN20...65
0510240015	ADM322 fitting kit with DEF DN80...100

 Ordering information: DN 25 = /025, DN 100 = /100

### Combination of DEF with electric actuators

- i** Warranty: The technical data and pressure differences indicated here are applicable only in combination with SAUTER valve actuators. The warranty does not apply if used with valve actuators from other manufacturers.
- i** Definition of  $\Delta p_s$ : Max. admissible pressure drop in the event of a malfunction (pipe break after the damper) at which the actuator reliably closes the damper using the return spring.
- i** Definition of  $\Delta p_{max}$ : Max. admissible pressure drop in control mode at which the actuator reliably opens and closes the damper.

### Pressure differences

Actuator	ADM322F120 ADM322F122 ADM322HF120 ADM322HF122 ADM322PF120 ADM322PF122	ADM322SF122 ADM322SF152	ASM124F120 ASM124F122	ASM124SF132
Page	330	332	340	345
Torque	15 Nm	15 Nm	18 Nm	15 Nm
Control signal	3-point	2-/3-point, 0...10 V	2-/3-point	2-/3-point, 0...10 V
Running time	120 s	30/60/120 s	120 s	60/120 s
Operating voltage	24 V~/=/ 230 V	24 VAC/DC	24 V~/=/ 230 V	24 V~/=/ 230 V
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_{max}$ [bar]
DEF025F200 DEF032F200 DEF040F200 DEF050F200	10.0	10.0	10.0	10.0
DEF065F200	7.0	7.0	7.0	7.0
DEF080F200	4.0	4.0	4.0	4.0
DEF100F200	2.0	2.0	2.0	2.0
Cannot be used to close with the pressure				

Actuator	ASF122F120 ASF122F220	ASF122F122	ASF122F222	ASF123F122	ASF123SF122					
Page	350	350	350	350	352					
Torque	18 Nm	18 Nm	18 Nm	18 Nm	18 Nm					
Control signal	2-point	2-point	2-point	3-point	0...10 V					
Running time	90 s	90 s	90 s	90 s	90 s					
Operating voltage	230 V~	24 V~	24V~	24V~	24V~					
Closes against the pressure	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]	$\Delta p_{max}$ [bar]	$\Delta p_s$ [bar]
DEF025F200 DEF032F200 DEF040F200 DEF050F200	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DEF065F200	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
DEF080F200	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
DEF100F200	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Cannot be used to close with the pressure										

Actuator	A44W2F001	A44W2F020	A44W2SF001	ASM134SF132	ASM134F130
Page				345	342
Rotational torque	30 Nm	30 Nm	30 Nm	30 Nm	30 Nm
Control signal	3-point	3-point	0...10 V; 4...20 mA	0...10 V	3-point
Running time	120 s	120 s	120 s	120/240 s	120/240 s
Operating voltage	230 V~	24 V~	24V~	24 V~	230 V~
Closes against the pressure	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]	$\Delta p_{\max}$ [bar]
DEF025F200 DEF032F200 DEF040F200 DEF050F200	16.0	16.0	16.0	-	-
DEF065F200	16.0	16.0	16.0	7.0	7.0
DEF080F200 DEF100F200	10.0	10.0	10.0	7.0	7.0
DEF125F200	6.0	6.0	6.0	7.0	7.0
DEF150F200	5.0	5.0	5.0	6.0	6.0
DEF200F200	3.0	3.0	3.0	2.0	2.0
Cannot be used to close with the pressure					

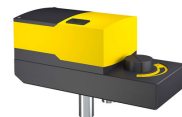
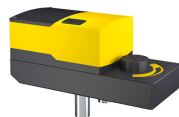
 Accessories required: Assembly parts; see accessories



# Damper and rotary actuators

SAUTER damper and rotary actuators provide a torque- and time-dependent cut-off facility for efficient energy use. They operate air dampers, shut-off dampers and multi-leaf dampers. The overload protection and the end position detector in the rotary actuators ensures the efficient use of energy. SAUTER rotary actuators can be used for controllers with a switching or continuous output.

## Overview of damper and rotary actuators



Type designation	ADM322F12*	ADM322SF1*2
Technical data		
Torque (Nm)	15	15
Running time for 90°/(s)	120 (240)	30, 60
Power supply (VAC)	24, 230	24
Control		
3-point	•	•
Positioner	–	•
Further information	Page 329	Page 331



Type designation	ASM 105, 115	ASM 105S, 115S F132	ASM 105S, 115S F152	ASM 124
Technical data				
Torque (Nm)	5, 10	5, 10	5, 10	18
Running time (s)	30, 120	35, 60, 120	3, 6	120
Power supply (V)	24, 230	24	24	24, 230
Control				
2-point	•	•	•	•
3-point	•	•	•	•
Positioner	–	•	•	–
High-speed	–	–	•	–
Spring return	–	–	–	–
Further information	Page 334	Page 336	Page 338	Page 340



Type designation	ASM 134	ASM 124S, 134S	ASF 112, 113	ASF 113S
Technical data				
Torque (Nm)	30	15, 30	7	7
Running time (s)	120, 240	60, 120, 240	90	90
Power supply (V)	230	24, 230	24	24
Control				
2-point	–	•	•	–
3-point	•	•	•	–
Positioner	–	•	–	•
High-speed	–	–	–	–
Spring return	–	–	•	•
Further information	Page 342	Page 344	Page 346	Page 348

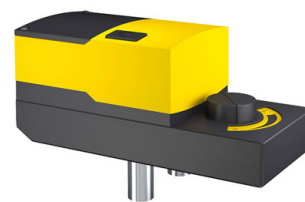


Type designation	ASF 122, 123	ASF 123S
Technical data		
Torque (Nm)	18	18
Running time (s)	90	90
Power supply (V)	24, 230	230
Control		
2-point	•	–
3-point	•	–
Positioner	–	•
High-speed	–	–
Spring return	•	•
Further information	Page 350	Page 352

## ADM 322: Rotary actuator

### Features

- For operating control units such as control valves, butterfly valves etc.
- For controllers with a switching output (2-point or 3-point control)
- 15 Nm nominal torque and holding torque
- Synchronous motor with electronic control unit and load-dependent cut-off
- Low operating noise
- Direction of operation and running time can be set using coding switches
- Gear unit can be disengaged for manual adjustment
- Electrical parallel operation of up to five actuators possible
- Numerous adapters enable the unit to be fitted onto defined non-SAUTER control valves
- Maintenance-free gearbox made of plastic and steel, and gearbox base-plates made of steel
- Mounting columns made of aluminium



ADM322F12\*



### Technical data

#### Power supply

	Power supply 24 VAC	± 20%, 50...60 Hz
	Power supply 24 VDC	-10%...20%
	Power supply 230 VAC	± 15%
	Connections (screw terminals)	Max. 1.5 mm <sup>2</sup>
ADM322(H, P)F120	Power consumption	< 2.2 W
ADM322(H, P)F122	Power consumption	< 2.5 W

#### Parameters

Operating noise <sup>1)</sup>	< 30 dB(A) (loaded)
Running time for 90°	120 (240) s
Response time	< 200 ms
Angle of rotation	Max. 95°
Rotational torque and holding torque	15 Nm

#### Ambient conditions

Operating temperature	-20...55 °C
Storage and transport temperature	-40...80 °C
Air humidity without condensation	5...85% rh

#### Construction

Dimensions W × H × D	194 × 116 × 86 mm
Weight	1.5
Fitting position	Vertically upright to horizontal, not fitted upside down
Housing	Three-part
Housing material	Flame retardant yellow/black plastic
Cable inlet	With break-outs, for metric screw fittings M20×1.5

#### Standards and directives

	Type of protection	IP54 (EN 60529)
	Protection class	II (EN 60730-1), EN 60730-2-14 III (EN 60730-1), EN 60730-2-14
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1 EN 61000-6-2 EN 61000-6-3 EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1 EN 60730-2-14

<sup>1)</sup> Operating noise with the slowest running time



Over-voltage categories	III
Degree of contamination	II
Max. altitude	2000 metres
Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

### Overview of types

Type	Nominal voltage	Type
ADM322F120	230 V~	-
ADM322F122	24 V~/=	-
ADM322HF120	230 V~	Auxiliary contacts
ADM322HF122	24 V~/=	Auxiliary contacts
ADM322PF120	230 V~	Potentiometer
ADM322PF122	24 V~/=	Potentiometer

### Accessories

Type	Description
0510600001	Cable module, 1.2 m, 3-wire, PVC
0510600002	Cable module, 1.2 m, 3-wire, halogen-free
0510600003	Cable module, 1.2 m, 6-wire, PVC
0510600004	Cable module, 1.2 m, 6-wire, halogen-free
0510600005	Cable module, 5 m, 3-wire, PVC
0510600006	Cable module, 5 m, 3-wire, halogen-free
0510600007	Cable module, 5 m, 6-wire, PVC
0510600008	Cable module, 5 m, 6-wire, halogen-free
0510240013	ADM322 mounting kit with M3R, M4R, MH32, MH42
0510240014	ADM322 fitting kit with DEF DN20...65
0510240015	ADM322 fitting kit with DEF DN80...100
0510390002	Adapter set for control valve, Honeywell, DZ/ZR valves only
0510390003	Adapter set for control valve, Danfoss
0510390004	Adapter set for Caleffi control valve
0510390005	Adapter set for control valve, Coster

## ADM 322S: Rotary actuator with positioner

### Features

- For operating control units such as control valves, butterfly valves etc.
- For controllers with a continuous output
- 15 Nm nominal torque and holding torque
- ADM322SF122: Synchronous motor with electronic control unit and load-dependent cut-off
- ADM322SF152: Brushless DC motor with SUT (SAUTER Universal Technology) electronic control unit and electronic, load-dependent cut-off
- Low operating noise
- Automatic recognition of applied control signal
- With the built-in absolute distance measurement system, the position is always maintained in the case of power failure
- The direction of operation, running time and control signal (voltage/current) can be adjusted via coding switches
- High-speed variant ADM322SF152 with 30 s or 60 s for angle of rotation 90°
- Gear unit can be disengaged for manual adjustment
- Easy re-initialisation using a coding switch
- Electrical parallel operation of up to five actuators possible
- Numerous adapters enable the unit to be fitted onto defined non-SAUTER control valves
- ADM322SF152: Integrated forced operation can be set via coding switches (with selectable direction of operation)
- Maintenance-free gearbox made of plastic and steel, and gearbox base-plates made of steel
- Mounting columns made of aluminium



ADM322SF1\*2



### Technical data

#### Power supply

Power supply	24 VDC -10%...20% 24 VAC ± 20% (50...60 Hz)
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#### Parameters

	Operating noise <sup>1)</sup>	< 30 dB(A) (loaded)
	Response time	< 200 ms
	Angle of rotation	Max. 95°
	Rotational torque and holding torque	15 Nm
ADM322SF122 positioner	Control signal y	0...10 V, R <sub>i</sub> ≥ 50 kΩ, 0...20 mA, R <sub>i</sub> ≤ 50 Ω 2...10 V (4...20 mA)
	Positional feedback signal y <sub>0</sub>	0...10 V, load ≥ 5 kΩ
	Starting point U <sub>0</sub>	0 or 10 V
	Starting point I <sub>0</sub>	0 or 20 mA
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	130 mV, 0.26 mA
	Control span ΔI	20 mA
	Max. admissible line resistance	3 Ω
ADM322SF152 positioner	Control signal y	0...10 V, R <sub>i</sub> ≥ 50 kΩ, 4...20 mA, R <sub>i</sub> ≤ 50 Ω
	Positional feedback signal y <sub>0</sub>	0...10 V, load ≥ 5 kΩ
	Starting point U <sub>0</sub>	0 or 10 V
	Starting point I <sub>0</sub>	4 or 20 mA
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	130 mV, 0.26 mA
	Control span ΔI	20 mA

<sup>1)</sup> Operating noise with the slowest running time



Max. admissible line resistance 3 Ω

**Ambient conditions**

Operating temperature	-20...55 °C
Storage and transport temperature	-40...80 °C
Humidity without condensation	5...85% rh

**Construction**

Connection terminals	Screw terminals, max. 1.5 mm <sup>2</sup>
Cable inlet	With break-outs, for metric screw fittings M20 × 1.5
Housing	Three-part
Housing material	Flame-retardant yellow/black plastic
Dimensions W × H × D	194 × 166 × 86 mm
Fitting position	Vertically upright to horizontal, not fitted upside down
Weight	1.5 kg

**Standards and directives**

	Type of protection	IP54 (EN 60529)
	Protection class	III (EN 60730-1), EN 60730-2-14
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1 EN 60730-2-14
	Over-voltage categories	III
	Degree of contamination	II
	Max. altitude	2000 m
	Machinery Directive 2006/42/EC (according to Appendix II, 1B)	EN ISO 12100:2018

**Overview of types**

Type	Description
ADM322SF122	Rotary actuator, continuous, 24 VDC/AC, running time 120 s, 15 Nm
ADM322SF152	Rotary actuator, continuous, 24 VDC/AC, running time 30 s, 15 Nm

**Power consumption at nominal voltage**

Type	Running time for 90° [s]	Status	Active power P [W]	Apparent power S [VA]
ADM322SF122	120	Operation	< 2.5	5.0
		Standstill	< 0.3	-
		Sizing	3.0	6.0
ADM322SF152	30 (60)	Operation	< 2.3	4.5
		Standstill	< 0.5	-
		Sizing	3.0	6.0

**Accessories**

Type	Description
0510600001	Cable module, 1.2 m, 3-wire, PVC
0510600002	Cable module, 1.2 m, 3-wire, halogen-free
0510600003	Cable module, 1.2 m, 6-wire, PVC
0510600004	Cable module, 1.2 m, 6-wire, halogen-free
0510600005	Cable module, 5 m, 3-wire, PVC
0510600006	Cable module, 5 m, 3-wire, halogen-free
0510600007	Cable module, 5 m, 6-wire, PVC
0510600008	Cable module, 5 m, 6-wire, halogen-free
0313529001	Split-range unit for setting sequences
0510240013	ADM322 mounting kit with M3R, M4R, MH32, MH42
0510240014	ADM322 fitting kit with DEF DN20...65

Type	Description
0510240015	ADM322 fitting kit with DEF DN80...100
0510390002	Adapter set for control valve, Honeywell, DZ/ZR valves only
0510390003	Adapter set for control valve, Danfoss
0510390004	Adapter set for Caleffi control valve
0510390005	Adapter set for control valve, Coster

ADM322SF152 only

Type	Description
0500420002	4...20 mA feedback module for valve actuators AVM321S and AVM322S
0500570003	Constant 230 V module for valve actuators AVM321S and AVM322S





ASM105F122



## ASM 105, 115: Damper actuator

### Features

- For controllers with switching output (2- and 3-point)
- Self-centring spindle adapter
- Gear unit can be disengaged to position the damper and for manual adjustment
- Synchronous motor with electronic activation and cut-out
- Maintenance-free
- Suitable for all fitting positions

### Technical data

#### Parameters

Angle of rotation	Max. 95°
Admissible damper shaft	∅ 8...16 mm, □ 6,5...12.5 mm
Admissible damper shaft (hardness)	Max. 300 HV
Operating noise	< 30 dB (A)
Response time	200 ms

#### Ambient conditions

Ambient temperature <sup>1)</sup>	-20...65 °C
Ambient humidity	5...85% rh, no condensation

#### Function

Control	2-/3-point
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#### Construction

Weight	0.7 kg
Housing	Lower section black, upper section yellow
Housing material	Fire-retardant plastic
Power cable	1.2 m long, 3 × 0.75 mm <sup>2</sup>

#### Standards and directives

Type of protection	IP54 (EN 60529)
Protection class 24 V	III (EN 60730)
Protection class 230 V	II (EN 60730)

#### CE conformity according to

EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Directive 2006/95/EC	EN 1050
Low-Voltage Directive 2014/35/EU <sup>2)</sup>	EN 60730-1, EN 60730-2-14 Over-voltage category III Degree of contamination II

### Overview of types

Type	Rotational torque and holding torque	Running time for 90°	Power supply	Power consumption
ASM105F100	5 Nm	30 s	230 V~	2.4 W, 5.4 VA
ASM105F120	5 Nm	120 s	230 V~	2.0 W, 5.0 VA
ASM105F122	5 Nm	120 s	24 V~	1.6 W, 1.7 VA
ASM115F120	10 Nm	120 s	230 V~	2.0 W, 5.0 VA
ASM115F122	10 Nm	120 s	24 V~	1.6 W, 1.7 VA

<sup>1)</sup> Operating time approx. 80% up to 65 °C, 100% up to 55 °C

<sup>2)</sup> Only for ASM1\*5F1\*0





## Accessories

Type	Description
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115
0372145001	Auxiliary change-over contacts, single
0372145002	Auxiliary change-over contacts, double
0372286001	Potentiometer, 130 $\Omega$
0372286002	Potentiometer, 1000 $\Omega$
0372286003	Potentiometer, 5000 $\Omega$
0372300001	Torsion protection, long (230 mm)
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.
0372320001	Hexagon key as visualisation for position indicator

☛ Auxiliary change-over contacts: Infinitely variable 0...90°, admissible load 5(2) A, 24...230 V

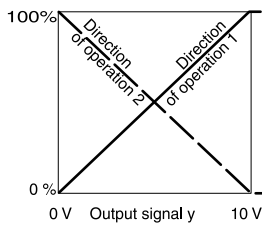
☛ Potentiometers: Only one potentiometer or one set of auxiliary contacts can be fitted for each actuator



## ASM 105S, 115S F132: Damper actuator with SAUTER Universal Technology (SUT)



ASM105SF132



### Features

- For controllers with switching (2- and 3-point) or continuous output (0...10 V)
- Self-centring spindle adapter
- Gear unit can be disengaged to position the damper and for manual adjustment
- Stepping motor with electronic activation and cut-out
- Maintenance-free
- Intelligent adaptation of rotation angle, incl. feedback adjustment
- Free configuration using the CASE Drive PC tool
- Suitable for all fitting positions

### Technical data

Power supply		
Power supply 24 VAC		±20%, 51...60 Hz
Power supply 24 VDC		±20%

Parameters		
Angle of rotation		Max. 95°
Admissible damper shaft		∅ 8...16 mm, □ 6,5...12.5 mm
Admissible damper shaft (hardness)		Max. 300 HV
Operating noise		< 30 dB (A)
Response time		200 ms
Positioner	Control signal y	0...10 V, R <sub>i</sub> > 100 kΩ
	Positional feedback signal y <sub>0</sub>	0...10 V; load > 10 kΩ
	Starting point U <sub>0</sub>	0 or 10 V
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	200 mV

Ambient conditions		
Ambient temperature		-20...55 °C
Ambient humidity		< 95% rh, no condensation

Construction		
Weight		0.7 kg
Housing		Lower section black, upper section yellow
Housing material		Fire-retardant plastic
Power cable		1.2 m long, 5 × 0.5 mm <sup>2</sup>

Standards and directives		
	Type of protection	IP54 (EN 60529)
	Protection class	III (IEC 60730)
CE conformity	EMC Directive 2014/30/EU	EN 61000-6-1 EN 61000-6-3 EN 61000-6-4
	Directive 2006/95/EC	EN 1050

### Overview of types

Type	Rotational torque and holding torque (Nm)	Running time for 90°	Power consumption
ASM105SF132	5	35/60/120 s	5.0 W, 9.0 VA
ASM115SF132	10	60/120 s	4.8 W, 8.7 VA



## Accessories

Type	Description
0313529001	Split-range unit for setting sequences
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115
0372145001	Auxiliary change-over contacts, single
0372145002	Auxiliary change-over contacts, double
0372286001	Potentiometer, 130 $\Omega$
0372286002	Potentiometer, 1000 $\Omega$
0372286003	Potentiometer, 5000 $\Omega$
0372300001	Torsion protection, long (230 mm)
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.
0372320001	Hexagon key as visualisation for position indicator

☛ Auxiliary change-over contacts: Infinitely variable 0...90°, admissible load 5(2) A, 24...230 V

☛ Potentiometers: Only one potentiometer or one set of auxiliary contacts can be fitted for each actuator



## ASM 105S, 115S F152: High-speed damper actuator with SAUTER Universal Technology (SUT)



ASM115SF152



### Features

- For controllers with switching (2- and 3-point) or continuous output (0...10 V)
- Brushless motor with electronic activation and cut-out
- Intelligent adaptation of rotation angle
- Electronic force-dependent cut-off
- Direction of rotation selection via DIP switch
- Pulse length correction in 3-point operation, i.e. internal adjustment of start-up time
- Self-centring spindle adapter
- Gear unit can be disengaged to position the damper and for manual adjustment
- Maintenance-free
- Fitting: Vertically upright to horizontal, not suspended

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC	+20%, -10%

#### Parameters

	Angle of rotation	Max. 95°
	Admissible damper shaft	∅ 8...16 mm, □ 6.5...12.5 mm
	Admissible damper shaft (hardness)	Max. 300 HV
	Operating noise (unloaded)	< 49 dB (A)
	Response time	10 ms (electrically compensated)
Positioner	Positioning signal y	0...10 V / 2...10 V, R <sub>i</sub> = 100 kΩ, 0...20 mA / 4...20 mA, R <sub>i</sub> = 500 Ω
	Positional feedback signal y <sub>0</sub>	0...10 V, load > 10 kΩ
	Starting point U <sub>0</sub>	0 or 10 V / 2 or 10 V
	Starting point I <sub>0</sub>	0 or 20 mA / 4 or 20 mA
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	100 mV
	Control span ΔI	20 mA
	Switching range X <sub>sh</sub>	0.1 mA

#### Ambient conditions

Operating temperature	-20...55 °C
Storage and transport temperature	-30...65 °C
Ambient humidity	5...85% rh, no condensation

#### Construction

Dimensions W × H × D	70 × 63 × 133 mm
Weight	0.7 kg
Housing	Lower section black, upper section yellow
Housing material	Flame-retardant plastic
Power cable	1.2 m long, 6 × 0.5 mm <sup>2</sup>

#### Standards, directives

Type of protection	IP54 (EN 60529)
Protection class	III (EN 60730)



CE conformity	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
UL and CAN compliance (ASM105SF152U only)	Electrical safety	UL 60730-1 Part 1, UL 60730-2-14 Part 2, CAN/CSA-E60730-1:02 Part 1 and Annex 1

### Overview of types

**i** Rotational torque and holding torque: Holding torque is typically 1.5 Nm when the actuator is without power

Type	Rotational torque and holding torque	Running time for 90°	Power consumption
ASM105SF152	5 Nm	3 s	6.0 W, 8.5 VA
ASM115SF152	10 Nm	6 s	6.5 W, 9.0 VA
ASM105SF152U	3 Nm	3 s	6.0 W, 8.5 VA

### Accessories

Type	Description
0313529001	Split-range unit for setting sequences
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115
0372300001	Torsion protection, long (230 mm)
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.

**⚡** The UL compliances of the ASM105SF152U do not apply to the accessories





ASM124F12\*



## ASM 124: Damper actuator

### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with switching (2- and 3-point) output
- Synchronous motor with electronic activation and cut-out
- Maintenance-free gear unit
- Electronic end position detector and motor cut-off
- Self-centring spindle adapter for fitting onto damper spindle
- Gear unit can be disengaged to position the damper and for manual adjustment
- Suitable for all fitting positions
- Threaded holes (M5) for fitting to bracket
- Version with halogen-free cable on demand

### Technical data

Power supply	
Power supply 230 VAC	±15%, 50...60 Hz
Power supply 24 VAC	±20%, 50...60 Hz
Parameters	
Rotational torque and holding torque	18 Nm
Running time for 90°	120 s
Angle of rotation	Max. 95°
Admissible damper shaft	Ø 12...20 mm, □ 10...16 mm
Admissible damper shaft (hardness)	Max. 300 HV
Operating noise	< 30 dB (A)
Response time	200 ms
Ambient conditions	
Ambient temperature	-20...55 °C
Ambient humidity	< 95% rh, no condensation
Construction	
Weight	1.2 kg
Housing	Lower section black, upper section yellow
Housing material	Flame-retardant plastic
Power cable	1.2 m long, 3 × 0.75 mm <sup>2</sup>
Standards, directives	
Type of protection	IP40 (EN 60529), IP43 (EN 60529), IP54 (EN 60529), IP55 (EN 60529)
Protection class 230 V	II (EN 60730)
Protection class 24 V	III (EN 60730)
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	II
Mode of operation	Type 1 AB (EN 60730) Type 1 C (EN 60730)
Software	A (EN 60730)


### Overview of types

Type	Voltage	Power consumption
ASM124F120	230 V~	2.9 W, 5.6 VA
ASM124F122	24 V~	2.3 W, 2.4 VA



 **Power consumption when idle:**

 ASM124F120: 0.5 W, 5.1 VA

 ASM124F122: 0.03 W, 0.4 VA

### Accessories

Type	Description
0361977001	Assembly materials for M3R, M4R, MH32F, MH42F with ASM 124
0370059000	Clamping lever for shaft, Ø 8...18 mm
0370990001	Auxiliary change-over contacts, single
0370990002	Auxiliary change-over contacts, double
0370992001	Potentiometer, 2000 Ω, 1 W
0370992002	Potentiometer, 130 Ω, 1 W
0372200001	Fitting bracket
0372201001	Spindle extension with coupling
0372202001	Lever, fitting strip
0372203001	Driver axle for auxiliary contacts
0372204001	Spindle for clamping lever 0370059000
0372455001	Assembly part; DEF DN25...65 for ASM 124/134
0372455002	Assembly part; DEF DN80...100 for ASM 124; DN125 for ASM 134

 Auxiliary change-over contacts: Infinitely variable 0...90°, admissible load 5(2) A, 24...230 V





ASM134F130



## ASM 134: Damper actuator

### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with a switching (3-point) output
- Self-centring spindle adapter
- Gear unit can be disengaged to position the damper and for manual adjustment
- Stepping motor with electronic activation and cut-out
- Direction of rotation changed by transposing the connections
- Suitable for all fitting positions
- Maintenance-free
- Version with halogen-free cable on demand

### Technical data

Power supply	
Power supply	230 V~, ±15%, 50 Hz
Power consumption	3.7 W, 4.7 VA

Parameters	
Rotational torque and holding torque	30 Nm
Running time for 90°	120/240 s
Angle of rotation	Max. 95°
Admissible damper shaft	Ø 12...20 mm, □ 10...16 mm
Admissible damper shaft (hardness)	Max. 300 HV
Operating noise	< 30 dB (A)
Response time	200 ms

Ambient conditions	
Ambient temperature	-20...55 °C
Ambient humidity	< 95% rh, no condensation

Construction	
Weight	1.8 kg
Housing	Lower section black, upper section yellow
Housing material	Flame-retardant plastic
Power cable	1.2 m long, 3 × 0.75 mm <sup>2</sup>

Standards, directives	
Type of protection	IP40 (EN 60529) IP54 (EN 60529) IP55 (EN 60529)
Protection class	II (IEC 60730)
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	III
Mode of operation	Type 2 B (EN 60730)
Software	A (EN 60730)

### Overview of types

Type	Rated power during continuous operation	Power consumption when idle
ASM134F130	3.7 W, 4.7 VA	1.1 W, 2.7 VA





## Accessories

Type	Description
0361977001	Assembly materials for M3R, M4R, MH32F, MH42F with ASM 124
0370059000	Clamping lever for shaft, $\varnothing$ 8...18 mm
0370990001	Auxiliary change-over contacts, single
0370990002	Auxiliary change-over contacts, double
0370992001	Potentiometer, 2000 $\Omega$ , 1 W
0370992002	Potentiometer, 130 $\Omega$ , 1 W
0372200001	Fitting bracket
0372201001	Spindle extension with coupling
0372202001	Lever, fitting strip
0372203001	Driver axle for auxiliary contacts
0372204001	Spindle for clamping lever 0370059000
0372455001	Assembly part; DEF DN25...65 for ASM 124/134
0372455002	Assembly part; DEF DN80...100 for ASM 124; DN125 for ASM 134
0372455003	Assembly part; DEF DN150...200 for ASM 134

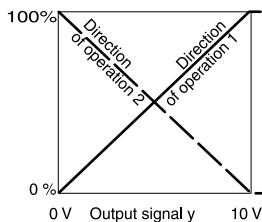
 Auxiliary change-over contacts: Infinitely variable 0...90°, admissible load 5(2) A, 24...230 V



## ASM 124S, 134S: Damper actuator with SAUTER Universal Technology (SUT)



ASM1\*4SF132



### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with switching (2- and 3-point) or continuous output (0...10 V)
- Self-centring spindle adapter
- Gear unit can be disengaged to position the damper and for manual adjustment
- Stepping motor with electronic activation and cut-out
- Maintenance-free
- Intelligent adaptation of rotation angle, incl. feedback adjustment
- Direction of rotation changed by transposing the connections
- Suitable for all fitting positions
- Version with halogen-free cable on demand

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24 VDC <sup>1)</sup>	±20%

#### Parameters

	Angle of rotation	Max. 95°
	Admissible damper shaft (hardness)	Max. 300 HV
	Operating noise	< 30 dB(A)
	Response time	200 ms
Positioner	Control signal	0...10 V, R <sub>i</sub> > 100 kΩ
	Positional feedback signal	0...10 V, load > 10 kΩ
	Starting point U <sub>0</sub>	0 or 10 V
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	200 mV

#### Ambient conditions

Ambient temperature	-20...55 °C
Ambient humidity	< 95% rh, no condensation

#### Construction

Weight	1.6 kg
Housing	Lower section black, upper section yellow
Housing material	Flame-retardant plastic
Power cable	1.2 m long, 2 × 0.75 mm <sup>2</sup>

#### Standards, directives

Type of protection	IP40 (EN 60529), IP43 (EN 60529), IP54 (EN 60529)
Protection class	III (IEC 60730)
EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
Mode of operation	Type 1 AB (EN 60730) Type 1 C (EN 60730)
Software	A (EN 60730)


<sup>1)</sup> 24 V= only for control signals 0...10 V




### Overview of types

Type	Rotational torque	Holding torque	Running time for 90°	Power consumption	Admissible damper shaft
ASM124SF132	15 Nm	15 Nm	60, 120 s	2.4 W, 4.4 VA	Ø 12...20 mm, □ 10...16 mm
ASM134SF132	30 Nm	30 Nm	120, 240 s	2.4 W, 4.3 VA	Ø 12...20 mm, □ 10...16 mm

 **Power consumption when idle:**

 ASM124SF132: 0.25 W, 0.46 VA

 ASM134SF132: 0.26 W, 0.48 VA

### Accessories

Type	Description
0313529001	Split-range unit for setting sequences
0361977001	Assembly materials for M3R, M4R, MH32F, MH42F with ASM 124
0370059000	Clamping lever for shaft, Ø 8...18 mm
0370990001	Auxiliary change-over contacts, single
0370990002	Auxiliary change-over contacts, double
0370992001	Potentiometer, 2000 Ω, 1 W
0370992002	Potentiometer, 130 Ω, 1 W
0372200001	Fitting bracket
0372201001	Spindle extension with coupling
0372202001	Lever, fitting strip
0372203001	Driver axle for auxiliary contacts
0372204001	Spindle for clamping lever 0370059000
0372455001	Assembly part; DEF DN25...65 for ASM 124/134
0372455002	Assembly part; DEF DN80...100 for ASM 124; DN125 for ASM 134
0372455003	Assembly part; DEF DN150...200 for ASM 134

 Auxiliary change-over contacts: Infinitely variable 0...90°, admissible load 5(2) A, 24...230 V





ASF112F122



## ASF 112, 113: Damper actuator with spring return

### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with switching (2- and 3-point) output
- Self-centring spindle adapter
- Manual adjustment using hexagon socket, including locking of gear unit
- Maintenance-free
- Suitable for all fitting positions

### Technical data

#### Power supply

Power supply 230 VAC	±10%, 50...60 Hz
Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24...48 V=	±20%

#### Parameters

Rotational torque and holding torque	7 Nm
Angle of rotation	Max. 95°
Admissible damper shaft	∅ 6.4...20.5 mm, □ 6.4...13 mm
Running time for 90° motor	90 s
Running time for 90° spring	15 s

#### Ambient conditions

Ambient temperature	-32...55 °C
Ambient humidity	5...95% rh, no condensation

#### Construction

Housing	Cast aluminium
Power cable	0.9 m, 0.75 mm <sup>2</sup>

#### Standards and directives

Type of protection	IP54 (EN 60529), suspended IP42 (EN 60529), not suspended
Protection class 24 V	III (EN 60730)
Protection class 230 V	II (EN 60730)
EMC Directive 2014/30/EU	EN 61000-6-2, EN 61000-6-3
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Degree of contamination	II
Over-voltage categories	III

### Overview of types

Type	Control function	Voltage	Power consumption	Weight
ASF112F120	2-point	230 V~	4.5 W, 7.0 VA	1.2 kg
ASF112F122	2-point	24 V~/24...48 V=	3.5 W, 5.0 VA	1.2 kg
ASF112F220	2-point	230 V~	4.5 W, 7.0 VA	1.3 kg
ASF112F222	2-point	24 V~/24...48 V=	3.5 W, 5.0 VA	1.3 kg
ASF113F122	3-point	24 V~/24...48 V=	3.5 W, 5.0 VA	1.2 kg

💡 ASF112F220, ASF112F222: Double auxiliary contacts 6(2) A; 24...250 V~ with cable 0.9 m; 6 × 0.75 mm<sup>2</sup>



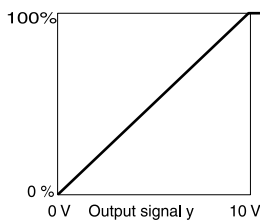
**Accessories**

Type	Description
0372245001	Lever adaptor for converting rotation into stroke
0372245002	Lever adaptor for converting rotation into stroke, with carrier plate for mounting on wall or plinth
0510240001	Assembly kit for VK***/BK*** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B





ASF113SF122



## ASF 113S: Damper actuator with spring return and positioner

### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with a continuous output (0...10 V)
- Self-centring spindle adapter
- Manual adjustment using hexagon socket, including locking of gear unit
- Maintenance-free
- Suitable for all fitting positions

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 24...48 V=	±20%
Power consumption	3.5 W, 5.0 VA

#### Parameters

Running time for 90° motor	90 s
Running time for 90° spring	15 s
Rotational torque	7 Nm
Holding torque	7 Nm
Angle of rotation	Max. 95°
Admissible damper shaft	∅ 6.4...20.5 mm, □ 6.4...13 mm
Admissible damper surface area <sup>1)</sup>	1.5 m <sup>2</sup>

#### Positioner

Control signal	0...10 V, R <sub>i</sub> = 100 kΩ
Positional feedback signal	0...10 V (0...100%)
Admissible load	> 10 kΩ
Switching range X <sub>sh</sub>	0.2 V

#### Setting range

Starting point U <sub>0</sub>	0 V
Control span ΔU	10 V

#### Ambient conditions

Ambient temperature	-32...55 °C
Ambient humidity	< 95% rh

#### Construction

Weight	1.3 kg
Housing	Cast aluminium
Power cable	0.9 m, 4 × 0.75 mm <sup>2</sup>

#### Standards and directives

Type of protection	IP54 (EN60529), suspended IP 42 (EN 60529), not suspended
Protection class	III (IEC 60730)
Degree of contamination	II
Over-voltage categories	III
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
EMC Directive 2014/30/EU	EN 61000-6-2, EN 61000-6-3

### Overview of types

Type	Features
ASF113SF122	Damper actuator with spring return and positioner



<sup>1)</sup> Recommended value for smooth-running air dampers

**Accessories**

Type	Description
0372245001	Lever adaptor for converting rotation into stroke
0372245002	Lever adaptor for converting rotation into stroke, with carrier plate for mounting on wall or plinth
0510240001	Assembly kit for VK**/BK** ball valves as spare part and as accessory for rotary actuators ASF 112, 113 from index B





ASF122F122



## ASF 122, 123: Damper actuator with spring return

### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with switching (2- and 3-point) output
- Self-centring spindle adapter
- Manual adjustment using hexagon socket, including locking of gear unit
- Wear-free brushless motor
- Maintenance-free
- Change direction of rotation by simply turning the actuator
- Suitable for all fitting positions

### Technical data

#### Power supply

Power supply 24 VAC	±20%, 50...60 Hz
Power supply 230 VAC	±10%, 50...60 Hz
Power supply 24...48 V=	±20%

#### Parameters

Running time for 90° motor	90 s
Running time for 90° spring	15 s
Rotational torque and holding torque	18 Nm
Angle of rotation	Max. 90°
Admissible damper shaft	∅ 8...25 mm, □ 6...18 mm

#### Ambient conditions

Ambient temperature	-32...55 °C
Ambient humidity	5...95% rh

#### Construction

Housing	Cast aluminium
Power cable	0.9 m, 0.75 mm <sup>2</sup>

#### Standards and directives

Type of protection	IP54 (EN60529), suspended IP42 (EN 60529), not suspended
Protection class 24 V	III (EN 60730)
Protection class 230 V	II (EN 60730)
EMC Directive 2014/30/EU	EN 61000-6-2, EN 61000-6-3
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	II

### Overview of types

Type	Control function	Voltage	Power consumption	Weight
ASF122F120	2-point	230 V~	6 W, 8 VA	2 kg
ASF122F122	2-point	24 V~/24...48 V=	5 W, 7 VA	2 kg
ASF122F220	2-point	230 V~	6 W, 8 VA	2.1 kg
ASF122F222	2-point	24 V~/24...48 V=	5 W, 7 VA	2.1 kg
ASF123F122	3-point	24 V~/24...48 V=	5 W, 7 VA	2 kg

⚡ ASF122F220, ASF122F222: With double auxiliary contacts 6(2) A; 24...250 V~; with cable 0.9 m; 6 x 0.75 mm<sup>2</sup>





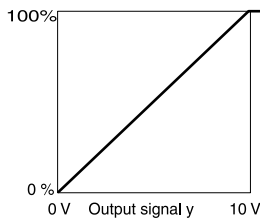
**Accessories**

Type	Description
0370997001	Lever adaptor for converting rotation into stroke
0370998001	Lever adaptor for converting rotation into stroke, with carrier plate for mounting on wall or plinth
0378113001	Assembly parts; DEF DN 25...100 for ASF122/123





ASF123SF122



## ASF 123S: Damper actuator with spring return and positioner

### Features

- For operating air dampers, shut-off dampers, butterfly valves and multi-leaf dampers
- For controllers with a continuous output (0...10 V)
- Self-centring spindle adapter
- Manual adjustment using hexagon socket, including locking of gear unit
- Wear-free brushless motor
- Maintenance-free
- Change direction of rotation by simply turning the actuator
- Suitable for all fitting positions

### Technical data

#### Power supply

Power supply 24...48 V=	±20%
Power consumption	5.4 W, 7.5 VA

#### Parameters

	Running time for 90° motor	90 s
	Running time for 90° spring	15 s
	Rotational torque and holding torque	18 Nm
	Angle of rotation	Max. 95°
	Admissible damper shaft	∅ 8...25 mm, □ 6...18 mm
Positioner	Control signal	0...10 V, R <sub>i</sub> = 100 kΩ
	Positional feedback signal	0...10 V (0...100%)
	Admissible load	> 10 kΩ
	Switching range X <sub>sh</sub>	0.2 V
Setting range	Starting point U <sub>0</sub>	0 V
	Control span ΔU	10 V

#### Ambient conditions

Ambient temperature	-32...55 °C
Ambient humidity	< 95% rh

#### Construction

Weight	2 kg
Housing	Cast aluminium
Power cable	0.9 m, 4 × 0.75 mm <sup>2</sup>

#### Standards and directives

Type of protection <sup>1)</sup>	IP54 (EN60529), suspended IP42 (EN 60529), not suspended
Protection class	III (IEC 60730)
EMC Directive 2014/30/EU	EN 61000-6-2, EN 61000-6-3
Low-Voltage Directive 2014/35/EU	EN 60730-1, EN 60730-2-14
Over-voltage categories	III
Degree of contamination	II

### Overview of types

Type	Features
ASF123SF122	Damper actuator with spring return and positioner



<sup>1)</sup> Depending on fitting position, ensure IP54

**Accessories**

Type	Description
0370997001	Lever adaptor for converting rotation into stroke
0370998001	Lever adaptor for converting rotation into stroke, with carrier plate for mounting on wall or plinth
0378113001	Assembly parts; DEF DN 25...100 for ASF122/123



# HVAC automation



## The new standard in building automation.

SAUTER modulo 6 offers unprecedented performance in terms of data points, memory capacity and processing speed, all with minimal space requirements. The app with an augmented reality function shows real-time values and signal labels. Values can be adjusted via the touch screen. As an alternative to smartphone operation, the range also includes a local operating unit (LOI) with a high-resolution graphical colour display. The LOI is compatible with all available I/O modules and offers priority operation decoupled from the station. modulo 6 connects to the cloud and IoT just as securely as with the existing HVAC systems. BACnet/SC adds another security level to the product range.

## HVAC automation

### HVAC automation

EY6AS80: modular BACnet automation station and web server, modu680-AS	357
EY6AS60: modular BACnet automation station, modu660-AS	361
EY6LC01: Module for separate I/O module supply, modu601-LC	366
EY6LC02: Coupling kit for I/O modules in cabinet, modu602-LC	368
EY6LC12: IP coupler for I/O modules with web server, modu612-LC	370
EY6IO30: 16 × DI/CI inputs I/O module, modu630-IO	373
EY6IO31: 8 × UI (DI/CI/AI), 8 × DI/CI I/O module, modu631-IO	375
EY6IO50: 6 × relay (2A) outputs I/O module, modu650-IO	377
EY6IO70: 8 × DI/CI/DO (OC) and 8 × DI/CI I/O module, modu670-IO	379
EY6IO71: 8 × AO and 8 × DI/CI I/O module, modu671-IO	381
EY6IO72: 4 × AO, 4 × DO(OC), 4 × UI (DI/CI/AI) I/O module, modu672-IO	383
EY6LO00: Operating and indicating unit for I/O modules, modu600-IO	386
EY6CM20: Modbus/RTU (RS-485) communication module, modu620-CM	389
EY6CM30: M-Bus communication module, modu630-CM	391
EY6RT30: BACnet router and SC hub, modu630-RT	394



# SAUTER modulo 6 automation stations

SAUTER modulo 6 automation stations regulate, control, monitor and optimise the energy efficiency in HVAC installations. The installation network is based on BACnet/IP – the communication protocol for networked building intelligence.

## Overview of automation stations



Type designation	EY6AS80	EY6AS60
Product name	modu680-AS	modu660-AS
Parameters		
Power supply	24 VDC	
Connection of	ecoLink I/O modules, COM modules, ASV actuators, ecoUnit room operating units, EnOcean wireless interface	
I/O and COM extension modules	24 with modu601-LC (5 of which are COM modules)	
Interfaces, communication		
Interfaces	2 × RS-485, WAN, LAN, REST API, Bluetooth, USB, microSD	RS-485, LAN, REST API, Bluetooth, USB, microSD
Ethernet/LAN	3 × RJ45 (switched)	2 × RJ45 (switched)
Ethernet/WAN	1 × RJ45	–
SLC/RS-485 interfaces	1	
Modbus/RS-485 interfaces	1	–
Protocols	BACnet/IP, SLC, Modbus RTU, HTTP(S), NTP, SMTP, SMPP	BACnet/IP, SLC, HTTP(S), NTP, SMTP, SMPP
BACnet profile	B-BC	
AMEV profile	AS-B	
Objects		
Data points (BACnet objects)	1600 I/O, 3200 total	800 I/O, 1600 total
Historical data (Trend Log)	1600	800
Control (Loop)	96	48
Sequences, scenes (Command)	16	
Calendars (Calendar)	32	
Time programmes (Schedule)	64	
Alarms (Notification Class)	32	
Further information	Page 357	Page 361

## EY6AS80: Modular BACnet automation station and web server, modu680-AS

### Features

- Part of the SAUTER modulo 6 system family
- Modular automation station, expandable with I/O modules and communication modules
- Regulation, control, monitoring and optimisation of operational systems in HVAC
- Locally expandable with up to 24 modules via the SAUTER Extension Bus
- Can be locally equipped with ecoLink I/O modules and ASV actuators via SLC interface
- RS-485 interface for field bus integration (Modbus/RTU / ASCII)
- Four RJ45 connections for two separate IP networks (OT/IT; Operational/Information Technology). Three connections switched for daisy chain
- BACnet/IP communication (EN ISO 16484-5)
- BACnet profile B-BC
- AMEV profile AS-B
- REST API interface
- MQTT interface (MQTT Broker/Client)
- Integrated web server for local commissioning, visualisation and operation
- User administration for identification, authentication and access control
- Encryption of communication with TLS
- Bluetooth interface for mobile commissioning and maintenance
- Programming/parameterisation via PC using CASE Suite (based on IEC 61131-3)
- Control libraries
- Time and calendar function
- Predictive control based on meteorological forecast data
- Data recording on removable media (microSD card)
- User administration and user identification (web server)
- Alive signal output pulsed



EY6AS80F021



### Technical data

#### Power supply

Power supply	24 VDC $\pm$ 10%
Power consumption <sup>1)</sup>	$\leq$ 2 W without load $\leq$ 24 W at maximum load
Dissipated power	$\leq$ 2 W without load $\leq$ 4 W at maximum load
Peak inrush current <sup>2)</sup>	$\leq$ 20 A, $\leq$ 1 ms on the 24 V side

#### Parameters

Connection	5-pin spring-type terminal, pluggable, 0.5...1.5 mm <sup>2</sup> (rigid) 0.5...2.5 mm <sup>2</sup> , min. 8 mm wire strip- ped
Battery (buffer: RTC)	CR2032, pluggable
Earth connector	Spring contact against DIN rail and PE terminal

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C

<sup>1)</sup> Maximum load with 12 I/O modules

<sup>2)</sup> Measured value with EY-PS021F021 power supply unit



	Ambient humidity	10...90% rh, no condensation
<b>Function</b>		
BACnet	BACnet data point objects	Up to 1600 I/O objects, 3200 total
	BACnet client links	600 (Peer-to-Peer)
	Control	96 (Loop)
	Active COV subscription	4800
	Structured view	128 (Structured View)
Dynamic objects	Sequences, scenes	16 (Command)
	Time programmes	64 (Schedule)
	Calendar	32 (Calendar)
	Notification	32 (Notification Class) intrinsically or extrinsically with Event Enrolment
	Historical data	1600 (Trend Log) up to 4 million entries
	BBMD in BDT	32
	FD in FDT	32
Services	Embedded web server	moduWeb Unity, MQTT Commissioning Tool
	Web API (REST)	moduWeb Unity
	MQTT Client	Number of topics/alias topics for BACnet objects max. 3200
	MQTT Broker	Number of topics max. ??? (depending on CPU/memory resources) Number of client connections max. ???
	Notification (client)	SMTP, SMPP
	Time synchronisation	NTP client, BACnet master or client, local or UTC
	Data integrity (client)	With modu615-BM
<b>Architecture</b>		
	Processor	ARM Cortex A8, 32-bit, 1 GHz
	RAM (memory)	512 MB (DDR3)
	Flash	512 MB
	Application data	Via CASE Engine
	Processes (BACnet programs)	Supports separated processes with different cycle times and independent booting
	Cycle time	Adjustable for each process, min. 50 ms (50, 100, 500, 1000)
<b>Interfaces, communication</b>		
Ethernet network #1 (WAN)	Communication protocols	HTTP(S), NTP, SMTP, SMPP, DHCP, MQTT/TCP(TLS), MQTT/WS(S)
	Ethernet network	1 × RJ45 connector
	10/100 BASE-T(X)	10/100 Mbit/s
Ethernet network #2 (LAN)	Communication protocols	BACnet/IP (DIX), HTTP(S), NTP, SMTP, SMPP, DHCP, MQTT/TCP(TLS), MQTT/WS(S)
	Ethernet network	3 × RJ45 connector
	10/100 BASE-T(X) switched	10/100 Mbit/s
Connection, I/O and COM modules	Use <sup>3)</sup>	1 × integrated iSEB interface for max. 12 modules, expandable with modu601-LC for max. 24 modules in total
RS-485 A connection	Communication protocol	Modbus/RTU / ASCII Modbus master according to V1.02
	Bus physics	1 unit load (UL), electrically isolated
	Bus speed	600...115,200 bit/s Parity bit, stop bit, Rx/Tx bus timing
	Connection	Spring-type terminal, pluggable 0.2...1.5 mm <sup>2</sup> stiff/flexible

<sup>3)</sup> Performance-dependent



	Line <sup>4)</sup>	3-/4-wire (D+/D-/COM reference), twisted, shielded, up to 1000 m
	Use	Integration of Modbus slaves in an RS-485 segment (line)
	Participant	Up to 31 RS-485 unit loads (UL)
	Functions	Up to 600 Modbus channels for BACnet I/O/V objects for up to 247 Modbus devices; FC01-06, 15, 16, 22; unicast and broadcast; access optimisation
	120 Ω bus termination and pull-up/pull-down	Switchable via software (CASE Engine)
RS-485 B connection	Communication protocol	SLC master
	Use	ecoLink, ASV, ecoUnit, FCCP200
	Participant	Max. 8 ecoLink modules and 4 ecoUnit modules, max. 12 ASV units
	Power supply	20...26 V=, max. 1.5 W, protected against short circuit, can be switched on/off (CASE Sun)
	Connection	Spring-type terminal, pluggable 0.2...1.5 mm <sup>2</sup> stiff/flexible
	Line	4-wire, twisted, shielded
	Line length	Max. 100 m (30 m) with ecoUnit or ASV, up to 500 m, bus termination necessary (120 Ω)
	120 Ω bus termination and pull-up/pull-down	Switchable via software (CASE Sun)
Bluetooth	Version	BLE 4.0
	Range	< 10 m
	Frequency band	2.402...2.480 GHz
	Radiation	6 mW
USB	Version	2.0, type A
	Current limitation	400 to max. 500 mA
SD memory expansion	Type	microSD, suitable for industrial use
<b>Construction</b>		
	Fitting	On metallic DIN rail 35 × 7.5/15 as per EN 60715. Rail housing as per DIN 43880
	Dimensions W × H × D	92.6 (5 HP) × 100.9 × 58.3 mm
	Weight	260 g
<b>Standards, directives</b>		
	Type of protection	Connections: IP00 Front in DIN cut-out: IP30 (EN 60730-1)
	Protection class	I
	Environment class	3K3 (IEC 60721)
	Software class <sup>5)</sup>	A (EN 60730-1, Appendix H)
	Temperature controller class	I to VIII = up to 5% as per 2009/125/EC, 2010/30/EU & 811/2013 (EU)
	BACnet profile	B-BC (ISO 16484-5)
	AMEV profile	AS-B
CE/UKCA conformity <sup>6)</sup>	EMC-D 2014/30/EU (CE)	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	EMC-2016 (UKCA)	See EMC Directive
	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-9, EN 60950-1

<sup>4)</sup> Performance-dependent

<sup>5)</sup> The product is not suitable for safety functions

<sup>6)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues

EESR-2016 (UKCA)	See LVD
RED 2014/53/EU (CE)	EN 300328 (V2.1.1)
RER-2017 (UKCA)	EN 300328 (V2.1.1)
RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Features
EY6AS80F021	Modular BACnet automation station and web server

### Accessories

#### Plug-in I/O modules

Type	Description
EY6IO30F001	modu630-IO 16 × DI/CI inputs I/O module
EY6IO70F001	modu670-IO 8 × DI/CI/DO(OC), 8 × DI/CI I/O module
EY6IO31F001	modu631-IO 8 × UI(DI/CI/AI), 8 × DI/CI I/O module
EY6IO71F001	modu671-IO 8 × AO, 8 × DI/CI I/O module
EY6IO50F001	modu650-IO 6 × relay (2 A) outputs I/O module
EY6IO72F001	modu672-IO 4 × AO, 4 × DO(OC), 4 × UI (DI/CI/AI) I/O module

#### Connection modules

Type	Description
EY6LC01F001	Module for separate I/O module supply
EY6LC02F001	Coupling kit for I/O modules in cabinet (P100017761 and P100017762)
EY6LC12F011	IP coupler for I/O modules with web server, modu612-LC

#### Spare parts

Type	Description
0929360602	AS bus cover with resistor, 5 pcs.

#### Function expansions

Type	Description
Y6WS80F007	Activation code for reporting for modu680-AS
Y6WS80F008	Activation code for the REST API on modu680-AS
Y6WS80F009	Data point extension activation code for moduWeb Unity on modu680-AS
Y6WS80F031	Activation code for network option for modu680-AS
Y6FX02F001	Activation code for MQTT client
Y6FX02F002	Activation code for MQTT client and broker
Y6FX03F001	Activation code for RADIUS Supplicant
Y6FX04F001	Activation code for BACnet/SC DataLink

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 – Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 – Meilleures pratiques I

## EY6AS60: Modular BACnet automation station, modu660-AS

### Features

- Part of the SAUTER modulo 6 system family
- Modular automation station, expandable with I/O modules and communication modules
- Regulation, control, monitoring and optimisation of operational systems in HVAC
- Locally expandable with up to 24 modules via the SAUTER Extension Bus
- Can be locally equipped with ecoLink I/O modules and ASV actuators via SLC interface
- Two RJ45 connections switched for daisy chain
- BACnet/IP communication (EN ISO 16484-5)
- BACnet profile B-BC
- AMEV profile AS-B
- REST API interface
- MQTT interface (MQTT Broker/Client)
- Integrated web server for local commissioning, expandable with visualisation and operation
- User administration for identification, authentication and access control
- Encryption of communication with TLS
- Bluetooth interface for mobile commissioning and maintenance
- Programming/parameterisation via PC using CASE Suite (based on IEC 61131-3)
- Control libraries
- Time and calendar function
- Predictive control based on meteorological forecast data
- Data recording on removable media (microSD card)
- User administration and user identification (web server)
- Alive signal output pulsed



EY6AS60F01



### Technical data

Power supply		
Power supply		24 VDC ± 10%
Power consumption <sup>1)</sup>		≤ 2 W without load ≤ 24 W at maximum load
Dissipated power		≤ 2 W without load ≤ 4 W at maximum load
Peak inrush current <sup>2)</sup>		≤ 20 A, ≤ 1 ms on the 24 V side
Parameters		
Connection		5-pin spring-type terminal, pluggable, 0.5...1.5 mm <sup>2</sup> 0.5...2.5 mm <sup>2</sup> , min. 8 mm wire stripped
Battery (buffer: RTC)		CR2032, pluggable
Earth connector		Spring contact against DIN rail and PE terminal
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-20...70 °C
Ambient humidity		10...90% rh, no condensation
Function		
BACnet data point objects		Up to 800 I/O objects, 1600 total

<sup>1)</sup> Maximum load with 12 I/O modules

<sup>2)</sup> Measured value with EY-PS021F021 power supply unit



Dynamic objects	BACnet client links	300 (Peer-to-Peer)
	Control	48 (Loop)
	Active COV subscription	2400
	Structured view	128 (Structured View)
	Sequences, scenes	16 (Command)
	Time programmes	64 (Schedule)
	Calendar	32 (Calendar)
	Notification	32 (Notification Class) intrinsically or extrinsically with Event Enrolment
	Historical data	800 (Trend Log) up to 2 million entries
	BBMD in BDT	32
Services	FD in FDT	32
	Embedded web server	moduWeb Unity, MQTT Commissioning Tool
	Web API (REST)	moduWeb Unity
	MQTT Client	Number of topics / alias topics for max. number of BACnet objects (600)
	MQTT Broker	Number of topics, depending on CPU/memory resources (> 1000)
	Notification (client)	SMTP, SMPP
	Time synchronisation	NTP client, BACnet master or client, local or UTC
Data integrity (client)	With modu615-BM	

### Architecture

Processor	ARM Cortex A8, 32-bit, 1 GHz
RAM (memory)	512 MB (DDR3)
Flash	512 MB
Application data	Via CASE Engine
Processes (BACnet programs)	Supports separated processes with different cycle times and independent booting
Cycle time	Adjustable via process, min. 50 ms (50, 100, 500, 1000)

### Interfaces, communication

Ethernet network (LAN)	Communication protocols	BACnet/IP (DIX), HTTP(S), NTP, SMTP, SMPP, DHCP, MQTT/TCP(TLS), MQTT/WS(S)	
	Ethernet network	2 × RJ45 connector	
Connection, I/O and COM modules	10/100 BASE-T(X) switched	10/100 Mbit/s	
	Use <sup>3)</sup>	1 × integrated iSEB interface for max. 12 modules, expandable with modu601-LC for max. 24 modules in total	
RS-485 B connection	Communication protocol	SLC master	
	Use	ecoLink, ASV, ecoUnit, FCCP 200	
	Participant	Max. 8 ecoLink modules and 4 ecoUnit modules, max. 12 ASV units	
	Power supply	20...26 VDC, max. 1.5 W, protected against short circuit, can be switched on/off (CASE Sun)	
	Connection	Spring-type terminal, pluggable 0.2...1.5 mm <sup>2</sup> rigid/flexible	
	Line	4-wire, twisted, shielded	
	Line length	Max. 100 m (30 m) with ecoUnit or ASV, up to 500 m, bus termination necessary (120 Ω)	
	120 Ω bus termination and pull-up/pull-down	Switchable via software (CASE Sun)	
	Bluetooth	Version	BLE 4.0
		Range	< 10 m
Frequency band		2.402...2.480 GHz	

<sup>3)</sup> Performance-dependent

	Radiation	6 mW
USB	Version	2.0, type A
	Current limitation	400 to max. 500 mA
SD memory expansion	Type	microSD, suitable for industrial use

### Construction

Fitting	On metallic DIN rail 35 × 7.5/15 as per EN 60715 Rail housing as per DIN 43880
Dimensions W × H × D	92.6 (5 HP) × 100.9 × 58.3 mm
Weight	240 g

### Standards, directives

	Type of protection	Connections: IP00 Front in DIN cut-out: IP30 (EN 60730-1)
	Protection class	I
	Environment class	3K3 (IEC 60721)
	Software class <sup>4)</sup>	A (EN 60730-1, Appendix H)
	Temperature controller class	I to VIII = up to 5% as per 2009/125/EC, 2010/30/EU & 811/2013 (EU)
	BACnet profile	B-BC (ISO 16484-5)
	AMEV profile	AS-B
CE/UKCA conformity <sup>5)</sup>	EMC-D 2014/30/EU (CE)	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	EMC-2016 (UKCA)	See EMC Directive
	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-9, EN 60950-1
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-9, EN 60950-1
	RED 2014/53/EU (CE)	EN 300328 (V2.1.1)
	RER-2017 (UKCA)	EN 300328 (V2.1.1)
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Description
EY6AS60F011	Modular BACnet automation station and web server

### Accessories

Plug-in I/O modules

Type	Description
EY6IO30F001	modu630-IO 16 × DI/CI inputs I/O module
EY6IO31F001	modu631-IO 8 × UI(DI/CI/AI), 8 × DI/CI I/O module
EY6IO50F001	modu650-IO 6 × relay (2 A) outputs I/O module
EY6IO70F001	modu670-IO 8 × DI/CI/DO(OC), 8 × DI/CI I/O module
EY6IO71F001	modu671-IO 8 × AO, 8 × DI/CI I/O module
EY6IO72F001	modu672-IO 4 × AO, 4 × DO(OC), 4 × UI (DI/CI/AI) I/O module

<sup>4)</sup> The product is not suitable for safety functions

<sup>5)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues

Connection modules

Type	Description
EY6LC01F001	Module for separate I/O module supply
EY6LC02F001	Coupling kit for I/O modules in cabinet (P100017761 and P100017762)
EY6LC12F011	IP coupler for I/O modules with web server, modu612-LC

Spare parts

Type	Description
O929360602	AS bus cover with resistor, 5 pcs.

Function expansions

Type	Description
Y6WS60F007	Activation code for reporting for modu660-AS (requires Y6WS60F021)
Y6WS60F008	Activation code for the REST API on modu660-AS (requires Y6WS60F021)
Y6WS60F009	Data point extension activation code for moduWeb Unity on modu660 AS (requires Y6WS60F021)
Y6WS60F021	Activation code for visualisation on modu660 AS
Y6FX02F001	Activation code for MQTT client
Y6FX02F002	Activation code for MQTT client and broker
Y6FX03F001	Activation code for RADIUS Supplicant
Y6FX04F001	Activation code for BACnet/SC DataLink

Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I



# SAUTER modulo 6 connection modules

The SAUTER modulo 6 connection modules offer more flexibility in the cabinet installation (modu602-LC) and more freedom for a decentralised topology (modu612-LC). The modu601-LC ensures the functionality of the I/O modules if the operation of the automation station is interrupted.

## Overview of connection modules



Type designation	EY6LC01F001	EY6LC02F001	EY6LC12F011
Product name	modu601-LC	modu602-LC	modu612-LC
Power supply	24 VDC	–	24 VDC
IP network interfaces	–	–	2 (switch)
I/O and COM extension modules	–	–	Max. 24 (of which 5 are COM modules)
Cloud Connector	–	–	MQTT
Further information	Page 366	Page 368	Page 370

## EY6LC01: Module for separated I/O module supply, modu601-LC



EY6LC01

### Features

- Part of the SAUTER modulo 6 system family
- Enables separate supply between automation station and I/O modules
- Power supply of I/O modules and connected LOI units (Local Override and Indication Device)
- Allows extension to up to 24 I/O modules
- Enables simple wiring tests of the I/O modules without the station, together with modu600-LO on the I/O modules

### Technical data

#### Power supply

Power supply	24 V = ± 10%
Dissipated power	< 0.5 W
Power consumption	< 19 W at max. load
Peak inrush current <sup>1)</sup>	≤ 2 A, ≤ 10 ms

#### Parameters

Connection	3-pin spring-type terminal, pluggable, 0.5...1.5 mm <sup>2</sup> (rigid) 0.5...2.5 mm <sup>2</sup> , min. 8 mm wire stripped
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#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...90% rh, no condensation

#### Interfaces, communication

Connection, I/O bus	6-pin spring contacts left and 7-pin right
Earth connector	Spring contact against DIN rail and PE feed connection

#### Construction

Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715 DIN rail housing as per DIN 43880
Dimensions W × H × D	56 × 97 × 59 mm
Weight	98 g

#### Standards, directives

Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
Protection class	I
Environment class	3K3 (IEC 60721)

CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
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### Overview of types

Type	Description
EY6LC01F001	Module for separate I/O module supply



<sup>1)</sup> Measured value with EY-PS021F021 power supply unit



## Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I



## EY6LC02: Coupling kit for I/O modules in cabinet, modu602-LC



EY6LC02

### Features

- Part of the SAUTER modulo 6 system family
- Arrangement of I/O modules in up to three rows for space-optimised cabinet installation
- Minimum space requirement of the transmitter and receiver modules (1.5 HP)
- Up to two modu602-LC per station

### Technical data

#### Power supply

Power supply	From AS or LC via I/O bus
Dissipated power	< 0.3 W incl. 3 m cable

#### Parameters

Max. number per station	2
Max. cable length per station	3 m

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...90% rh, no condensation

#### Interfaces, communication

Connection	RJ45 connector
Cable type	RJ45 type S/FTP, not crossed, at least AWG 24
Connection, I/O bus	P100017761: 7-pin spring contacts, only left P100017762: 7-pin spring contacts, only right
Earth connector	Spring contact against DIN rail

#### Construction

Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715 DIN rail housing as per DIN 43880
Dimensions W × H × D	27 × 97 × 59 mm
Weight <sup>1)</sup>	95 g

#### Standards, directives

Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
Protection class	I
Environment class	3K3 (IEC 60721)

CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
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### Overview of types

Type	Description
EY6LC02F001	Coupling kit for I/O modules in cabinet (P100017761 and P100017762)

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I

<sup>1)</sup> Total weight



Document number	Language	Title
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I



## EY6LC12: IP coupler for I/O modules, with web server, modu612-LC



EY6LC12F011

### Features

- Part of the SAUTER modulo 6 system family
- Enables decentralised installation and connection of the modulo 6 COM and IO modules with the automation station via IP network
- Locally expandable with up to 10 modules
- Two RJ45 connections switched for daisy chain
- Integrated web server for local commissioning
- Bluetooth interface for mobile commissioning and maintenance
- User administration and user identification (web server)

### Technical data

#### Power supply

Power supply	24 VDC $\pm$ 10%
Power consumption <sup>1)</sup>	$\leq$ 2 W without load $\leq$ 24 W at maximum load
Dissipated power	$\leq$ 2 W without load $\leq$ 4 W at maximum load
Peak inrush current <sup>2)</sup>	$\leq$ 20 A, $\leq$ 1 ms on the 24 V side

#### Parameters

Connection	3-pin spring-type terminal, pluggable, 0.5...1.5 mm <sup>2</sup> (rigid) 0.5...2.5 mm <sup>2</sup> , min. 8 mm wire stripped
Battery (buffer: RTC)	CR2032, pluggable
Earth connector	Spring contact against DIN rail and PE terminal

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C
Ambient humidity	10...90% rh, no condensation

#### Architecture

Processor	ARM Cortex A8, 32-bit, 600 MHz
Embedded web server	moduWeb Unity
Application data	From the automation station

#### Interfaces, communication

Ethernet network	Ethernet network	2 $\times$ RJ45 connector, switched
	10/100 BASE-T(X) switched	10/100 Mbit/s

#### Construction

Dimensions W $\times$ H $\times$ D	92.6 (5 HP) $\times$ 97 $\times$ 58.3 mm
Fitting	On metal DIN rail 35 $\times$ 7.5/15 as per EN 60715. Rail housing as per DIN 43880

#### Standards, directives

Type of protection	Connections: IP00 Front in DIN cut-out: IP30 (EN 60730-1)
Protection class	I (IEC 60730-1)
Environment class	3K3 (IEC 60721)

<sup>1)</sup> Maximum load with 12 I/O modules

<sup>2)</sup> Measured value with EY-PSO21F021 power supply unit



	Software class	A (EN 60730-1, Appendix H)
	Energy class	I to VIII = up to 5% as per EU 811/2013, 2010/30/EU, 2009/125/EC
CE/UKCA conformity <sup>3)</sup>	EMC-D 2014/30/EU (CE)	EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	EMC-2016 (UKCA)	See EMC Directive
	LV-D 2014/35/EU (CE)	EN 60730-1, EN 60730-2-9, EN 62479
	EESR-2016 (UKCA)	EN 60730-1, EN 60730-2-9, EN 62479
	RED 2014/53/EU (CE)	EN 300328 (V2.1.1)
	RER-2017 (UKCA)	EN 300328 (V2.1.1)
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Description
EY6LC12F011	IP coupler for I/O modules, with web server

### Accessories

#### Plug-in I/O modules

Type	Description
EY6IO30F001	modu630-IO 16 × DI/CI inputs I/O module
EY6IO31F001	modu631-IO 8 × UI(DI/CI/AI), 8 × DI/CI I/O module
EY6IO50F001	modu650-IO 6 × relay (2 A) outputs I/O module
EY6IO70F001	modu670-IO 8 × DI/CI/DO(OC), 8 × DI/CI I/O module
EY6IO71F001	modu671-IO 8 × AO, 8 × DI/CI I/O module
EY6IO72F001	modu672-IO 4 × AO, 4 × DO(OC), 4 × UI (DI/CI/AI) I/O module

#### Plug-in communication modules (COM)

Type	Description
EY6CM20F011	Modbus/RTU (RS-485) communication module
EY6CM30F031	modu630-CM M-Bus communication module

#### Connection modules

Type	Description
EY6LC01F001	Module for separate I/O module supply
EY6LC02F001	Coupling kit for I/O modules in cabinet (P100017761 and P100017762)

<sup>3)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues

# SAUTER modulo 6 I/O modules

SAUTER I/O modules are compatible with the modulo 6 series and are used to capture digital and analogue signals in HVAC installations. They control devices such as contactors, relays and valve actuators.

## Overview of I/O modules



Type designation	EY6IO30F001	EY6IO31F001	EY6IO50F001
Product name	modu630	modu631	modu650
Power supply	From AS modulo 6	From AS modulo 6	From AS modulo 6
Control panel optional	modu600-LO	modu600-LO	modu600-LO
Inputs/outputs			
Digital inputs	16	8	–
Universal inputs	–	8	–
Digital outputs	–	–	6
Analogue outputs	–	–	–
Digital inputs/outputs	–	–	–
Further information	Page 373	Page 375	Page 377



Type designation	EY6IO70F001	EY6IO71F001	EY6IO72F001
Product name	modu670	modu671	modu672
Power supply	From AS modulo 6	From AS modulo 6	From AS modulo 6
Control panel optional	modu600-LO	modu600-LO	modu600-LO
Inputs/outputs			
Digital inputs	8	8	–
Universal inputs	–	–	4
Digital outputs	–	–	4
Analogue outputs	–	8	4
Digital inputs/outputs	8	–	–
Further information	Page 379	Page 381	Page 383

## EY6IO30: 16 × DI/CI inputs I/O module, modu630-IO

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu6\*2-LC link coupler
- Receiving digital inputs (alarm, status or pulse counter) in operational systems, e.g. in HVAC engineering
- 16 digital inputs
- Power supply from automation station (modu6\*-AS), link coupler (modu6\*2-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)



EY6IO30F001

### Technical data

Power supply		
	Power supply	From AS or LC via I/O bus
	Dissipated power <sup>1)</sup>	≤ 0.8 W
Ambient conditions		
	Operating temperature	0...45 °C
	Storage and transport temperature	-20...70 °C
	Ambient humidity	10...90% rh, no condensation
Inputs/outputs		
Digital inputs (DI/CI)	Number of inputs	16
	Power supply for DI	Internal, ~13 V=
	Pulse counter <sup>2)</sup>	≤ 50 Hz
Interfaces, communication		
	Connection, LOI	4-pin
	Connection, I/O bus	7-pin, spring contact
	Connection terminals	4 x 8-pin spring-loaded plug-in connectors
	Earth connector	Spring contact against DIN rail
Construction		
	Fitting	On metal DIN rail 35 x 7.5/15 as per EN 60715
	Dimensions W × H × D	55.7 (3 HP) × 100 × 59 mm
	Weight	130 g
Standards, directives		
	Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Environment class	3K3 (IEC 60721)
	Software class <sup>3)</sup>	A (EN 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3

### Overview of types

Type	Features
EY6IO30F001	16 x DI/CI inputs I/O module

<sup>1)</sup> Measured value without accessories

<sup>2)</sup> 50 Hz only with PC module, otherwise 5 Hz

<sup>3)</sup> The product is not suitable for safety functions



### Accessories

Type	Description
EY6LO00F001	Local operating and indicating unit for I/O modules

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I





## EY6IO31: 8 × UI (DI/CI/AI), 8 × DI/CI I/O module, modu631-IO

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu6\*2-LC link coupler
- Receiving digital inputs (alarm, status or pulse counter) and analogue inputs (Ni/Pt1000, R, U) in operational systems, e.g. in HVAC
- Eight digital inputs and eight universal inputs
- Power supply from automation station (modu6\*\*-AS), link coupler (modu6\*2-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)



EY6IO31F001

### Technical data

#### Power supply

Power supply	From AS or LC via I/O bus
Dissipated power <sup>1)</sup>	≤ 0.8 W

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C
Ambient humidity	10...90% rh, no condensation

#### Inputs/outputs

Digital inputs (DI/CI)	Number of inputs	8
	Power supply for DI	Internal, ~13 V=
	Pulse counter	≤ 50 Hz
Universal inputs (UI)	Number of inputs	8
	Analogue	0...10 V, Ni1000, Pt1000, R
	Digital <sup>2)</sup>	DI/CI: ≤ 50 Hz

#### Interfaces, communication

Connection, LOI	4-pin
Connection, I/O bus	7-pin, spring contact
Connection terminals	4 x 8-pin spring-loaded plug-in connectors
Earth connector	Spring contact against DIN rail

#### Construction

Fitting	On metal DIN rail 35 x 7.5/15 as per EN 60715
Dimensions W × H × D	55.7 (3 HP) x 100 x 59 mm
Weight	131 g

#### Standards, directives

CE conformity according to	Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Protection class	I
	Environment class	3K3 (IEC 60721)
	Software class <sup>3)</sup>	A (EN 60730-1, Appendix H)
	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3

<sup>1)</sup> Measured value without accessories

<sup>2)</sup> DI: 50 Hz only with PC module, otherwise 5 Hz

<sup>3)</sup> The product is not suitable for safety functions



### Overview of types

Type	Features
EY6IO31F001	8 x UI(DI/CI/AI) and 8 x DI/CI I/O module

### Accessories

Type	Description
EY6LO00F001	Local operating and indicating unit for I/O modules

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 – Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 – Meilleures pratiques I



## EY6IO50: 6 × relay (2A) outputs I/O module, modu650-IO

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu6\*2-LC link coupler
- Activation of displays in operational systems, such as HVAC engineering
- Activation of actuators such as contactors or valve actuators, in operational systems
- Six digital outputs (relay)
- Power supply from automation station (modu6\*\*-AS), link coupler (modu6\*2-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)



EY6IO50F001

### Technical data

#### Power supply

Power supply	From AS or LC via I/O bus
Dissipated power <sup>1)</sup>	≤ 1,3 W

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C
Ambient humidity	10...90% rh, no condensation

#### Inputs/outputs

Digital outputs (DO)	Number of outputs	6
	Type of outputs	Relay (0-1), normally-open contact, galvanically isolated
	Load	24 VDC, 24...250 VAC Resistive load: 2 A Inductive load: ≤ 1 A, cos φ ≥ 0.8 Start-up current: ≤ 5 A
	Switching frequency, mechanical	300,000 cycles for 2 A

#### Interfaces and communication

Connection, LOI	4-pin
Connection, I/O bus	7-pin, spring contact
Connection terminals	6 x 2-pin spring-loaded plug-in connectors
Earth connector	Spring contact against DIN rail

#### Construction

Fitting	On metallic DIN rail 35 x 7.5/15 as per EN 60715
Dimensions W × H × D	55.7 (3 HP) x 100 x 59 mm
Weight	124 g

#### Standards and directives

	Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Protection class	I
	Environment class	3K3 (IEC 60721)
	Software class <sup>2)</sup>	A (EN 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1

<sup>1)</sup> Measured value without accessories

<sup>2)</sup> The product is not suitable for safety functions



### Overview of types

Type	Features
EY6IO50F001	6 x relay (2 A) outputs I/O module

### Accessories

Type	Description
EY6LO00F001	Local operating and indicating unit for I/O modules

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 – Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 – Meilleures pratiques I



## EY6IO70: 8 × DI/CI/DO (OC) and 8 × DI/CI I/O module, modu670-IO

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu6\*2-LC link coupler
- Activation of actuators such as relays and displays of operational systems, e.g. in HVAC engineering
- Activation of displays in operational systems
- Receiving digital inputs (alarm, status or pulse counter) in operational systems
- Eight digital inputs and eight digital inputs/outputs
- Power supply from automation station (modu6\*\*-AS), link coupler (modu6\*2-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)



EY6IO70F001

### Technical data

Power supply		
	Power supply	From AS or LC via I/O bus
	Dissipated power <sup>1)</sup>	≤ 0,8 W
Ambient conditions		
	Operating temperature	0...45 °C
	Storage and transport temperature	-20...70 °C
	Ambient humidity	10...90% rh, no condensation
Inputs/outputs		
Digital inputs (DI/CI)	Number of inputs	8
	Pulse counter <sup>2)</sup>	≤ 50 Hz
Digital inputs/outputs (DIO)	Number of inputs/outputs	8
	Type of inputs/outputs	Open collector, normally-open contacts (O-I), outputs switched with respect to ground (any arrangement)
	Power supply for DO	External, positive ≤ 28 V=
	Load	0...100 mA (max. 2 V voltage drop)
	Power supply for DI	Internal, ~ 13 V=
	Pulse counter <sup>3)</sup>	≤ 50 Hz
Interfaces and communication		
	Connection, LOI	4-pin
	Connection, I/O bus	7-pin, spring contact
	Connection terminals	4 x 8-pin spring-loaded plug-in connectors
	Earth connector	Spring contact against DIN rail
Construction		
	Fitting	On metallic DIN rail 35 x 7.5/15 as per EN 60715
	Dimensions W × H × D	55.7 (3 HP) × 100 × 59 mm
	Weight	131 g
Standards and directives		
	Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Protection class	I

<sup>1)</sup> Measured value without accessories

<sup>2)</sup> 50 Hz only with PC module, otherwise 5 Hz

<sup>3)</sup> 50 Hz only with PC module, otherwise 5 Hz



	Environment class	3K3 (IEC 60721)
	Software class <sup>4)</sup>	A (EN 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU <sup>5)</sup>	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3

### Overview of types

Type	Features
EY6IO70F001	8 x DI/CI/DO(OC) and 8 x DI/CI I/O module

### Accessories

Type	Description
EY6LO00F001	Local operating and indicating unit for I/O modules

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I

<sup>4)</sup> The product is not suitable for safety functions

<sup>5)</sup> EN 61000-6-2: To comply with the standard, the connecting cables for the digital open collector outputs (DO-OC) may not be longer than 30 m

## EY6IO71: 8 × AO and 8 × DI/CI I/O module, modu671-IO

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu6\*2-LC link coupler
- Activation with a standard signal (0(2)...10 V) in operational systems, such as HVAC engineering
- Receiving digital inputs (alarm, status or pulse counter) in operational systems
- Eight digital inputs and eight analogue outputs
- Power supply from automation station (modu6\*\*-AS), link coupler (modu6\*2-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)



EY6IO71F001

### Technical data

#### Power supply<sup>1)</sup>

Power supply	From AS or LC via I/O bus
Power consumption	≤ 1 W
Dissipated power	≤ 0,8 W

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C
Ambient humidity	10...90% rh, no condensation

#### Inputs/outputs

Digital inputs (DI/CI)	Number of inputs	8
	Power supply for DI	Internal, ~1.3 V=
	Pulse counter <sup>2)</sup>	≤ 50 Hz
Analogue outputs (AO)	Number of outputs	8
	Analogue	0(2)...10 V=
	Load	≤ 2 mA

#### Interfaces and communication

Connection, LOI	4-pin
Connection, I/O bus	7-pin, spring contact
Connection terminals	4 x 8-pin spring-loaded plug-in connectors
Earth connector	Spring contact against DIN rail

#### Construction

Fitting	On metallic DIN rail 35 x 7.5/15 as per EN 60715
Dimensions W × H × D	55.7 (3 HP) x 100 x 59 mm
Weight	130 g

#### Standards and directives

	Protection type (as per EN 60730)	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Protection class	I
	Environment class	3K3 (IEC 60721)
	Software class <sup>3)</sup>	A (EN 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3

<sup>1)</sup> Measured values without accessories

<sup>2)</sup> 50 Hz only with PC module, otherwise 5 Hz

<sup>3)</sup> The product is not suitable for safety functions



### Overview of types

Type	Features
EY6IO71F001	8 x AO and 8 x DI/CI I/O module

### Accessories

Type	Description
EY6LO00F001	Local operating and indicating unit for I/O modules

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 – Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 – Meilleures pratiques I





## EY6IO72: 4 × AO, 4 × DO(OC), 4 × UI (DI/CI/AI) I/O module, modu672-IO

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu612-LC link coupler
- Activation with a standard signal (0(2)...10 V, 0(4)...20 mA) in operational systems, such as HVAC engineering
- Receiving digital inputs (alarm/status) and analogue inputs (Ni/Pt1000, U, I, R, pot.) in operational systems
- Four universal inputs, four analogue outputs and four digital outputs
- Power supply from automation station (modu6\*\*-AS), link coupler (modu612-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)



EY6IO72F001

### Technical data

Power supply		
Power supply		From AS or LC via I/O bus
Power consumption		≤ 3.4 W
Dissipated power		≤ 0,75 W
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-20...70 °C
Ambient humidity		10...90% rh, no condensation
Inputs/outputs		
Universal inputs (UI)	Number of inputs	4
	Analogue	U: 0(2)...10 V I: 0(4)...20 mA R: 200...2500 Ω, Ni/Pt1000, Poti
	Reference voltage	3 V (potentiometer)
Analogue outputs (AO)	Digital <sup>1)</sup>	DI/CI (≤ 50 Hz)
	Number of outputs	4
	Analogue	U: 0(2)...10 V I: 0(4)...20 mA
Voltage output (U)	Load > 6 kΩ	0...10 V / 2...10 V
Current output (I)	Load < 500 Ω	0...20 mA / 4...20 mA
Digital outputs (DO)	Number of outputs	4
	Type of outputs	Open collector, NO contacts (0-1), outputs switched with respect to ground
	Power supply for DO	External, positive ≤ 28 VDC
Interfaces, communication	Load	0...100 mA (max. 2 V voltage drop)
	Connection, LOI	4-pin
	Connection, I/O bus	7-pin, spring contact
Construction	Connection terminals	4 × 8-pin spring-loaded plug-in connectors
	Earth connector	Spring contact against DIN rail
Construction	Fitting	On DIN rail 35 × 7.5/15 as per EN 60715
	Dimensions W × H × D	55.7 (3 HP) × 100 × 59 mm

<sup>1)</sup> 50 Hz only with PC module, otherwise 5 Hz



Weight 130 g

**Standards, directives**

	Type of protection	Connections and terminals:IP00 Front in DIN cut-out:IP30 As per 60730-1
	Protection class	I
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 50491-5-1, EN 50491-5-2, EN 50491-5-3

**Overview of types**

Type	Features
EY6IO72F001	4 × AO, 4 × DO(OC), 4 × UI (DI/CI/AI) I/O module

**Accessories**

Type	Description
EY6LO00F001	Local operating and indicating unit for I/O modules

**Manuals**

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I



# SAUTER modulo 6 operating unit

The SAUTER modulo 6 operating unit allows you to display the current status of the inputs and to directly override the outputs of the I/O modules – local priority operation as per EN ISO 16484-2.

## Overview of operating unit



Type designation	EY6LO00F001
Product name	modu600-LO
Power supply	From I/O module
Device	Operating device with 4 push-buttons
Function	Visualisation, operation
Display	Display of analogue, digital and multi-state signals
Use	Universally for I/O modules
Further information	Page 386

## EY6LO00: Operating and indicating unit for I/O modules, modu600-LO



EY6LO00F001

### Features

- Part of the SAUTER modulo 6 system family
- Pluggable element for direct operation and visualisation of displays for the modu6\*\* I/O modules
- Automatic detection of the current I/O module configuration
- Display of values and statuses of the inputs and outputs on an LCD colour display
- Detailed display of the individual inputs and outputs including labelling, type, status and graphics
- Simple 4-button operation
- LED indicator of I/O module modu6\*\*-IO
- Local priority operation
- Ready for use without parameterising

### Technical data

Power supply		
Power supply		From I/O module modu6**-IO
Current consumption		≤ 12.5 mA
Dissipated power		≤ 0,3 W
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-25...60 °C
Ambient humidity		10...90% rh, no condensation
Indicators, display, operation		
Resolution		240 × 240 pixels, colour LCD
Operation		Four buttons: Back/reject, Reverse/reduce, Forward/increase, Confirm
Interfaces and communication		
Connection		4-pin, spring contacts
Protocol		Proprietary
Standards and directives		
Type of protection		Connections: IP00 front, plugged in: IP30 (EN 60730-1)
Protection class		III
Environment class		3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3

### Overview of types

Type	Features
EY6LO00F001	modu600-LO, operating and indicating unit for I/O modules

### Manuals

Document number	Language	Title
D100386646	de	modu600-LO Bedienungsanleitung
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100408262	en	modu600-LO Operating instructions
D100402674	en	SAUTER modulo system description



Document number	Language	Title
D100410201	en	EY-modulo 6 - Best Practice I
D100408261	fr	modu600-LO Notice d'emploi
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I



# SAUTER modulo 6 communication modules

SAUTER communication modules enable third-party systems to be integrated on the automation level. Field-bus protocols, based on EIA-232 or EIA-485, such as Modbus/RTU and M-Bus, can be integrated directly on the automation station. The data is mapped in BACnet objects and is visible on the BACnet/IP network.

## Overview of communication modules

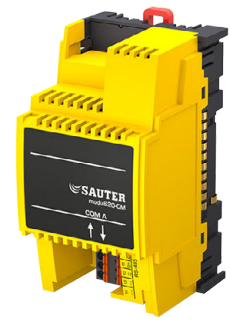


Type designation	EY6CM20F011	EY6CM30F031
Product name	modu620-CM	modu630-CM
Interfaces	RS-485	RS-232, M-Bus
Protocol	Modbus RTU / ASCII	M-Bus
Further information	Page 389	Page 391

## EY6CM20: Modbus/RTU (RS-485) communication module, modu620-CM

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu680-AS and modu660-AS automation stations or modu612-LC link coupler
- Up to five COM modules per automation station
- Connection to non-SAUTER systems (PLC, chillers, meters etc.)
- RS-485, half duplex, electrically isolated interface for Modbus/RTU, Modbus/ASCII
- Electrical isolation
- Configurable RS-485 network resistors (software)
- Baud rate 600...115 200 bit/s
- Modbus master with up to four Modbus communication profiles
- Integrated tunnelling function for commissioning and monitoring with serial Modbus master tools



EY6CM20F011

### Technical data

#### Power supply

Power supply	From AS or LC via I/O bus
Power consumption	30 mA (AS-LC)
Dissipated power	≤ 0.7 W

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...90% rh, no condensation

#### Interfaces, communication

RS-485 (Modbus)	Communication protocol	Modbus/RTU and Modbus/ASCII master as per V1.02, 2-wire (2W)
	Bus physics	1 unit load (unit load (UL)); electrically isolated; integrated RS-485 network resistors (LT, PU, PD) configurable via software
	Bus speed	600...115 200 bit/s, parity bit, stop bit, Rx/Tx bus timing
	Connection	Pluggable spring-type terminals 2 × 5-pin 0.2...1.5 mm <sup>2</sup> rigid/flexible
	Line	3-/4-wire (D+/D-/COM reference), twisted, shielded, up to 1000 m
	Use	Integration of Modbus slaves in an RS-485 segment (line)
	Participant	Up to 31 RS-485 unit loads (UL)
	Functions	600 Modbus channels for BACnet I/O/V objects for up to 247 Modbus devices; FC01-06, 15, 16, 22; unicast and broadcast; access optimisation
	120 Ω bus termination and pull-up/pull-down	Switchable via software (CASE Engine)

#### Construction

Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715
Dimensions W × H × D	55.7 (3 HP) × 100 × 59 mm
Weight	110 g



**Standards, directives**

	Type of protection	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Environment class	3K3 (IEC 60721)
	Software class <sup>1)</sup>	A (EN 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU <sup>2)</sup>	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	RoHS Directive 2011/65/EU	EN IEC 63000

**Overview of types**

Type	Features
EY6CM20F011	Modbus/RTU (RS-485) communication module

**Accessories**

Type	Description
O920360601	Placeholder module for modu6**CM

**Manuals**

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 – Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 – Meilleures pratiques I

**Additional information**

P100018041	Fitting instructions
MD 91.200	SAUTER Declaration on materials and the environment

<sup>1)</sup> The product is not suitable for safety functions

<sup>2)</sup> HBES/BACS: 3 metres max. between EY-PS and AS



## EY6CM30: M-Bus communication module, modu630-CM

### Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu680-AS and modu660-AS automation stations or modu612-LC link coupler
- Up to four COM modules per automation station
- M-Bus master
- Connection to M-Bus meter networks for the integration of heat meters, electricity meters etc.
- 2-wire M-Bus network for up to 80 unit loads, galvanically isolated
- 2-wire RS-232 connection for point-to-point communication
- Up to 256 devices and 600 values
- M-Bus master with up to four M-Bus communication profiles
- Integrated tunnelling function for commissioning and monitoring on the modulo 6 stations



EY6CM30F031

### Technical data

#### Power supply

Power supply	From AS or LC via I/O bus
Power consumption	≤ 0.35 mA
Power consumption	7.42 W
Dissipated power	2.56 W

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...90% rh, no condensation

#### Interfaces, communication

RS-232 (M-Bus)	Communication protocol	M-Bus master (EN 13757-3)
	Bus physics	M-Bus (EN 13757-2), electrically isolated, mark voltage 36 V, short-circuit proof, overcurrent monitoring and protection (max. 135 mA)
	Bus speed	300...9600 (19 200, 38 400) bit/s
	Connection	Pluggable spring-type terminals 2 × 5-pin 0.2...1.5 mm <sup>2</sup> rigid/flexible
	Line <sup>1)</sup>	2-wire (M+/M-) up to 1000 m; RS-232 (D+/D-/GND) up to 3 m
	Use	Integration of M-Bus meters
	Participant	Up to 80 M-Bus unit loads (UL of 1.5 mA); up to 256 M-Bus devices (with external M-Bus level converter via RS-232)
	Functions	600 M-Bus channels for BACnet I/O/V objects for up to 256 M-Bus devices; REQ_UD2, SND_NKE, SND_UD, primary/secondary addressing, readout (triggered, by offset or filter)

#### Construction

Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715
Dimensions W × H × D	55.7 (3 HP) × 100 × 59 mm
Weight	118 g

<sup>1)</sup> M-Bus cable lengths depend on the cable type (J-Y(ST)Y 4 × 0.5 mm<sup>2</sup> max. 1000 m, LiYY 2 × 1.5 mm<sup>2</sup> max. 4000 m), number of bus segments and the baud rate; see engineering notes



### Standards, directives

	Type of protection	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Environment class	3K3 (IEC 60721)
	Software class <sup>2)</sup>	A (EN 60730-1, Appendix H)
CE conformity according to	EMC Directive 2014/30/EU <sup>3)</sup>	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

Type	Features
EY6CM30F031	M-Bus communication module

### Accessories

Type	Description
0920360601	Placeholder module for modu6 **CM

### Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I

#### Additional information

P100018041	Fitting instructions
MD 91.205	SAUTER Declaration on materials and the environment

<sup>2)</sup> The product is not suitable for safety functions

<sup>3)</sup> HBES/BACS: 3 metres max. between EY-PS and AS

# Security in the building network

The IoT provides incredible opportunities for building automation thanks to its openness, availability and variety of solutions. On the other hand, it can pose a threat for exactly the same reasons. New devices must therefore be secure from the outset. Because of this, modulo 6 was developed according to the recommendations of IEC 62443-3-3. With modulo 6, the latest generation of building automation systems, SAUTER offers a security-oriented solution. The security concept is based on the international standard for cybersecurity in industrial automation, IEC 62443, which defines system security requirements and security levels. With BACnet Secure Connect (BACnet/SC), modulo 6 is now even more secure. The new BACnet data connection only supports encrypted communication and is based on the latest version of the encryption protocol, TLS 1.3. BACnet/SC is also ideally suited for enterprise IT due to the basic technologies used (TCP, WebSocket, TLS, IPv4, IPv6). Seamless integration into the existing infrastructure is made easy with BACnet/SC BACnet/IP routers.

Proven security technologies provide encryption, authentication and access protection. This means the system is already well protected against cyber attacks on the automation level.

## EY6RT30: BACnet router and SC hub, B/IP <-> B/SC, modu630-RT



EY6RT30F001

### Features

- Part of the SAUTER modulo 6 system family
- Suitable for use as BACnet router between BACnet networks
- Suitable for use as BACnet Secure Connect Hub (B/SC-Hub)
- BACnet profiles: B-RTR, B-SCHUB, B-BBMD
- BACnet data links: BACnet/IP, BACnet/SC
- BACnet/IP-BBMD or FD function
- Four RJ45 connections for two separate IP networks
- Three connections switched for daisy chain
- Encryption of communication with TLS 1.3

### Technical data

Power supply	
Power supply	24 VDC ± 10%
Power consumption	≤ 3 W
Dissipated power	≤ 3 W
Peak inrush current <sup>1)</sup>	≤ 20 A, ≤ 1 ms, on the 24 V side
Parameters	
Connection	Spring-type terminal, pluggable, 0.5...1.5 mm <sup>2</sup> (rigid) 0.5...2.5 mm <sup>2</sup> (flexible) 8...10 mm wire stripped
Battery (buffer: RTC)	CR2032, pluggable
Earth connector	Spring contact against DIN rail and PE terminal
Ambient conditions	
Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C
Ambient humidity	10...90% rh, no condensation
Function	
BACnet profiles	B-RTR (BACnet router) B-SCHUB (BACnet SC hub) B-BBMD (BACnet Broadcast Manager)
BACnet router	BACnet/IP, BACnet/SC Data Links
Architecture	
Processor	ARM Cortex A8, 32-bit, 1 GHz
RAM (memory)	512 MB (DDR3)
Flash	512 MB
Operating system	Embedded Linux
Interfaces, communication	
Communication	Via BACnet/IP (UDP) BACnet/SC (web sockets, TCP)
Encryption	TLS V.1.3 (BACnet/SC)
Ethernet network #1	Communication protocols Ethernet network
	BACnet/IP, BACnet/SC 1 × RJ45 connector
	10/100 BASE-T(X) 10/100 Mbit/s
Ethernet network #2	Communication protocols Ethernet network
	BACnet/IP, BACnet/SC 3 × RJ45 connector

<sup>1)</sup> Measured value with EY-PS021F021 power supply unit



10/100 BASE-T(X) switched 10/100 Mbit/s

**Construction**

Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715. Rail housing as per DIN 43880
Dimensions W × H × D	92.6 (5 HP) × 100.9 × 58.3 mm
Weight	260 g

**Standards, directives**

CE/UKCA conformity <sup>2)</sup>	Type of protection	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Protection class	I
	Environment class	3K3 (IEC 60721)
	EMC-D 2014/30/EU (CE)	EN 55024, EN 55032 Class B
	EMC-2016 (UKCA)	EN 55024, EN 55032 Class B
	LV-D 2014/35/EU (CE)	EN 62368-1
	EESR-2016 (UKCA)	EN 62368-1
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

**Overview of types**

Type	Features
EY6RT30F001	BACnet router and SC hub, BACnet/SC <-> BACnet/IP

**Manuals**

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 - Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 - Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 - Meilleures pratiques I

<sup>2)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues

# Room automation



**High-performance,  
modular, communicative  
and ready for IoT.**

SAUTER ecos guarantees seamless integration into the building management system as well as the automation system of the primary plants while also providing maximum flexibility with the minimum use of energy. Integrated room automation from SAUTER controls not only the room climate, but also the lighting and sun-shading. Individual daily programs and real-time monitoring ensure comfort for users.

## Room automation

### Room automation

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### HVAC automation

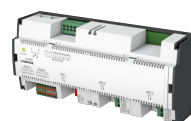
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# SAUTER ecos room automation stations

The areas of use for the SAUTER ecos room automation stations range from precise room control with heating and cooling to integrated room automation with demand-controlled ventilation, lighting and sunshading. The scalable solutions for controlling and regulating the rooms are individually adjusted to the required functional scope and the usage profile. You thus reduce your energy consumption, your costs and the CO<sub>2</sub> emissions while providing maximum comfort and well-being. The ecos devices enable the area usage to be adjusted flexibly during operation by dividing the area on each floor into room segments.

## Overview of room automation stations



Type designation	EY-RC504F***	EY-RC505F0**	EY-RC311F001
Product name	ecos504	ecos505	ecos311
<b>Parameters</b>			
Power supply	24 V=/~		230 V~
Room segments	8		1
Room operating units	2 × 4		1
I/O extension modules	2 × 8		2
<b>Inputs/outputs</b>			
Universal inputs	–		5
Digital inputs	–		–
Analogue outputs	–		3
Digital outputs	–		4
Relay outputs (2 A / 10 A)	–		3/1
<b>Interfaces, communication</b>			
Interfaces	RS-485, Ethernet		RS-485
Protocols	BACnet/IP, MQTT, Modbus RTU, M-Bus, SLC, KNX, DALI, SMI		BACnet MS/TP, SLC
BACnet profile	B-BC		B-ASC
<b>Objects</b>			
Data points (value objects)	600		50
Control (Loop)	32		6
Calendars (Calendar)	16		3
Time programmes (Schedule)	32		4
Historical data (Trend Log)	256		–
Alarms (Notification Class)	16		–
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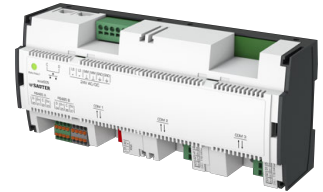
## EY-RC 504/505: Room automation station, ecos504/505

### Features

- Part of the SAUTER modulo 5 system family
- Modular room automation station (AS) for up to eight rooms or eight flexible room segments
- BACnet/IP communication (EN ISO 16484-5) as BACnet Building Controller (B-BC)
- The ecoUnit 3 and ecoUnit 1 room operating units enable individual adjustment of the room climate
- Optimises energy consumption thanks to presence function, window contact monitoring, demand-controlled ventilation, control of lighting and window blinds, and time-dependent setpoint specification
- Function libraries for climate, lighting and sunshading
- Expansion bus for remote ecolink modules, ecoUnit room operating units and EnOcean wireless interface
- KNX interface to connect KNX operating units, sensors and actuators
- Integrated KNX tunnelling function (KNX/IP) for the commissioning of KNX with ETS
- DALI interface with DALI bus power supply for the connection of DALI electronic ballasts (EB) and DALI sensors
- Web-based commissioning tool for DALI network
- SMI interface (SMI/SMI LoVo) for activating SMI motors for sunshading (window blinds, roller shutters)
- Integrated tunnelling function for commissioning with SMI-easyMonitor
- RS-485 half duplex, electrically isolated interface for Modbus/RTU, Modbus/ASCII
- Baud rate 600 to 115,200 bit/s with configurable RS-485 network resistors
- Modbus master with up to four simultaneous communication profiles
- Integrated tunnelling function for commissioning and monitoring with serial Modbus master tools
- Physical M-Bus interface and RS-232 interface for external M-Bus level converters
- Supports M-Bus baud rates of 300 to 38,400 bit/s
- M-Bus master function with up to four simultaneous communication profiles
- Integrated tunnelling function for commissioning and monitoring with M-Bus tools
- Time programme and calendar function; data recording
- Integrated (EY-RC504F202 only) or licensable MQTT functionality (MQTT Broker / Client)
- Engineering/programming using SAUTER CASE Suite (based on IEC 61131-3)
- Integration into the building management system via BACnet/IP with Ethernet interface



EY-RC 504



EY-RC 505



### Technical data

Power supply		
Power supply	24 VDC ±10%	24 VAC +25%/–15%, 48...63 Hz
Max. peak inrush current	23 A (10 milliseconds)	
Connection	Spring-type terminals 0.2...2.5 mm <sup>2</sup> rigid/flexible Ampacity max. 5 A	
Ambient conditions		
Operating temperature	0...45 °C	
Storage and transport temperature	–25...70 °C	
Ambient humidity	10...85% rh, no condensation	
Function		
BACnet	BACnet profile	B-BC (EN ISO 16484-5)
	BACnet data point objects	600 (incl. HW)
	Control	32 (Loop)
	Active COV subscription	1500
	BACnet client links	200 (Peer-to-Peer)
Dynamic objects	Time programmes	32 (Schedule)
	Calendar	16 (Calendar)



	Notification	16 (Notification Class)
	Historical data	256 (Trend Log) up to 60,000 entries
	Chart	32 (Log View), moduWeb (F101) only
	Command object	16 (Command)
Services	Number of BBMDs in BDT	32
	Number of FDs in FDT	32
Gateway	Field bus protocols	KNX, DALI, SMI, Modbus, M-Bus, SLC, SLC/EnOcean
	IP protocols	BACnet/IP as per ISO 16484-5, HTTP for moduWeb (F101 only), MQTT protocol V3.1.1/V5 as per ISO/IEC 20922 via TCP or TCP/TLS 1.2 (F202 only / licence)
MQTT	MQTT Client	Number of topics / alias topics for max. number of BACnet objects (600)
	MQTT Broker	Number of topics, depending on CPU/memory resources (> 1000)

### Architecture

	Processor	32-bit, 600 MHz (ARM)
	SDRAM (synchronous dynamic RAM)	128 MB
	SRAM (static RAM)	64 kB
	Flash	128 MB
	Operating system	Embedded Linux
	Cycle time	100 milliseconds
	Application data	Via CASE Engine

### Interfaces, communication

Ethernet network	Communication protocol	BACnet/IP, HTTP (F101 only), MQTT (F202 only or with licence), NTP client
	Connection	2 × RJ-45 connector
	Type	10/100 BASE-TX switched
RS-485 A, RS-485 B	Communication protocol	2 × RS-485, SLC
	Use	ecoLink I/O modules; ecoUnit 1, ecoUnit 3 operating units; ASV 2 VAV actuators
	Participant	Max. 2 × 8 ecoLink modules Max. 2 × 4 ecoUnit 1, 3 or FCCP 2 Max. 2 × 12 ASV 2
	Power supply	5 V ±5% < 200 mA (sum of both RS-485), protected against short circuit
	Connection	Pluggable spring-type terminals 2 × 4-pin 0.2...1.5 mm <sup>2</sup> rigid/flexible
	Line <sup>1)</sup>	4-wire, twisted, shielded
	Line length <sup>2)</sup>	Max. 100 m (30 m) with ecoUnit, up to 500 m, bus termination necessary
KNX	Communication protocol	KNX TP1 (ISO/IEC 14543-3)
	Power consumption	KNX bus max. 6 mA
	Bus power supply	Via external KNX power supply
	Connection	KNX bus terminal x4 0.6...0.8 mm rigid lines
	Line	KNX cable, 2-wire, twisted
	Use	KNX actuators and sensors
	Participant	Up to 64 KNX devices, depending on the external KNX power supply

<sup>1)</sup> Example cable CAT-5, J-Y(ST)Y, RS-485 bus cable (e.g. Belden 9842)

<sup>2)</sup> With the cable length and the conductor cross-section, the supply voltage (+5 V) for the ecoUnit 3 must not fall below the minimum required voltage due to the voltage drop.

	Functions	256 KNX group addresses for BACnet I/O objects (256 channels)
DALI (per COM module)	Communication protocol	DALI (IEC 62386-101/-103)
	Power consumption	DALI bus max. 2 mA (only when operating with external power supply)
	Bus power supply	Typ. 16 V, max. 116 mA (can be switched off for external bus power supply)
	Connection	Spring-type terminals 0.2...2.5 mm <sup>2</sup> rigid/flexible
	Line	2-wire, NYM..., up to 300 m
	Use	DALI ballasts (IEC 62386-102) DALI sensors (see list)
	Participant	Up to 64 DALI ballasts and 64 DALI sensors (depending on type and bus power supply)
	Functions	256 DALI functions for BACnet I/O objects (256 channels) with addressable 64 DALI short addresses and 16 group addresses
SMI (per COM module)	Communication protocol	SMI master (SMI standard V2.3.2)
	Bus power supply	Typ. 17 V, max. 20 mA, for 16 motors typ. 12.8 mA (0.8 mA/motor), protected against short circuit (30 mA)
	Connection	Spring-type terminals 0.2...2.5 mm <sup>2</sup> rigid/flexible
	Line	2-wire, NYM..., up to 350 m
	Use	SMI actuators, SMI (230 V) or SMI Lo-Vo (see list)
	Participant	Up to 16 SMI motors
	Functions	128 SMI functions for BACnet I/O objects (128 channels) for up to 16 single and group addresses each
RS-485 (COM module)	Communication protocol	Modbus/RTU and Modbus/ASCII Master as per V1.02 2-wire (2W)
	Bus physics	1 unit load (UL); electrically isolated; integrated RS-485 network resistors (LT, PU, PD) configurable via software
	Bus speed	600...115,200 bit/s Parity bit, stop bit, Rx/Tx bus timing
	Connection	Pluggable spring-type terminals 2 × 5-pin 0.2...1.5 mm <sup>2</sup> rigid/flexible
	Line <sup>3)</sup>	3-/4-wire (D+/D-/COM reference), twisted, shielded, up to 1000 m
	Use	Integration of Modbus slaves in an RS-485 segment (line)
	Participant	Up to 31 RS-485 unit loads (UL)
	Functions	600 Modbus channels for BACnet I/O/V objects for up to 247 Modbus devices; FC01-06, 15, 16, 22; unicast and broadcast; access optimisation
	M-Bus/RS-232 (COM module)	Communication protocol
Bus physics		M-Bus (EN 13757-2); electrically isolated, mark voltage 36 V, short-circuit proof, overcurrent monitoring and protection
Bus speed		300...9600 (19 200, 38 400) bit/s
Connection		Pluggable spring-type terminals 2 × 5-pin 0.2...1.5 mm <sup>2</sup> rigid/flexible

<sup>3)</sup> Example cable CAT-5, J-Y(ST)Y, RS-485 bus cable (e.g. Belden 9842)

Line <sup>4)</sup>	2-wire (M+/M-) up to 1000 m; RS-232 (RX/TX/C) up to 15 m
Use	Integration of M-Bus meters
Participant	Up to 40 M-Bus unit loads (UL of 1.5 mA); up to 256 M-Bus devices (with external M-Bus level converter via RS-232)
Functions	400 M-Bus channels for BACnet I/O/V objects for up to 256 M-Bus devices; REQ_UD2, SND_NKE, SND_UD, primary/secondary addressing, readout (triggered, by offset or filter)

#### Construction

Fitting	DIN rail 35 × 7.5/15 EN 50022 Rail housing DIN 43880
Dimensions W × H × D	EY-RC 504: 105 (6 HP) × 90 × 58 mm EY-RC 505: 210 (12 HP) × 90 × 58 mm

#### Standards, directives

	Type of protection	Connections and terminals: IP00 Front in DIN cut-out: IP30 IP30 (EN 60529), with accessory terminal cover
	Energy class <sup>5)</sup>	I to VIII = up to 5% as per EU 811/2013, 2010/30/EU, 2009/125/EC
	Environment class	3K3 (IEC 60721)
	Protection class	I (EN 61140)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1 EN 61000-6-2 EN 61000-6-3 EN 61000-6-4
eu.bac certificate	Energy Performance of Buildings Directive 2010/31/EU	EN 15500
	eu.bac licence	No. 2166

#### Overview of types

Type	COM1	COM2	COM3	Weight	Current consumption (max.)	Power consumption
EY-RC504F001	-	-	-	220 g	0.33 A	4 W / 8 VA
EY-RC504F202	-	-	-	220 g	0.33 A	4 W / 8 VA
EY-RC504F011	KNX	-	-	240 g	0.33 A	4 W / 8 VA
EY-RC504F021	DALI	-	-	245 g	0.43 A	6 W / 10 VA
EY-RC504F041	SMI	-	-	240 g	0.33 A	4 W / 8 VA
EY-RC504F0C1	RS-485	-	-	243 g	0.33 A	5 W / 9.5 VA
EY-RC504F0D1	M-Bus	-	-	253 g	0.48 A	6.9 W / 10 VA
EY-RC505F031	KNX	DALI	-	385 g	0.61 A	7 W / 10 VA
EY-RC505F051	SMI	DALI	-	410 g	0.61 A	7 W / 11 VA
EY-RC505F061	KNX	SMI	-	385 g	0.33 A	4 W / 8 VA
EY-RC505F071	KNX	SMI	DALI	420 g	0.61 A	7 W / 11 VA
EY-RC505F081	-	DALI	DALI	410 g	0.61 A	9 W / 14 VA
EY-RC505F091	SMI	SMI	DALI	430 g	0.61 A	8 W / 12 VA
EY-RC505F0A1	KNX	DALI	DALI	420 g	0.61 A	9 W / 14 VA

<sup>4)</sup> M-Bus cable lengths depend on the cable type (J-Y(ST)Y 4 × 0.5 mm<sup>2</sup> up to 1000 m, LiYY 2 × 1.5 mm<sup>2</sup> up to 4000 m), the number of bus segments and the baud rate; see engineering notes

<sup>5)</sup> When the room automation station is being used as a temperature controller, most temperature controller classes can be fulfilled according to EU Directive 2010/30 / EU Regulation 811/2013. For information on the exact temperature class reached, please refer to the system integrator's user program

Type	COM1	COM2	COM3	Weight	Current consumption (max.)	Power consumption
EY-RC505F0B1	SMI	SMI	-	400 g	0.33 A	4 W / 8 VA
EY-RC505F0E1	RS-485	M-Bus	-	405 g	0.48 A	7.1 W / 10.6 VA
EY-RC505F0F1	RS-485	DALI	-	405 g	0.61 A	6 W / 10 VA
EY-RC505F0G1	RS-485	SMI	DALI	430 g	0.61 A	7 W / 10 VA
EY-RC505F0H1	KNX	RS-485	DALI	420 g	0.61 A	9 W / 14 VA
EY-RC505F0J1	RS-485	DALI	DALI	440 g	0.61 A	9 W / 14 VA
EY-RC505F0K1	KNX	RS-485	-	385 g	0.61 A	7 W / 10 VA

- 💡 EY-RC 504, 505: Room automation station, 8 rooms/segments, 2 × SLC/RS-485
- 💡 COM1...3: Integrated communication interfaces
- 💡 F\*O\*: EY-RC504F001 (ecos504, standard), EY-RC504F202 (ecos504-IoT, BACnet MQTT gateway)
- 💡 DALI: DALI interface with bus power supply (116 mA)
- 💡 RS-485: RS-485 interface for Modbus/RTU and Modbus/ASCII
- 💡 SMI: SMI interface for SMI or SMI/LoVo

### Accessories

Type	Description
0940240001	ecos504/505 terminal covers (2 pcs)
0450573001	Transformer 230 VAC / 24 VAC, 42 VA; for DIN rail 35 mm, dimensions: 78 × 74 × 52 mm (W×H×D)
EY-CM581F081	ecosCom581 EnOcean wireless interface
EY-RU 1**	ecoUnit 1 room operating units with EnOcean wireless technology (via EY-CM581F081)
EY-RU 3**	ecoUnit 3 room operating units
EY-EM51*	Remote ecoLink I/O modules (24 V)
EY-EM52*	Remote ecoLink I/O modules (230 V)
YY-FX502F001	ecos-IoT: MQTT Client, licence for ecos504/505
YY-FX502F002	ecos-IoT: MQTT Client + Broker, licence for ecos504/505
YY-FX503F001	ecos504/505: RADIUS supplicant, licence

- 💡 1 HP = one horizontal pitch with 17.5 mm



EY-RC311F001

## EY-RC 311: Room controller, ecos311

### Features

- Part of the SAUTER modulo system family (BACnet MS/TP)
- BACnet MS/TP communication (EN ISO 16484-5)
- BACnet room controller (B-ASC) for fan coil unit, chilled beam, chilled ceiling, radiator heater, light, control of window blinds, variable volume flow control (VAV) etc.
- Individual adjustment of the setpoints via ecoUnit 3 room operating units (EY-RU 3\*\*)
- Optimisation of energy consumption using presence function, monitoring of window contacts, demand-controlled switching of fan speeds and time-dependent setpoint specification
- Freely configurable time programme (BACnet Schedule objects)
- Freely programmable with CASE Suite software (based on IEC 61131-3)
- Expandable with ecoLink I/O modules for lighting and control of window blinds

### Technical data

Power supply		
Power supply		230 V, 200 V min., 253 V max., 50...60 Hz
Power consumption		Max. 14 VA
Dissipated power		5 W / 8 VA
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-20...70 °C
Humidity		10...85% rh, no condensation
Inputs / outputs		
Relay outputs	Type	0-1 relays, normally-open contacts with shared power supply
	Load	230 VAC / 30 VDC 2 A resistive load, total max. 5 A 230 VAC; 10 A resistive load
	Switching frequency	> 3 × 10 <sup>5</sup> cycles (2 A) > 2 × 10 <sup>5</sup> cycles (10 A)
Semiconductor outputs (MOS-FET)	Type	0-1, 24 VAC/DC, switched to ground
	Load	0.5 A Max. peak current 1 A (< 20 ms)
Analogue outputs	Type	0...10 V / 2 mA
Universal inputs	Analogue	0...10 V
	Digital	0-1, max. 2 Hz
	Potentiometer	1...10 kΩ (for potentiometer)
	Resistance	100...2500 Ω
	Ni1000/Pt1000	-20...100 °C
Interfaces and communication		
Interface	Interface	1 × RS-485 electrically isolated, ½ load
	Protocol	BACnet MS/TP
	Line	2-wire, twisted with reference, shielded
	Line length	1000 m with bus termination
SAUTER Local Communication interfaces		
Interface	Interface	1 × RS-485
	Protocol	SLC
	Cable	2×2-wire, twisted, shielded
	Cable length	< 100 m with bus termination (with ROU) < 500 m with bus termination (without ROU)



Room operating units	Max. 1; EY-RU 31*/355/110/146 (via EY-CM581)
I/O modules	Max. 2; EY-EM 51*, 52*

**Construction**

Dimensions W × H × D	178 × 103 × 53 mm
Weight	674 g
Fitting	DIN rail; TH35×7.5/15 EN 50022

**Standards and directives**

Type of protection	IP00 (EN 60529) IP20 (cover with front aperture)
Protection class	II (EN 60730-1)
Energy class <sup>1)</sup>	I to VIII = up to 5% as per EU 811/2013, 2010/30/EU, 2009/125/EC
Environment class	3K3 (IEC 60721)

CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1 EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1 EN 60730-2-9

**Overview of types**

Type	Description
EY-RC311F001	ecos311 - room controller B-ASC, MS/TP, 16IO, 230 V

Overview of I/O mix	
Universal inputs	5
Relay outputs	3 (2 A)
	1 (10 A)
Digital outputs	4
Analogue outputs	3

<sup>1)</sup> When the automation station is being used as a temperature controller, most temperature controller classes can be fulfilled according to EU Directive 2010/30/EU, Regulation 811/2013. For information on the exact temperature class, please refer to the system integrator's user program.

# SAUTER ecos room operating units

SAUTER ecoUnit 3 and ecoUnit 1 room operating units combine technology with design. The buttons can be freely assigned with various functions. Due to the standard internal dimensions of 55 × 55 mm, these devices fit both SAUTER frames and common frames of third-party manufacturers of light switches.

## Overview of room operating units



Type designation	EY-RU310F001	EY-RU311F001	EY-RU314F001	EY-RU316F001
Product name	ecoUnit310	ecoUnit311	ecoUnit314	ecoUnit316
Function	Temperature sensor	Temperature sensor, setpoint correction	Temperature sensor, setpoint correction, occupancy, fan	Temperature sensor, setpoint correction, occupancy, fan, and control of lighting and window blinds
Use	ecos 5, ecos311			
Interface	RS-485			
Indicator/display	–	–	–	–
Temperature sensor	•	•	•	•
Button functions	–	–	2	4
Fan speeds	–	–	AUTO-0-1-2-3	
Setpoint correction	–	–	Rotary knob	
Room occupancy	–	–	3 modes	
Further information	Page 408	Page 408	Page 408	Page 408





Type designation	EY-RU365F0**	EY-RU355F***	EY-SU358F081
Product name	ecoUnit365	ecoUnit355	ecoUnit358
Housing colour	Traffic white/jet black	Traffic white/jet black	Traffic white/jet black
Function	Temperature sensor, 12 setpoints with 4 functions (temperature, lights, blinds and fans)	Temperature sensor, setpoint correction, occupancy, fan	Push-button unit
Use	modulo 6, ecos 5	modulo 6, ecos 5, ecos 311	Connection to ecoUnit355
Interface	SLC/RS-485		–
Indicator/display	TFT colour display	LCD	–
Temperature sensor	•	•	–
Button functions	32 on 6 pages with 6 tiles each	5	2, 4, 8
Fan speeds	•	AUTO-0-1-2-3	–
Setpoint correction	Digitally adjustable via buttons		–
Room occupancy	•	3 modes	–
Further information	Page 410	Page 413	Page 416



Type designation	EY-RU110F201	EY-RU146F201	EY-SU106F100
Product name	ecoUnit110	ecoUnit146	ecoUnit106
Function	Temperature sensor	Temperature sensor, setpoint correction, occupancy, fan, and control of lighting and window blinds	Solar panel supply, control of lighting and window blinds
Use	With ecosCom581 for: ecos 5, ecos311, modulo 6		Connection to ecoUnit1**
Interface	EnOcean wireless		–
Indicator/display	–	LCD	–
Temperature sensor	•	•	–
Button functions	–	6	6
Fan speeds	–	AUTO-0-1-2-3	–
Setpoint correction	–	Digitally adjustable via buttons	–
Room occupancy	–	3 modes	–
Further information	Page 418	Page 420	Page 422

## EY-RU 310...316: Room operating unit, ecoUnit310...316



EY-RU316F001



EY-RU310F001

### Features

- Part of the SAUTER modulo 5 system family
- Room operating unit for ecos504/505
- Can be extended with EY-SU 306 push-button unit
- Operating unit to control and guarantee the highest possible room comfort
- Temperature measurement and setpoint adjustment
- Device insert with transparent front, fits into frame with 55 × 55 mm aperture
- Frame can be ordered as an accessory
- Room climate can be adapted individually
- Operating mode can be set for room occupancy and actuation of a 3-speed fan
- Control of window blinds, windows and lighting (ON/OFF/dim)
- Multicolour LED indicators for visualisation of local energy consumption
- Room operating unit with a wide range of functions, designs and colours

### Technical data

#### Power supply

Power supply	From automation station
Current consumption	≤ 25 mA ≤ 38 mA with 2 × EY-SU306

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...85% rh, no condensation

#### Parameters

Sensors	Measuring range	0...40 °C
	Resolution	0.1 K
	Time constant	Approx. 7 minutes
Functionality	Setpoint correction	Variable
	Room occupancy (presence)	3 modes, LED indicator
	Fan speeds	5 functions, LED indicator
	Position LED	Switchable: green/red/OFF

#### Interfaces and communication

Connection to automation station	Activation	ecos 5, modu521
	Interface	RS-485
	Protocol	SLC
	Line	4-wire, twisted, shielded
	Line length <sup>1)</sup>	≤ 100 m (30 m) with bus termination
	Connection terminals	Pluggable; for wire of 0.12...0.5 mm <sup>2</sup> (Ø 0.4...0.8 mm)

#### Construction

Fitting	Recessed/surface-mounted (see accessories)
Dimensions W × H × D	59.5 × 59.5 × 25 mm
Weight	0.1 kg
Housing	Pure white (similar to RAL 9010)
Labelling insert	Silver (similar to Pantone 877 C)

#### Standards and directives

Type of protection	IP30 (EN 60529)
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<sup>1)</sup> Max. 30 m for industrial applications as per EN 61000-6-2



	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3

### Overview of types

Type	Features	Buttons
EY-RU310F001	NTC sensor	–
EY-RU311F001	Operating unit, NTC sensor, dXs setpoint correction (rotary knob)	–
EY-RU314F001	Operating unit, NTC sensor, dXs setpoint correction (rotary knob), fan, occupancy	2
EY-RU316F001	Operating unit, NTC sensor, dXs setpoint correction (rotary knob), fan, occupancy, window blinds / light	4

### Accessories

#### Operating unit

Type	Description
EY-SU306F001	Push-button unit, without frame

#### Fitting

Type	Description
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0949360004	Push-in terminal RU/SU (for wire), 2 × 10 pcs. 2-pin (01/02, 03/04)
0949241301	Transparent cover for EY-RU and EY-SU, 10 pcs.
0949241302	RAL 9010 white cover for EY-CM581, EY-RU and EY-SU (10 pcs.)



EY-RU365F00\*



EY-RU365FOA\*

## EY-RU 365: Touch room operating unit, ecoUnit365

### Features

- Part of the SAUTER modulo system family
- High quality room operating unit with touch operation and tile display
- 3.5" TFT colour display, 320x240 pixels
- Scratch-resistant, capacitive touch interface
- Navigation of up to 6 pages with up to 6 functions (tiles) each
- Intuitive operation for predefined functions (temperature, lights, blinds, fans)
- Up to 32 values/channels can be defined as a reference for BACnet objects
- Display of the energy efficiency function ("ECO 10")
- Mode and symbol displays, e.g. heating/cooling
- Audio feedback when pressed
- Supply voltage 24 VAC/DC
- SLC/RS-485 communicative interface for ecos 5, modulo 6
- Can be located up to 500 m from the automation station
- 6 digital inputs for connecting presence detector, door/window contacts, digital contact directly
- Configuration with CASE Suite (CASE Engine "EY-RU365 module configuration", RU\_TOUCH module)
- Optional: Bluetooth (BLE 4.0) for using the "ecoUnit" app on a smartphone

### Technical data

Power supply		
	Power supply	24 VAC/DC, ±20% - SELV 0 / 50/60 Hz or from EY-PS of station
	Rated power during continuous operation	< 2.6 W
Ambient conditions		
Operation	Operating temperature	0...45 °C
	Ambient humidity	10...85% rh, no condensation
Transport	Ambient humidity	< 85% rh, no condensation
	Storage and transport temperature	-25...70 °C
Parameters		
	Values/channels	Up to 32 values/channels, parameterisable as setpoint, switching command or value display; 12 of which for complete setpoint inputs
	Symbol	Various symbols: e.g. room mode - comfort/reduced/set-back; ECO mode - green-yellow-red; heating/cooling; windows; humidity; wind; alarm; block
	Number of functions	Up to 6 pages Up to 6 tiles per page
	Tile function	Temperature, fan, light dimming, light switching, blind control (position/angle), value displays (feedback), switching function with various predefined symbols (lamp type, mode, scenes...)
	Special functions	°C/°F changeover for temperature function; home button; navigation display; (title) labelling for pages, tiles and functions
	Screensaver display	None, time, actual temperature or any value (channel)
Temperature sensor	Type of sensor	NTC 10kΩ
	Measuring range	0...40 °C



	Resolution	0.1 K
	Accuracy	± 1 K at typ. 0.1 ms dependent on environment (e.g. air flow)
	Refresh interval	1 s
	Drift	< 0.1 °C/year
	Position	Bottom left
Inputs	Number of inputs	6
	Type of inputs	For potential-free switching contacts
	Polling voltage	24 VDC unregulated
	Polling current	>3 mA (closed contact)
	Internal resistance	> 4.7 kΩ
	Input refresh interval	20 ms
	Switching thresholds	<10 V (voltage "rising") >6 V (voltage "falling")
	Switching hysteresis	>1 V
	Audible feedback	Type
Application		Audio feedback when touch function is executed
Display with backlight	Screen diagonal	3.5 inches (8.9 cm)
	Resolution	320 x 240 pixels
	Display refresh interval	60 Hz
	Type	TFT
	Number of colours	262,000
	Brightness	500 cd/m <sup>2</sup>
	Contrast ratio	300
	Perspective	From above: 15° From below: 35° From left/right: 45°
Touchpad	Touchpad type	Capacitive with gesture recognition
	Refresh rate	10 ms
<b>Interfaces, communication</b>		
Connection terminals	SLC/RS-485, DI, power supply	2 x 6-pin screw terminals, pluggable, for solid or braided wires, max. 1.5 mm <sup>2</sup> (grid dimension 5 mm)
Communication	Activation	From station (ecos 5, modulo 6)
	Interface	RS-485 with 115kbit/s (no integrated terminating resistor)
	Protocol	SLC (SAUTER Local Communication)
	Line	2-wire twisted, shielded (D+, D-); MM terminal is reference for RS-485; shielded at controller
	Line length	≤ 500 m with bus termination
	Protection circuit	Protected against excess voltage and reversed polarity
Wireless	Bluetooth specification	4.0 Low Energy Class 2
	Module	Panasonic PAN1740
	Number of app participants	1 simultaneously 256 registered
	Supported OS Bluetooth app	iOS 8.0 or higher Android 4.1 (Jelly Bean) or higher
<b>Construction</b>		
Device dimensions	Fitting	Recessed mounting
	Dimensions W x H	Glass front: 86 x 86 mm <sup>2</sup> Plastic housing: 85 x 85 mm <sup>2</sup>
	Surface depth T	Max. 15 mm
	Recessed depth T (recessed junction box)	Min. 34 mm (incl. terminals)
	Compatible recessed junction boxes	Swiss and European recessed junction boxes

Housing	Colour	F00*: White (similar to RAL 9010) F0A*: Black (similar to RAL 9005)
Weight	Weight	F0*1: 0.190 kg F0*2: 0.200 kg
Glass front	Glass type	Float glass, chemically hardened soda-lime glass
	Glass thickness	2.9 mm
	Surface hardness	6 H

#### Standards, directives

CE/UKCA conformity <sup>1)</sup>	Software class	A (EN 60730)	
	Plastic fire classification	UL94V2	
	Type of protection	IP30 (EN 60529)	
	Protection class	III (EN 60730)	
	Environment class	3K3 (IEC 60721)	
	EMC-D 2014/30/EU (CE)		EN 50491-5-2, EN 50491-5-3 ETSI EN 301 489-1 v.1.9.2
		EMC-2016 (UKCA)	EN 50491-5-2, EN 50491-5-3 ETSI EN 301 489-1 v.1.9.2
	LV-D 2014/35/EU (CE)	EN 62311	
	EESR-2016 (UKCA)	EN 62311	
	RED 2014/53/EU (CE)	ETSI EN 300 328 v2.1.1	
	RER-2017 (UKCA)	ETSI EN 300 328 v2.1.1	
	RoHS-D 2011/65/EU & 2015/863/EU (CE)		EN IEC 63000:2018
		RoHS-2012 (UKCA)	EN IEC 63000:2018
Other applicable legal acts	Chemicals	REACH Regulation (EC) 1907/2006	
	WEEE	WEEE Directive 2012/19/EU	

#### Overview of types

Type	Title
EY-RU365F001	ecoUnit365, white, touch, NTC, 6DI
EY-RU365F002	ecoUnit365, white, touch, NTC, 6DI, Bluetooth
EY-RU365F0A1	ecoUnit365, black, touch, NTC, 6DI
EY-RU365F0A2	ecoUnit365, black, touch, NTC, 6DI, Bluetooth

<sup>1)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues

## EY-RU 355: Room operating unit, ecoUnit355

### Features

- Part of the SAUTER modulo system family
- Room operating unit for ecos311, ecos504/505, modu680/660-AS, ASV2 and A\*M\*\*\*SA
- Local, intuitive operation for temperature, fan and occupancy
- Large backlit (BL) display for status information on the room condition
- Ergonomic buttons with mechanical, tactile feedback
- Individual adjustment of the room climate via temperature detection and setpoint adjustment
- Operating mode can be set for room occupancy and actuation of a 3-speed fan
- ECO button for resetting to automatic mode
- Multicolour LED indicator for visualisation of energy consumption or as position LED
- Sturdy surface of front cover
- Fits into standard frame with 55 × 55 mm aperture
- Individually assignable buttons with different symbols, can be ordered as accessories
- Expandable with EY-SU 358 switching unit for operating lights, window blinds etc.
- Frame can be ordered as an accessory
- Room operating unit with various functions, designs and colours

### Technical data

#### Power supply

Power supply	F***: 12...24 VDC, ± 20% (with BL) FO***/A***: 5 VDC, ± 20% (without BL) from ecos 5/ecos311/ASV2: 5 VDC from ecos311: 15 VDC from EY-PS, modu6**-AS, A*M-SA: 24 VDC
Current consumption	≤ 7 mA (at 24 VDC, with BL) ≤ 10 mA (at 15 VDC, with BL) ≤ 9 mA (at 5 VDC, without BL) ≤ 12 mA with 2 x EY-SU 358 (24 VDC)

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...85% rh, no condensation

#### Parameters

Sensor	Measuring range	0...40 °C
	Resolution	0.1 K
	Time constant	14 min.
	Measuring accuracy	0.5 K in 15...35 °C range
Functionality	Setpoint correction	Can be set and reset; LCD
	Room occupancy (presence)	3 modes; LCD
	Fan speeds	3 levels, off, automatic; LCD
	Position/energy LED	1; green, red, orange, off; switchable
	Symbols in LCD	Time/date, air quality, heating/cooling, ECO, different units, state symbols (window, dew point, locked), SAUTER logo (can be hidden)

#### Interfaces, communication

Connection to automation station, controller	Activation	ecos 5**, ecos311, modu6*0-AS, ASV215, A*M***SA
	Interface	RS-485



EY-RU355F051



EY-RU355FA51



Protocol	SLC
Line	4-wire, twisted, shielded
Line length <sup>1)</sup>	≤ 100 m with bus termination
Connection terminals	Pluggable, for wire of 0.12...0.5 mm <sup>2</sup> (Ø 0.4...0.8 mm)

**Construction**

Fitting	Recessed/surface-mounted (see accessories)
Dimensions W × H × D	55 × 55 × 23 mm
Weight	0.05 kg
Housing	F0xx/F1xx: traffic white FAxx/FBxx: jet black
Button printing	F0xx/F1xx: black FAxx/FBxx: white

**Standards, directives**

Type of protection	IP30 (EN 60529)
Protection class	III (EN 60730-1)
Environment class	3K3 (IEC 60721)
CE/UKCA conformity <sup>2)</sup>	EMC-D 2014/30/EU (CE)
	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	EMC-2016 (UKCA)
	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	RoHS-D 2011/65/EU & 2015/863/EU (CE)
	EN IEC 63000:2018
	RoHS-2012 (UKCA)
	EN IEC 63000:2018

**Overview of types**

Type	Features	Buttons _ = dummy button, PRA = presence
EY-RU355Fx02	Operating device, LCD, NTC, 0T	No buttons supplied
EY-RU355Fx21	Operating device, LCD, NTC, 2T	+   -   _   _   _
EY-RU355Fx31	Operating device, LCD, NTC, 3T	+   -   _   _   PRA
EY-RU355Fx32	Operating device, LCD, NTC, 3T	+   -   _   FAN   _
EY-RU355Fx41	Operating device, LCD, NTC, 4T	+   -   _   FAN   PRA
EY-RU355Fx42	Operating device, LCD, NTC, 4T	+   -   ECO   _   PRA
EY-RU355Fx51	Operating device, LCD, NTC, 5T	+   -   ECO   FAN   PRA
EY-RU355Fx52	Operating device, LCD, NTC, 5T	+   -   UP   DOWN   PRA
EY-RU355Fx53	Operating device, LCD, NTC, 5T	+   -   UP   DOWN   LIGHT
EY-RU355Fx54	Operating device, LCD, NTC, 5T	+   -   ECO   FAN   °C/°F
EY-RU355Fx55	Operating device, LCD, NTC, 5T	+   -   UP   DOWN   FAN

- ☛ All types:  
 x = 0 ≙ traffic white, 5/12...24 VDC  
 x = 1 ≙ traffic white, 12...24 VDC  
 x = A ≙ jet black, 5/12...24 VDC  
 x = B ≙ jet black, 12...24 VDC

**Accessories**

Type	Description	Colour
EY-SU358F021	Push-button unit with 2 button functions	Traffic white
EY-SU358FA21	Push-button unit with 2 button functions	Jet black
EY-SU358F041	Push-button unit with 4 button functions	Traffic white
EY-SU358FA41	Push-button unit with 4 button functions	Jet black
EY-SU358F081	Push-button unit with 8 button functions	Traffic white
EY-SU358FA81	Push-button unit with 8 button functions	Jet black

<sup>1)</sup> SLC/RS-485 permits a line length of up to 500 m (decentralised supply)

<sup>2)</sup> Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues



## Fitting accessories, spare parts

Type	Description
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0940240103	Frame, single, recessed, white (RAL9016), 10 pcs.
0940240104	Frame, single, recessed, black (RAL9005), 10 pcs.
0940240703	Mounting plate, single, for recessed fitting (10 pcs.)
0940240203	Frame, double, recessed, white (RAL9016), 10 pcs.
0940240204	Frame, double, recessed, black (RAL9005), 10 pcs.
0940240802	Mounting plate, double, for recessed fitting (10 pcs.)
0940240302	Frame, single, surface-mounted, white (RAL9016), 10 pcs.
0940240303	Frame, single, surface-mounted, black (RAL9005), 10 pcs.
0940240402	Frame, double, surface-mounted, white (RAL9016), 10 pcs.
0940240403	Frame, double, surface-mounted, black (RAL9005), 10 pcs.
094013****	Buttons as accessories/spares, 10 pcs. (see product data sheet 94.055)
0949360004	Push-in terminal RU/SU (for wire), 2 × 10 pcs. 2-pin (01/02, 03/04)
0940360005	Terminal RU-SU, push-in, @3P (V,C,DQ), 10 pcs. (accessory for EY-SU 358)
0940360007	Terminal RU-SU, screw, @3P (V,C,DQ), 10 pcs. (optional accessory for EY-SU 358)
0940360006	Terminal and cable RU-SU, @3P (V,C,DQ), 15 cm, 10 pcs. (optional accessory for EY-SU 358)
0940360012	Screw terminal RU/SU (optional for stranded cable), 2 × 10 pcs. 2-pin (01/02, 03/04)



## EY-SU 358: Push-button unit for room operating unit, ecoUnit358



EY-SU358F081



EY-SU358FA81

### Features

- Part of the SAUTER modulo system family
- Push-button unit to supplement the ecoUnit355 (EY-RU 355)
- Various designs and colour versions in black and white
- For controlling window blinds and lighting (on/off, dim)
- 2, 4 or 8 button functions
- Labelling insert for individual labelling
- Fits into frame with 55 × 55 mm aperture
- Frame can be ordered as an accessory

### Technical data

Power supply		
Power supply		From ecoUnit355
Current consumption		≤ 2.5 mA (at 24 V= for ROU) ≤ 3 mA (at 15 V= for ROU) ≤ 8.5 mA (at 5 V= for ROU)
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-25...70 °C
Ambient humidity		10...85% rh, no condensation
Parameters		
Functionality	Position LED	2; green, red, orange, off; can be connected parallel to EY-RU 355 LED
Connection	Line	3-wire (V, C, DQ)
	Length	≤ 30 m (can be installed remotely from ecoUnit355)
Labelling	Labelling insert	1 to 3, depending on type; Colour: silver (similar to Pantone 877 C)
Construction		
Fitting		Recessed/surface-mounted (see list of accessories)
Dimensions W × H × D		55 × 55 × 23 mm
Weight		0.04 kg
Buttons		F021: two (dual buttons, dummy buttons) F041: four (dual buttons) F081: eight (single buttons)
Standards, directives		
Type of protection		IP30 (EN 60529)
Protection class		III (EN 60730-1)
Environment class		3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4



**Overview of types**

Type	Description	Colour
EY-SU358Fx21	Push-button unit, ecoUnit358, 2T	x=0, traffic white x=A, jet black
EY-SU358Fx41	Push-button unit, ecoUnit358, 4T	x=0, traffic white x=A, jet black
EY-SU358Fx81	Push-button unit, ecoUnit358, 8T	x=0, traffic white x=A, jet black

**Accessories**

Type	Description
0940360005	Terminal RU-SU, push-in, @3P (V,C,DQ), 10 pcs. (accessory for EY-SU 358)
0940360007	Terminal RU-SU, screw, @3P (V,C,DQ), 10 pcs. (optional accessory for EY-SU 358)
0940360006	Terminal and cable RU-SU, @3P (V,C,DQ), 15 cm, 10 pcs. (optional accessory for EY-SU 358)
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0940240103	Frame, single, recessed, white (RAL9016), 10 pcs.
0940240104	Frame, single, recessed, black (RAL9005), 10 pcs.
0940240703	Mounting plate, single, for recessed fitting (10 pcs.)
0940240203	Frame, double, recessed, white (RAL9016), 10 pcs.
0940240204	Frame, double, recessed, black (RAL9005), 10 pcs.
0940240802	Mounting plate, double, for recessed fitting (10 pcs.)
0940240302	Frame, single, surface-mounted, white (RAL9016), 10 pcs.
0940240303	Frame, single, surface-mounted, black (RAL9005), 10 pcs.
0940240402	Frame, double, surface-mounted, white (RAL9016), 10 pcs.
0940240403	Frame, double, surface-mounted, black (RAL9005), 10 pcs.
0940001501	Blank foil for EY-SU 358, silver, (10 pcs.)
094013****	Buttons as accessories/spares, 10 pcs. (see product data sheet 94.055)





EY-RU 110F201



## EY-RU 110: Room sensor, EnOcean, ecoUnit 110

### Features

- Part of the SAUTER modulo system family
- Room sensor with integrated digital temperature sensor
- Compatible with ecosCom581 and EnOcean interfaces from third-party manufacturers
- Battery-free with integrated solar panel
- Expandable with ecoUnit 106 as additional solar panel supply
- Device insert with transparent front, fits into frame with 55 x 55 mm aperture
- Frame can be ordered as an accessory
- Frames and foils in many colours and designs possible

### Technical data

Power supply		
Power supply		3 V, from integrated solar panel (external battery operation optional)
Illuminance		Min. 250 lux, min. 5 hours daily in 5 of 7 days
Dark period <sup>1)</sup>		60 h of full operation, additional 7 days at least in low power mode
Parameters		
Technology		EnOcean, STM 300
Frequency		868 MHz band (868.3 MHz)
Range		Up to 30 m, depending on building structure (planning recommendation: 10 m)
Sensor (temperature)		
Measuring range		0...40 °C
Resolution <sup>2)</sup>		0.2 K (hysteresis)
Time constant		Approx. 7 min.
Measuring accuracy, temperature		Typ. 0.5 K in the 15...35 °C range
Ambient conditions <sup>3)</sup>		
Operating temperature		0...45 °C
Storage and transport temperature		-25...70 °C
Ambient humidity		5...85% rh, no condensation
Interfaces, communication		
Connection <sup>4)</sup>		No wiring necessary, teach-in (pairing) with ecosCom581 or ecoMod580 wireless interface via SLC/RS-485
EnOcean Equipment Profile <sup>5)</sup>		EEP: A5-10-01 (unidirectional)
Construction		
Weight		0.05 kg
Dimensions W × H × D		59.5 × 59.5 × 27.8 mm
Housing		Pure white (similar to RAL 9010)
Labelling insert		Silver (similar to Pantone 877 C)

<sup>1)</sup> Bridging time without lighting when the internal energy storage/battery is fully charged

<sup>2)</sup> Measurement value hysteresis for spontaneous transmission (EnOcean telegram)

<sup>3)</sup> The device may be active during transport. The device is equipped with a permanently installed lithium cell (energy storage/battery)

<sup>4)</sup> See quick reference for ecosCom581/ecoMod580

<sup>5)</sup> EEP V2.6.8 or higher

The ecoUnit 110 room sensor currently only supports the temperature value of EEP A5-10-01 and no other EEP as a temperature sensor, such as A5-02-05 (temp. sensor 0...40 °C)



Fitting	Recessed/surface-mounted (see accessories)
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### Standards, directives

	Type of protection	IP30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1
	RED Directive 2014/53/EU	ETSI EN 300220-2 (V3.1.1)
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

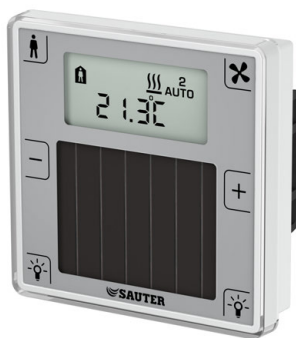
Type	Description
EY-RU110F201	Room sensor, EnOcean, temperature sensor, solar panel

- ☛ The device is supplied with a silver-coloured labelling insert. Spare inserts: 0940001510 (10 pcs.)
- ☛ Order frame and mounting plate separately (see accessories)

### Accessories

Type	Description
EY-SU106F100	Push-button unit with solar panel, 6 push-buttons, without frame
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0949241301	Transparent cover for EY-RU and EY-SU, 10 pcs.
0949360004	Push-in terminal RU/SU (for wire), 2 × 10 pcs. 2-pin (01/02, 03/04)
0940360012	Screw terminal RU/SU (optional for stranded cable), 2 × 10 pcs. 2-pin (01/02, 03/04)
0949570001	Battery pack, 10 pcs.
0940001510	Labelling insert, foil, silver, without button symbols, 10 pcs.

- ☛ EY-SU106F100: Can be used as an extended solar panel for the EY-RU110F201 room sensor, but not as a push-button unit.
- ☛ 0949570001: Suitable as energy supply in permanently darkened rooms.



EY-RU146F201



## EY-RU 146: Room operating unit, EnOcean, ecoUnit146

### Features

- Part of the SAUTER modulo system family
- Room operating unit with integrated digital temperature sensor
- Bidirectional and compatible with ecosCom581 (EnOcean SMART ACK)
- Compatible with EnOcean interfaces of third-party manufacturers
- Battery-free with LCD, ecoUnit106 push-button unit can be added
- Display with extensive status information on room conditions
- Device insert with transparent front, fits into frame with 55 x 55 mm aperture
- Room climate can be adapted individually
- Selection of three operating modes for room occupancy
- Control of a fan with three speed levels
- Control of window blinds, windows and lights (on/off/dim)
- Frame can be ordered as an accessory
- Frames and foils in many colours and designs possible

### Technical data

#### Power supply

Power supply	3 V, from integrated solar panel (external battery operation optional)
Illuminance	Min. 250 lux, min. 5 hours daily in 5 of 7 days
Dark period <sup>1)</sup>	50 h of full operation, 60 h all of most important functions, additional 7 days at least in low power mode

#### Parameters

Technology	EnOcean, STM 300
Frequency	868 MHz band (868.3 MHz)
Range	Up to 30 m, depending on building structure (planning recommendation: 10 m)
Sensor (temperature)	
Measuring range	0...40 °C
Resolution <sup>2)</sup>	0.1 K (display), 0.2 K (hysteresis)
Time constant	Approx. 7 min.
Measuring accuracy, temperature	Typ. 0.5 K in the 15...35 °C range

#### Ambient conditions<sup>3)</sup>

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	5...85% rh, no condensation

#### Function

Setpoint correction	Adjustable and resettable
Room occupancy (presence)	3 modes, LCD
Fan speeds	5 functions, LCD

<sup>1)</sup> Bridging time without lighting when the internal energy storage/battery is fully charged

<sup>2)</sup> 0.2 K (hysteresis): Measurement value hysteresis for spontaneous transmission (EnOcean telegram)

<sup>3)</sup> The device may be active during transport. The device is equipped with a permanently installed lithium cell (energy storage/battery)



**Interfaces, communication**

Connection <sup>4)</sup>	No wiring necessary, teach-in (pairing) with ecosCom581 or ecoMod580 wireless interface via SLC/RS-485
EnOcean Equipment Profile <sup>5)</sup>	EEP: D2-00-01 (bidirectional, SMART ACK) EEP: A5-10-01 (unidirectional) EEP: F6-03-01 (buttons 3, 4, [7...12 with ecoUnit106])

**Construction**

Weight	0.055 kg
Dimensions W × H × D	59.5 × 59.5 × 27.8 mm
Housing	Pure white (similar to RAL 9010)
Labelling insert	Silver (similar to Pantone 877 C)
Fitting	Recessed/surface-mounted (see accessories)

**Standards, directives**

	Type of protection	IP30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1
	RED Directive 2014/53/EU	ETSI EN 300220-2 (V3.1.1)
	RoHS Directive 2011/65/EU	EN IEC 63000

**Overview of types**

Type	Description
EY-RU146F201	Room operating unit, EnOcean, LCD, temperature sensor, solar panel, 6 buttons: dXs setpoint correction (+/-), fan, presence, 2 free buttons (window blind/light)

 The device is supplied with a silver-coloured labelling insert. Spare inserts: 0940001533 (10 pcs.)

 Order frame and mounting plate separately (see accessories)

**Accessories**

Type	Description
EY-SU106F100	Push-button unit with solar panel, 6 push-buttons, without frame
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0949241301	Transparent cover for EY-RU and EY-SU, 10 pcs.
0949360004	Push-in terminal RU/SU (for wire), 2 × 10 pcs. 2-pin (01/02, 03/04)
0940360012	Screw terminal RU/SU (optional for stranded cable), 2 × 10 pcs. 2-pin (01/02, 03/04)
0949570001	Battery pack, 10 pcs.
0940001511	Labelling insert, foil, silver, (symbols: +, -), 10 pcs.
0940001521	Labelling insert, foil, silver, (symbols: +, -, presence), 10 pcs.
0940001522	Labelling insert, foil, silver, (symbols: +, -, fan), 10 pcs.
0940001523	Labelling insert, foil, silver, (symbols: +, -, presence, fan), 10 pcs.
0940001531	Labelling insert, foil, silver, (symbols: +, -, presence, two lights), 10 pcs.
0940001532	Labelling insert, foil, silver, (symbols: +, -, fan, two lights), 10 pcs.
0940001533	Labelling insert, foil, silver, (symbols: +, -, presence, fan, two lights), 10 pcs.

<sup>4)</sup> See quick reference for ecosCom581/ecoMod580

<sup>5)</sup> EnOcean Equipment Profile (EEP) V2.6.8 or higher



EY-SU106F100

## EY-SU 106: Push-button unit for EnOcean room operating unit, ecoUnit106

### Features

- Part of the SAUTER modulo system family
- Integrated solar cell for additional solar panel supply of ecoUnit 1 EnOcean devices
- Push-button unit to supplement the ecoUnit 14\* room operating unit
- Control of window blinds and lighting (on/off, dim)
- Up to six button functions
- Device insert with transparent front, fits into frame with 55 x 55 mm aperture
- Frame can be ordered as an accessory
- Frames and foils in many colours and designs possible

### Technical data

Power supply		
	Power supply <sup>1)</sup>	Not required
Parameters		
Connection	Line	4-wire
	Length <sup>2)</sup>	≤ 1 m
Ambient conditions		
	Operating temperature	0...45 °C
	Storage and transport temperature	-25...70 °C
	Ambient humidity	10...85% rh, no condensation
Construction		
	Fitting	Recessed/surface-mounted (see accessories)
	Dimensions W × H × D	59.5 × 59.5 × 27.8 mm
	Weight	0.047 kg
Standards and directives		
	Type of protection	IP30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

Type	Features
EY-SU106F100	Push-button unit with up to 6 button functions, integrated solar cell

### Accessories

Type	Description
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0949241301	Transparent cover for EY-RU and EY-SU, 10 pcs.
0949360004	Push-in terminal RU/SU (for wire), 2 × 10 pcs. 2-pin (01/02, 03/04)
0940360012	Screw terminal RU/SU (optional for stranded cable), 2 × 10 pcs. 2-pin (01/02, 03/04)
0940001541	Labelling insert, foil, silver, (symbols: two lights, two window blinds), 10 pcs.
0940001542	Labelling insert, foil, silver, (symbols: two lights), 10 pcs.
0940001543	Labelling insert, foil, silver, (symbols: two window blinds), 10 pcs.

<sup>1)</sup> The power supply is provided by the connected device (ecoUnit 14\* or ecoUnit 110)

<sup>2)</sup> See connection diagram





## EY-CM 581: Wireless interface, EnOcean, ecosCom581

### Features

- Part of the SAUTER modulo system family
- Bidirectional wireless communication according to EnOcean (ISO/IEC 14543-3-10)
- Internal, optimised wireless antenna (no BNC antenna necessary)
- Integration of EnOcean devices: SAUTER ecoUnit110 room sensor and ecoUnit146 room operating unit and other EnOcean devices from third-party manufacturers
- Wide-range supply voltage for compatibility with ecos 5 and ecos311 room controllers and modulo 6 automation stations
- RS-485 interface for remote, optimum positioning of the wireless interface in the room
- Firmware update via SLC/RS-485
- Device insert with transparent front, fits into frame with 55 x 55 mm aperture
- Frame and white cover front can be ordered as accessories
- Frames and foils in many colours and designs possible



EY-CM581F081



### Technical data

Power supply		
Power supply		5...24 V DC ±20% ecos 5:+5 V, ecos311:+15 V/+5 V, modulo 6:+24 V
Current consumption		5 V: typ. 36 mA, 68 mA peak 15 V: typ. 14 mA, 24 mA peak 24 V: typ. 10 mA, 17 mA peak
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-25...70 °C
Ambient humidity		5...85% rh, no condensation
Interfaces and communication		
Wireless technology		EnOcean, TCM 300
Frequency		868 MHz band (868.3 MHz)
Protocol		EnOcean EEP (see EEP list)
Range		Up to 30 m, depending on building structure (planning recommendation: 10 m)
Connection to automation station	Interface	RS-485, 115.2 kbit/s
	Protocol	SLC (SAUTER Local Communication)
	Activation	ecos 5, ecos311, modulo 6
	Line	4-wire twisted (shielding, RS-485:line end resistance recommended)
	Line length	≤ 100 m
Construction		
	Weight	0.07 kg
	Dimensions W × H × D	59.5 × 59.5 × 27.8 mm
	Housing	Pure white (similar to RAL 9010)
	Labelling insert	Silver (similar to Pantone 877 C)
	Fitting	Recessed/surface-mounted (see accessories)
Standards and directives		
	Type of protection	IP30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)



CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-3
	Low-Voltage Directive 2014/35/EU	EN 60730-1
	RED Directive 2014/53/EU	ETSI EN 300220-2 (V3.1.1)
	RoHS Directive 2011/65/EU	EN IEC 63000

### Overview of types

Type	Description
EY-CM581F081	COM module EnOcean, SLC/RS-485, 5...24 V DC, 868 MHz

### Accessories

Type	Description
0940240***	For frames, mounting plates and adapters for third-party frames, see product data sheet 94.055
0949241301	Transparent cover for EY-RU and EY-SU, 10 pcs.
0949241302	RAL 9010 white cover for EY-CM581, EY-RU and EY-SU (10 pcs.)
0949360004	Push-in terminal RU/SU (for wire), 2 × 10 pcs. 2-pin (01/02, 03/04)
0940360012	Screw terminal RU/SU (optional for stranded cable), 2 × 10 pcs. 2-pin (01/02, 03/04)



# SAUTER smart sensors

Smart multi-sensors in a mesh network for precise detection of presence/motion, brightness, temperature, humidity, air quality (VOC) and noise levels in rooms or room zones for optimum indoor air and indoor environment quality.

## Overview of smart sensors



Type designation	FMS116F121	FMS116F121A	FMS196F121	FMS196F121A
Housing colour	Traffic white	Jet black	Traffic white	Jet black
<b>Sensors</b>				
Temperature sensor (digital / FIR)	• / •	• / •	• / •	• / •
Humidity sensor (digital)	•	•	•	•
VOC sensor (air quality, digital)	•	•	•	•
PIR sensor (presence and motion detector)	•	•	•	•
Light sensor	•	•	•	•
Noise level sensor (SL)	•	•	•	•
<b>Display and operation</b>				
LED ring	12 LEDs, RGB colours			
Push-button, capacitive	•	•	•	•
<b>Interfaces, communication</b>				
Interfaces	Bluetooth Mesh, Bluetooth Beacon, NFC, UART		Ethernet, Bluetooth Mesh, Bluetooth Beacon, NFC, UART	
Ethernet protocols	–	–	MQTT client, MQTT TCP/TLS	
Bluetooth Mesh profile/model	Sensor server		Sensor server and client	
Further information	Page 426			

## FMS 116, 196: Smart Sensor viaSens 116/196



FMS1\*6F121



FMS1\*6F121A

### Features

- Measurement of indoor air quality (IAQ<sup>1)</sup>), such as temperature, humidity and air quality (VOC<sup>2)</sup>)
- Measurement of indoor environment quality (IEQ<sup>3)</sup>), such as motion/presence, brightness and sound pressure level
- Sensor values can be linked together for more precise information on the state of the room (sensor fusion)
- For ceiling mounting (recessed/surface-mounted)
- Minimal sensor wiring thanks to Bluetooth<sup>® 4)</sup> mesh network
- Controllable coloured LED ring for displaying the room status to room users
- Parameterisable animation profiles for LED ring, e.g. room reserved/available, room air quality good/bad, room ready for cleaning, etc.)
- Bluetooth Beacon function for locating the room user with a smartphone and optimised use of SAUTER Mobile Building Services (Mobile Room Control app)
- Simple integration into the SAUTER automation system with viaSens 196
- For up to 16 sensors for an ecos504/505 room controller
- Complete commissioning with CASE Suite and Bluetooth smartphone app
- Meshing of up to 15 viaSens 116 sensors via Bluetooth mesh technology to the viaSens 196 sensor gateway
- IoT ready thanks to encrypted MQTT communication in the viaSens 196 as an MQTT client

### Technical data

#### Power supply

Power supply	12...34 VDC, typ. 24 VDC
Current consumption	Max. 80 mA at 24 VDC
Power consumption	Typ. 2 W

#### Parameters<sup>5)</sup>

Temperature (TDIG)	Method of measurement	CMOS technology (SHT40)
	Measuring range	0...40 °C
	Resolution	0.1 K
	Time constant	Approx. 8 s (dew 63%)
Temperature (TFIR)	Method of measurement	Far infrared (MLX)
	Measuring range	15...40 °C
	Resolution	0.1 K
	Measuring accuracy <sup>6)</sup>	±1 K
	Emissivity	0...100%, parameterisable
	Field of view (FOV)	50°
Relative humidity (HUM)	Method of measurement	CMOS technology (SHT40)
	Measuring range	0...100%, typ. 20...80% rh
	Resolution	1%
	Measuring accuracy	±2% in 10...90% range at 25 °C.
	Time constant	Approx. 8 s (dew 63%)
Volatile compound gases (VOC)	Method of measurement	CMOS technology (SGP40)
	Measuring range	1...500 VOC index
	Resolution	1 VOC index
	Time constant	< 10 s (dew 63%)

<sup>1)</sup> IAQ: indoor air quality

<sup>2)</sup> VOC: volatile organic compounds

<sup>3)</sup> IEQ: indoor environment quality

<sup>4)</sup> The Bluetooth<sup>®</sup> word mark and logos are registered trademarks of Bluetooth SIG, Inc.

<sup>5)</sup> For explanations, see the "Abbreviations (sensor types and functions)" list

<sup>6)</sup> Thermal objects can affect the measuring accuracy



Motion, presence (PIR)	Method of measurement	Four-element IR detector (PYQ)
	Detection range <sup>7)</sup>	Ø 9 m and approx. 8 × 8 m area at 2.5 m fitting height, 360° tangential and radial
	Field of view (FOV)	120°
	Fresnel lens	34 zones
Brightness (LUX)	Method of measurement	Digital light sensor (APDS)
	Measuring range	0...16 000 lux
	Resolution	1 lux
	Field of view (FOV)	140°
Sound pressure level (SPL)	Measuring range	0...120 dB(A)
	Frequency spectrum	60...20 000 Hz
	Filter type	A weighting
	Sensitivity	-26 dB on the measuring range, ±1 dB tolerance
Technology	Processor	Dual-Core ARM Cortex, 32-bit, 240 MHz
<b>Ambient conditions</b>		
	Operating temperature	0...45 °C
	Storage and transport temperature	-25...70 °C
	Ambient humidity	10...80% rh, no condensation
<b>Display and operation</b>		
	Indicator/display <sup>8)</sup>	LED ring with 12 LEDs, RGB colours (red, green, blue; 24 bit) Configurable animation profiles with 16 predefined colours
	Push-button, capacitive	Identification, service menu, restart, factory reset (front)
<b>Interfaces, communication</b>		
Bluetooth mesh	Network	Bluetooth mesh node (2.4 GHz), up to 8 TTL hops
	Radio frequency	2.4 GHz (5 dBm)
	Range <sup>9)</sup>	Up to 10 m
	Bluetooth mesh profile	FMS 116: Bluetooth mesh relay node, sensor-node (sensor server model, V1.0) FMS 196: Bluetooth mesh, sensor gateway (sensor server + client model, V1.0)
	Localisation	Bluetooth beacon (iBeacon), indoor position determination
Ethernet (FMS 196)	Ethernet network	1 × RJ-45 connector
	10/100 BASE-T(X)	10/100 Mbit/s
	Communication protocol	MQTT client V3.1.1/V5, MQTT(S), TLS V1.2, WS(S) (ISO/IEC 20922)
	NFC (near field communication)	Product data and configuration parameters
	Slide switch <sup>10)</sup>	(De)activation of sound pressure level (rear)
	Serial port	UART for firmware update (point to point), 3.3 V TTL
	WiFi (802.11 a/b/g/n)	WLAN client deactivated, can be temporarily activated for firmware update with app

<sup>7)</sup> As per IEC 63180:2020

<sup>8)</sup> Example application: Presence: LED ring off/blue, room climate / air quality: LED ring green/red

<sup>9)</sup> Depending on building and room structure; planning recommendation: max. 10 m between two Bluetooth mesh nodes

<sup>10)</sup> Switching only takes effect when the power is off

Construction		
Dimensions <sup>11)</sup>	Surface Ø × D: 103 × 30 mm Recessed Ø × D: min. 50 × 35 mm	
Housing material	Thermoplastic (PC, PC-ABS)	
Fitting <sup>12)</sup>	Recessed, surface and hollow ceiling mounting	
Fitting height	2.5...3.5 m (ceiling)	

Standards, directives		
Type of protection	IP20 (EN 60730)	
Protection class	III	
Environment class	3K3 (IEC 60721)	
Plastic fire classification	UL94	
CE/UKCA conformity <sup>13)</sup>	EMC-D 2014/30/EU (CE)	EN 301489 (EMC for radio equipment) EN 60730-1 (residential premises)
	EMC-2016 (UKCA)	See EMC Directive
	LV-D 2014/35/EU (CE)	EN 60730-1, EN 62311
	EESR-2016 (UKCA)	EN 60730-1, EN 62311
	RED 2014/53/EU (CE)	ETSI EN 300 328 (V2.2.2), 2.4 GHz band
	RER-2017 (UKCA)	ETSI EN 300 328 (V2.2.2), 2.4 GHz band
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

### Overview of types

Type	Description	Weight	Housing
FMS116F121	Smart sensor, Bluetooth mesh, TDIG, TFIR, HUM, VOC, PIR, LUX, SPL	0.2 kg	Traffic white (ws)
FMS116F121A	Smart sensor, Bluetooth mesh, TDIG, TFIR, HUM, VOC, PIR, LUX, SPL	0.2 kg	Jet black (sw)
FMS196F121	Smart sensor, MQTT/ETH, Bluetooth mesh, TDIG, TFIR, HUM, VOC, PIR, LUX, SPL	0.3 kg	Traffic white (ws)
FMS196F121A	Smart sensor, MQTT/ETH, Bluetooth mesh, TDIG, TFIR, HUM, VOC, PIR, LUX, SPL	0.3 kg	Jet black (sw)

💡 FMS196F121(A) has the same sensor characteristics as FMS116F121(A). The additional Ethernet interface is used as a sensor gateway for the Bluetooth mesh network and for integrating the sensor network in the automation system with MQTT via TCP/TCP+TLS (MQTT/MQTTS) or via web socket (WWS/WSS)

💡 Housing: matt, traffic white similar to RAL 9016, jet black similar to RAL 9005

### Abbreviations (sensor types and functions)

FOV	Field of view
HUM	Measurement of relative humidity with digital measuring element
LUX	Measurement of illuminance
MQTT/ETH	Ethernet interface for MQTT
PIR	Motion and presence detection with passive infrared sensor
SPL	Measurement of sound pressure level
TDIG	Temperature measurement with digital measuring element
TFIR	Temperature measurement with far infrared temperature element
VOC	Measurement of volatile organic compounds


<sup>11)</sup> For dimensions of accessories, see fitting instructions

<sup>12)</sup> Recessed mounting with box at least 45 mm deep for FMS 116 and at least 61 mm deep for FMS 196 (Ethernet cable bending radius). Mounting in hollow ceiling with spring clamps, at ceiling thickness 2...20 mm hole diameter 68 mm; at 20...25 mm hole diameter 75 mm. Surface mounting with box 28 mm deep for FMS 116 and 53 mm deep for FMS 196

<sup>13)</sup> Explanation of abbreviations in the "Additional technical information" section of the product data sheet and in the appendix to SAUTER product catalogues

## Accessories

Type	Delivery quantity	Description
0940241101	1 pcs.	Mounting plate, recessed, white
0940241101A	1 pcs.	Mounting plate, recessed, black
0940241110	Set of 10	Mounting plate, recessed, white
0940241110A	Set of 10	Mounting plate, recessed, black
0940241201	1 pcs.	Mounting plate, surface, 53 mm, white
0940241201A	1 pcs.	Mounting plate, surface, 53 mm, black
0940241210	Set of 10	Mounting plate, surface, 53 mm, white
0940241210A	Set of 10	Mounting plate, surface, 53 mm, black
0940241301	1 pcs.	Mounting plate, surface, 28 mm, white
0940241301A	1 pcs.	Mounting plate, surface, 28 mm, black
0940241310	Set of 10	Mounting plate, surface, 28 mm, white
0940241310A	Set of 10	Mounting plate, surface, 28 mm, black
0940241420	2 sets of 10	Mounting spring, false ceiling
0940241510	Set of 10	PIR orifice plate, 180° angle (half), white
0940241510A	Set of 10	PIR orifice plate, 180° angle (half), black
0949360014	Set of 10	Terminal, 2-pin, push-in, @2×2P (green)

 The sensors are supplied without mounting accessories. Accessory 0949360014 for power supply connection is supplied



# SAUTER ecos remote I/O modules

The SAUTER ecolink modules are remote modules for flexibly expanding the I/O mix of the ecos504/505 and modulo 6 automation stations. The modules are used to capture digital and analogue signals from sensors and HVAC installations. They control valve actuators, dampers, fans, dimmable lamps or sunshade actuators. The remote fitting reduces the wiring needed for the sensors and actuators.

## Overview of remote I/O modules



Type designation	EY-EM510F001	EY-EM511F001	EY-EM512F001
Product name	ecoLink510	ecoLink511	ecoLink512
Power supply	24 VAC	24 VAC	24 VAC
<b>Inputs/outputs</b>			
Universal inputs	–	–	–
0-10 V / digital inputs	4	4	4
Ni1000/Pt1000 inputs	2	2	–
DIM-10 V outputs	–	–	–
Normally-open relay contacts	3	–	–
Changeover relay contacts	–	–	–
Triac	3	3	2
Analogue outputs	3	3	3
Further information	Page 432	Page 432	Page 432

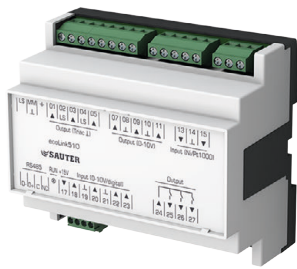




Type designation	EY-EM514F001	EY-EM515F001
Product name	ecoLink514	ecoLink515
Power supply	24 VAC/DC	24 VAC/DC
Inputs/outputs		
Universal inputs	4	4
0-10 V/digital inputs	–	–
Ni1000/Pt1000 inputs	–	–
DIM-10 V outputs	–	–
Normally-open relay contacts	4	–
Changeover relay contacts	–	–
Triac 24 VDC	–	–
MOS-FET 24 VAC/DC	6	6
Analogue outputs	4	4
Further information	Page 434	Page 434



Type designation	EY-EM522F001	EY-EM523F001	EY-EM527F001
Product name	ecoLink522	ecoLink523	ecoLink527
Power supply	230 VAC	230 VAC	230 VAC
Inputs/outputs			
Universal inputs	4	4	4
0-10 V/digital inputs	–	–	–
Ni1000/Pt1000 inputs	–	–	–
Digital/meter inputs	–	–	4
DIM-10 V outputs	4	4	–
Normally-open relay contacts	4	–	4
Changeover relay contacts	–	–	–
Triac	–	–	–
Analogue outputs	4	4	–
Further information	Page 436	Page 436	Page 438



EY-EM510F001

## EY-EM 510...512: Remote I/O module, ecoLink510...512

### Features

- Part of the SAUTER modulo 5 system family
- Regulation, control, monitoring and optimisation of operational systems, e.g. room automation or HVAC engineering
- Remote I/O module for ecos504/505
- Communicative connection of actuators to automation stations
- Can be located up to 500 m from automation stations

### Technical data

#### Power supply

Power supply	24 VAC, $\pm 20\%$ , 50...60 Hz
Current consumption	$\leq 0.2$ A, without load current from Triac and relay outputs
Power consumption	$\leq 6.6$ VA Triac outputs not under load, $\leq 48$ VA Triac outputs with rated load
Dissipated power	$\leq 5$ W (typically approx. 0.5 W)

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...85% rh, no condensation

#### Inputs/outputs

Analogue/digital inputs	Type	0...10 V/O-I
Ni1000/Pt1000-Eingänge	Type	-20...100 °C
Relay outputs	Type	O-I, normally-open contacts
	Load <sup>1)</sup>	230 VAC, 5 A (total max. 10 A)
	Switching frequency	$> 3 \times 10^5$ cycles
Triac outputs	Type	O-I, 24 V~/0.5 A
Analogue outputs	Type	0...10 V, 2 mA

#### Interfaces and communication

Activation	From ecos504/505
Interface	RS-485
Protocol	SLC
Line	4-wire, twisted, shielded
Line length <sup>2)</sup>	Up to 500 m with bus termination

#### Construction

Dimensions W × H × D	105 × 95 × 60 mm
Weight	0.22 kg

#### Standards and directives

	Type of protection <sup>3)</sup>	IP00 (EN 60529)
	Protection class	II (EN 60730-1) for EY-EM 510, III (EN 60730-1) for EY-EM 511, EY-EM 512
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU <sup>4)</sup>	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1

<sup>1)</sup> See the section "Digital outputs (relays)"

<sup>2)</sup> See the section "Engineering notes"

<sup>3)</sup> IP20 with terminal cover (accessory 0900240020); IP40 at front when fitted

<sup>4)</sup> EN 61000-6-2: In order to meet the European Standard, the power cables for the inputs and outputs must not exceed 30 metres in length



### Overview of types

Type	Description
EY-EM510F001	Remote I/O module, 24 V~, 3 relays, 3 Triacs
EY-EM511F001	Remote I/O module, 24 V~, 3 Triacs
EY-EM512F001	Remote I/O module, 24 V~, 2 Triacs

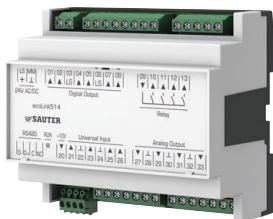
Overview of I/O mix	EY-EM 510	EY-EM 511	EY-EM 512
Relay	3	0	0
Triac	3	3	2
0...10 V Out	3	3	2
Ni1000/Pt1000	2	2	0
0...10 V In, Digital In	4	4	4

### Accessories

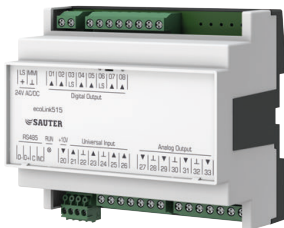
Type	Description
0949360003	Plug-in connector for ecoLink RS-485, 10 pcs.
0900240020	Terminal cover
0450573001	Transformer 230 VAC / 24 VAC, 42 VA; for DIN rail 35 mm, dimensions: 78 × 74 × 52 mm (W×H×D)



## EY-EM 514, 515: Remote I/O module, ecoLink514, 515



EY-EM514FO01



EY-EM515FO01

### Features

- Part of the SAUTER modulo 5 system family
- Remote I/O module for ecos504/505
- Communicative, digital connection of actuators and sensors to automation stations
- Activation of actuators for heated/chilled ceilings, recirculated air and fan coil units, and window blinds
- Inputs for presence detectors, temperature sensors, analogue sensors and window contacts
- Can be located up to 500 m from automation stations

### Technical data

Power supply		
Power supply		24 VAC, $\pm 20\%$ , 50...60 Hz 24 VDC, $\pm 10\%$
Current consumption		Max. 150 mA Without load current of DO (relay, FET) Plus up to 0.5 A / FET
Dissipated power		Max. 2 W (typically 1.2 W)
Ambient conditions		
Operating temperature		0...45 °C
Storage and transport temperature		-25...70 °C
Ambient humidity		10...85% rh, no condensation
Inputs/outputs		
Relay outputs	Type	0-1 relay, normally-open contacts
	Load	24...250 V 5 A resistive load Total max. 10 A
	Switching frequency	$> 3 \times 10^5$ cycles
Semiconductor outputs (FET)	Type	0-1, 24 VAC/DC, 0.5 A, connected to ground max. peak current 1 A at 20 ms
Analogue outputs	Type	0...10 V/2 mA
Universal inputs	Analogue	0...10 V / 0...1 V
	Digital	0-1
	Resistance	100...2500 $\Omega$
	Potentiometer	1...10 k $\Omega$
	Ni1000/Pt1000	-20...100 °C
Interfaces, communication		
Connection to automation station	Activation	From ecos504/505
	Interface	RS-485
	Protocol	SLC
	Line	4-wire, twisted, shielded
	Line length <sup>1)</sup>	Up to 500 m with bus termination
Construction		
	Dimensions W × H × D	105 × 95 × 60 mm
Standards, directives		
	Type of protection <sup>2)</sup>	IP00 (EN 60529)
	Protection class	II (EN 60730-1) for EY-EM 514 III (EN 60730-1) for EY-EM 515
	Environment class	3K3 (IEC 60721)

<sup>1)</sup> See the section "Engineering notes"

<sup>2)</sup> IP20 with terminal cover (accessory 0900240020); IP40 at front when fitted



CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1 (EY-EM 514 only)

### Overview of types

Type	Description	Weight
EY-EM514F001	Remote I/O module, 24 V~/=, 4 relays, 6 DO FET, 4 AO, 4 UI	270 g
EY-EM515F001	Remote I/O module, 24 V~/=, 6 DO FET, 4 AO, 4 UI	220 g

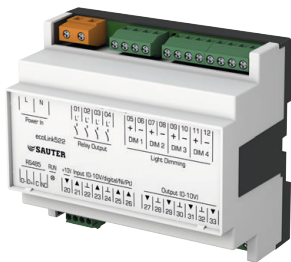
Overview of I/O mix	EY-EM 514	EY-EM 515
Normally-open relay contacts	4	-
Semiconductor FET switch (connected to ground)	6	6
Analogue outputs	4	4
Universal inputs	4	4

### Accessories

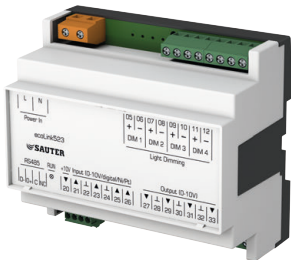
Type	Description
0949360003	Plug-in connector for ecoLink RS-485, 10 pcs.
0900240020	Terminal cover
0450573001	Transformer 230 VAC / 24 VAC, 42 VA; for DIN rail 35 mm, dimensions: 78 × 74 × 52 mm (W×H×D)



## EY-EM 522, 523: Remote I/O module, ecoLink522, 523



EY-EM522F001



EY-EM523F001

### Features

- Part of the SAUTER modulo 5 system family
- Remote I/O module for ecos504/505
- Switching and dimming of up to four lamps
- Can be located up to 500 m from the automation station

### Technical data

#### Power supply

Power supply	230 VAC ±10%, 50...60 Hz
Current consumption	Max. 20 mA (typically 14 mA) Without load current of relays
Dissipated power	Max. 2.5 W (typically 1.5 W)

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...85% rh, no condensation

#### Inputs/outputs

Relay outputs	Type	0-I relay, NO contacts 230 VAC with voltage applied
	Load	230 VAC / 5 A resistive load Total max. 10 A
	Switching frequency	> 3 × 10 <sup>5</sup> cycles
DIM-10V outputs	Type	1...10 V passive output for electronic ballasts as per EN 60929 Electrically isolated
Analogue outputs	Type	0...10 V / 2 mA
Universal inputs	Analogue	0...10 V / 0...1 V
	Digital	0-I
	Resistance	100...2500 Ω
	Potentiometer	1...10 kΩ
	Ni1000/Pt1000	-20...100 °C

#### Interfaces and communication

Connection to automation station	Activation	From ecos504/505
	Interface	RS-485
	Protocol	SLC
	Line	4-wire, twisted, shielded
	Line length <sup>1)</sup>	Up to 500 m with bus termination

#### Construction

Dimensions W × H × D	105 × 95 × 60 mm
Weight	0.32 kg

#### Standards and directives

	Type of protection <sup>2)</sup>	IP00 (EN 60529)
	Protection class	II (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU <sup>3)</sup>	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1

<sup>1)</sup> See the section "Engineering notes"

<sup>2)</sup> IP20 with terminal cover (accessory 0900240020); IP40 at front when fitted

<sup>3)</sup> EN 61000-6-2: In order to meet the European Standard, the power cables for the inputs and outputs must not exceed 30 m in length



### Overview of types

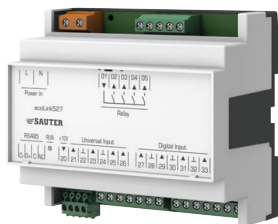
Type	Description
EY-EM522F001	Remote I/O module, 230 V~, 4 normally-open relay contacts, 4 DIM outputs
EY-EM523F001	Remote I/O module, 230 V~, 4 DIM outputs

Overview of I/O mix	EY-EM 522	EY-EM 523
Normally-open relay contacts (with voltage applied)	4	-
DIM-10V	4	4
Analogue outputs	4	4
Universal inputs	4	4

### Accessories

Type	Description
0949360003	Plug-in connector for ecoLink RS-485, 10 pcs.
0900240020	Terminal cover





EY-EM527F001

## EY-EM 527: Remote I/O module, ecoLink527

### Features

- Part of the SAUTER modulo 5 system family
- Remote I/O module for ecos504/505
- Communicative, digital connection of actuators and sensors to automation stations
- Controlling ventilation dampers, motorised windows and blinds
- Inputs for positional feedback, presence detectors, window contacts
- Universal inputs for temperature measurement, 0-10 V signals, potentiometer
- Meter inputs for recording energy pulses up to 10 Hz
- Can be located up to 500 m from automation stations

### Technical data

#### Power supply

Power supply	230 VAC $\pm$ 10%, 50...60 Hz
Current consumption	Max. 15 mA
	Without load current of relays
Dissipated power	Max. 2.5 W (typically 1.5 W)

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-25...70 °C
Ambient humidity	10...85% rh, no condensation

#### Inputs/outputs

Relay outputs	Type	0-1 relay, normally-open contacts
	Load	24...250 VAC 5 A resistive load Total max. 10 A
	Switching frequency	$> 3 \times 10^5$ cycles
Universal inputs	Analogue	0...10 V / 0...1 V
	Digital	0-1
	Resistance	100...2500 $\Omega$
	Potentiometer	1...10 k $\Omega$
	Ni1000/Pt1000	-20...100 °C
Digital inputs	Digital	0-1
	Meter	10 Hz (pulse duration 50 ms)

#### Interfaces and communication

Connection to automation station	Activation	From ecos504/505
	Interface	RS-485
	Protocol	SLC
	Line	4-wire, twisted, shielded
	Line length <sup>1)</sup>	Up to 500 m with bus termination

#### Construction

Dimensions W × H × D	105 × 95 × 60 mm
Weight	0.35 kg

#### Standards and directives

Type of protection <sup>2)</sup>	IP00 (EN 60529)
Protection class	II (EN 60730-1)
Environment class	3K3 (IEC 60721)

<sup>1)</sup> See the section "Engineering notes"

<sup>2)</sup> IP20 with terminal cover (accessory 0900240020); IP40 at front when fitted





CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
	Low-Voltage Directive 2014/35/EU	EN 60730-1

### Overview of types

Type	Description
EY-EM527F001	Remote I/O module, 230 V~, 4 normally-open relay contacts, 4 universal and 4 digital inputs

Overview of I/O mix	EY-EM 527
Normally-open relay contacts	4
Universal inputs	4
Digital inputs / meter inputs (10 Hz)	4

### Accessories

Type	Description
0949360003	Plug-in connector for ecoLink RS-485, 10 pcs.
0900240020	Terminal cover



# SAUTER modulo power supply units

Efficient switched-mode power supply units for supplying power to automation stations, I/O modules and field devices in building automation. Optimal for use with the SAUTER ecos and modulo 6 system families.

- Variable input voltage
- Output protected against short circuit
- Flat DIN-rail housing for small distribution box

## Overview of power supply units



Type designation	EY-PS031F011	EY-PS031F021	EY-PS031F041
Nominal rating	30 W	60 W	100 W
Nominal current	1.25 A	2.5 A	4.16 A
Efficiency	Typ. 86.5%	Typ. 91.7%	Typ. 92.1%
Dimensions W × H × D	36 × 94 × 68 mm	52.5 × 95 × 68 mm	72 × 93 × 68 mm
Weight	0.13 kg	0.21 kg	0.24 kg
Further information	Page 441	Page 441	Page 441

## EY-PS 031: Power supply, DIN rail, 230 V / 24 VDC

### Features

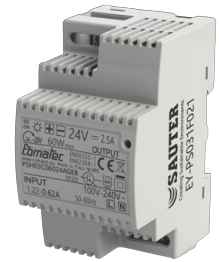
- Optimum power supply for the SAUTER modulo and ecos system families and the SAUTER field devices
- Modern, efficient switching power supply with quasi-resonant flyback converter principle
- High efficiency and minimum idle power (standby)
- Variable input voltage
- Controlled output voltage with tolerance of  $\pm 3\%$  with mains voltage fluctuations of  $\pm 10\%$
- Output short-circuit proof with HICCUP mode, without overshoot when switching on
- Compact DIN rail housing ideal for DIN rail mounting in standard small distribution boxes or cabinets
- High reliability

### Technical data

Power supply	
Input voltage (SELV)	110...240 VAC, 45...65 Hz
Ambient conditions	
Operating temperature	-10...50 °C
Storage and transport temperature	-40...85 °C
Ambient humidity	0...95% rh, no condensation
Output	
Output voltage	24 VDC $\pm 3\%$
Setting range	24...28 VDC
Overload behaviour <sup>1)</sup>	HICCUP mode
LED indicator	Green (device ready for operation)
Construction	
Connection terminals	Screw terminals 0.5...2.5 mm <sup>2</sup> rigid/flexible
Fitting	DIN rail as per EN 60715 Type TH 35 × 7.5/15 DIN rail housing DIN 43880
Standards, directives	
Type of protection	IP20 (EN 60529)
Protection class	II (EN 60730-1)
CE conformity according to	EMC Directive 2014/30/EU EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3, EN 55032 Class B, EN 55035
	Low-Voltage Directive 2014/35/EU EN 62368-1, EN 60335
	RoHS-D 2011/65/EU & 2015/863/EU (CE) EN IEC 63000



EY-PS031F011



EY-PS031F021



EY-PS031F041

<sup>1)</sup> HICCUP: Halt or inhibit on overcurrent and overvoltage protection



**Overview of types**

Type	Nominal rating	Nominal current	Efficiency	Dimensions W × H × D	Weight
EY-PS031F011	30 W	1.25 A	86.5%	36 (2 HP) × 94 × 68 mm	130 g
EY-PS031F021	60 W	2.5 A	91.7%	52.5 (3 HP) × 95 × 68 mm	210 g
EY-PS031F041	100 W	4.16 A	92.1%	72 (4 HP) × 93 × 68 mm	240 g

💡 1 HP = one horizontal pitch with 17.5 mm

Type	Manufacturer/supplier's original type designation: Comatec® PSH series
EY-PS031F011	PSH02P03024AGEB
EY-PS031F021	PSH03C06024AGEB
EY-PS031F041	PSH04P10024AGEB

💡 The original data sheets from Comatec Hi-Tech S.r.l., [www.comatec-hitech.com](http://www.comatec-hitech.com), are legally binding

# SAUTER communication modules

The devices of the SAUTER moduNet series enable the novaNet bus system to be integrated into parent IT networks. A direct Ethernet interface and an RS-232 serial port are provided for this purpose.

## Overview of communication modules



Type designation	EY-BU292F001	EYZ291F001
Product name	moduNet292	novaNet291
Property	Connection of novaNet to Ethernet/IP	Router
Fitting	Cabinet model	Cabinet model
Further information	Page 444	Page 446



EY-BU292F001

## EY-BU 292: novaNet-Ethernet interface, moduNet292

### Features

- Part of the SAUTER EY-modulo 2 system family
- Bus access device for novaNet system bus with Ethernet interface
- To integrate novaNet stations (EY3600, EY-modulo 2) into 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 the internet
- TCP/IP communication
- Communication with two-wire novaNet system bus
- RJ-45 plug for Ethernet 10 Base-T (10 Mbit/s)
- Fixed IP addressing
- RS-232 interface for parameterisation and updating
- Five LEDs for Error, novaNet Send, Power, Activity, Link

### Technical data

Power supply		
Power supply		230 V~, +10%, -15% 115 V~, +10%, -15% (50...60 Hz)
Power consumption		6 VA, < 7 W
Ambient conditions		
Operating temperature		0...45 °C (32...113 °F)
Storage and transport temperature		-25...70 °C (-13...158 °F)
Ambient humidity		10...85% rh, no condensation
Interfaces, communication		
Ethernet		1 × RJ-45 socket 10 Mbit/s (10 Base-T)
RS-232 serial port		1 × DB-9 (male) as per 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)
Construction		
Fitting		DIN rail mounting
Standards, directives		
Type of protection		IP00 (EN 60529); IP20 (EN 60529)
Protection class		I (EN 60730-1)
Software class		EN 60730-1 Appendix H
CE conformity according to		
EMC Directive 2014/30/EU		EN 61000-6-1, EN61000-6-2, EN 61000-6-4
Low-Voltage Directive 2014/35/EU		EN 60950-1

### Overview of types

Type	Description	Dimensions W × H × D	novaNet	Weight
EY-BU292F001	panel-fitted model	193 × 131 × 41 mm	1 × a/b terminal	650 g



## Accessories

### Software

Type	Description
GZS100F599	CASE Tools CD, latest version (CASE TPC, CASE HWC, CASE Sun, novaNet292 SW etc.)

### Connecting cables

Type	Description
0367862001	novaNet RJ-11 to RJ-11: 1.5 m
0367862002	novaNet RJ-11 to RJ-11: 2.9 m
0367862003	novaNet RJ-11 to RJ-11: 6.0 m
0367842002	Ethernet RJ-45 to RJ-45: 1.5 m
0367842003	Ethernet RJ-45 to RJ-45: 2.9 m
0367842004	Ethernet RJ-45 to RJ-45: 6.0 m
0386507001	Ethernet crossover RJ-45 to RJ-45: 3.0 m

### General

Type	Description
0374509001	Connector, 3-pin, packaged
0010240105	Cable housing for 0374509 001, cable cord grip
0374677001	Installation kit for 2-DIN rail mounting





EYZ291F001

## EYZ 291: Router, novaNet291

### Features

- Part of the EY-modulo 2 and EY3600 system family
- Bus access device for novaNet system bus with RS-232 interface
- For configuring EY-modulo 2 and EY3600 stations with SAUTER CASE applications
- For management-level software and all SAUTER novaPro visualisations and novaNet OPC servers
- Direct communication from novaNet stations to PC with a serial connection
- Remote access with router function via RS-232 modem
- Remote monitoring in routel mode via RS-232 modem (i.e. automatic uploading of events)
- Communication using two-wire novaNet system bus
- Communication with RS-232-compatible pairs of devices (dial-up modem, ISDN adapter, electronic surge protector, OWG converter, wireless modem etc.)
- 1 MB buffer for separating the time characteristics of novaNet and RS-232 interface

### Technical data

Power supply		
Power supply		230 V~, 50/60 Hz
Max. current consumption		10 VA
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
Interfaces and communication		
COM port (DTE)		DB9 plug
novaNet		1 × a/b terminal, 1 × RJ-11 socket
DIP switch		4 (baud rate, router/routel function)
Construction		
Weight		0.99 kg (2.2 lb)
Standards and directives		
CE conformity according to	Type of protection	
	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4

### Overview of types

Type	Description
EYZ291F001	novaNet router

### Accessories

Type	Description
0367862001	Connecting cable to novaNet291 or moduNet292 automation station 1.5 m (4.9 ft)
0367862002	Connecting cable to novaNet291 or moduNet292 automation station 2.9 m (9.5 ft)
0367862003	Connecting cable to novaNet291 or moduNet292 automation station 6.0 m (19.7 ft)







# Management level



## **Building and energy management at any time, from anywhere.**

SAUTER Vision Center ensures optimum system monitoring and continuous operation. Energy management and maintenance modules offer additional benefits for facility management to ensure energy-efficient operation.

SAUTER Mobile Building Services (MBS) is a SAUTER Cloud solution which is used in numerous applications for buildings and premises. Room conditions can be controlled in combination with the Mobile Room Control (MRC) app.

SAUTER Digital Services allow secure remote access to plants, continuous analysis of buildings and access to key data.

## Management level

### Software

YZP 480...495: SAUTER Vision Center	450
YCS 200...210: Mobile Building Services (MBS)	452
YCS 320...325: Vision Services	454
YCS 451...453: Digital Services - Remote Management	455
YCS451F001: Remote Management connector	456





## YZP 480...495: SAUTER Vision Center

### Central building management and visualisation of decentralised installations

SAUTER Vision Center (SVC) is a web-based building management and integration platform in the HTML5 standard for running and visualising the building operation. SVC is suitable for both single buildings and entire real estate parks or distributed premises. Typical areas of use are office complexes, business parks, college and industrial campuses, airports, railway stations, hospitals or internationally distributed branch networks. The modular concept allows the software to be extended precisely to meet the customer requirements of every installation. Therefore, SVC gathers all of the data for the entire building and energy management and makes it available to the user from anywhere at all times.

In the energy monitoring, meters and other information can be mapped, thus making daily, weekly, monthly and yearly consumption from the plants, buildings and properties automatically available. Specific energy widgets, KPIs and energy labels and other dashboard widgets are used to display the energy values and consumption.

Since version 7, a powerful building analytics and energy management module (AEM) has been integrated in SVC, which already contained all the energy monitoring functions. In addition, with chart types such as scatter and carpet plots, but also SANKEY and histogram displays with calculations of the Gaussian distribution, analytic tools are available to carry out energy inspections, to optimise systems in transition phases such as spring and autumn, for example, and thus to meet energy and CO<sub>2</sub> reduction requirements, as demanded for companies in the context of certifications in accordance with ISO 50001.

The additional online analytics integrated in the AEM enables immediate information in dashboards as KPIs (traffic lights, circular or linear gauge etc.) or alarm messages in the event of abnormal plant operation. In this way, deviations from operating patterns and setpoints, as well as oscillations, are detected automatically and in real time.

The maintenance module for SVC is used for optimum planning and efficient performance of servicing and facility management tasks. Here, support is also provided by plant asset management, the definition of maintenance intervals and the automatic triggering of maintenance cycles based on building management information.

With energy monitoring, energy management and the building analytics and maintenance modules, SVC provides comprehensive information and tools to ensure continuous and constantly optimised and thus efficient and sustainable plant and building operation.

Thanks to SVC's simple and intuitive operation, starting, planning and changing predefined building automation procedures is easy with the scenario manager. This allows users with PC skills to set rooms, for example, to Comfort or ECO mode at precise times, and to plan and log them via calendar views.

For the integration of different equipment systems, SVC supports the manufacturer-independent BACnet standard, as well as connection to OPC UA servers, for integrating different protocols in the building automation. Thus, SVC is the first building and energy management system (BEMS) certified with a cross-platform profile B-XAWS 1.18. SVC supports device profiles B-AWS, B-ALWS, B-ACCWS and thus profile B-XAWS. As of SVC 7.1, the BACnet/SC protocol is also supported. It enables the encryption of the data traffic based on certificates. Ideally, this ensures a secure connection from local sites via BACnet/SC routers to Vision Services (SVC in the cloud) with full BACnet functionality.

In addition to the OPC UA client, operation as an OPC UA server is also implemented. Furthermore, an IoT client is integrated that supports the connection of room controllers and automation stations via MQTT. TLS encryption ensures secure communication from decentralised automation stations, e.g. to connect SAUTER ecos or modulo 6 stations via the internet with an SVC located in the cloud.

Direct connection of moduWeb Vision via web services and SAUTER novaNet plants via OPC is available for comprehensive support of the integration options. This makes it possible to connect existing systems when converting to the new generation of building management software without having to replace the existing automation level.

SVC sends alarms directly via e-mail or SMS to mobile phones according to the responsibilities assigned. With its many user-defined settings and customisable dashboards, SVC guarantees maximum user convenience.

SVC can be deployed in virtual IT environments and uses Microsoft SQL databases. These modern architectures and infrastructures enable topics such as high availability, redundancy via cluster systems and



corresponding load assignments (load balancing) to be implemented and used.<sup>1)</sup> For optimum integration of the user structures of a company, it is possible to connect SVC to an existing LDAP server that additionally supports the latest communication types (LDAP signing & channel binding).

## Overview of types

### **i** SVC licences and options

Type	Description
YZP480F000	Provision of all codes in a single ticket
YZP480F098	Latest SVC version on a USB stick
YZP480F200	Basic licence for 500 addresses with maintenance
YZP481F200	Additional 100 objects with maintenance
YZP481F210	Additional 1000 objects with maintenance
YZP481F220	Additional 10000 objects with maintenance
YZP481F230	Additional 25000 objects with maintenance
YZP482F101	Termination of the software maintenance
YZP482F210	Resumption of the software maintenance
YZP483F300	novaNet connection (YZP487F201 is a prerequisite)
YZP484F200	Licence key for VM
YZP484F310	Migration Manager for SVC from nP32 and nPO
YZP484F400	Vision Center Studio
YZP485F201	Energy monitoring with maintenance
YZP485F203	Analytics and energy management with maintenance
YZP485F210	Maintenance module with software maintenance
YZP485F220	Scenario manager with software maintenance
YZP485F230	Touch panel server with 5 clients
YZP485F231	Additional 5 touch panel clients
YZP485F240	Reports and designer
YZP486F205	Upgrade from energy monitoring to analytics and energy management
YZP487F201	OPC UA client for SVC with maintenance
YZP487F203	OPC UA server with maintenance
YZP487F205	SVC MQTT client with maintenance (price per MQTT broker connection)
0900360001	Hardlock (dongle) for VM

<sup>1)</sup> Scalable via MS SQL Express up to SQL Enterprise depending on the specified properties, virtual IT environments and high-availability VMware & SQL Enterprise.



## YCS 200...210: Mobile Building Services (MBS)

### Features

- Connects the local building management, including the integral room automation, with the room operation via smartphone or tablet
- Control of lighting, temperature, window blinds and ventilation (depending on the building equipment)
- Direct access to information such as caretaker services, cafeteria schedule and other information
- Direct notification from the MRC app of caretaker services and other services such as comfort notifications, repair and cleaning requests, meeting room beverage orders, hotel and boarding house service requests
- Reservations for meeting rooms, mobile workstations, parking spaces or equipment items (assets)
- E-mail invitations including reservations directly from the MRC app
- Guest invitations: Sending temporary access codes for the agreed meeting period
- Integrated Indoor Navigation for employees and guests via MRC app
- Access and rights management via unique access codes for each device based on user profiles and dedicated room assignments
- Room identification and user access via iBeacon badges for smartphones and tablets (iOS and Android)
- Perfect for use in office buildings with meeting rooms and mobile workstations, hotels with business facilities, suites and rooms, as well as upscale apartment buildings
- High level of security and up-to-date functionality thanks to Microsoft Azure technology
- MRC app available free of charge in the Google Play Store and the Apple App Store

### Overview of types

Type	Description
YCS200F300	MRC app subscription per apartment (1-5 access codes per apartment), price per apartment per year, annual subscription based on monthly use of the master access code per apartment, invoice date 1 year after project activation by basic subscription, automatically renewed
YCS200F320	MRC app subscription (without indoor localisation), price per device (badge) per room, annual subscription based on monthly use of access codes (badges), invoice date 1 year after project activation by basic subscription, automatically renewed
YCS210F300	MRC app subscription (with indoor localisation via iBeacon), price per device (badge) including access profile for rooms, annual subscription based on monthly use of access codes (badges), invoice date 1 year after project activation by basic subscription, automatically renewed
YCS200F200	MBS Cloud Basic subscription for up to 50 rooms/apartments, annual subscription with automatic renewal
YCS200F210	MBS Cloud Basic subscription for up to 150 rooms/apartments, annual subscription with automatic renewal
YCS200F220	MBS Cloud Basic subscription for up to 300 rooms/apartments, annual subscription with automatic renewal
YCS200F230	MBS Cloud Basic subscription for up to 500 rooms/apartments, annual subscription with automatic renewal
YCS200F240	MBS Cloud Basic subscription for up to 1000 rooms/apartments, annual subscription with automatic renewal
YCS210F200	MBS Cloud Basic subscription for office with indoor localisation for up to 50 iBeacons, annual subscription with automatic renewal to use YCS210F300 access codes
YCS210F210	MBS Cloud Basic subscription for office with indoor localisation for up to 150 iBeacons, annual subscription with automatic renewal to use YCS210F300 access codes
YCS210F220	MBS Cloud Basic subscription for office with indoor localisation for up to 300 iBeacons, annual subscription with automatic renewal to use YCS210F300 access codes
YCS210F230	MBS Cloud Basic subscription for office with indoor localisation for up to 500 iBeacons, annual subscription with automatic renewal to use YCS210F300 access codes
YCS210F240	MBS Cloud Basic subscription for office with indoor localisation for up to 1000 iBeacons, annual subscription with automatic renewal to use YCS210F300 access codes
YCS210F250	MBS Cloud Basic subscription for office with indoor localisation for over 1000 iBeacons, annual subscription with automatic renewal to use YCS210F300 access codes
YCS211F200	MBS Cloud Booking option, subscription per MS Exchange Online
YCS220F200	MBS Cloud Indoor Navigation option, subscription for up to 100 iBeacons
YCS220F210	MBS Cloud Indoor Navigation option subscription for up to 200 iBeacons



Type	Description
YCS220F220	MBS Cloud Indoor Navigation option subscription for up to 300 iBeacons
YCS220F230	MBS Cloud Indoor Navigation option subscription for up to 500 iBeacons
YCS220F240	MBS Cloud Indoor Navigation option subscription for up to 1000 iBeacons
YCS221F000	RTLS engineering support for Indoor Navigation per day excl. expenses for on-site work





## YCS 320...325: Vision Services

### Vision Services: Powerful, efficient energy and building management from the cloud

SAUTER Vision Services are comprehensive, powerful modules from the SAUTER Cloud for energy monitoring, building management and energy management and analytics. The centralised approach of cloud operation means that the latest functions and extensions are always available for all building and energy management applications, without the need for time-consuming installations and migrations. Additionally, it saves the investment costs in hardware and software and shifts these investments and their support to the cloud. IoT clients are used to securely transfer local energy and automation data by means of the MQTT protocol with TLS encryption.

#### Features

- Vision Services Energy Monitoring with dashboards, diagrams, energy navigation, meter overview with correction and offset functions for meter replacement, alarms, reports and data import and export management
- Vision Services Building with dashboards, diagrams, alarms, object lists, scenario manager, reports and export function
- Vision Services Energy Management & Analytics with additional diagrams for energy and plant analysis such as SANKEY, carpet & scatter plots. Histogram plots with Gaussian distribution function and analytics functions for automatic detection of operating pattern deviations, setpoint deviations and oscillations. All Vision Services Energy Monitoring functions are included.

All Vision Services can be booked individually or in combination. For example, Vision Services Energy can be used to operate dedicated monitoring in the cloud that runs independently of the local building management. However, complete building and energy management with analytics from the cloud can also be booked as a subscription.

#### Overview of types

Type	Description
YCS320F200	Vision Services Building, subscription incl. 1 admin & 1 standard user, 1 MQTT client
YCS321F200	Vision Services Energy Monitoring, subscription incl. 1 admin & 1 standard user, 1 MQTT client
YCS321F210	Vision Services Energy Management & Analytics, subscription incl. 1 admin & 1 standard user, 1 MQTT client
YCS324F200	Object package 50 from 0...500
YCS324F201	Object package 100 from 500...1000
YCS324F202	Object package 100 from 1000
YCS324F220	Additional standard user
YCS325F010	Cloud Connection Service (project & user set-up) incl.1 MQTT connection
YCS325F020	Additional MQTT connection per device
YCS325F400	Cancellation of project subscription; no option of single item cancellation

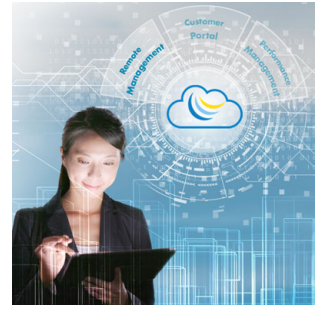




## YCS 451...453: Digital Services – Remote Management

### Features

- Secure access to decentralised systems and applications
- Two-factor authentication via e-mail or SMS
- Fully transparent and secure network connection via browser and Windows client
- Remote access:
  - To applications such as SAUTER Vision Center or moduWeb Unity (via http/https)
  - To PCs and servers and their applications (via RDP/VNC)
  - Via VPN tunnel (Layer 2):
    - The local PC appears in the remote network structure (use of all engineering and network tools from the local PC in the remote system)
- Rights administration with user and group management for the assignment of rights for individual systems and buildings, right up to distributed properties



### Overview of types

Type	Description
YCS451F010	G100 Remote Management connector with 2 Ethernet ports, incl. pre-installed OS and VPN licence
YCS451F002	3G/4G option for YCS451F001 (Huawei e3372 modem)
YCS452F200	Remote Management basic connector subscription incl. 5 secured connections
YCS452F210	Remote Management connector subscription, additional 5-pack of secured connections
YCS452F220	Remote Management connector subscription, 5-pack of time-limited, unauthenticated links
YCS453F200	End user subscription, access to all predefined connections via dashboard and Windows client
YCS453F203	End user + 1 VPN channel subscription, access to all pre-defined connections via dashboard and Windows client, incl. VPN tunnel (layer 2 and 3)
YCS453F210	Engineering user subscription with full access to all protocols incl. VPN tunnel connection (layer 2) and Windows client
YCS453F220	Admin user subscription, full access to all protocols incl. VPN tunnel connection (layer 2) and Windows client, incl. user & group management

- 💡 The term of the connector subscription (YCS452F2\*\*) is 12 months with automatic renewal. YCS452F200 must be ordered together with the universal gateway.
- 💡 The user subscriptions (YCS453F2\*\*) of the SAUTER Cloud for Remote Management are monthly subscriptions with automatic monthly renewal.



## YCS451F001: Remote Management connector

### Features

- VPN gateway for SAUTER Digital Services – Remote Management
- Integrated web server for configuration and monitoring
- MicroSD, USB, watchdog, LED indicator
- Painted aluminium DIN rail housing as per DIN 43880

### Technical data

#### Power supply

Power supply	12...24 V=, 2 A
--------------	-----------------

#### Parameters

Connection	Screw terminals, plug-in terminal block
Battery (buffer: RTC)	CR2032, backup for up to 7 days

#### Ambient conditions

Operating temperature	0...45 °C
Storage and transport temperature	-20...70 °C
Ambient humidity	10...80% rh, no condensation

#### Function

Web server	Yes (Node.js, V 7.8.x)
VPN/access point	Yes (Open SSL, L2TP)
DHCP, DNS services	Yes, IPv4 and IPv6

#### Architecture

Processor	H3 Quad-Core Cortex-A7
RAM (memory)	1 GB (Low Power DDR2)
Memory	microSDHC, 64 GB included, includes OS and software USB up to 64 GB
Operating system	Embedded Linux (on SD card)

#### Interfaces, communication

Ethernet/LAN	Ethernet network	1 × RJ45 connector, 10/100 BASE-T(X)
	Transmission rate	10/100 Mbit/s
Wireless	WLAN	3 × USB type C (for accessory YCS451F002)

#### Construction

Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715
Dimensions W × H × D	71 (4 HP) × 102 × 62 mm
Weight	300 g

### Overview of types

Type	Description
YCS451F001	SAUTER Remote Management connector – universal gateway, incl. pre-installed OS and VPN licence

 The device can only be ordered together with a connector subscription, see accessories.

### Accessories

Type	Description
YCS451F002	3G/4G option for YCS451F001 (Huawei e3372 modem)
YCS452F200	Remote Management basic connector subscription incl. 5 secured connections



Type	Description
YCS452F210	Remote Management connector subscription, additional 5-pack of secured connections
YCS452F220	Remote Management connector subscription, 5-pack of time-limited, unauthenticated links
YCS453F200	End user subscription, access to all predefined connections via dashboard and Windows client
YCS453F210	Engineering user subscription with full access to all protocols incl. VPN tunnel connection (layer 2) and Windows client
YCS453F220	Admin user subscription, full access to all protocols incl. VPN tunnel connection (layer 2) and Windows client, incl. user & group management

💡 The term of the connector subscription (YCS452F2\*\*) is 12 months with automatic renewal. YCS452F200 must be ordered together with the universal gateway.

💡 The user subscriptions (YCS453F2\*\*) of the SAUTER Cloud for Remote Management are monthly subscriptions with automatic monthly renewal.

### Related documents

Document number	Type	Language	Title
D100471121	Datenblatt	de	Remote Management
D100471122	Data sheet	en	Remote Management
D100471123	Données techniques	fr	Remote Management

# Engineering tools



## Project engineering made easy.

SAUTER CASE Suite is used to carry out the technical project processing for both building management systems and conventional control systems. Energy-efficient strategies and methods are already incorporated in the extensive and proven library. CASE Suite is also highly flexible when it comes to adapting solutions to special circumstances, so that even very unusual customer installations can be efficiently operated in terms of energy.

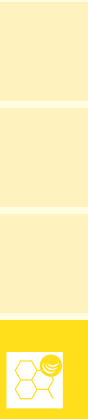
# Engineering tools

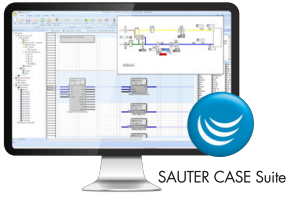
## Engineering

GZS 100, 150: CASE Suite

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GZS 100, 150

## GZS 100, 150: CASE Suite

### Features

- Supports the whole process of a project, from the planning stage to the engineering, commissioning and servicing phases
- 'Nerve centre' for the project data and software programs
- Seamless integration of the solution libraries
- Safeguards the workflow between the specialist sub-programs (CASE Builder, CASE Engine, CASE Vision)
- Planning and documentation of the system technology
- Commercial and technical project processing
- Creates the regulation, control and optimisation functions
- Puts the automation stations into service
- Based on the Microsoft Windows operating system
- Multi-lingual program (German, English and French)
- Licence is required for full use of the program

### Technical data

#### System requirements

System requirements		
Hardware	Processor	Intel I7 (recommended)
	Clock rate	2.4 GHz or higher
	RAM memory	Min. 8 GB RAM – recommended 16 GB RAM
	Storage capacity	Min. 20 GB free memory space
	Connections	USB (operating the VM licence dongle, program installation from USB stick), network
Software <sup>1)</sup>	Operating system	Windows 10 Pro (x64) or higher, web browser, MS IIS (Internet Information Services) installed
	Additional software <sup>2)</sup>	MS Office 2010 (32-bit) or higher Graphics program [CorelDRAW Graphics Suite]

### Overview of types

**i** All licences delivered without CASE Suite application software

Type	Description	Running time
GZS150F010	CASE Suite Enterprise licence with maintenance [annual fees]	Unlimited
GZS150F011	CASE Suite Enterprise licence, excluding maintenance	Unlimited
GZS150F020	CASE Suite Enterprise time licence	365 days from activation
GZS150F021	CASE Suite Partner time licence	365 days from activation
GZS150F022	CASE Suite Designer time licence	365 days from activation
GZS100F699	CASE Suite, current software version on data carrier	-

### Accessories

Type	Description
0900360001	Hardlock VM

<sup>1)</sup> Compatible versions on request.

<sup>2)</sup> To be able to use all the functions of CASE Suite Enterprise, we recommend installing the following software.



# Abbreviations used

The following abbreviations are used in the technical data under "Standards, directives":

ATEX-D	Explosive Atmospheres Directive 2014/34/EU
ATEX-2016	Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016 (UK)
CAN/CSA	Standards and norms of the Canadian CSA Group
CE	Manufacturer's Declaration of Conformity for the European Union (EU)
PED	Pressure Equipment Directive 2014/68/EU
EAC	Eurasian Conformity (Customs Union of Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan)
EESR-2016	Electrical Equipment (Safety) Regulations 2016 (UK)
EMC-D	Electromagnetic Compatibility Directive 2014/30/EU
EMC-2016	Electromagnetic Compatibility Regulations 2016 (UK)
Machinery-D	Machinery Directive 2006/42/EC
LVD	Low Voltage Directive 2014/35/EU
PESR-2016	Pressure Equipment (Safety) Regulations 2016 (UK)
RED	Radio Equipment Directive 2014/53/EU
RER-2017	Radio Equipment Regulations 2017 (UK)
RoHS-D	Restriction of Hazardous Substances in Electrical and Electronic Equipment Directives 2011/65/EU & 2015/863/EU
RoHS-2012	Restriction of Hazardous Substances (RoHS) Regulations 2012 (UK)
SMSR-2008	Supply of Machinery (Safety) Regulations 2008 (UK)
TÜV	Technical Inspection Association (technical safety inspection with certificate)
UKCA	Manufacturer's Declaration of Conformity for the United Kingdom of Great Britain and Northern Ireland (UK)
UL	Underwriters Laboratories (organisation for testing products, components, materials)
WEEE-D	Waste Electrical and Electronic Equipment Directive 2012/19/EU
WEEE-2013	Waste Electrical and Electronic Equipment Regulations 2013 (UK)

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