

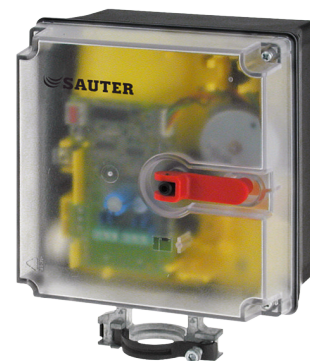
# AVM 125S: Valve actuator with SAUTER Universal Technology (SUT)

## Improving energy efficiency

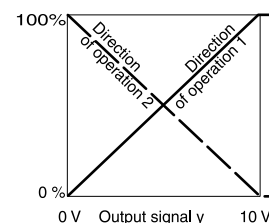
Electric cut-off and self-adjustment to save energy

## Features

- Activation of through and 3-way valves of the VUN/BUN, VUD/BUD and VUE/BUE series, DN 15 to DN 50.
- 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, power-dependent cut-off
- Automatic recognition of applied control signal (constant or switched)
- Coding switches for selecting characteristic and running time
- Type of characteristic (linear/quadratic/equal-percentage) can be set on the actuator
- Automatic adaptation to valve stroke
- Direction of operation can be selected via screw terminals when making the electrical connection
- Maintenance-free gear unit
- Manual positioning with external crank handle with motor cut-off
- LED display/indicators
- Electrical connections (max. 1.5 mm<sup>2</sup>) with screw terminals
- Cable inlet M20 × 1.5
- Fitting vertically upright to horizontal, not suspended



AVM125SF132



## Technical data

|                          |   |  |
|--------------------------|---|--|
| Power supply             |   |  |
|                          | Power supply                              | 24 V~, ±20%, 50...60 Hz                |
|                          | Power consumption                         | 5.0 W, 8.4 VA                          |
| Parameters               |   |  |
|                          | Running time                              | 30/60/120 s                            |
|                          | Actuating power                           | 800 N                                  |
|                          | Actuator stroke                           | 0...8 mm                               |
| Positioner <sup>1)</sup> | 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       |   |  |
|                          | Admissible ambient temperature            | −10...55 °C                            |
|                          | Admissible ambient humidity               | < 95% rh, no condensation              |
|                          | Temperature of medium                     | Max. 100 °C                            |
| Construction             |   |  |
|                          | Weight                                    | 2.1 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>          | IP 54 (EN 60529)                       |
|                          | Protection class                          | III (IEC 60730)                        |

<sup>1)</sup> Also for 2-point or 3-point, depending on connection

<sup>2)</sup> Type of protection IP 54 only with M20 cable gland



|                           |  |
|---------------------------|--|
| EMC directive 2004/108/EC | EN 61000-6-1, EN 61000-6-2<br>EN 61000-6-3, EN 61000-6-4 |
| Software                  | A (EN 60730)   |
| Mode of operation         | Type 1 AB (EN 60730)                                     |

### Overview of types

**i** Actuator for valve series: VUN, BUN, VUD, BUD, VUE, BUE

| Type        | Properties  |
|-------------|---|
| AVM125SF132 | Valve actuator with SAUTER Universal Technology (SUT) |

### Accessories

| Type       | Description  |
|------------|--|
| 0313529001 | Split-range unit for adjusting sequences, fitted in separate junction box  |
| 0370881001 | Auxiliary change-over contacts, single   |
| 0370882001 | Auxiliary change-over contacts, single, combined with pot. 2000 $\Omega$ , 1 W; 24 V                               |
| 0370882006 | Auxiliary change-over contacts, single, combined with pot. 1000 $\Omega$ auxiliary change-over contacts, 1 W; 24 V |
| 0370883001 | Potentiometer, 2000 $\Omega$ , 1 W; 24 V   |
| 0370883006 | Potentiometer, 1000 $\Omega$ , 1 W; 24 V   |
| 0372249001 | Adaptor required when media temperature > 100 °C (recommended for temperatures < 10 °C)                            |
| 0372460001 | Cable screw fitting (plastic M20 $\times$ 1,5) incl. locking nut and seal  |

 Auxiliary change-over contacts: Infinitely variable, admissible load 2(1) A, 12...250 mA, 12 V~

### Description of operation

Depending on the type of connection (see connection diagram), the actuator can be used as a continuous 0...10V and/or 4...20 mA as 2-point (OPEN/CLOSE) or 3-point actuator (OPEN/STOP/CLOSE) with an intermediate position. When control signals 1 (3u or 03) and 2 (3i or 04) are connected simultaneously, the input with the highest value has priority over the other.

The running time of the actuator can be set with switches S1 and S2 according to requirements.

Switches S3 and S4 can be used to select the equal-percentage, linear or quadratic characteristic.

The AVM 125S is combined with valves that have an equal-percentage basic characteristic like the VUD, BUD, VUE and BUE valves. The AVM 125S can be mounted on a valve with a linear characteristic (e.g. VUE 050F200), but the position of the coding switches must be considered.

An external crank handle is used for the manual adjustment. When the crank handle is folded out, the motor is switched off. After the crank handle is folded back, the actuator moves to the closing position again and readjusts itself (continuous mode).

### Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product documents must also be adhered to. Changing or converting the product is not admissible.

### Connection as 2-point actuator

This OPEN/CLOSE activation can be performed via 2 cables. The actuator is connected to the voltage via terminals 1 / MM and 2b / 02. The control passage of the valve is closed by connecting the voltage to terminal 2a / 01. After this voltage is switched off, the actuator moves to the opposite end position and opens the valve.

### Connection as 3-point control unit

When voltage is applied to terminal 2a / 01 or 2b / 02, the valve is moved to any desired position. The coupling rod moves out and opens the valve when voltage is applied to terminals 1 / MM and 2b / 02. It moves in and closes the valve when the electrical circuit is closed via terminals 1 / MM and 2a / 01. In the end positions (limit stop in valve or maximum stroke reached) or in the case of an overload, the electronic motor cut-off is activated (no limit switches). Direction of the stroke changed by transposing the connections (2a, 2b / 01, 02).

### Connection for control voltage 0...10V and/or 4...20 mA

The built-in positioner controls the actuator depending on controller's output signal y.

Voltage signal 0...10 V– is applied via terminal 3u / 03 and current signal via terminal 3i / 04.

Direction of operation 1 (mains power supply on internal connection 2a / 01):

When the positioning signal is increasing, the coupling rod moves out and opens the valve (control passage).

Direction of operation 2 (mains power supply on internal connection 2b / 02):

When the positioning signal is increasing, the coupling rod moves in and closes the valve (control passage).

The starting point and control span are fixed. A split-range unit (accessory) is available for setting partial ranges and only for control signal 1.

After a manual adjustment or a power failure of more than at least 5 min, the actuator automatically readjusts itself (always with a running time of 60 s).


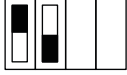





After the power supply is connected, the stepping motor moves to the lower limit stop, then moves to the upper limit stop, and thus defines the closing position. After this, every stroke between 0 and 8 mm can be achieved, depending on the control voltage. Thanks to the electronics, no steps can be lost. The actuator does not require periodic re-adjustment. It is possible to operate multiple actuators of the same type in parallel.

The feedback signal  $y_0 = 0 \dots 10V$  corresponds to the effective stroke of 0 to 8 mm.

The coding switch can be used to select the characteristic of the valve. Characteristics can only be generated when the actuator is used as a continuous actuator. The running times can be selected with additional switches. These can be used regardless of whether the 2-point, 3-point or continuous function is selected.

### Coding switch for selecting running time

AVM 124S, AVM 125S

| Run time per mm   | Switch coding   | Run time for 8 mm stroke |
|---|---|--------------------------|
| 3,75 s  | <div> <div>1 2 3 4</div> <div>  <div>On</div> <div>Off</div> </div> </div>  | $30 \text{ s} \pm 1$     |
| 7,5 s   | <div> <div>1 2 3 4</div> <div>  <div>On</div> <div>Off</div> </div> </div>   | $60 \text{ s} \pm 2$     |
| 15 s  | <div> <div>1 2 3 4</div> <div>  <div>On</div> <div>Off</div>  </div> <div> <div>1 2 3 4</div> <div>  <div>On</div> <div>Off</div>  </div> </div> </div> | $120 \text{ s} \pm 4$    |
|  = factory setting |   |                          |

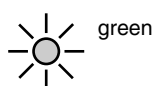
## Coding switch for selecting characteristic

AVM 125S

| Desired character. curve | Switch coding | Characteristic curve for valve | Characteristic curve for drive | Effective on valve |
|--------------------------|---------------|--------------------------------|--------------------------------|--------------------|
| Equal percentage         |               |                                |                                |                    |
| Quadratic                |               |                                |                                |                    |
| Linear                   |               |                                |                                |                    |
| Equal percentage         |               |                                |                                |                    |
| Linear                   |               |                                |                                |                    |
| = factory setting        |               |                                |                                |                    |

## LED indicator

AVM 125S



|   |  |
|---|--|
| auto-reset (initialisation)                                   |  |
| at a standstill (setpoint=actual position, manual adjustment) |  |
| drive moves in setpoint direction                             |  |
| too much force detected                                       |  |

Split-range unit, accessory 0361529 001x

Starting point  $U_0$  and control span  $\Delta U$  can be set with the potentiometer. In this way, several control units can be operated in sequence or cascade by the control signal of the controller. The input signal (partial range) is amplified into an output signal of 0...10V. This accessory can be built into the actuator or can be externally housed in an electrical junction box.

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### Engineering and fitting notes

Condensate, dripping water, etc. must be prevented from entering the actuator along the valve spindle.

When connecting the electricity supply, ensure that the cross-section of the power cable is adapted to the power output and the length. However, in all cases we recommend a minimum cross-section of  $0.75\text{mm}^2$ .

The actuator/valve is mounted by inserting and tightening screws without any additional adjustment. The device is delivered ex works in the middle position.

The concept of stepping motor and electronics enables parallel operation of multiple valve actuators of the same type.

The maximum accessory equipment is 1 stroke indicator and 1 additional accessory of auxiliary contacts, potentiometer or combination or split-range unit.

### Outdoor installation

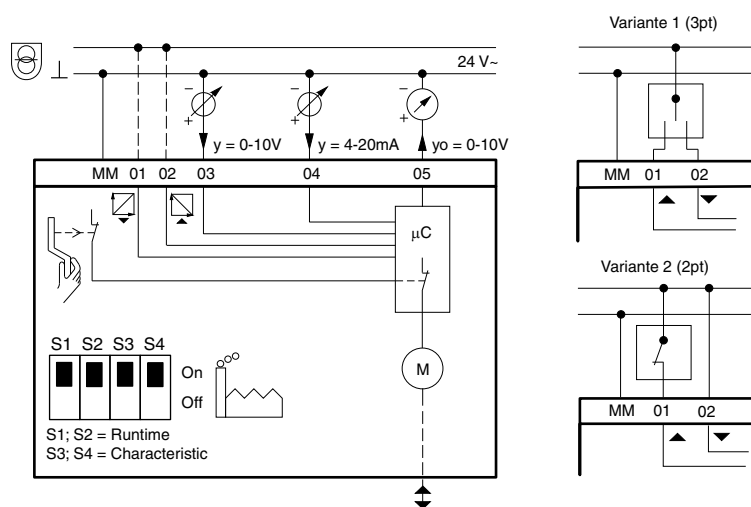
We recommend protecting the devices from the weather if they are installed outside buildings.

### Disposal

When disposing of the product, observe the currently applicable local laws.

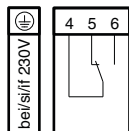
More information on materials can be found in the Declaration on materials and the environment for this product.

### Connection diagram

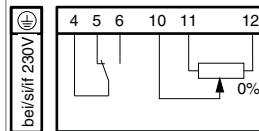


## Accessories

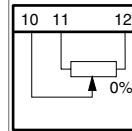
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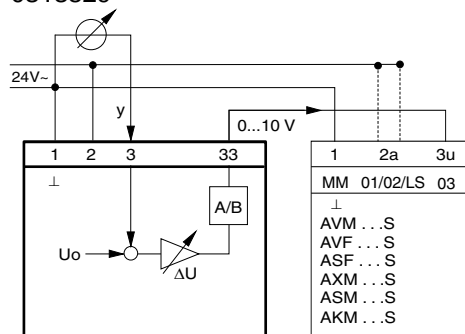
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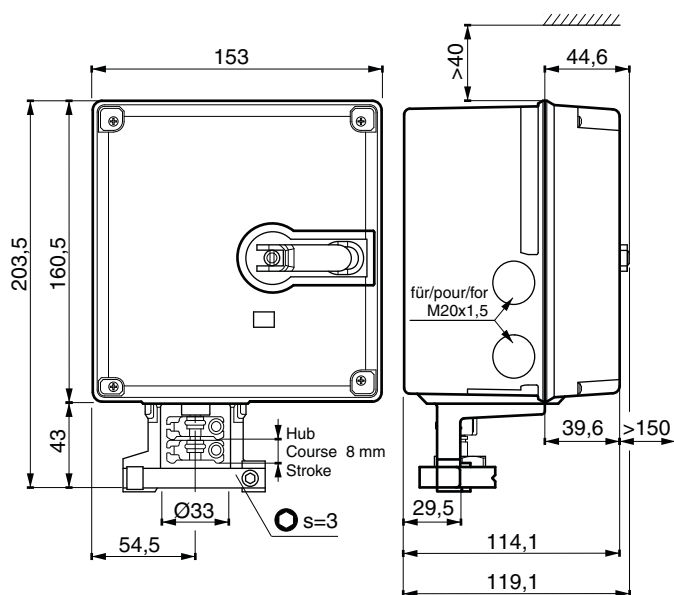
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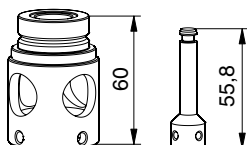


## Dimension drawing



## Accessories

0372249 001



0372249 002

