

Communication-capable globe valve actuator for 2-way and 3-way globe valves

- Actuating force 2500 N
- Nominal voltage AC/DC 24 V
- Control modulating DC (0) 0.5 V...10 V, variable
- Nominal stroke 40 mm


**Technical data**

|                        |  |   |
|------------------------|--|---|
| <b>Electrical data</b> | Nominal voltage                                      | AC/DC 24 V  |
|                        | Nominal voltage frequency                            | 50/60 Hz  |
|                        | Nominal voltage range                                | AC 19.2...28.8 V / DC 21.6...28.8 V                                 |
|                        | Power consumption in operation                       | 4 W   |
|                        | Power consumption in rest position                   | 1.5 W   |
|                        | Power consumption for wire sizing                    | 6 VA  |
|                        | Connection supply / control                          | Terminals 4 mm <sup>2</sup> and cable 1 m, 4 x 0.75 mm <sup>2</sup> |
|                        | Parallel operation                                   | Yes   |
| <b>Functional data</b> | Actuating force                                      | 2500 N  |
|                        | Positioning signal Y                                 | DC 0...10 V   |
|                        | Positioning signal Y note                            | Input impedance 100 kΩ  |
|                        | Operating range Y                                    | DC 0.5...10 V   |
|                        | Operating range Y variable                           | Start point DC 0.5 ... 30V<br>End point DC 2.5 ... 32V              |
|                        | Position feedback U                                  | DC 0.5...10 V   |
|                        | Position feedback U note                             | max. 0.5 mA   |
|                        | Position feedback U variable                         | Start point DC 0.5 ... 8V<br>End point DC 2.5 ... 10V               |
|                        | Position accuracy                                    | 5% absolute   |
|                        | Manual override                                      | Gear disengagement with push-button, can be locked                  |
|                        | Nominal stroke                                       | 40 mm   |
|                        | Actuating time                                       | 150 s / 40 mm   |
|                        | Override control MAX (maximum position)              | 100 %   |
|                        | Override control MIN (minimum position)              | 0 %   |
|                        | Override control ZS (intermediate position, only AC) | 50 %  |
|                        | Override control ZS variable                         | ZS = MIN ... MAX  |
|                        | Sound power level motor max.                         | 55 dB (A)   |
|                        | Sound power level motor note                         | 55 dB (A) @ 90 s running time                                       |
| Position indication    | Mechanical 5 ... 40 mm stroke                        |   |
| <b>Safety</b>          | Protection class IEC/EN                              | III Safety extra-low voltage  |
|                        | Degree of protection IEC/EN                          | IP54  |
|                        | EMC  | CE in accordance with 2004/108/EC                                   |
|                        | Certification IEC/EN                                 | Certified to: IEC/EN 60730-1 and IEC/EN 60730-2-14                  |
|                        | Mode of operation                                    | Type 1  |
|                        | Rated impulse voltage supply / control               | 0.8 kV  |
|                        | Control pollution degree                             | 3   |
|                        | Ambient temperature                                  | 0°C ... 50°C  |
|                        | Non-operating temperature                            | -40°C ... 80°C  |
|                        | Ambient humidity                                     | 95% r.h., non-condensing  |
| Maintenance            | Maintenance-free                                     |   |
| <b>Weight</b>          | Weight approx.                                       | 4.320 kg  |

## Safety notes



- This actuator has been designed for application in stationary heating, ventilation and air-conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.
- The switch for changing the direction of motion/the closing point may be adjusted only by authorised personnel. The direction of stroke is critical, particularly in connection with frost protection circuits.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

## Product features

|                                       |   |
|---------------------------------------|---|
| <b>Principle of operation</b>         | The actuator is connected with a standard modulating signal of DC 0 ... 10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0 ... 100% and as slave control signal for other actuators.   |
| <b>Adjustable-parameter actuators</b> | The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the PC-Tool MFT-P or with the service tool ZTH-GEN.  |
| <b>Direct mounting</b>                | Simple direct mounting on the globe valve by means of form-fit hollow clamping jaws. The actuator can be rotated by 360° on the valve neck.   |
| <b>Manual override</b>                | Manual override with push-button possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. The stroke can be adjusted by using a hexagon socket screw key (5 mm), which is inserted into the top of the actuator. The stroke spindle extends when the key is rotated clockwise.  |
| <b>High functional reliability</b>    | The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.  |
| <b>Combination valve/actuator</b>     | Refer to the valve documentation for suitable valves, their permitted medium temperatures and closing pressures.  |
| <b>Position indication</b>            | The stroke is indicated mechanically on the bracket with tabs. The stroke range adjusts itself automatically during operation.  |
| <b>Home position</b>                  | Setting ex-works: Actuator spindle is retracted.<br>When valve-actuator combinations are shipped, the direction of motion is set in accordance with the closing point of the valve.   |
| <b>Direction of stroke switch</b>     | When actuated, the direction of stroke switch changes the running direction in normal operation.  |
| <b>Adaption of stroke range</b>       | The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a stroke adaption, which is when the operating range and position feedback adjust themselves to the mechanical stroke.<br>Manual triggering of the adaption can be carried out by pressing the "Adaption" button or with the PC-Tool.<br>The actuator then moves into the position defined by the positioning signal. |

## Accessories

|                               | Description   | Type    |
|-------------------------------|---|---------|
| <b>Electrical accessories</b> | Auxiliary switch add-on, 2 x SPDT   | S2A-H   |
| <b>Service tools</b>          | Manual parameterizing device, for MF/MP/Modbus/LonWorks actuators and VAV-Control | ZTH-GEN |
|                               | Belimo PC-Tool, software for adjustments and diagnostics                          | MFT-P   |

Electrical installation

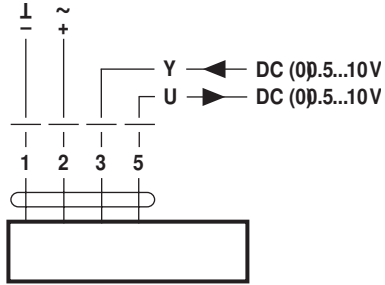


Notes

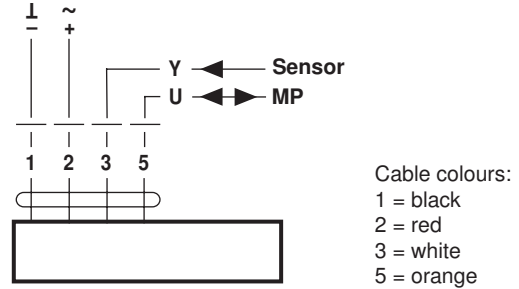
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible.
- Direction of stroke switch factory setting: Actuator spindle retracted.

Wiring diagrams

AC/DC 24V, modulating



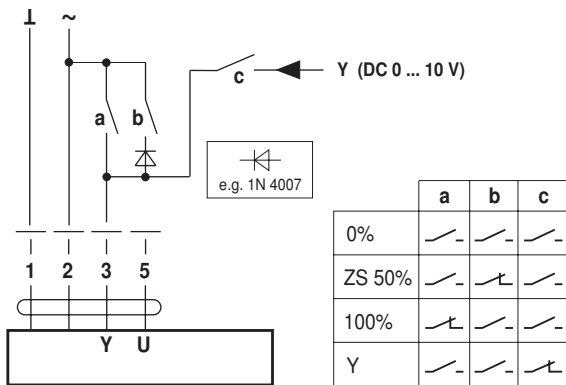
Operation on the MP bus



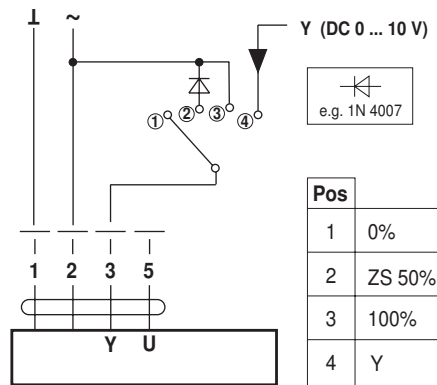
Functions

Functions with basic values

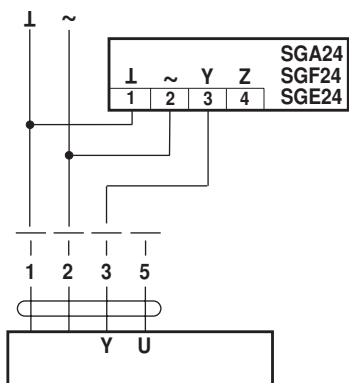
Override control with AC 24V with relay contacts



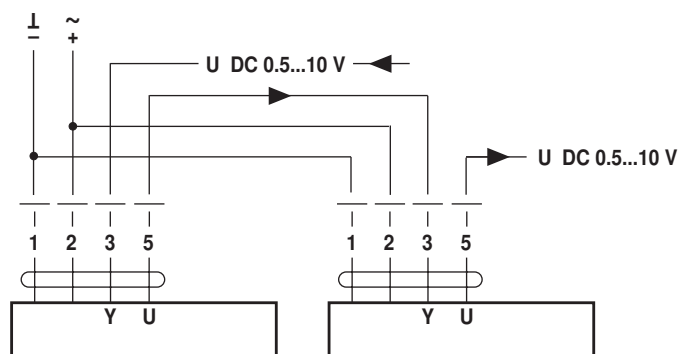
Override control with AC 24V with rotary switch



Remote control 0 ... 100%

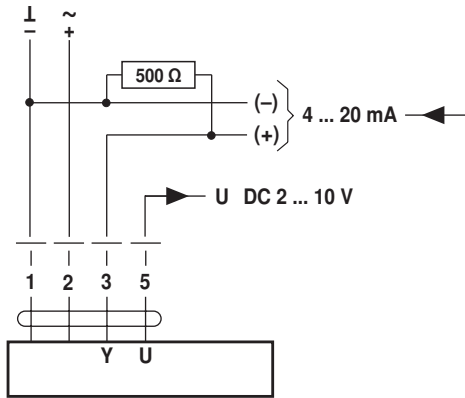


Follow-up control (position-dependent)



Functions

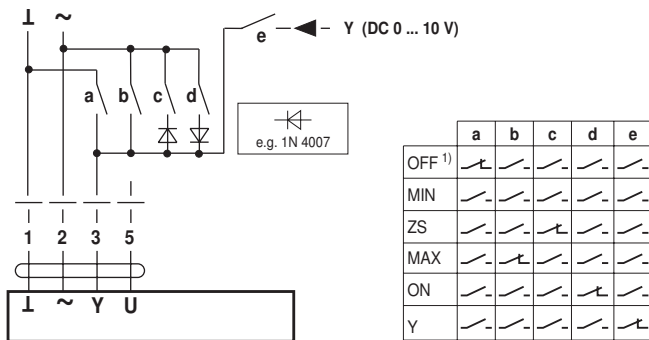
Control with 4 ... 20 mA via external resistor



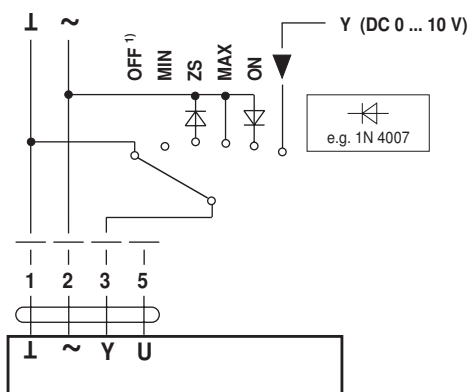
The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



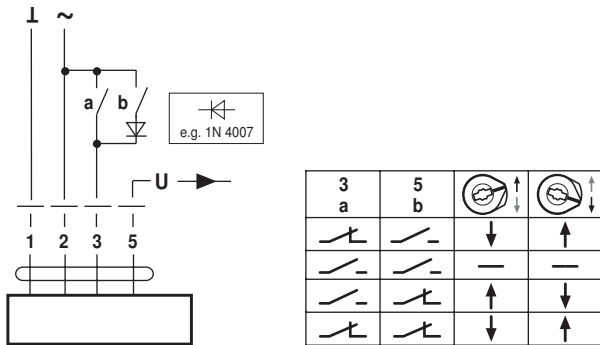
Override control and limiting with AC 24V with rotary switch



1) Caution: This function is guaranteed only if the start point of the operating range is defined as min. 0.6V.

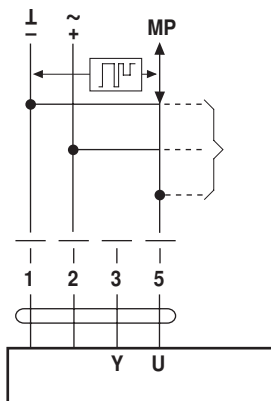
Functions

AC 24V; 3-point

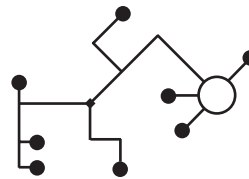


Functions when operated on MP bus

Connection on the MP bus



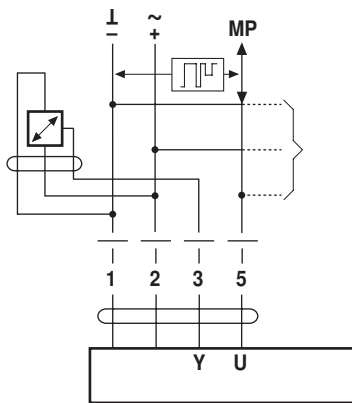
Power topology



Supply and communication in one and the same 3-wire cable  
 • no shielding or twisting required  
 • no terminating resistor required

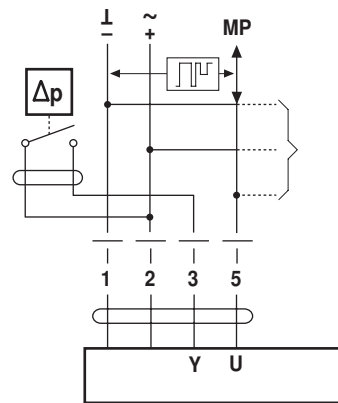
There are no restrictions for the network topology (star, ring, tree or mixed forms are permitted).

Connection of active sensors



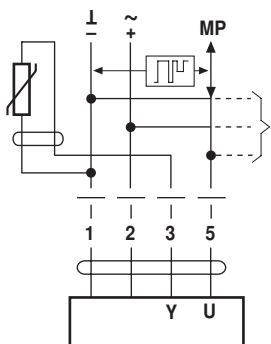
- Supply AC/DC 24 A
- Output signal DC 0 ... 10V (max. DC 0 ... 32V)
- Resolution 30 mV

Connection of external switching contact



- Switching current 16 mA @ 24V
- Start point of the operating range must be parameterised on the MP actuator as  $\geq 0.6V$

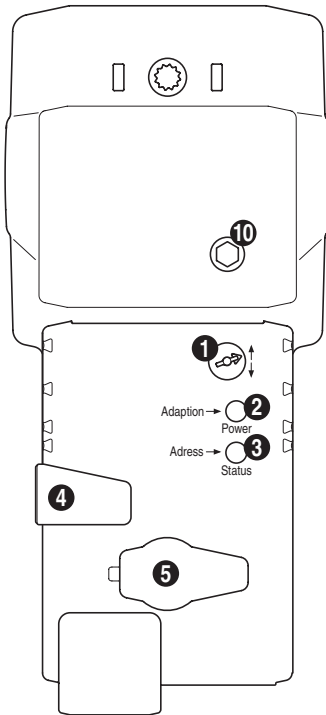
Connection of passive sensors



|        |                               |                                  |
|--------|-------------------------------|----------------------------------|
| Ni1000 | -28 ... +98 °C                | 850 ... 1600 $\Omega^2$          |
| PT1000 | -35 ... +155 °C               | 850 ... 1600 $\Omega^2$          |
| NTC    | -10 ... +160 °C <sup>1)</sup> | 200 $\Omega$ ... 50 k $\Omega^2$ |

1) Depending on the type  
 2) Resolution 1 Ohm

## Indicators and operating controls

**(1) Direction of stroke switch**

Switching: Direction of stroke changes

**(2) Push-button and LED display green**

Off: No power supply or malfunction

Illuminated in green: In operation

Press button: Triggers stroke adaption, followed by standard mode

**(3) Push-button and LED display yellow**

Off: Standard mode

Flickering: MP communication active

Illuminated: Adaption procedure active

Blinking: Request for addressing from MP master

Press button: Confirmation of addressing

**(4) Gear disengagement button**

Press button: Gear disengages, motor stops, manual override possible

Release button: Gear engages, standard mode

**(5) Service plug**

For connecting the parameterisation and service tools

**(10) Manual override**

Clockwise: Actuator spindle extends

Counterclockwise: Actuator spindle retracts

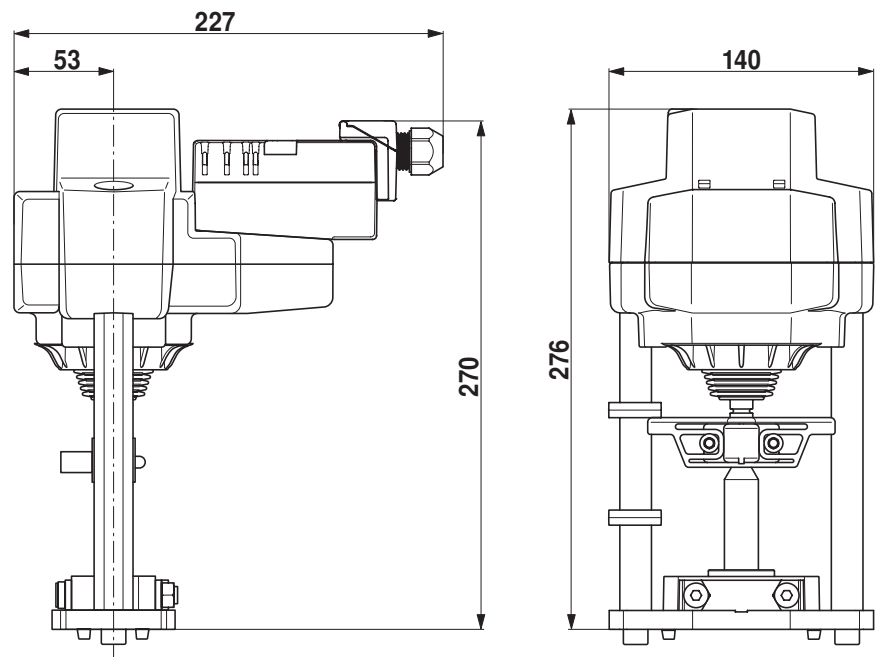
**LED displays (2, green) and (3, yellow)**

green: Off; yellow: Illuminated;

Check the supply connections. The phases may have been switched.

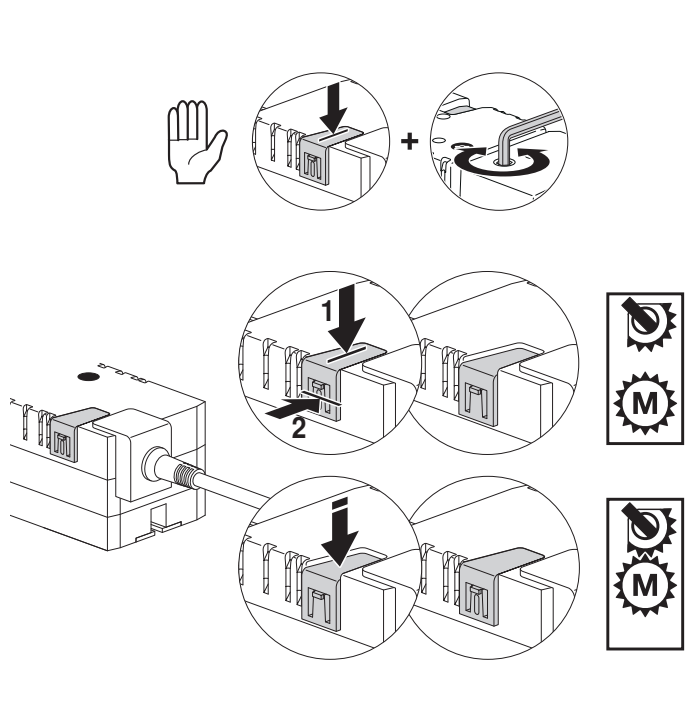
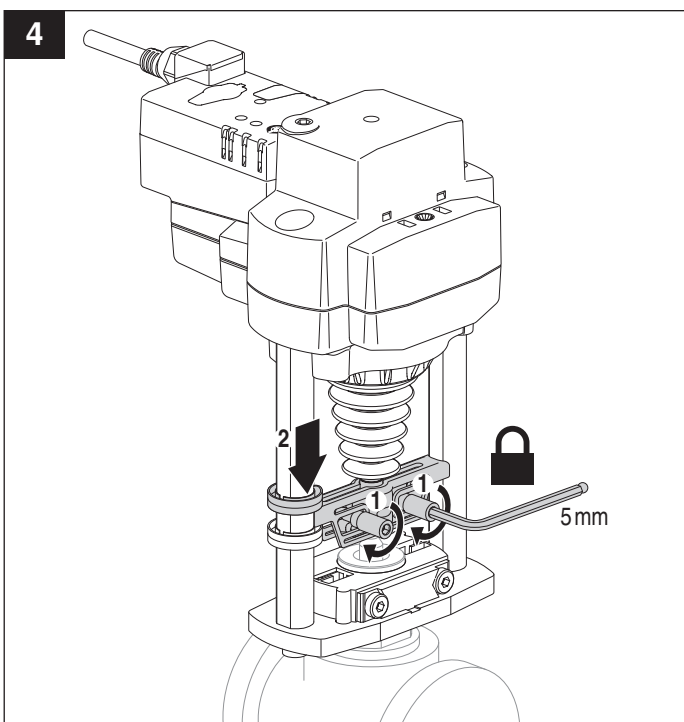
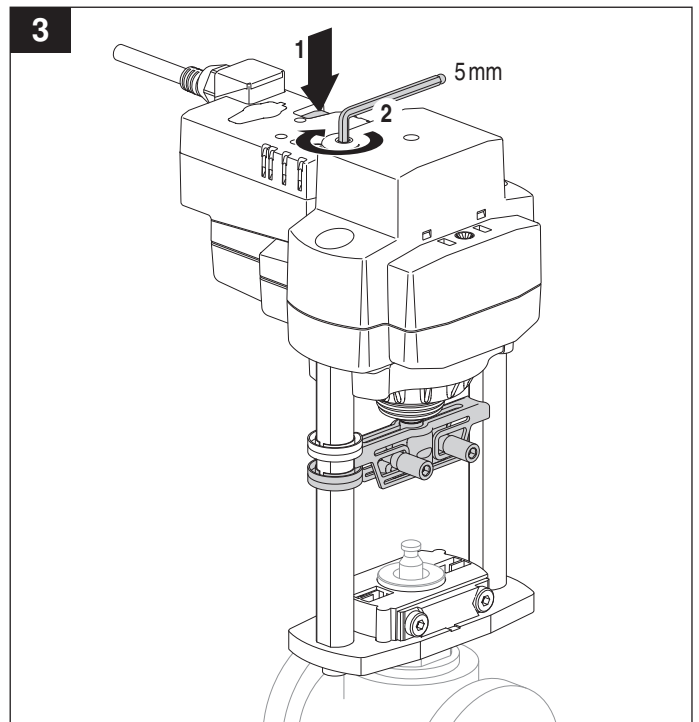
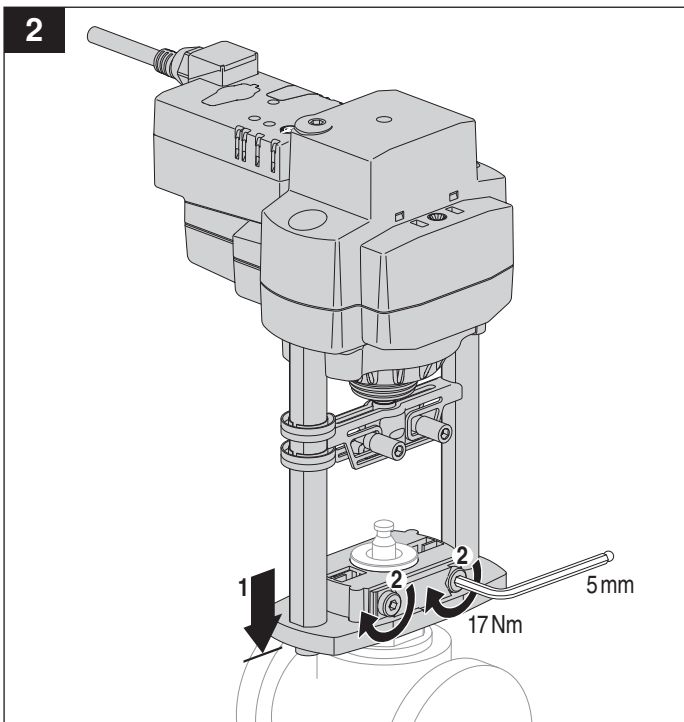
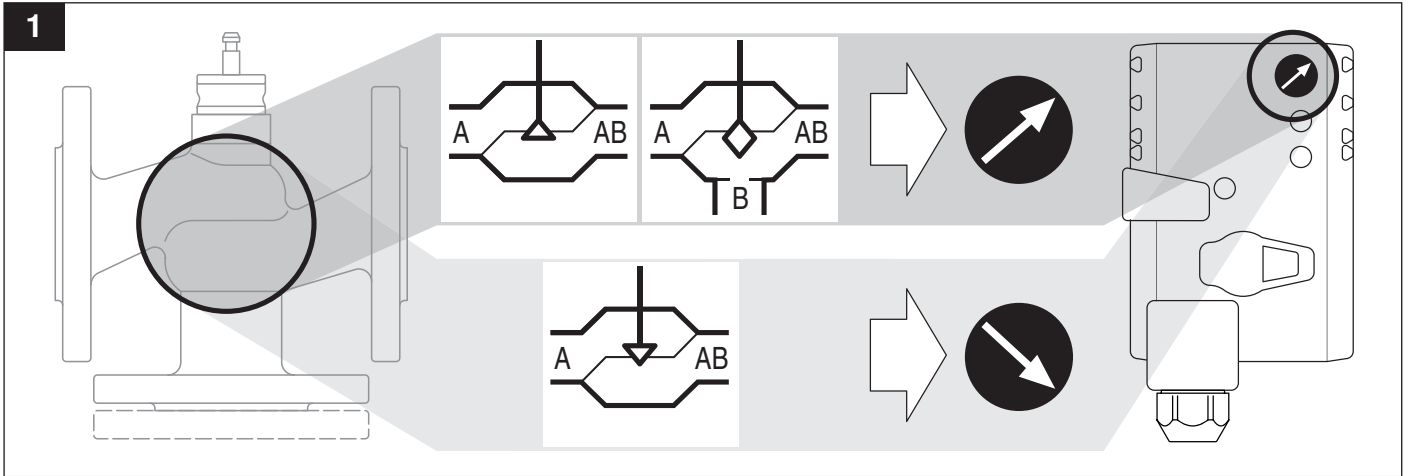
## Dimensions [mm]

## Dimensional drawings



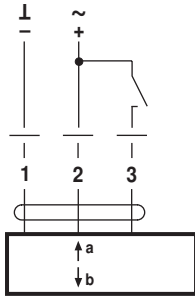
## Further documentation

- Data sheets for globe valves
- Installation instructions for actuators and/or globe valves, respectively
- Notes for project planning, 2-way and 3-way globe valves
- Overview "Valve-actuator combinations"



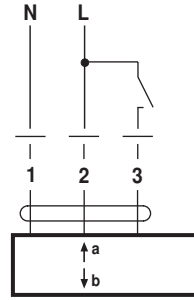


AC 24 V / DC 24 V

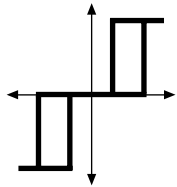


SVL(C)24A  
EV(C)24A

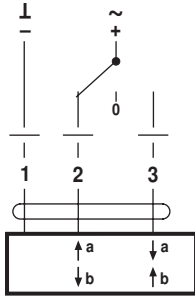
AC 230 V



SVL(C)230A  
EV(C)230A

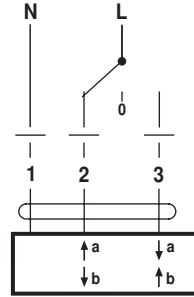


AC 24 V / DC 24 V

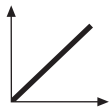


SVL(C)24A  
EV(C)24A

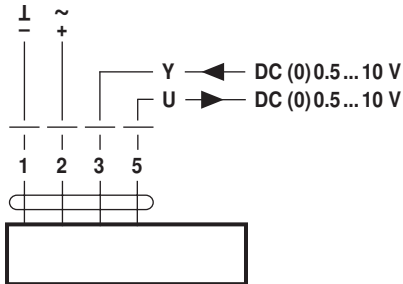
AC 230 V



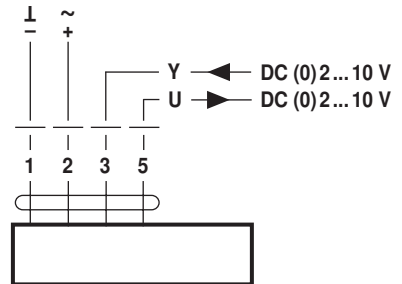
SVL(C)230A  
EV(C)230A



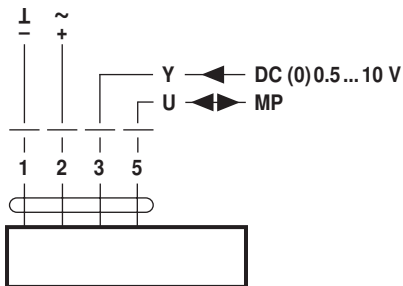
AC 24 V / DC 24 V



SVL(C)24A-SZ SVL(C)24A-MF  
EV(C)24A-SZ EV(C)24A-MF  
RV24A-SZ RV24A-MF



SVL(C)24A-SR  
EV(C)24A-SR  
RV24A-SR



SVL(C)24A-MP  
EV(C)24A-MP  
RV24A-MP