

Multifunctional damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- For air dampers up to approx. 1 m²
- Torque 5 Nm
- Nominal voltage AC/DC 24 V
- Control: modulating DC 0 ... 10 V or variable
- Position feedback DC 2 ... 10 V or variable


Technical data
Electrical data

| | |
|-----------------------|---|
| Nominal voltage | AC 24 V, 50/60 Hz / DC 24 V |
| Nominal voltage range | AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V |
| Power consumption | 2.5 W @ nominal torque |
| At rest | 1.2 W |
| For wire sizing | 5 VA |

| | |
|------------|---|
| Connection | Terminals 4 mm ² (Cable Ø 4 ... 10 mm, four-core) |
|------------|---|

| Functional data | Factory settings | Variable | Settings |
|--|---|---|----------|
| Torque (nominal torque) | Min. 5 Nm @ nominal voltage | 25%, 50%, 75% reduced | |
| Control Control signal Y | DC 0 ... 10 V, input impedance 100 kΩ | Open-close / 3-point (only AC), modulating (DC 0 ... 32 V) | |
| Operating range | DC 2 ... 10 V | Starting point DC 0.5 ... 30 V End point DC 2.5 ... 32 V | |
| Position feedback (Measuring voltage) | DC 2 ... 10 V, max. 0.5 mA | Starting point DC 0.5 ... 8 V End point DC 2.5 ... 10 V | |
| Position accuracy | ±5% | | |
| Direction of rotation | Reversible with switch 0 / 1 | | |
| Direction of motion at Y = 0 V | At switch position 0 ↺ resp. 1 ↻ | Electronically reversible | |
| Manual override | Gearing latch disengaged with push-button, can be locked | | |
| Angle of rotation | Max. 95°↔, limited on both sides by means of adjustable, mechanical end stops | | |
| Running time | 150 s / 90°↔ | 35 ... 150 s | |
| Automatic adjustment of running time, operating range and measuring signal U to match the mechanical angle of rotation | Manual triggering of the adaption by pressing the «Adaption» button or with the PC-Tool | Automatic adaption whenever the supply voltage is switched on, or manual triggering | |
| Override control | MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, only AC) = 50% | MAX = (MIN + 30°↔) ... 100% MIN = 0% ... (MAX - 30°↔) ZS = MIN ... MAX | |
| Sound power level | Max. 35 dB (A) | With a 35 s = 45 dB (A) running time of 90 s = <35 dB (A) | |
| Position indication | Mechanical, pluggable | | |

Safety

| | |
|---------------------------|--|
| Protection class | III Safety extra-low voltage / UL Class 2 Supply |
| Degree of protection | IP54 in any mounting position NEMA2, UL Enclosure Type 2 |
| EMC | CE according to 2004/108/EC |
| Certification | cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-01:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14 |
| Mode of operation | Type 1 (EN 60730-1) |
| Rated impulse voltage | 0.8 kV (EN 60730-1) |
| Control pollution degree | 3 (EN 60730-1) |
| Ambient temperature | -30 ... +50 °C |
| Non-operating temperature | -40 ... +80 °C |
| Ambient humidity | 95% r.H., non-condensating (EN 60730-1) |
| Maintenance | Maintenance-free |

Technical data *(continued)*
Dimensions / Weight





| | |
|------------|----------------------------|
| Dimensions | See «Dimensions» on page 5 |
| Weight | Approx. 440 g |

Safety notes


- This actuator is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- 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 cable must not be removed from the device.
- When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.
- 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

| | |
|-------------------------------------|---|
| Mode of operation | The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and moves to the position defined by the control signal. The measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators. |
| Parameterisable actuators | The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the MFT-H parameterising device or the BELIMO Service Tool, MFT-P. |
| Simple direct mounting | Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating. |
| Manual override | Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked). |
| Adjustable angle of rotation | Adjustable angle of rotation with mechanical end stops. |
| High functional reliability | The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached. |
| Home position | When the supply voltage is switched on for the first time, i.e. at commissioning or after pressing the «gear disengagement» switch, the actuator moves to the home position. |

| Pos. | Direction of rotation switch | Home position |
|------|---|---|
| 0 | Y = 0  | ccw  Left stop |
| 1 | Y = 0  |  cw Right stop |

The actuator then moves into the position defined by the control signal.

Accessories

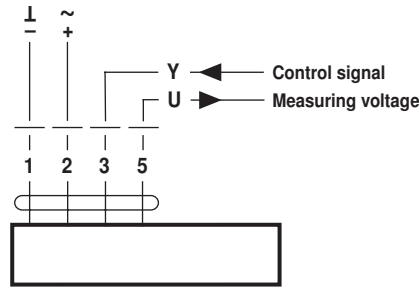
| | Description | Data sheet |
|-------------------------------|---|----------------|
| Electrical accessories | Auxiliary switch S..A.. | T2 - S..A.. |
| | Feedback potentiometer P..A.. | T2 - P..A.. |
| | Parameterizing device MFT-H | T2 - MFT-H |
| | PC-Tool MFT-P | T2 - MFT-P |
| | Positioner, type SG..24 | T2 - SG..24 |
| | Digital position indication ZAD24 | T2 - ZAD24 |
| Mechanical accessories | Various accessories (clamps, shaft extensions etc.) | T2 - Z-LM..A.. |

Electrical installation

Wiring diagram

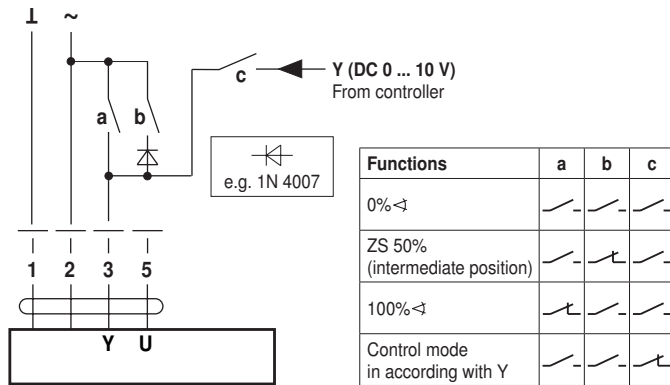
Note

- Connect via safety isolation transformer.
- Parallel connection of other actuators possible. Note performance data for supply.

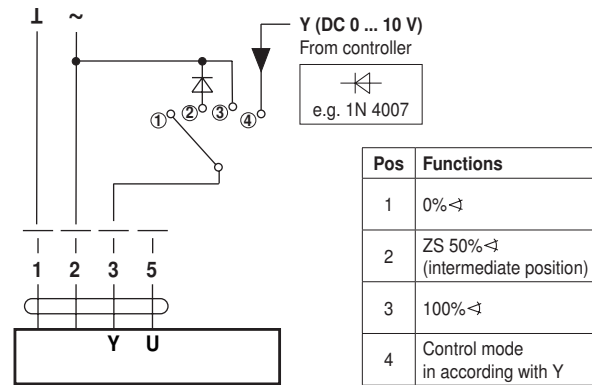


Functions with basic values

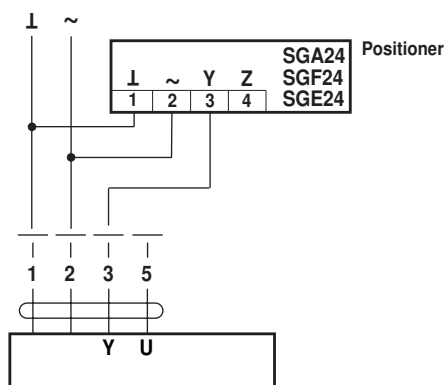
Override control with AC 24 V with relay contacts



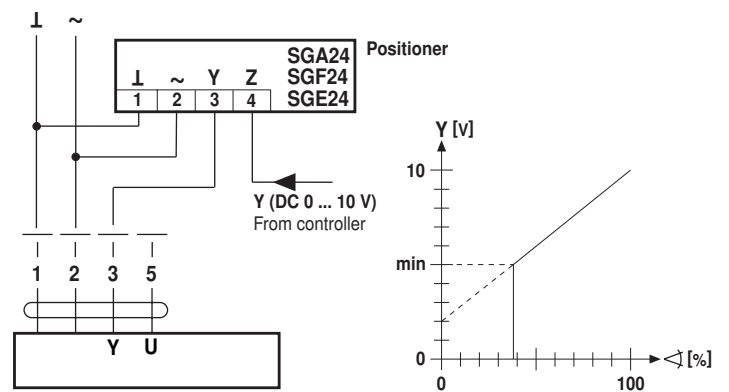
Override control with AC 24 V with rotary control switch



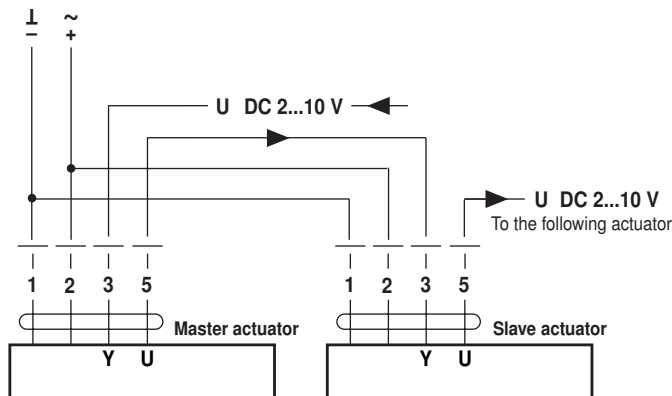
Remote control 0 ... 100%



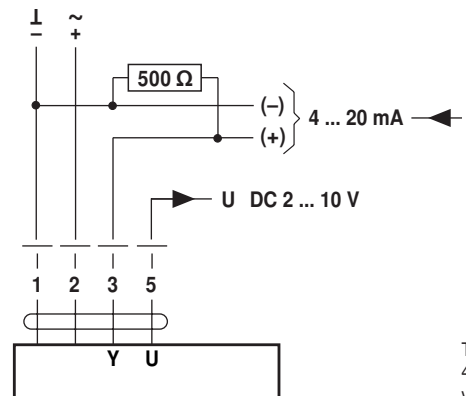
Minimum limit



Master/Slave control (position-dependent)



Control with 4 ... 20 mA via external resistance

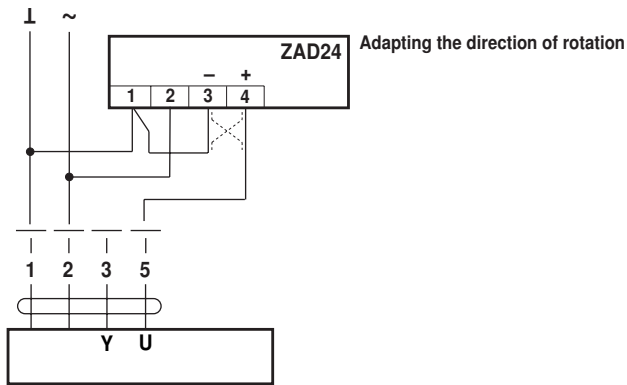


The 500 Ω resistor converts the 4 ... 20 mA current signal into a voltage signal DC 2 ... 10 V

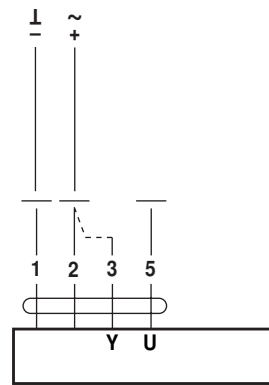
Functions with basic values

(continued)

Position indication



Functional check

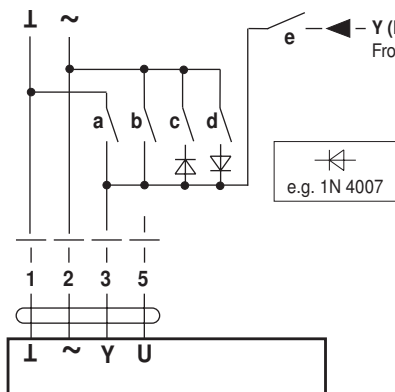


Procedure

- Apply 24 V to connection 1 and 2
- Disconnect connection 3:
 - For direction of rotation 0: Actuator turns in the direction of ↺
 - For direction of rotation 1: Actuator turns in the direction of ↻
- Short circuit connections 2 and 3:
 - Actuator runs in the opposite direction

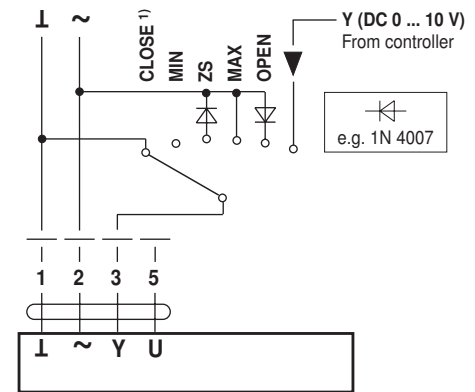
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



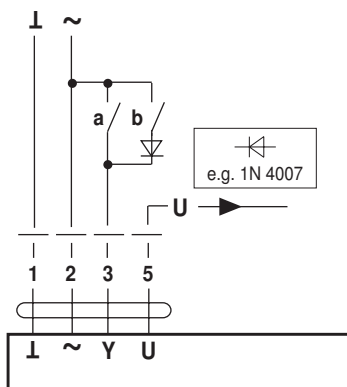
| Functions | a | b | c | d | e |
|-----------------------------|---|---|---|---|---|
| CLOSE 1) | | | | | |
| MIN | | | | | |
| ZS (intermediate position) | | | | | |
| MAX | | | | | |
| OPEN | | | | | |
| Control mode in acc. with Y | | | | | |

Override control and limiting with AC 24 V with rotary switch



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

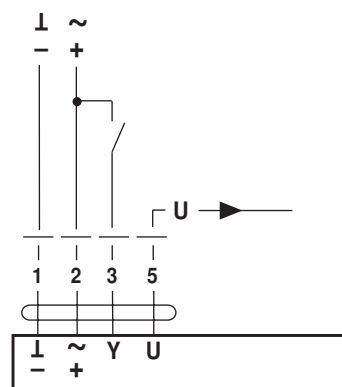
3-point control



Drehsinn-schalter

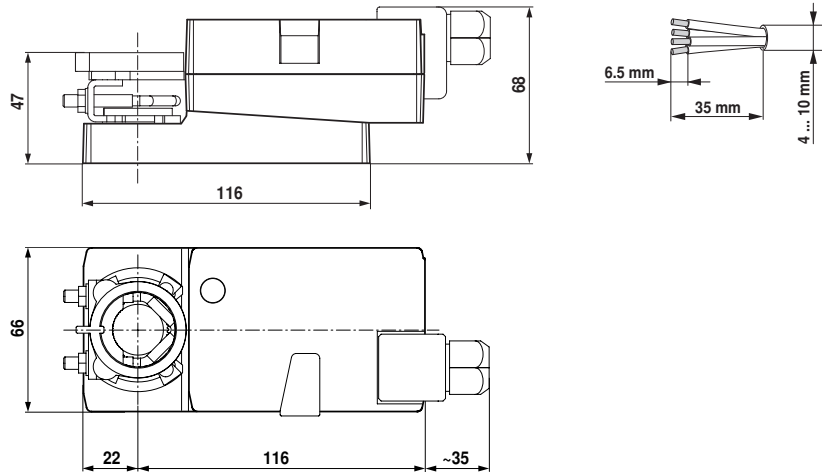
| a | b | 1 | 0 |
|---|---|------|------|
| | | | |
| | | Stop | Stop |
| | | | |
| | | | |

Open-close control



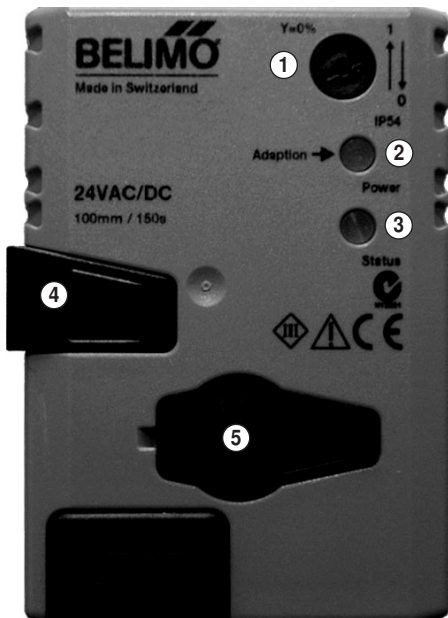
Dimensions [mm]

Dimensional drawings



| Damper spindle | Length | | | |
|----------------|--------|----------|----|-----|
| | ≥37 | 6 ... 20 | ≥6 | ≤20 |

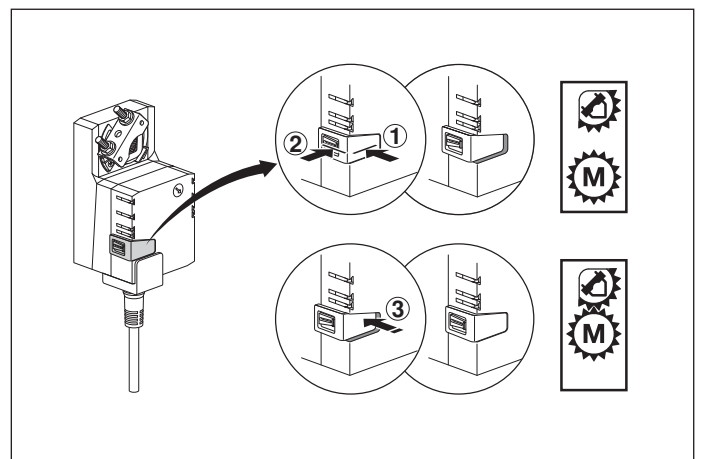
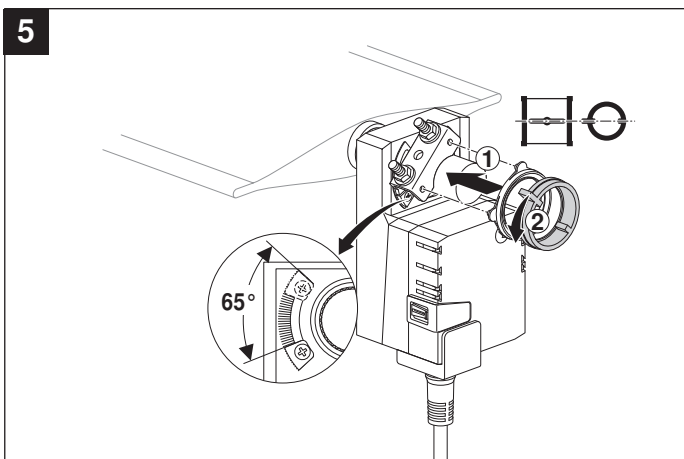
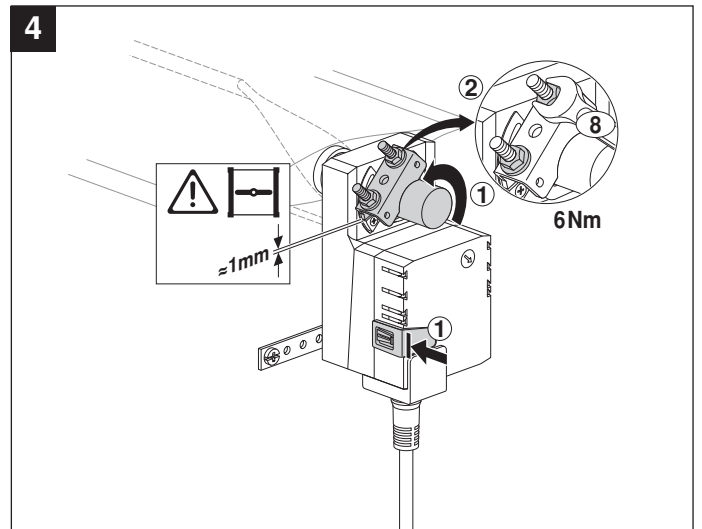
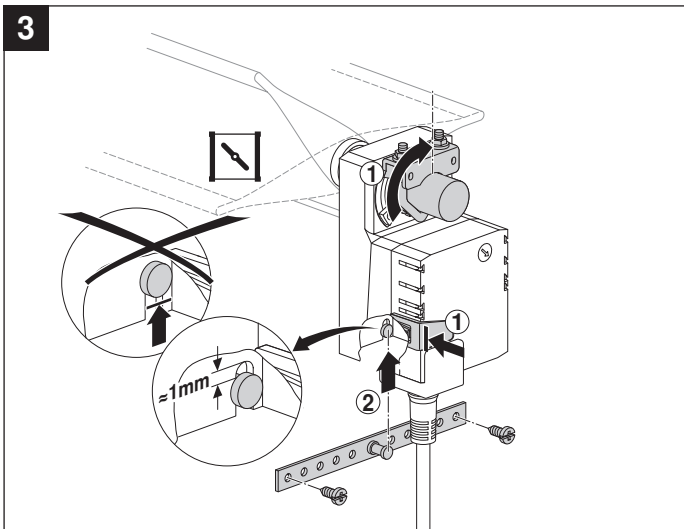
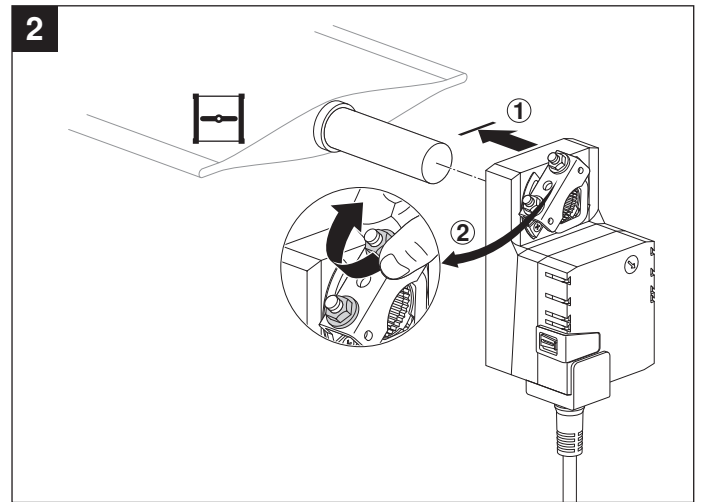
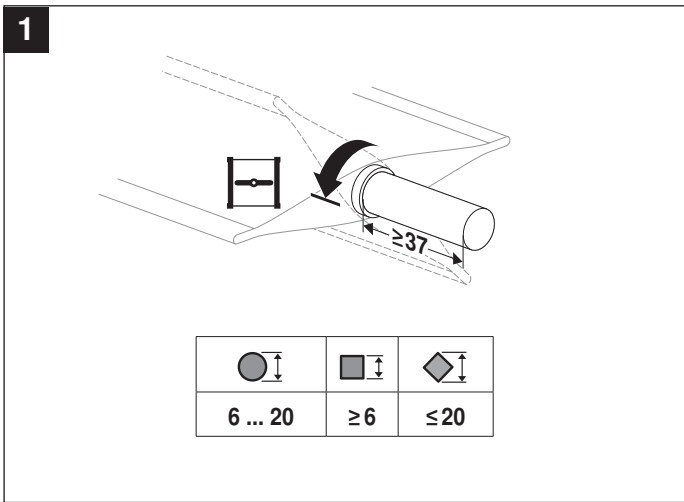
Operating controls and indicators

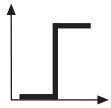
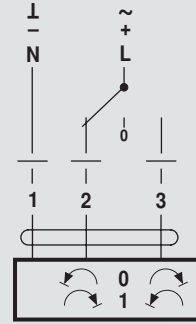
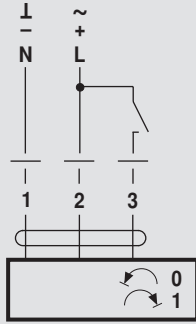


- ① **Direction of rotation switch**
Switching over:: Direction of rotation changes
- ② **Push-button and green LED display**
Off: No voltage supply or fault
On: Operation
Press button: Switches on angle of rotation adaptation followed by standard operation
- ③ **Push-button and yellow LED display**
Off: Standard operation
On: Adaptation or synchronising process active
Press button: No function
- ④ **Gear disengagement switch**
Press button: Gear disengaged, motor stops, manual override possible
Release button: Gear engaged, synchronisation starts, followed by standard operation
- ⑤ **Service plug**
For connecting parameterising and service tools

Check connection power supply

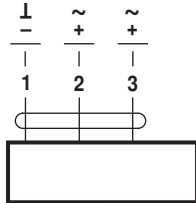
- ② Off } or flashing }
 ③ On } or flashing } Check the power supply connections. \perp and ∇ could be reverse.



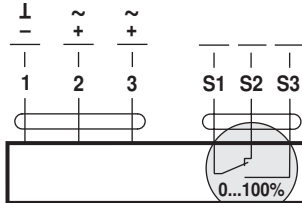


AC 24 V / DC 24 V

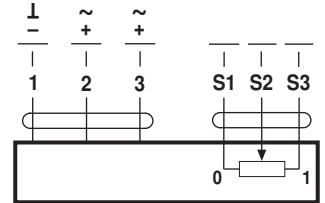
DC 48 ... 110 V
(LM72A..)



LM24A.. LMC24A..
LM72A.. TMC24A..

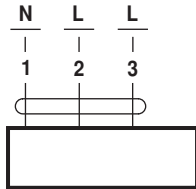


LM24A-S.. TMC24A-S..
LM72A-S..

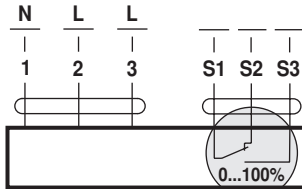


LM24AP5..

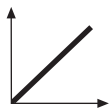
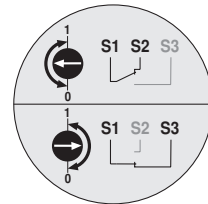
AC 100 ... 240 V



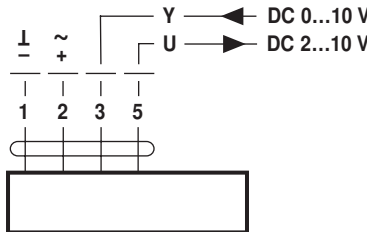
LM230A.. LMC230A..
TMC230A..



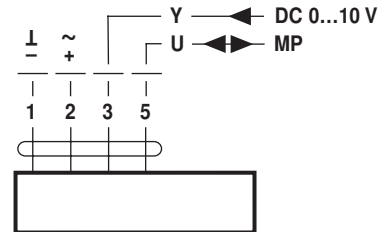
LM230A-S.. TMC230A-S..



AC 24 V / DC 24 V

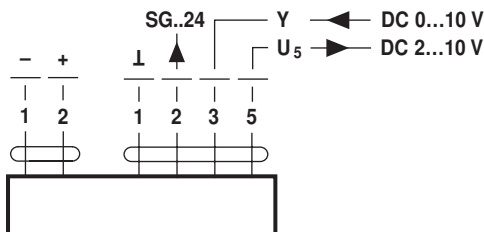


LM24A-SR.. LMC24A-SR..
LM24A-MF.. TMC24A-SR..



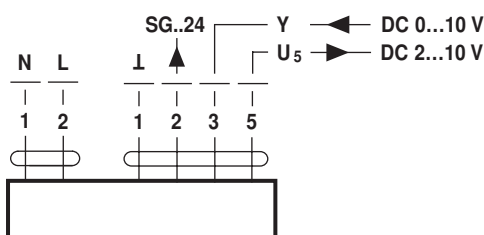
LM24A-MP..

DC 48 ... 110 V
(LM72A-SR..)



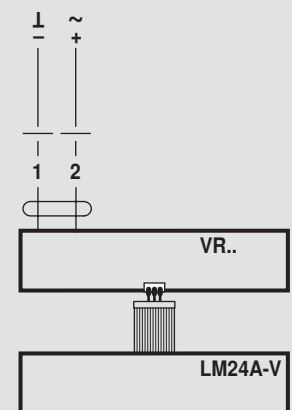
LM72A-SR..

AC 100 ... 240 V



LM230ASR.. TMC230ASR..

AC 24 V / DC 24 V
(LM24A-V / VR..)



LM24A-V / VR..

