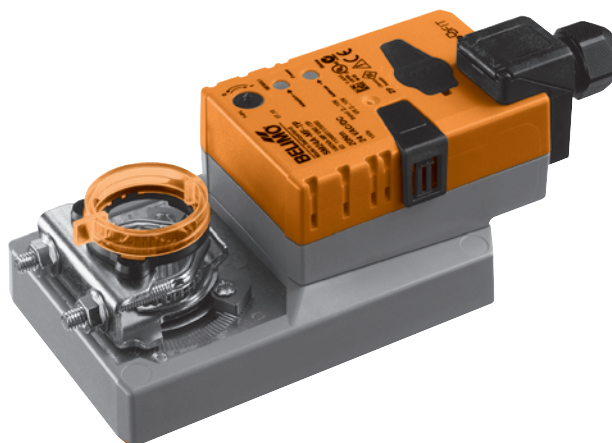


Multifunctional damper actuator for adjusting air dampers in ventilation and air-conditioning systems for building services installations

- For air dampers up to approx. 4 m²
- Torque 20 Nm
- Nominal voltage AC/DC 24 V
- Control: Modulating DC 0 ... 10 V or variable
- Position feedback DC 2 ... 10 V or variable
- with connecting terminals



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 | In operation 4 W @ nominal torque |
| | At rest 1.25 W |
| | For wire sizing 6 VA |
| Connection | Terminals 4 mm ² (Cable Ø 4 ... 10 mm, 4-core) |

| Functional data | Factory settings | Variable | Settings |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
| Torque (nominal torque) | Min. 20 Nm @ nominal voltage | 25%, 50%, 75% reduziert | |
| Control Control signal Y | DC 0 ... 10 V, input impedance 100 kΩ | Open-close, 3-point (AC only), modulating (DC 0 ... 32 V) | |
| Operating range | DC 2 ... 10 V | Start point DC 0.5 ... 30 V End point DC 2.5 ... 32 V | |
| Position feedback (Measuring voltage U) | DC 2 ... 10 V, max. 0.5 mA | Start 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 | In switch position 0 ↺ resp. 1 ↻ | Electronically reversible | |
| Manual override | Gearing latch disengaged with pushbutton, can be locked | | |
| Angle of rotation | Max. 95°↔, can be limited at both ends with adjustable mechanical end stops | | |
| Running time | 150 s / 90°↔ | 86 ... 346 s | |
| Automatic adjustment 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, AC only) = 50% | MAX = (MIN + 30°↔) ... 100% MIN = 0% ... (MAX - 30°↔) ZS = MIN ... MAX | |
| Sound power level | Max. 45 dB (A) | With a 86 s = 45 dB (A) running time 346 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 NEMA 2, 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 E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14 |
| Mode of operation | Type 1 |
| Rated impulse voltage | 0.8 kV |
| Control pollution degree | 3 |
| Ambient temperature | -30 ... +50 °C |
| Non-operating temperature | -40 ... +80 °C |
| Ambient humidity | 95% r.h., non-condensating |
| Maintenance | Maintenance-free |

Technical data *(Continued)*
Dimensions / Weight







| | |
|------------|----------------------------|
| Dimensions | See «Dimensions» on page 5 |
| Weight | ca. 920 g |

Safety notes


- The actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.
- Assembly must be carried out by 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.
- 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 travels to the position defined by the control signal. 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 operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented). |
| 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 travels to the home position. |

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

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

Accessories

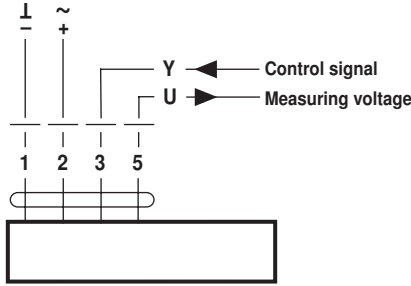
| | Description | Data sheet |
|-------------------------------|-----------------------------------------------------|----------------|
| Electrical accessories | Auxiliary switch S..A.. | T2 - S..A.. |
| | Feedback potentiometer P..A.. | T2 - P..A.. |
| | PC-Tool MFT-P from version 3.3 | T2 - MFT-P |
| | Parameterising device MFT-H | T2 - MFT-H |
| | Position sensor SGA24, SGE24 and SGF24 | T2 - SG..24 |
| | Digital position indication ZAD24 | T2 - ZAD24 |
| Mechanical accessories | Various accessories (clamps, shaft extensions etc.) | T2 - Z-SM..A.. |

Electrical installation

Wiring diagram

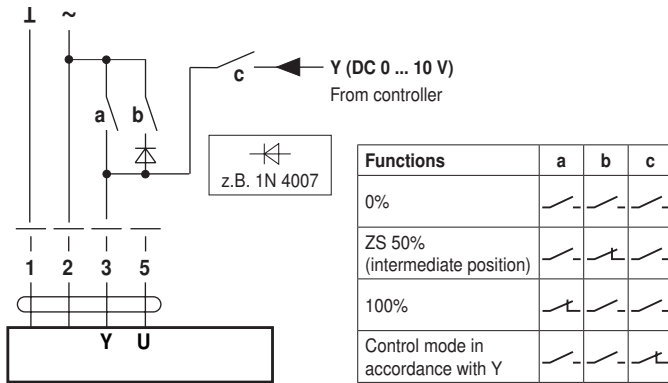
Notes

- Connection via safety isolating transformer!
- Other actuators can be connected in parallel. Please note the performance data!

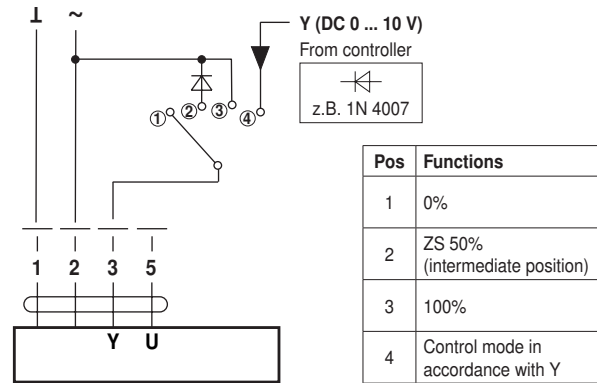


Functions with basic values

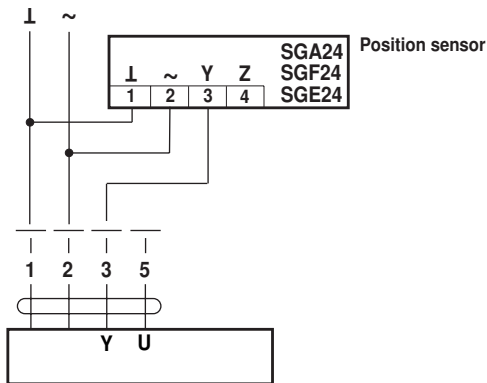
Override control with AC 24 V with relay contacts



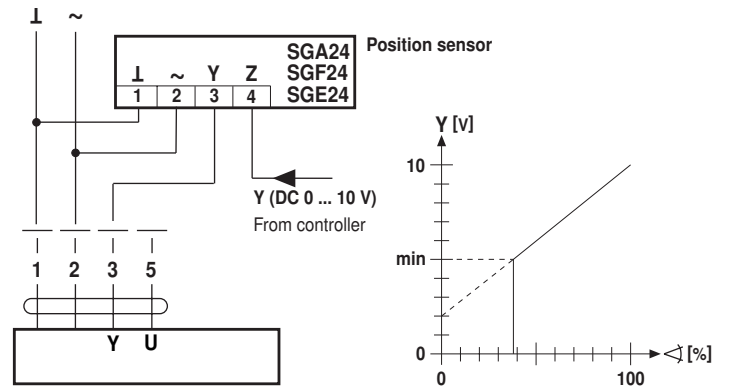
Override control with AC 24 V with rotary control switch



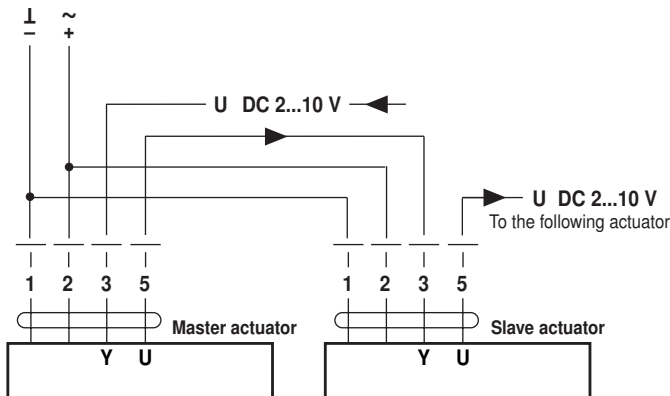
Remote control 0 ... 100 %



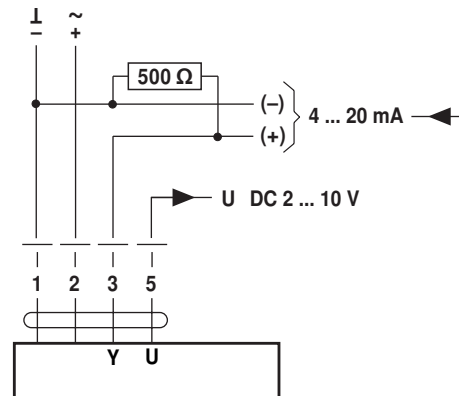
Minimum limit



Master/Slave control (position-dependent)



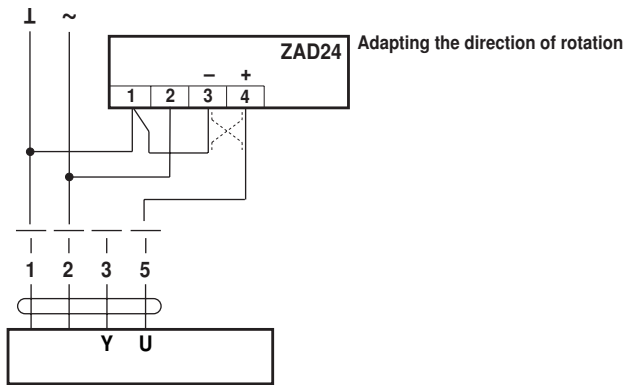
Control with 4 ... 20 mA via external resistance



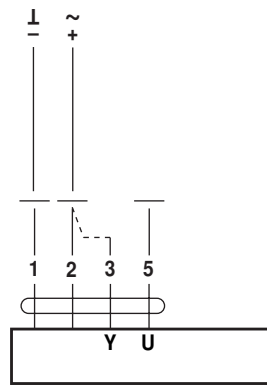
The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Functions with basic values (Continued)

Position indication



Functional check

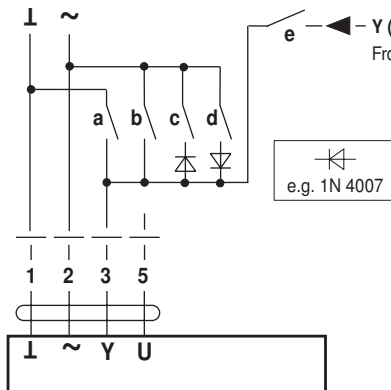


Procedure

- 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 travels in the opposite direction

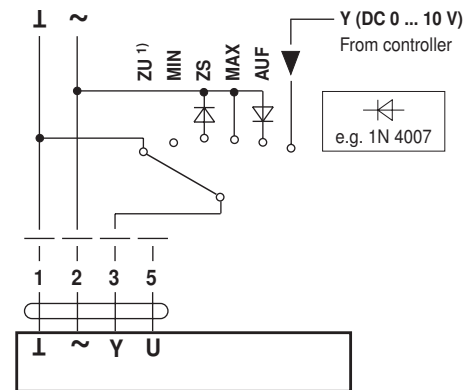
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



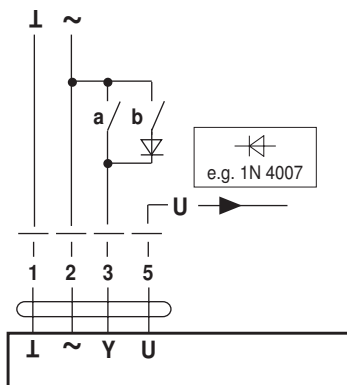
| Functions | a | b | c | d | e |
|-----------------------------------|---|---|---|---|---|
| CLOSE ¹⁾ | | | | | |
| MIN | | | | | |
| ZS (intermediate position) | | | | | |
| MAX | | | | | |
| OPEN | | | | | |
| Control mode in accordance with Y | | | | | |

Override control and limiting with AC 24 V with rotary switch



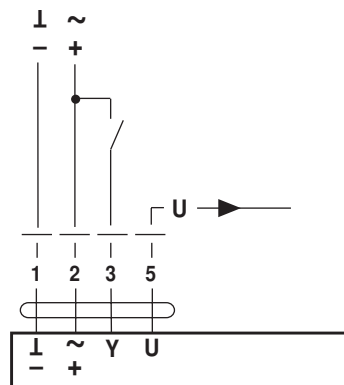
¹⁾ Caution ! This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V

3-point control



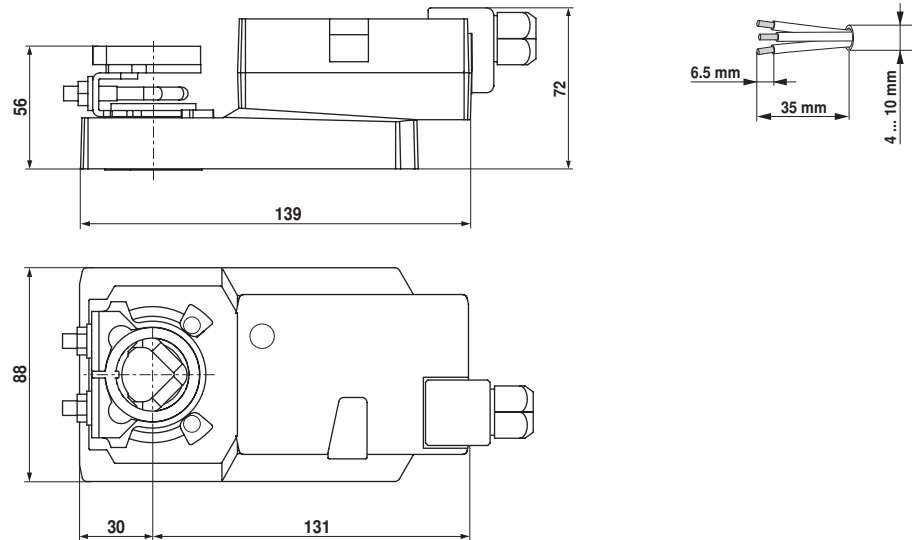
| | | Direction of rotation switch | |
|---|---|------------------------------|------|
| a | b | 1 | 0 |
| | | | |
| | | stop | stop |
| | | | |
| | | | |



Open-close control



Dimensions [mm]

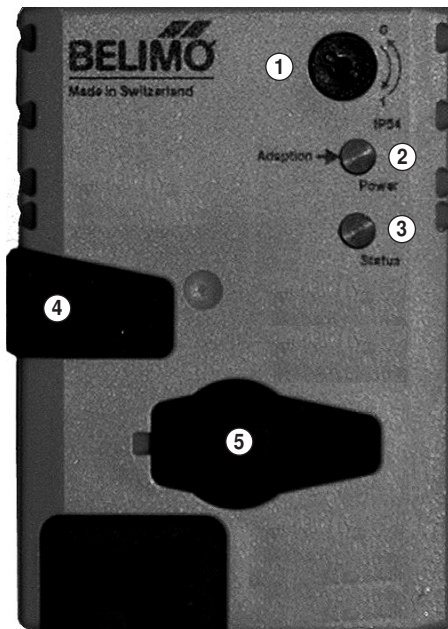
Dimensional drawings



| Damper spindle | Length | ● I | ■ I | ◆ I |
|-----------------------------------------------------------------------------------|--------|-------------------------|-----|-----|
|  | ≥48 | 10 ... 20 ¹⁾ | ≥10 | ≤20 |
|  | ≥20 | 10 ... 20 ¹⁾ | ≥10 | ≤20 |

¹⁾ CrNi (INOX) 12 ... 20

Operating controls and indicators



① Direction of rotation switch

Switching over: Direction of rotation changes

② Pushbutton and green LED display

Off: No voltage supply or malfunction

On: Operation

Press button: Switches on angle of rotation adaption followed by standard operation

③ Pushbutton and yellow LED display

Off: Standard operation

On: Adaption or synchronising process active

Press button: No function

④ Gear disengagement switch

Press button: Gear disengaged, motor stops, manual operation possible

Release button: Gear engaged, synchronisation starts, followed by standard operation

⑤ Service plug

For connecting parameterising and service tools

Check voltage supply connection

- a) ② Off and ③ On } Check the supply connections.
 b) ② Blinking and ③ Blinking } Possibly \perp and ∇ are swapped over.

