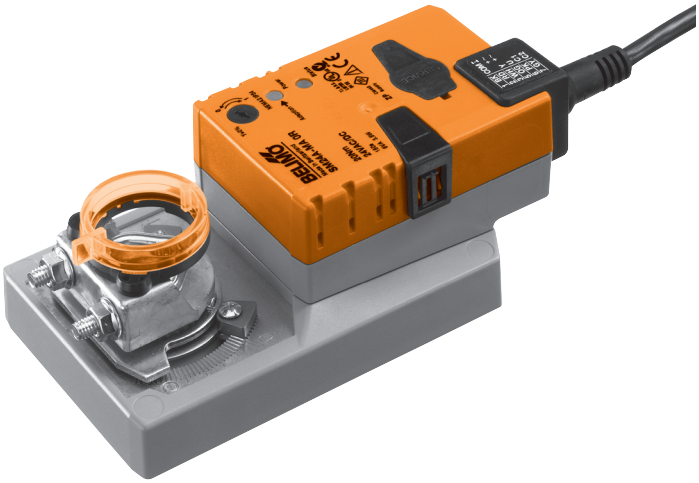
**Parameterisable damper actuator for adjusting air dampers in ventilation and air-conditioning systems in buildings**

- **Air damper size up to approx. 4 m²**
- **Torque 20 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control:**
  **Modulating 4 ... 20 mA**
- **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 | In operation | 3.5 W @ nominal torque | | |
| | At rest | 1.25 W | | |
| | For wire sizing | 6 VA | | |
| Connection | | Cable 1 m, 4 x 0,75 mm² | | |
| **Functional data** | | **Factory settings** | **Variable** | Settings |
| Torque (nominal torque) | | Min. 20 Nm @ nominal voltage | 25%, 50%, 75% reduced | ..... |
| Control | Control signal Y | 0 ... 20 mA, input impedance 500 Ω | | |
| | Operating range | 4 ... 20 mA | | |
| Position feedback (measuring voltage U) | | DC 2 ... 10 V, max. 0.5 mA | Start point DC 0.5 ... 8 V<br>End point DC 2.5 ... 10 V | ..... |
| Position accuracy | | ±5% | | |
| Direction of rotation | | Can be selected with 0 / 1 | | |
| Direction of motion at Y = 0 mA | | In switch position 0 ↶ and 1 ↷, respectively | Electronically reversible | ..... |
| Manual override | | Gearing latch disengaged with pushbutton, can be locked | | |
| Angle of rotation | | Max. 95°∢, can be limited at both ends with mechanical adjustable end stops | | |
| Running time | | 150 s / 90°∢ | 85 ... 353 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%<br>MIN (minimum position) = 0% | MAX = (MIN + 30°∢) ... 100%<br>MIN = 0% ... (MAX – 30°∢) | ..... |
| Sound power level | | Max. 45 dB (A) | with a 85 s = 45 dB (A)<br>running time of 353 s < 35 dB (A) | |
| Position indication | | Mechanical, pluggable | | |
| **Safety** | | | | |
| Protection class | | **III** Safety extra-low voltage<br>UL Class 2 Supply | | |
| Degree of protection | | IP54<br>NEMA 2, UL Enclosure Type 2 | | |
| EMC | | CE according to 2004/108/EC | | |
| Certification | | Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14<br>cULus according to UL 60730-1A and UL 60730-2-14<br>and CAN/CSA E60730-1:02 | | |
| Mode of operation | | Type 1 | | |
| Rated impulse voltage | | 0.8 kV | | |
| Control pollution degree | | 3 | | |
| Ambient temperature range | | –30 ... +50°C | | |
| Non-operating temperature | | –40 ... +80°C | | |
| Ambient humidity range | | 95% r.H., non-condensating | | |
| Maintenance | | Maintenance-free | | |

## Technical data *(continued)*

**Dimensions / Weight**

| | |
|---|---|
| Dimensions | See «Dimensions» on page 4 |
| Weight | Approx. 910 g |

## Safety notes

- **The 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 installation.**
- **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.**
- **To calculate the actuating force required for air dampers and sliders, the specifications supplied by the damper manufacturers concerning the surface, 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 4 ... 20 mA 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. The output signal and other parameters can be altered with the ZTH-GEN 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 |
|---|---|
| 0 / 1 — Y = 0 | ccw — Left stop |
| Y = 0 | cw — Right stop |

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

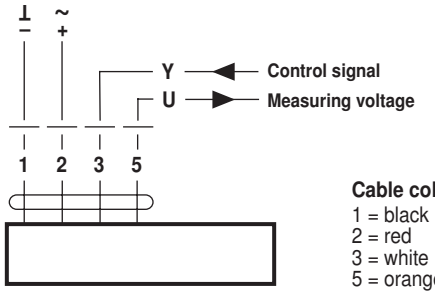
## Accessories

| | Description | Data sheet |
|---|---|---|
| **Electrical accessories** | Auxiliary switch S..A.. | T2 - S..A.. |
| | Feedback potentiometer P..A.. | T2 - P..A.. |
| | PC-Tool MFT-P | |
| | Parameterising device ZTH-GEN | T9 - ZTH-GEN |
| | 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

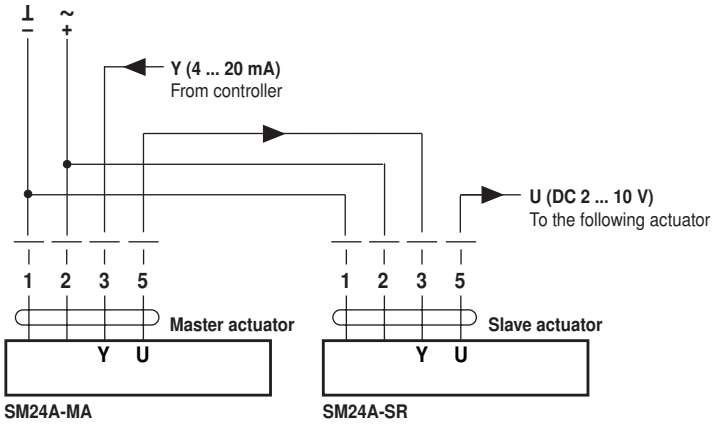
**Notes**
- Connection via safety isolating transformer.
- Other actuators can **not** be connected in parallel.



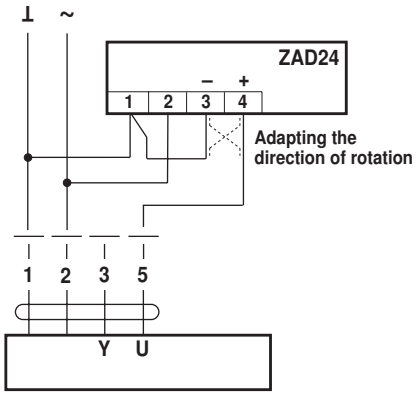

**Cable colours:**
1 = black
2 = red
3 = white
5 = orange

## Functions with basic values

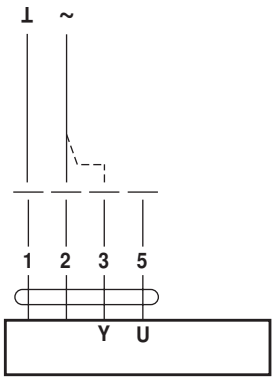
### Master/Slave control




### Position indication

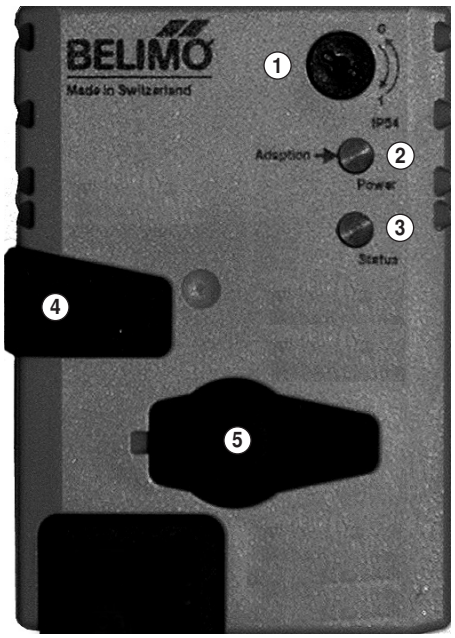



### Functional check




**Procedure**
- Apply AC 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

## 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

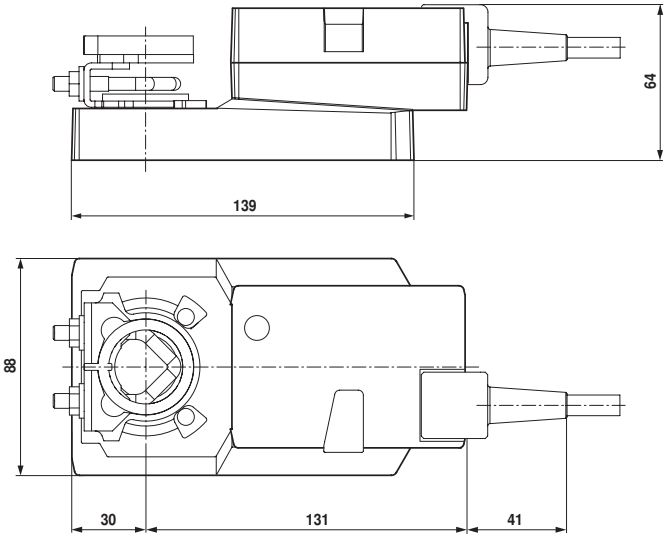
**(4) Gear disengagement switch**
Press button: Gear disengaged, motor stops, manual operation possible
Release button: Gear engaged, synchronisation starts, followed by standard operation

**(5) Service plug**
For connecting parameterising and service tools

**Check voltage supply connection**
(2) Off and (3) On Check the supply connections.
Possibly ⏚ and ⏦ are swapped over.

## Dimensions [mm]

**Dimensional drawings**




| Damper spindle | Length | | | |
|---|---|---|---|---|
| | ≥48 | 10 ... 20 [1] | ≥10 | ≤20 |
| | ≥20 | 10 ... 20 [1] | ≥10 | ≤20 |

[1] CrNi (INOX) 12 ... 20

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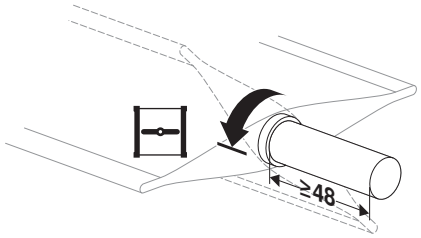
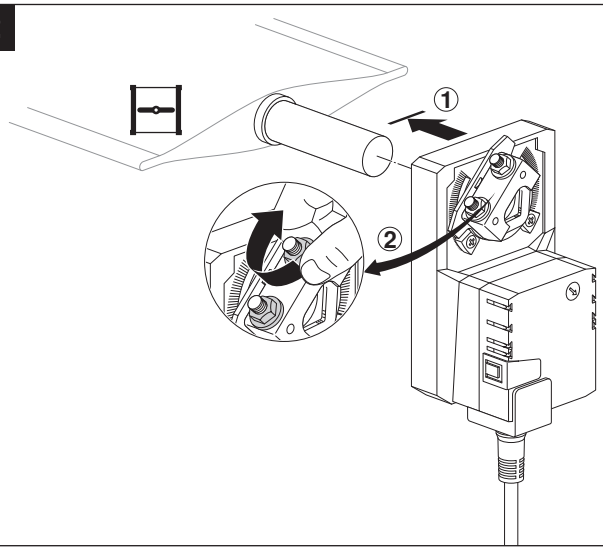
**1**

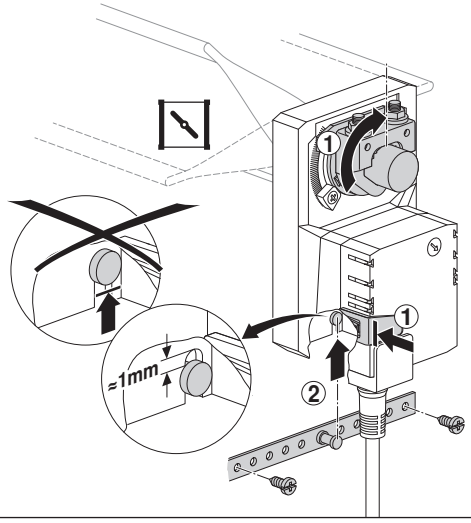



| | ● ↕ | ■ ↕ | ◆ ↕ |
|---|---|---|---|
| | 10 ... 20 | ≥10 | ≤20 |
| CrNi (INOX) | 12 ... 20 | ≥10 | ≤20 |

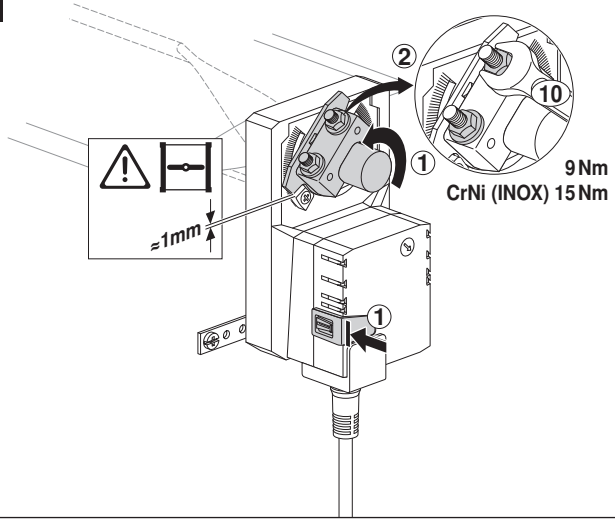
**2**



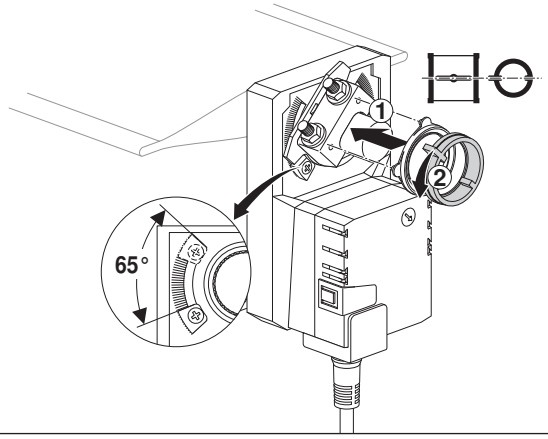

**3**

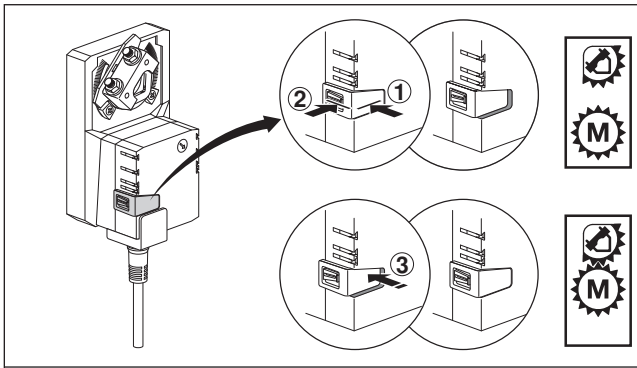


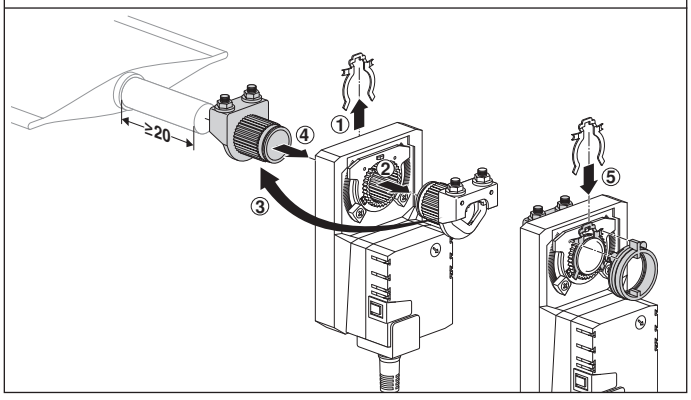

**4**




**5**

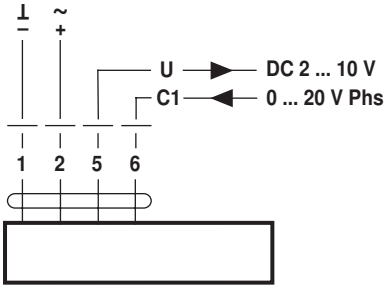


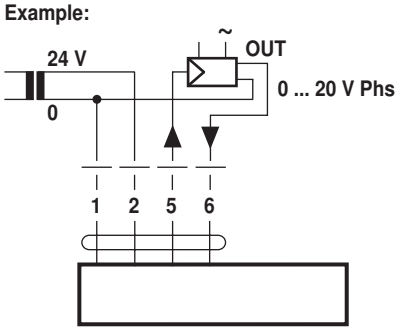



## SM24A-PC..

AC/DC 24 V

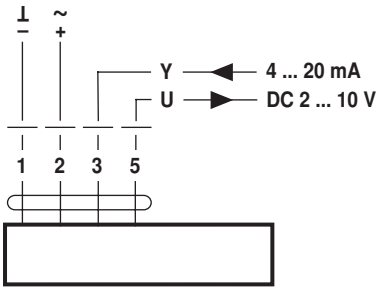



Example:



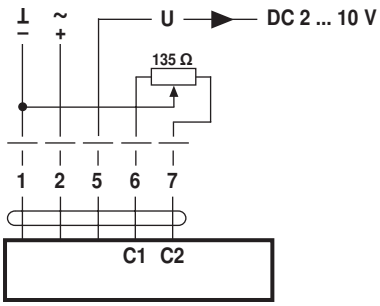

## SM24A-MA..

AC/DC 24 V




## SM24A-R9..

AC/DC 24 V




Honeywell, Serie 90: