

Multifunctional rotary actuator for 2 and 3 way control ball valves.

- 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             |
| Power supply range             | AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V |
| Power consumption In operation | 2 W at nominal torque                   |
| At rest                        | 1.2 W                                   |
| For wire sizing                | 3.5 VA                                  |
| Connection                     | Cable 1 m, 4 x 0.75 mm <sup>2</sup>     |

| Functional data  | Factory settings   | Variable  | Settings |
|--|--|---|----------|
| Torque (nominal torque)  | Min. 5 Nm at nominal voltage   |   |          |
| Control Control signal Y   | DC 0 ... 10 V, input impedance 100 kΩ  | Open-close, 3-point   | .....    |
| Working 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   | .....    |
| Uni-rotation   | ±5% absolutely   |   |          |
| Running time   | 90 s / 90° <math>\leq</math>   | 35 ... 150 s  | .....    |
| Automatic adjustment of running time, operating range and measuring signal U to match the mechanical angle of rotation | Manual triggering of this adaption by pressing the button «Adaption» or with the PC-Tool         | Automatic adaption whenever the supply voltage is switched on, or manual triggering | .....    |
| Angle de rotation limiting   | MAX (maximum position) = 100%<br>MIN (minimum position) = 0%<br>ZS (intermediate position) = 50% | MAX = (MIN + 32%) ... 100%<br>MIN = 0% ... (MAX - 32%)<br>ZS = MIN ... MAX          | .....    |
| Sound power level  | Max. 35 dB (A)   | With a running 35 s = 45 dB (A)<br>time of 90 s = 35 dB (A)                         |          |
| Position indication  | Mechanical, plug-on  |   |          |

### Safety

|                           |   |
|---------------------------|---|
| Protection class          | III Safety extra-low voltage  |
| Degree of protection      | IP54 in all mounting positions  |
| EMC                       | CE according to 89/336/EEC  |
| Mode of operation         | Type 1 (to EN 60730-1)  |
| Rated impulse voltage     | 0.8 kV (to EN 60730-1)  |
| Control pollution degree  | 3 (in acc. with EN 60730-1)   |
| Ambient temperature range | +0 ... +50 °C   |
| Temperature of medium     | +5 ... +110 °C in control ball valve<br>-10 °C with stem heating upon request |
| Non-operating temperature | -40 ... +80 °C  |
| Ambient humidity range    | 95% r.H., non-condensating (to EN 60730-1)                                    |
| Maintenance               | Maintenance-free  |

### Dimensions/weight

|            |                            |
|------------|----------------------------|
| Dimensions | See «Dimensions» on page 4 |
| Weight     | Approx. 500 g              |



## Safety notes



- The rotary actuator has been designed for use 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.
- It may only be installed by suitably trained personnel.  
All applicable legal or institutional installation regulations must be complied with.
- The switch for changing the direction of rotation may only be operated by authorized personnel. The direction of rotation must not be reversed in a frost protection circuit.
- 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 is not allowed to be removed from the unit.
- 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>Mode of operation</b>            | 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 actuator position 0 ... 100% and as slave control signal for other actuators. |
| <b>Parameterisable actuators</b>    | 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.   |
| <b>Simple direct mounting</b>       | Straightforward direct mounting on the ball valve with only one screw. The mounting position in relation to the ball valve can be selected in $90^\circ <$ steps.   |
| <b>Manual override</b>              | Manual operation with pushbutton possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched.   |
| <b>Adjustable angle of rotation</b> | Adjustable angle of rotation with mechanical end stops.   |
| <b>High functional reliability</b>  | The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.  |
| <b>Home position</b>                | 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.<br>Factory setting: Direction of rotation Y2 (counter-clockwise rotation)                            |

| Rotary actuator  | Rotary valve  |
|--|---------------|
|  Y2 | A - AB = 0%   |
|  Y1 | A - AB = 100% |

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

## Accessories

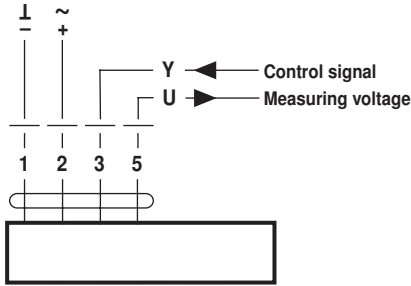
|                               | Description                      | Data sheet  |
|-------------------------------|----------------------------------|-------------|
| <b>Electrical accessories</b> | Auxiliary switch S..A..          | T2 - S..A.. |
|                               | Feedback potentiometer P..A..    | T2 - P..A.. |
|                               | Parameterizing device MFT-H      | T2 - MFT-H  |
|                               | PC-Tool MFT-P                    | T2 - MFT-P  |
|                               | Positioner SG..24                | T2 - SG..24 |
|                               | Digital position indicator ZAD24 | T2 - ZAD24  |

**Electrical installation**

**Wiring diagram**

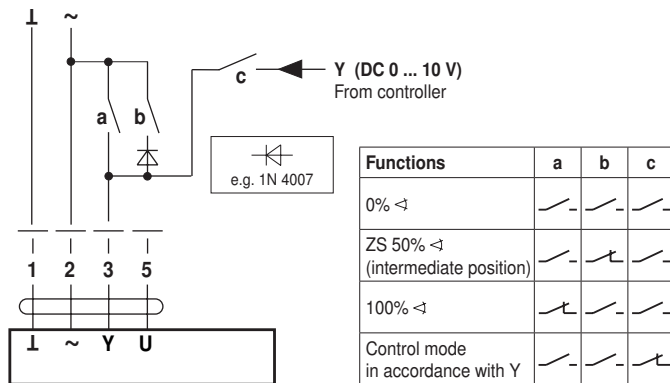
**Note**

- Connect via safety isolation transformer.
  - Parallel connection of other actuators possible.
  - Direction of rotation switch is covered.
- Factory setting: Direction of rotation Y2

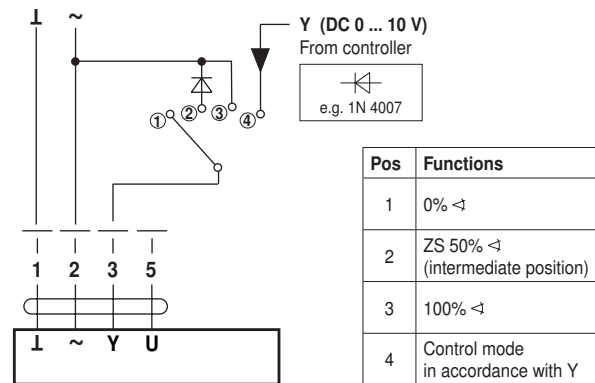


**Functions with basic values**

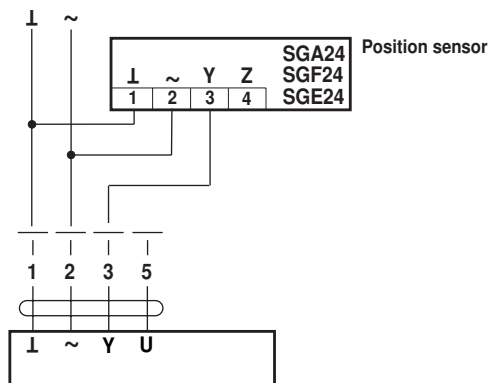
**Override control with AC 24 V with relay contacts**



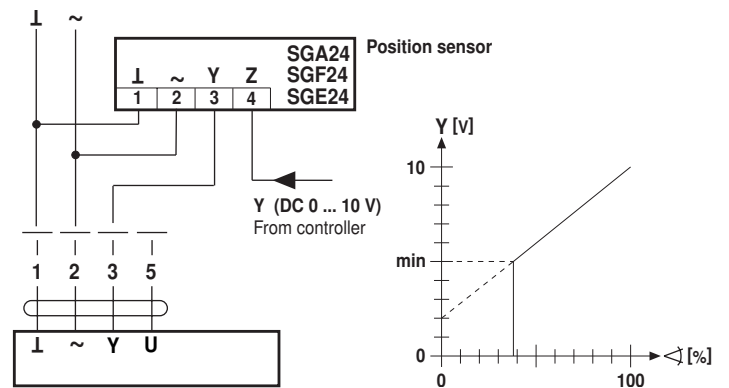
**Override control with AC 24 V with rotary control switch**



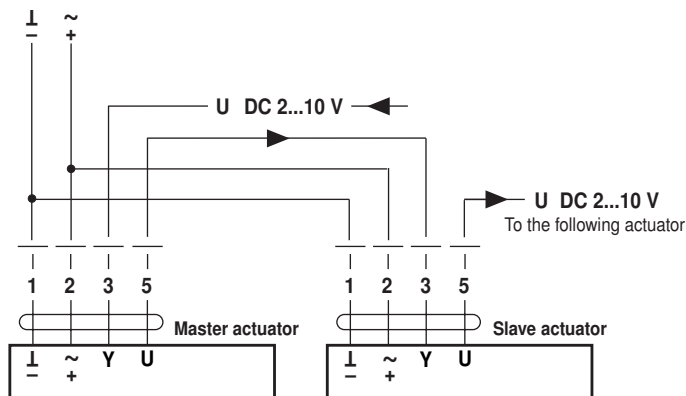
**Remote control 0 ... 100 %**



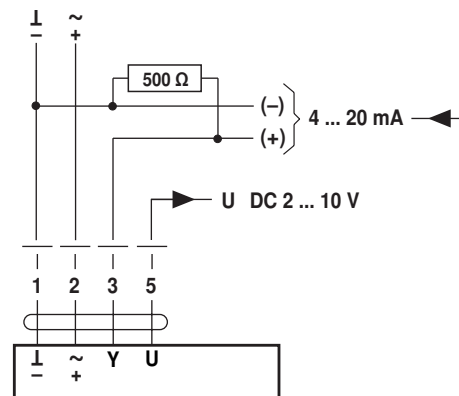
**Minimum limit**



**Master/Slave control (position-dependent)**



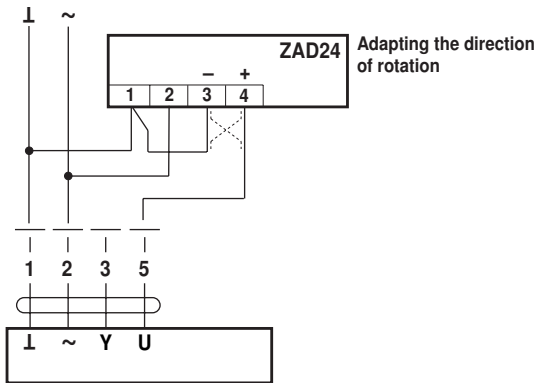
**Control with 4 ... 20 mA via external resistance**



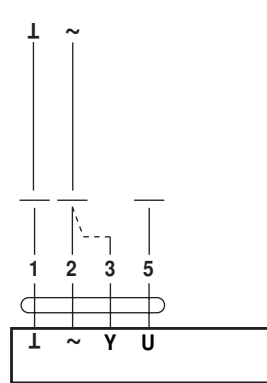
The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Functions with basic values (continued)

Position indication



Functional check

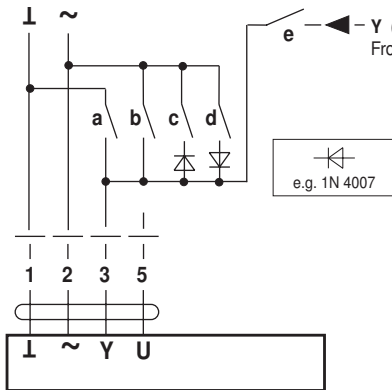


Procedure

- Apply 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

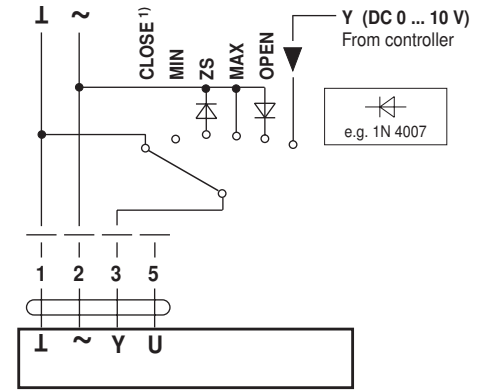
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



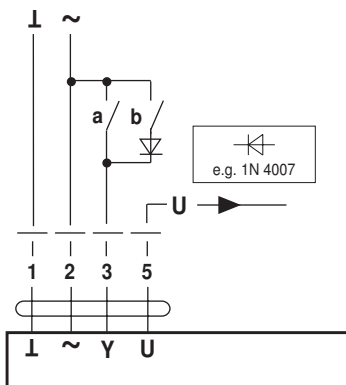
| Functions                         | a | b | c | d | e |
|-----------------------------------|---|---|---|---|---|
| CLOSE <sup>1)</sup>               |   |   |   |   |   |
| MIN                               |   |   |   |   |   |
| ZS (intermediate position)        |   |   |   |   |   |
| MAX     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

Override control and limiting with AC 24 V with rotary switch



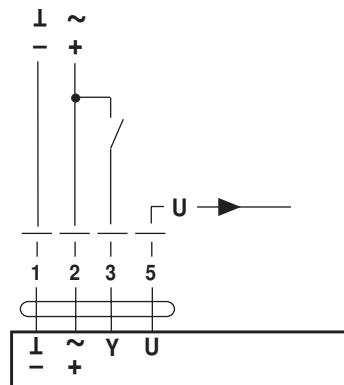
<sup>1)</sup> **Caution!** This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V.

3-point control



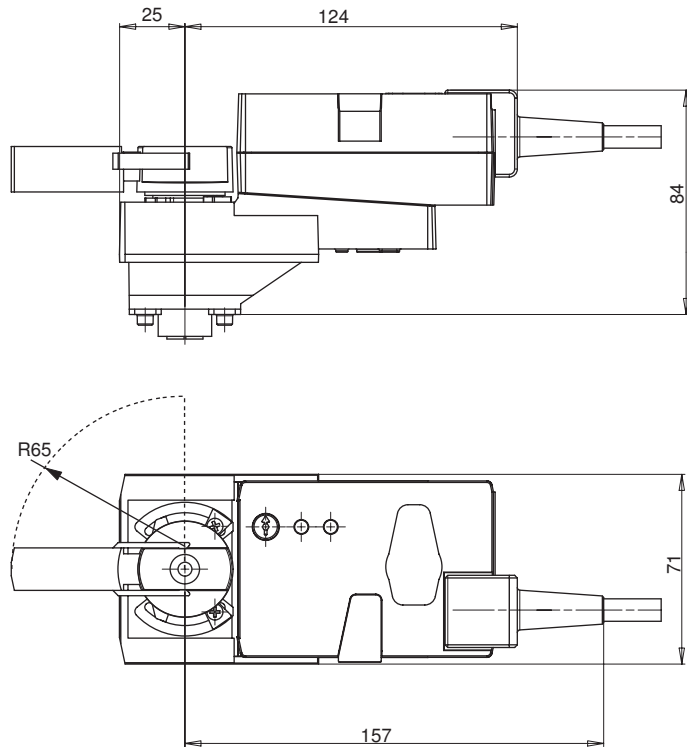
|   |   | Direction of rotation switch |      |
|---|---|------------------------------|------|
| a | b | 0                            | 1    |
|   |   |                              |      |
|   |   | stop                         | stop |
|   |   |                              |      |
|   |   |   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

Open/close control



Dimensions [mm]

Dimensional diagrams



Operating controls and indicators

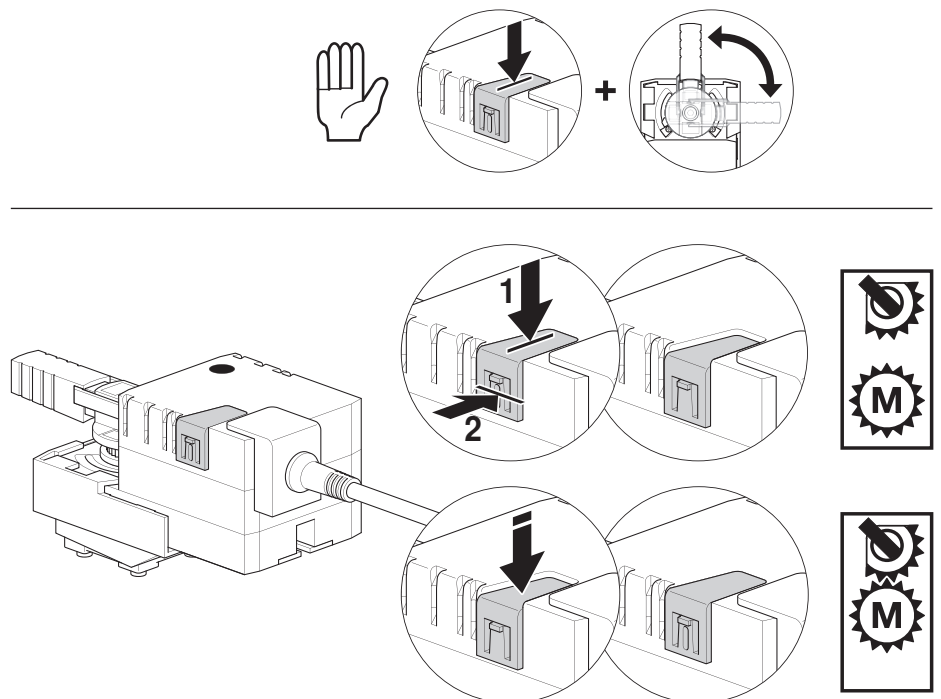
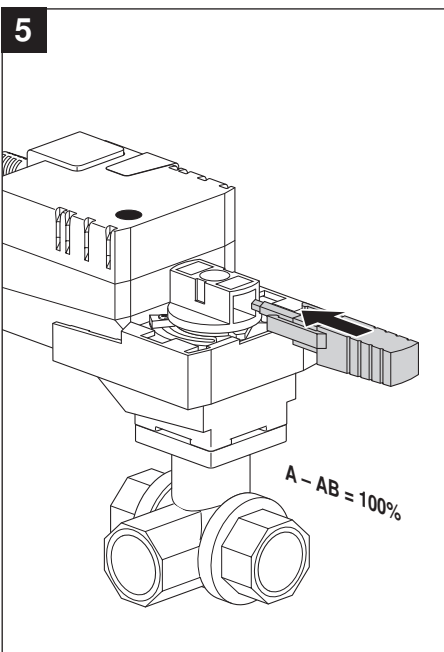
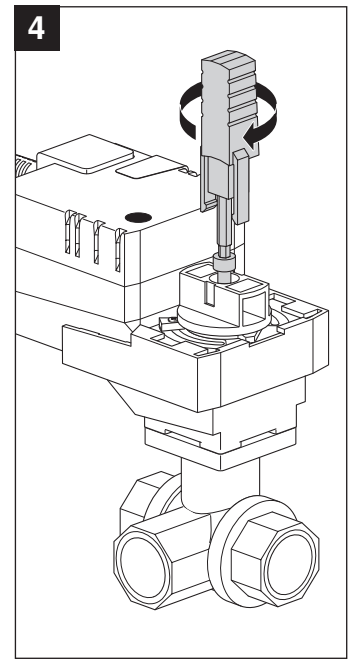
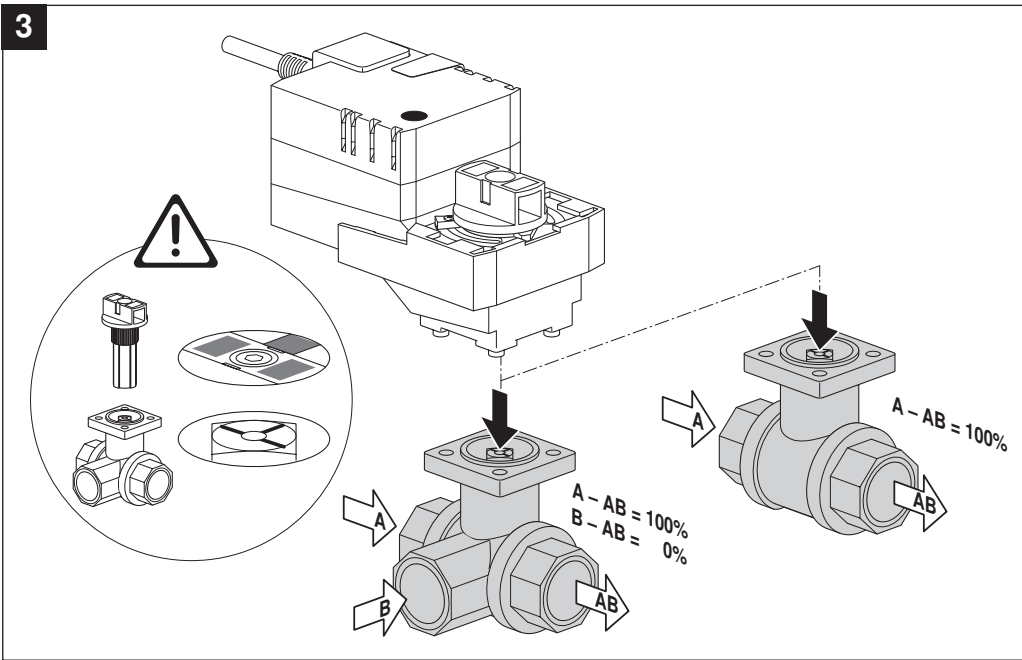
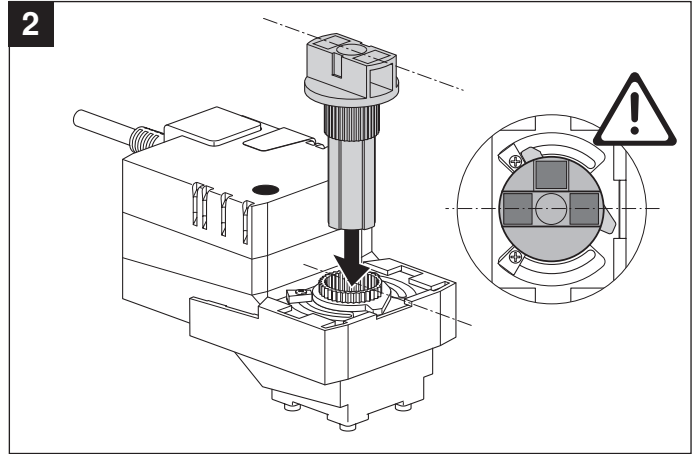
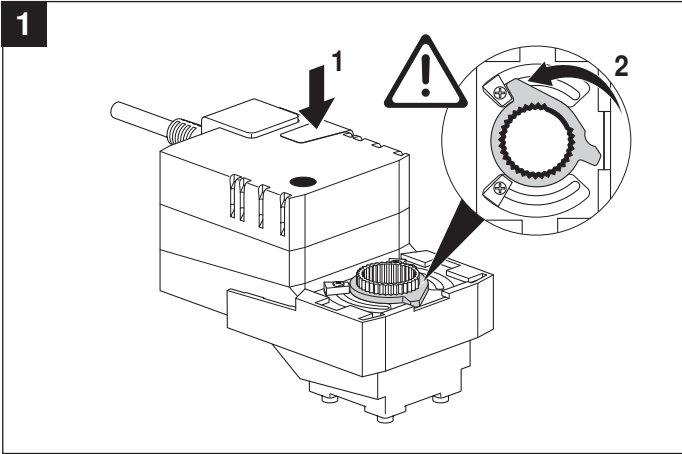


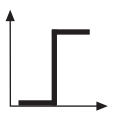
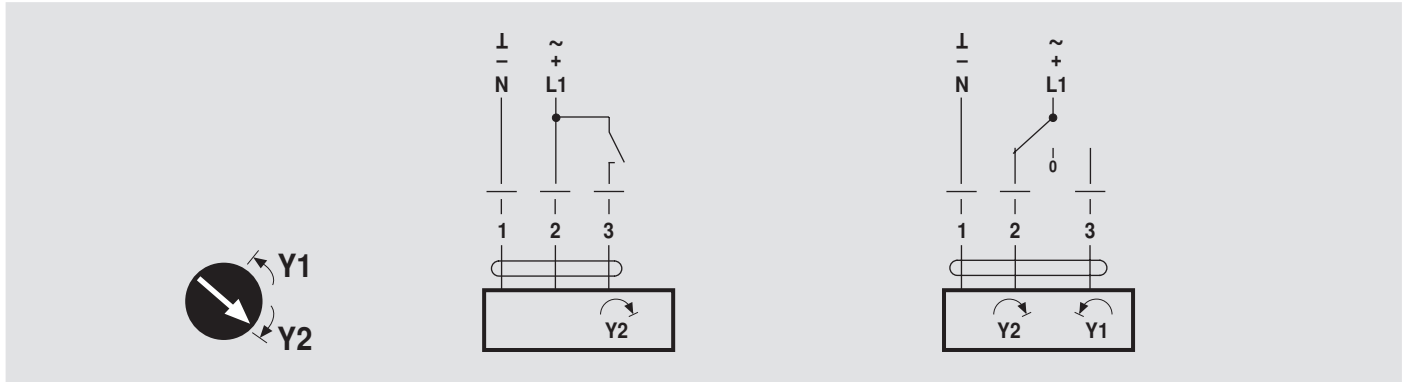
- ① **Direction of rotation switch**  
Switching over: Direction of rotation changes
- ② **Pushbutton and green LED display**  
Off: No voltage supply or malfunction  
Green on: Operation  
Press button: Switches on angle of rotation adaption followed by standard operation
- ③ **Pushbutton and yellow LED display**  
Off: Standard operation  
Yellow 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

Further documentations

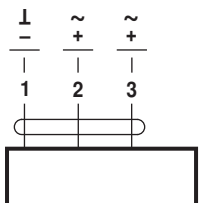
- Complete overview of actuators for water solutions
- Data sheets for butterfly valves
- Installation instructions for actuators and/or ball valves
- Notes for project planning (hydraulic characteristic curves and circuits, installation regulations, commissioning, maintenance etc.)

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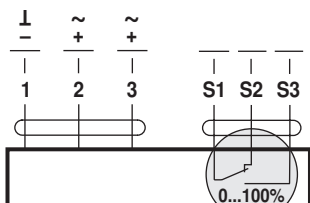




AC 24 V / DC 24 V

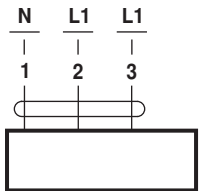


LR24A NR24A  
SR24A

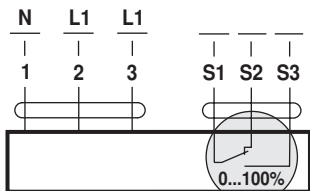


LR24A-S NR24A-S  
SR24A-S

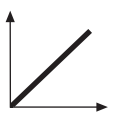
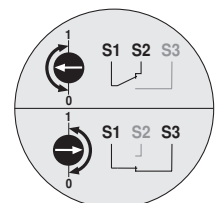
AC 100 ... 240 V ⚠



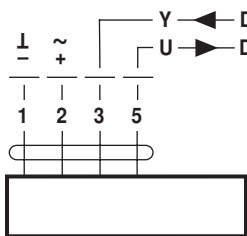
LR230A NR230A  
SR230A



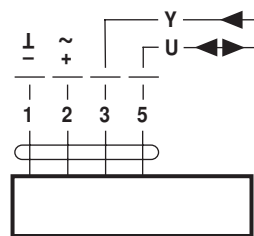
LR230A-S NR230A-S  
SR230A-S



AC 24 V / DC 24 V



TRC24A-SR LR24A-MF  
LR(C)24A-SR NR24A-MF  
NR(C)24A-SR SR24A-MF  
SR24A-SR



LR24A-MP NR24A-MP  
SR24A-MP

**LONWORKS**<sup>®</sup> AC 24 V / DC 24 V

