

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

- 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



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 | 4 W at nominal torque |
| At rest | 1.25 W |
| For wire sizing | 6 VA |
| Connection | Cable 1 m, 4 x 0.75 mm ² |

| Functional data | Factory settings | Variable | Settings |
|--|---|--|----------|
| Torque (nominal torque) | Min. 20 Nm at nominal voltage | | |
| Control Control signal Y | DC 0 ... 10 V, input impedance 100 kΩ | Open-close, 3-point (AC only) | |
| 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° \triangleleft | 90 ... 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 of rotation limiting | MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50% | MAX = (MIN + 30° \triangleleft) ... 100% MIN = 0% ... (MAX - 30° \triangleleft) ZS = MIN ... MAX | |
| Sound power level | Max. 35 dB (A) | With a running 90 s = 45 dB (A) time of 150 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 ... +100°C in control ball valve -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 5 |
| Weight | Approx. 500 g |



Safety notes



- The damper 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. 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

| | |
|-------------------------------------|---|
| 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 actuator 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 | 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. |
| Manual override | Manual operation with pushbutton possible - temporary, permanently. The gear is disengaged and the actuator decoupled for as long as the button is pressed / latched. |
| 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. 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

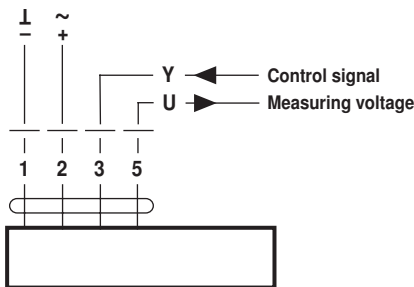
| | Description | Data sheet |
|-------------------------------|----------------------------------|-------------|
| Electrical accessories | Auxiliary switch S..A.. | T2 - S..A.. |
| | Feedback potentiometer P..A.. | T2 - P..A.. |
| | Parameterizing device MFT-H | T2 - MFT-H |
| | PC-Tool MFT-P | T2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

Electrical installation

Wiring diagram

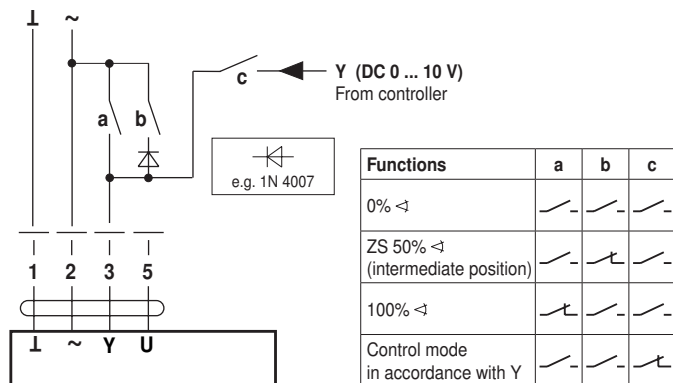
Note

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

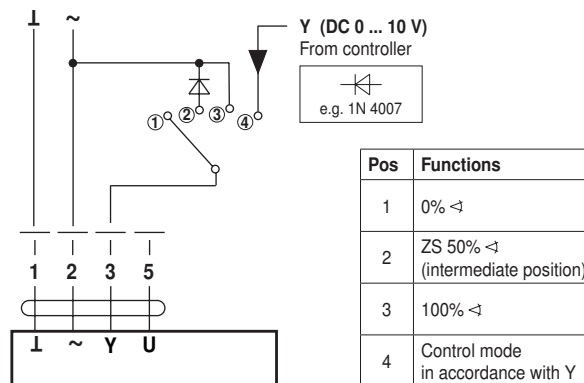


Functions with basic values

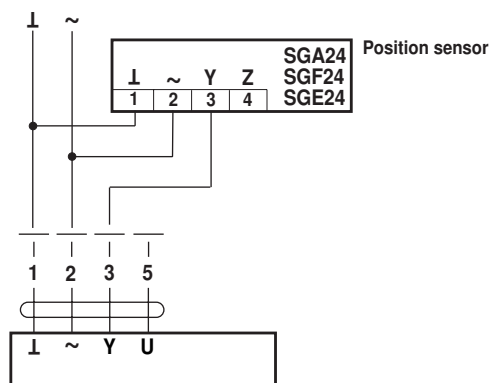
Override control with AC 24 V with relay contacts



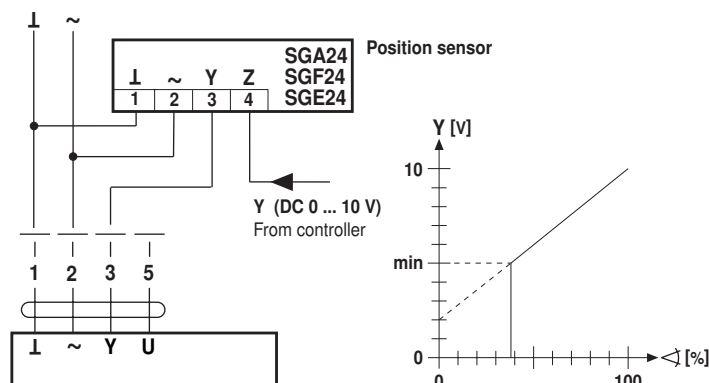
Override control with AC 24 V with rotary control switch



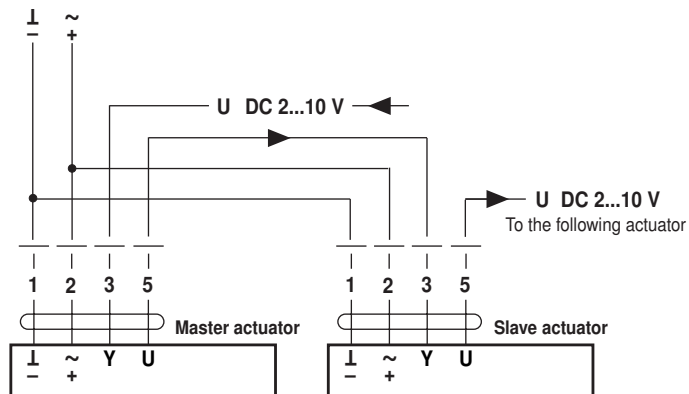
Remote control 0 ... 100 %



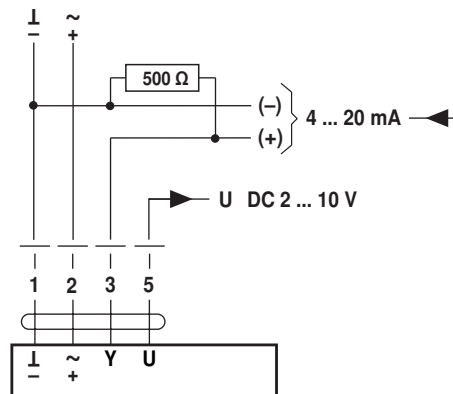
Minimum limit



Master/Slave control (position-dependent)



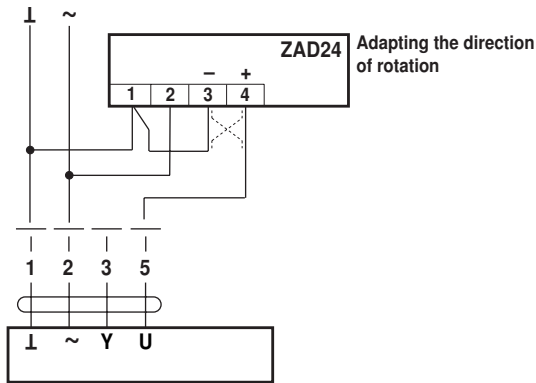
Control with 4 ... 20 mA via external resistance



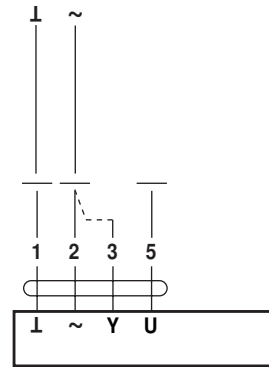
The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Functions with basic values

Position indication



Functional check

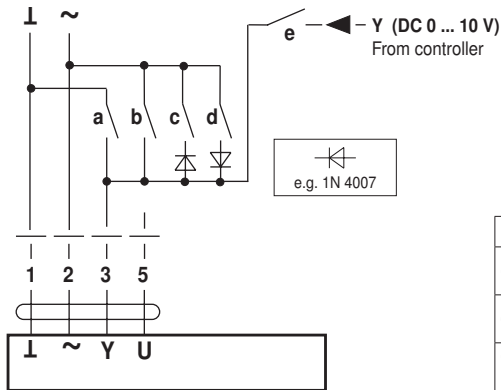


Procedure

- Apply AC 24 V to connection 1 and 2
- Disconnect connection 3:
 - For direction of rotation Y1: Actuator turns in the direction of ↺
 - For direction of rotation Y2: Actuator turns in the direction of ↻
- Short circuit connections 2 and 3:
 - Actuator runs in the opposite direction

Functions for actuators with specific parameters

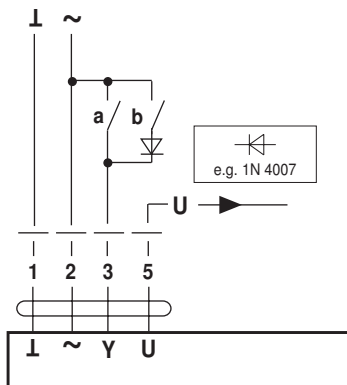
Override control and limiting with AC 24 V with relay contacts



| Functions | a | b | e |
|-----------------------------------|---|---|---|
| CLOSE ¹⁾ | | | |
| OPEN | | | |
| Control mode in accordance with Y | | | |

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

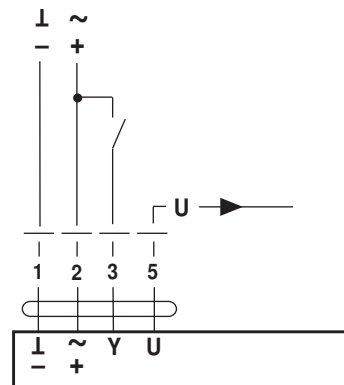
3-point control



Direction of rotation switch

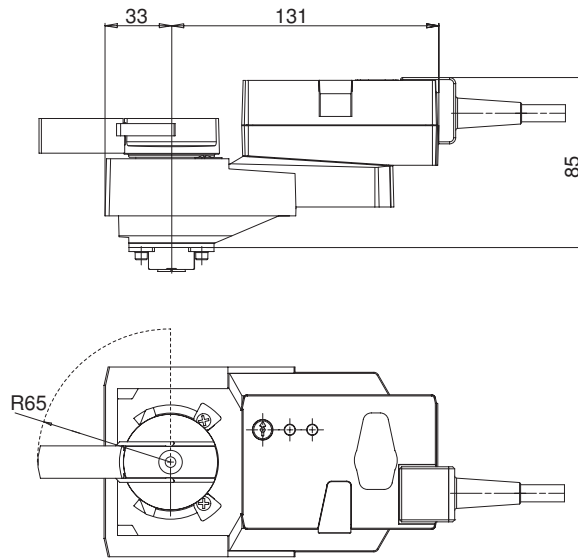
| a | b | 0 | 1 |
|---|---|------|------|
| | | | |
| | | stop | stop |
| | | | |
| | | | |

Open/close control (1 wire)



Dimensions [mm]

Dimensional diagrams



Operating controls and indicators

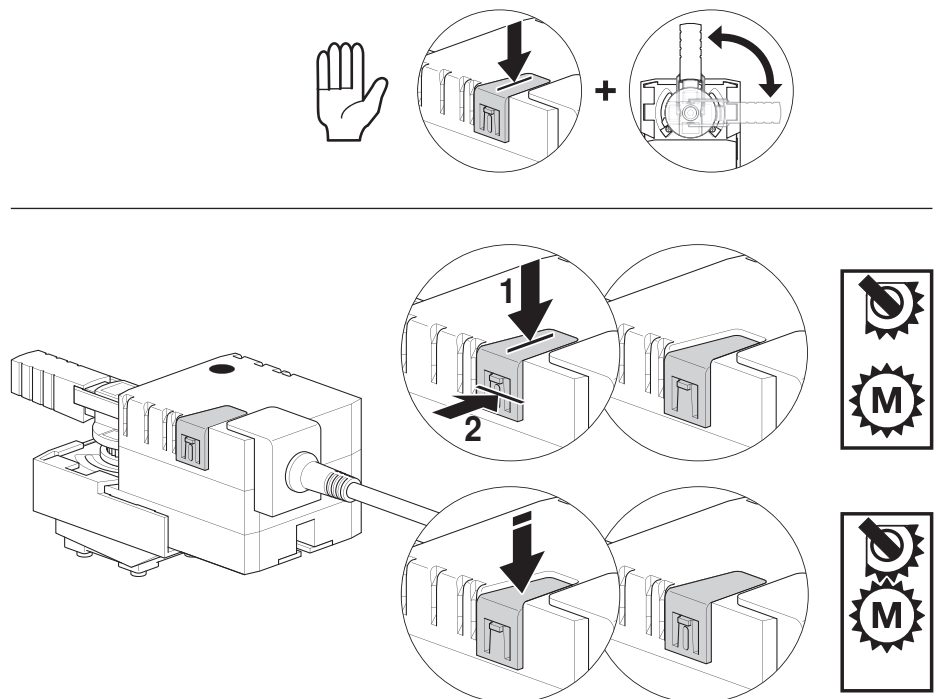
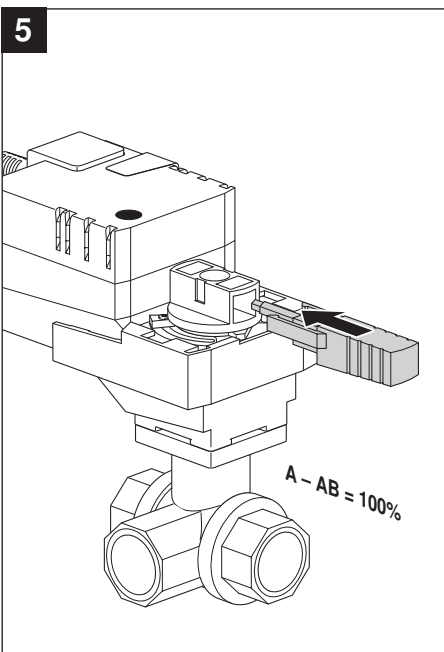
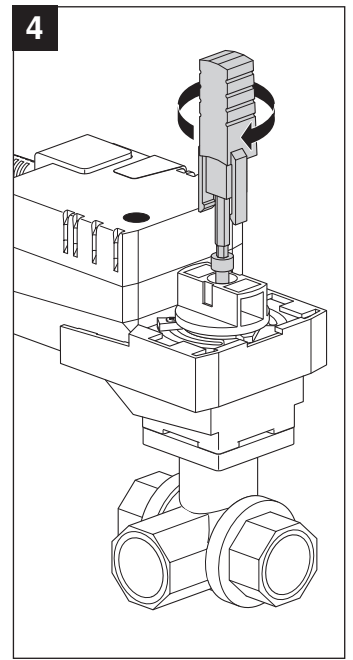
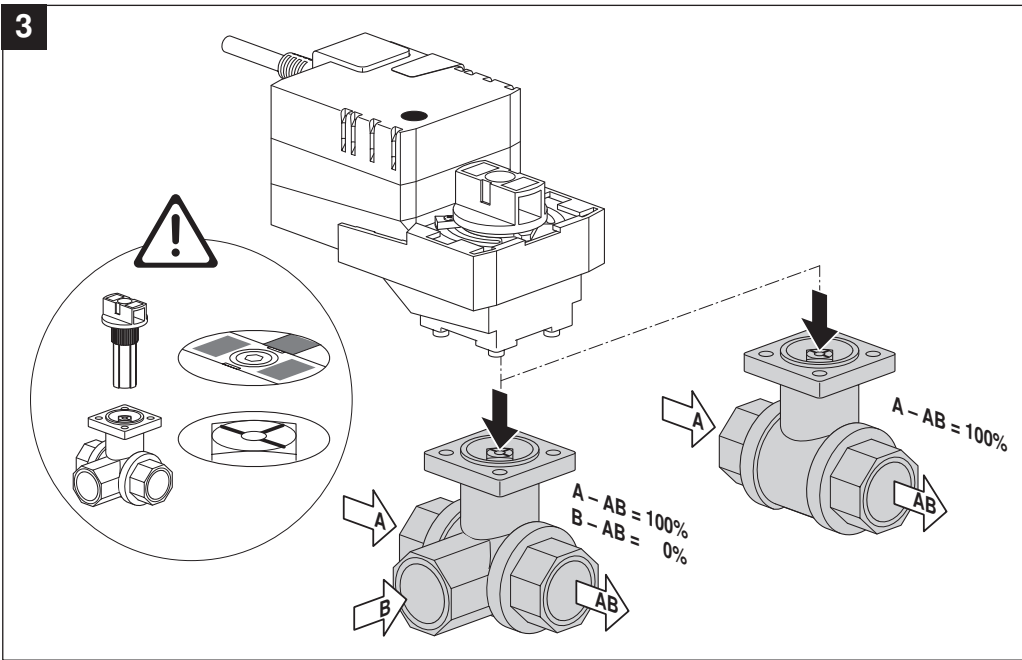
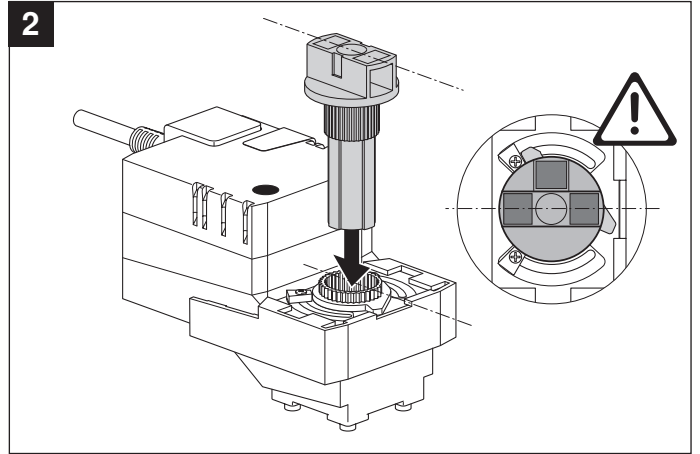
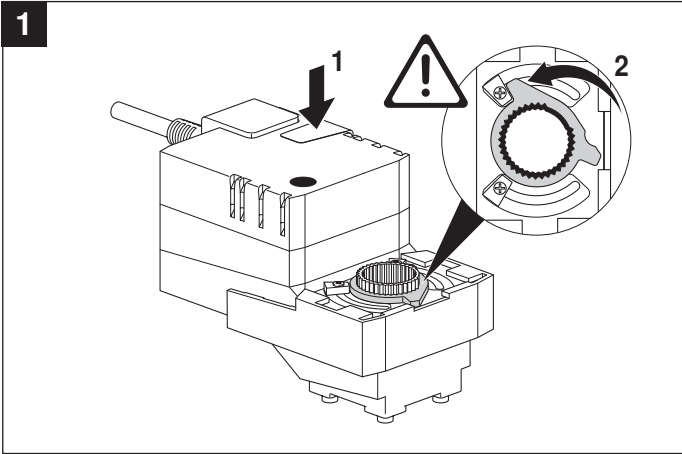


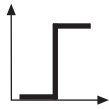
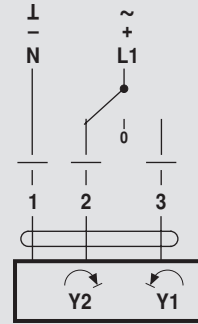
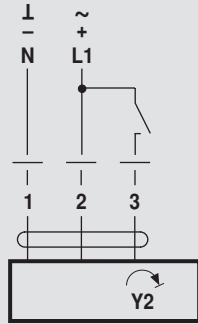
- ① **Direction of rotation switch**
Switching over: Direction of rotation changes
- ② **Pushbutton and green LED display**
Off: No voltage supply or malfunction
Green on: Operation
Press button: Switches on angle of rotation adaption followed by standard operation
- ③ **Pushbutton and yellow LED display**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

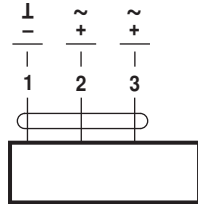
- Complete overview of actuators for water solutions
- Data sheets for butterfly valves
- Installation instructions for actuators and/or ball valves
- Notes for project planning (hydraulic characteristic curves and circuits, installation regulations, commissioning, maintenance etc.)

70741-00001.C

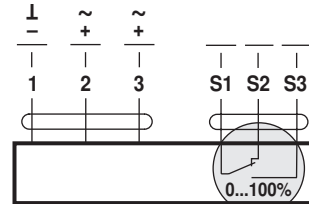




AC 24 V / DC 24 V

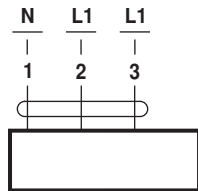


LR24A NR24A
SR24A

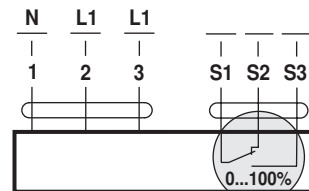


LR24A-S NR24A-S
SR24A-S

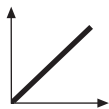
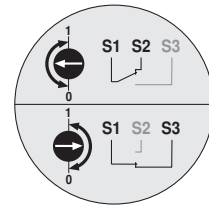
AC 100 ... 240 V ⚠



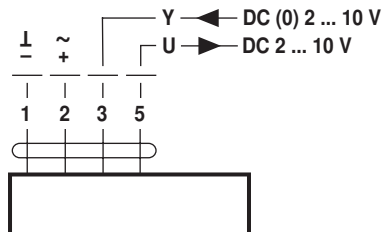
LR230A NR230A
SR230A



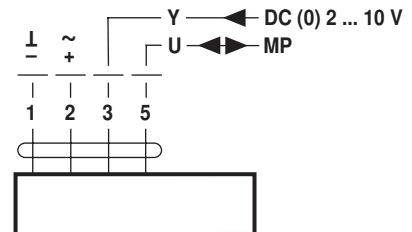
LR230A-S NR230A-S
SR230A-S



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® AC 24 V / DC 24 V

