

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 <sup>2</sup>

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° <math>\triangleleft</math>	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° <math>\triangleleft</math>) ... 100% MIN = 0% ... (MAX - 30° <math>\triangleleft</math>) 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

<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. 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

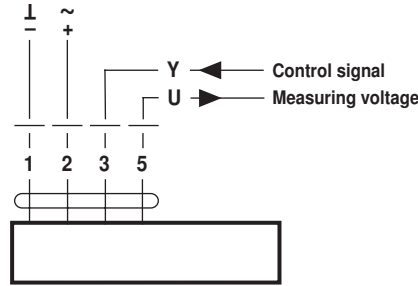
	Description	Data sheet
<b>Electrical accessories</b>	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	Parameterizing device MFT-H	T2 - MFT-H
	PC-Tool MFT-P	T2 - MFT-P
	Positioner SG..24	T2 - SG..24
	Digital position indicator ZAD24	T2 - ZAD24

**Electrical installation**

**Wiring diagram**

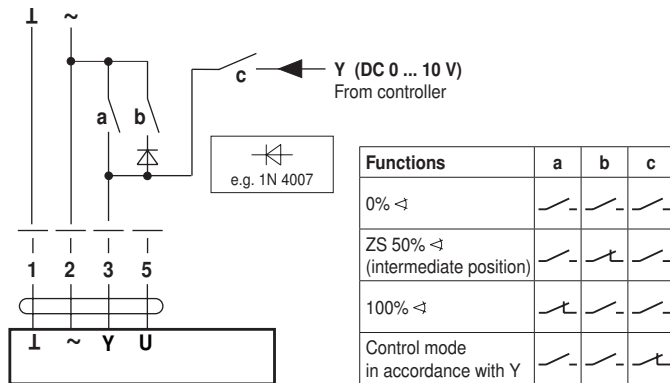
**Note**

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

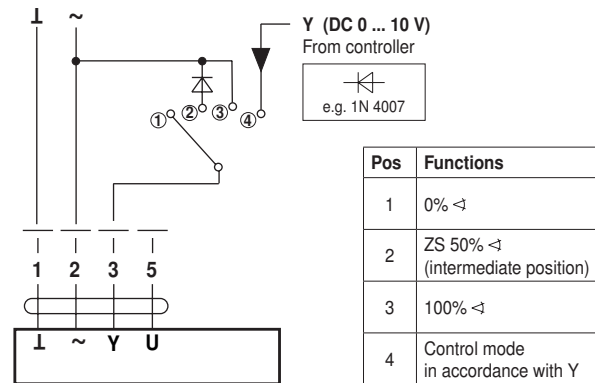


**Functions with basic values**

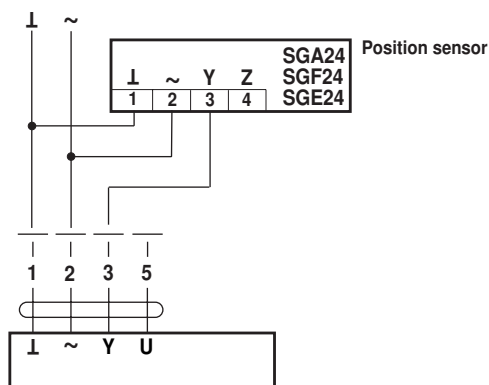
**Override control with AC 24 V with relay contacts**



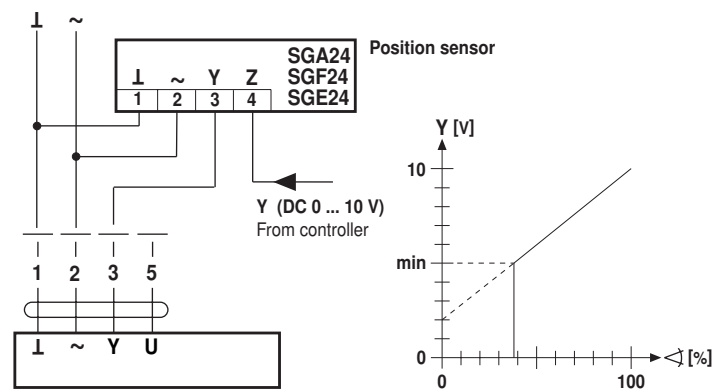
**Override control with AC 24 V with rotary control switch**



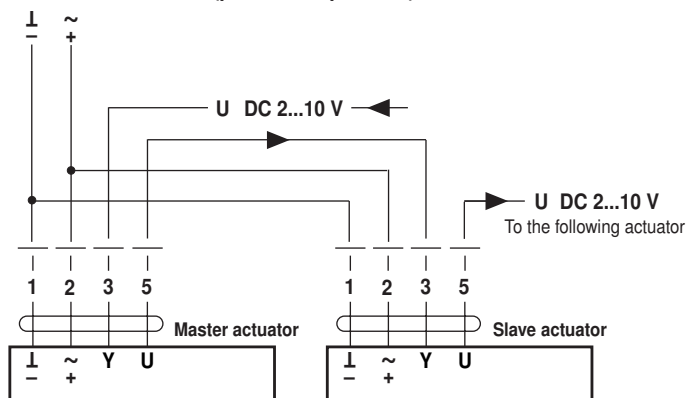
**Remote control 0 ... 100 %**



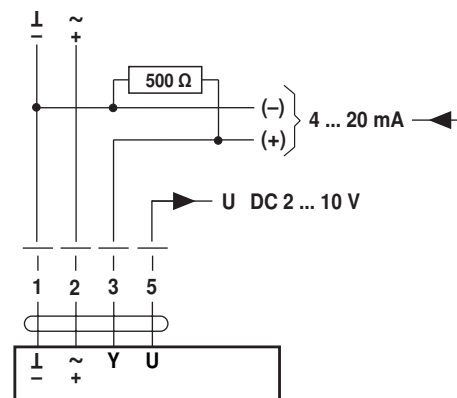
**Minimum limit**



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



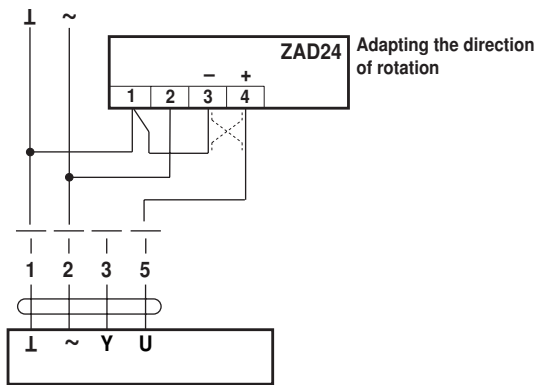
**Control with 4 ... 20 mA via external resistance**



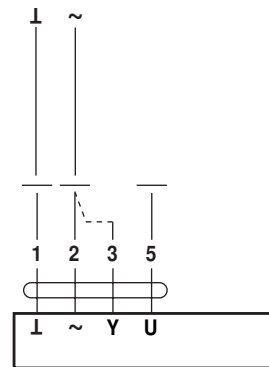
The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Functions with basic values

Position indication



Functional check

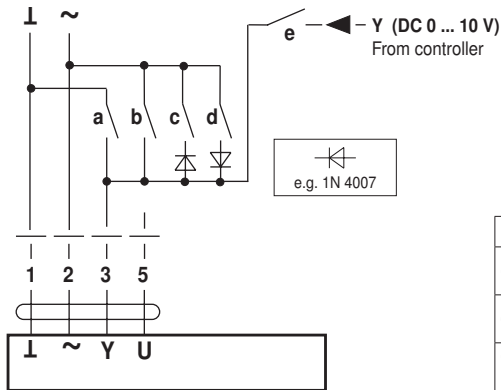


Procedure

- 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

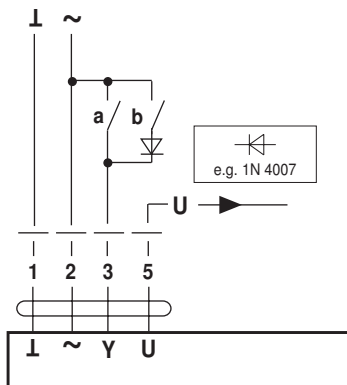
Override control and limiting with AC 24 V with relay contacts



Functions	a	b	e
CLOSE <sup>1)</sup>			
OPEN			
Control mode in accordance with Y			

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

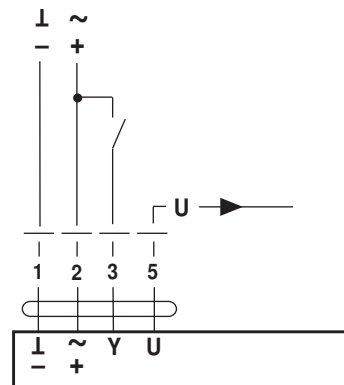
3-point control



Direction of rotation switch

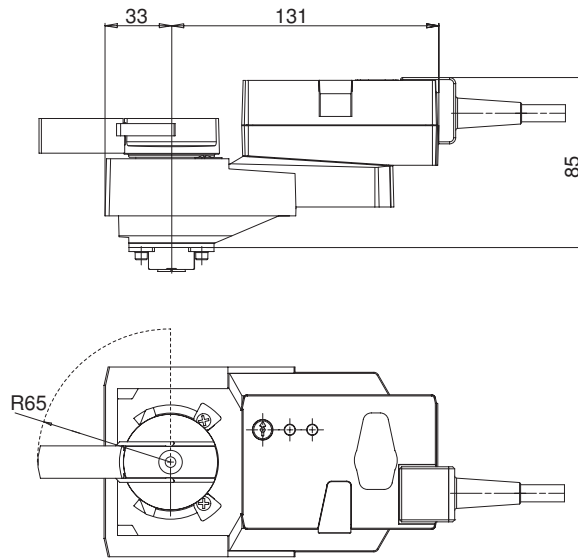
a	b	0	1
		stop	stop

Open/close control (1 wire)



Dimensions [mm]

Dimensional diagrams



Operating controls and indicators

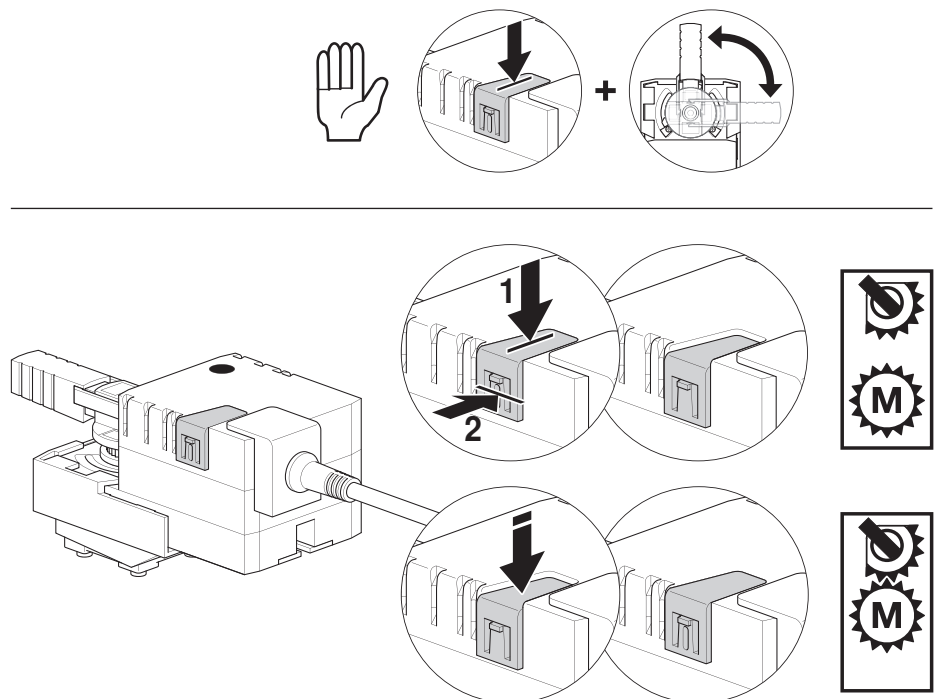
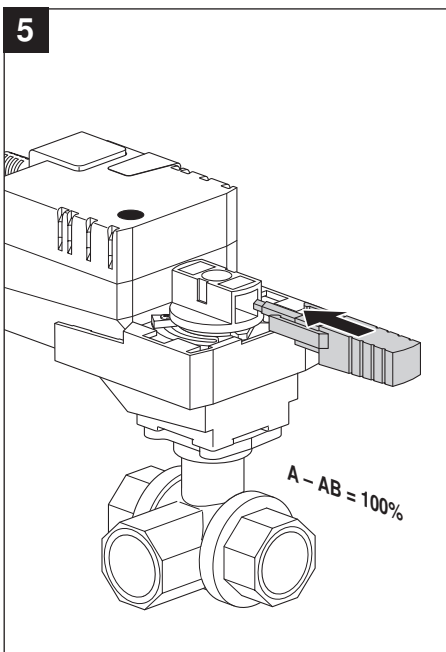
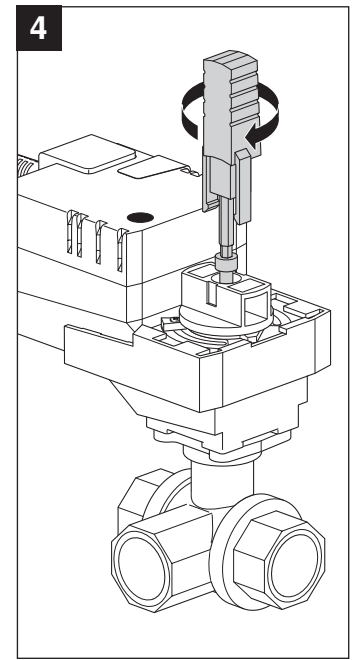
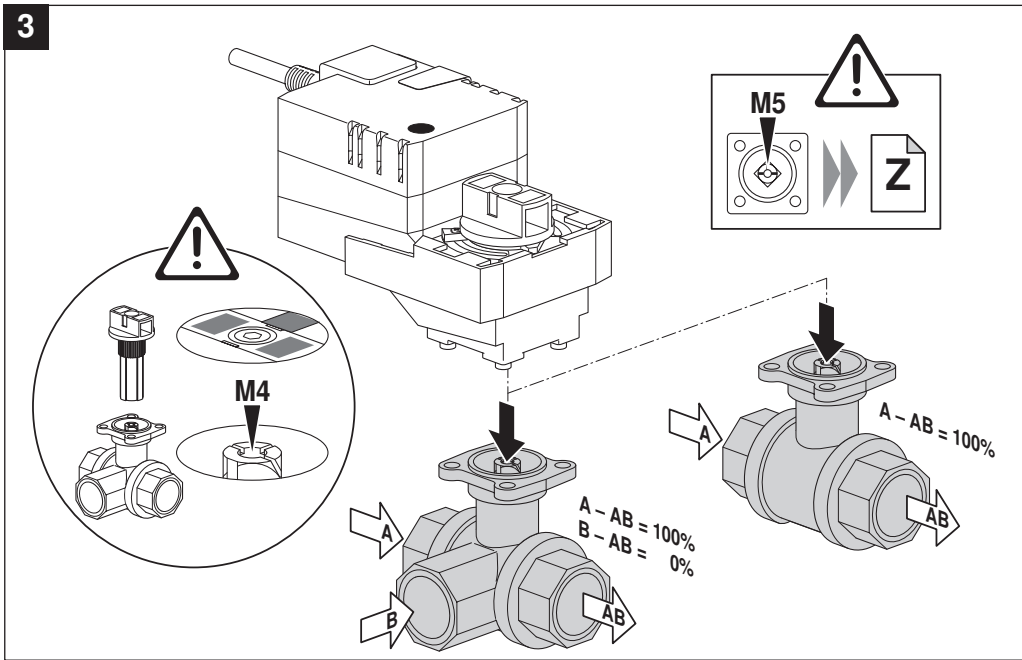
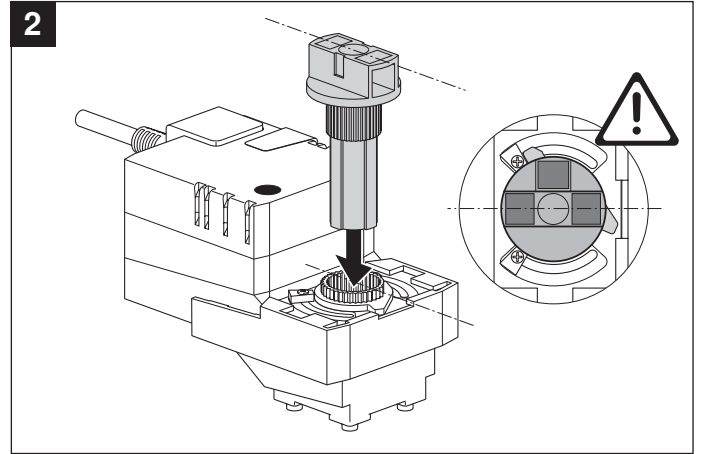
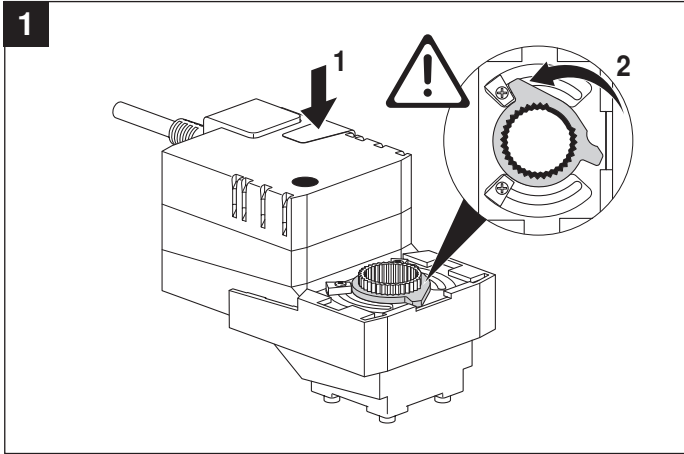


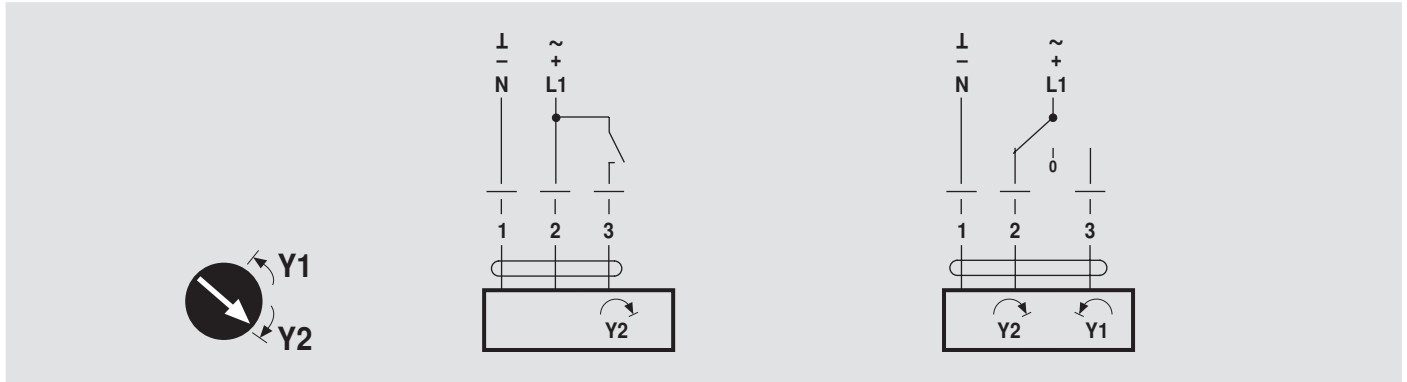
- ① **Direction of rotation switch**  
Switching over: Direction of rotation changes
- ② **Pushbutton and green LED display**  
Off: No voltage supply or malfunction  
Green on: Operation  
Press button: Switches on angle of rotation adaption followed by standard operation
- ③ **Pushbutton and yellow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

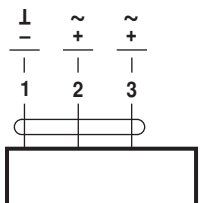
- Complete overview of actuators for water solutions
- Data sheets for butterfly valves
- Installation instructions for actuators and/or ball valves
- Notes for project planning (hydraulic characteristic curves and circuits, installation regulations, commissioning, maintenance etc.)

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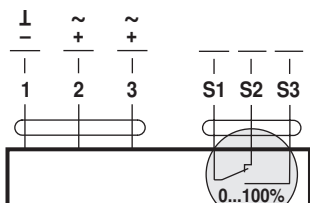




AC 24 V / DC 24 V

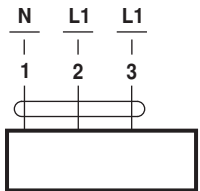


LR24A NR24A  
SR24A

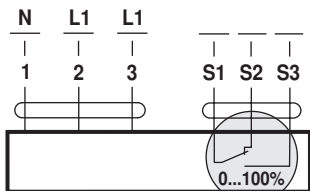


LR24A-S NR24A-S  
SR24A-S

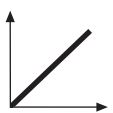
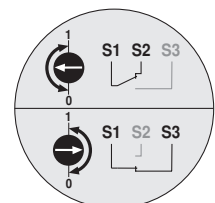
AC 100 ... 240 V ⚠



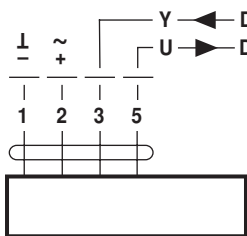
LR230A NR230A  
SR230A



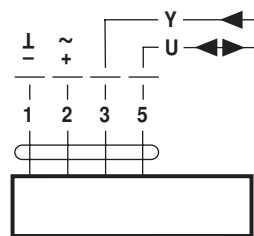
LR230A-S NR230A-S  
SR230A-S



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®** AC 24 V / DC 24 V

