

Parameterisable rotary actuator for rotary valves and butterfly valves

- Torque motor 90 Nm
- Nominal voltage AC/DC 24 V
- Control modulating DC 2...10 V Variable
- Position feedback DC 2...10 V Variable
- Running time motor max 90 s
- Optimum weather protection for use outdoors


**Technical data**

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 19.2...28.8 V
	Power consumption in operation	12 W
	Power consumption at rest	3 W
	Power consumption for wire sizing	21 VA
	Connection motor	Terminals
	Parallel operation	No
<b>Functional data</b>	Torque motor	90 Nm
	Control Operating range	DC 2...10 V
	Input Impedance	100 kΩ
	Operating modes optional	Open-close 3-point (AC only) Modulating (DC 0...32 V)
	Control Operating range variable	Start point DC 0.5...30 V End point DC 2.5...32 V
	Position feedback measuring voltage U	DC 2...10 V
	Position feedback measuring voltage U note	Max. 0.5 mA
	Position feedback measuring voltage U variable	Start point DC 0.5...8 V End point DC 2.5...10 V
	Position accuracy	±5%
	Manual override	with push-button, can be locked
	Running time motor	90 s / 90°
	Running time motor optional	30...120 s
	Adaption setting range	manual (automatic on first power-up)
	Adaption setting range variable	No action Adaption when switched on Adaption after pushing the gear disengagement button
	Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%
	Override control variable	MAX = (MIN + 33%)...100% MIN = 0%...(MAX - 33%) ZS = MIN...MAX
Sound power level motor	45 dB(A)	
Position indication	Mechanically (integrated)	
<b>Safety</b>	Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP66
	Degree of protection UL	NEMA 4, UL Enclosure Type 4
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1
	Rated current voltage supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature range	-30...50 °C
	Non-operating temperature	-40...80 °C

## Technical data

<b>Safety</b>	Ambient humidity range	Max. 95% r.h., non-condensing
	Maintenance	Maintenance-free
<b>Mechanical data</b>	Connection flange	F05
<b>Weight</b>	Weight	5.8 kg

## Safety notes



- This device has been designed for use in stationary heating, ventilation and air conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- Junction boxes must at least correspond with enclosure IP degree of protection!
- The cover of the protective housing may be opened for adjustment and servicing. When it is closed afterwards, the housing must seal tight (see installation instructions).
- The switch for changing the direction of rotation may only be operated by authorised specialists. The direction of rotation must not in particular be reversed in a frost protection circuit.
- The angle of rotation is not permitted to be subjected to mechanical limitation. It is forbidden to alter the mechanical end stops.
- 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 device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The actuator is not designed for applications where chemical influences (gases, fluids) are present or for utilisation in corrosive environments in general.
- The actuator may not be used in plenary applications (e.g. suspended ceilings or raised floors).
- The materials used may be subjected to external influences (temperature, pressure, construction fastening, effect of chemical substances, etc.), which cannot be simulated in laboratory tests or field trials. In case of doubt, we definitely recommend that you carry out a test. This information does not imply any legal entitlement. Belimo will not be held liable and will provide no warranty.
- If cables which are not authorised for UL (NEMA) Type 4 applications are used, then flexible metallic cable conduits or suitable threaded cable conduits of equal value are to be used.

## Product features

<b>Fields of application</b>	The actuator is particularly suitable for utilisation in outdoor applications and is protected against the following weather conditions: - UV radiation - Rain / Snow - Dirt / Dust - Humidity - Changing atmosphere / frequent and severe temperature fluctuations (recommendation: use the actuator with integrated factory-installed heating which can be ordered separately to prevent internal condensation)
<b>Simple direct mounting</b>	Simple direct mounting on the rotary valve or butterfly valve with mounting flange. The mounting orientation in relation to the fitting can be selected in 90° steps.
<b>Manual override</b>	Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked). The housing cover must be removed for manual override.
<b>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
<b>Combination valve/actuator</b>	For valves with the following mechanical specifications in accordance with ISO 5211 F07: - Square stem head SW = 17 mm for form-fit coupling of the rotary actuator. - Hole circle d = 70 mm

Accessories

Electrical accessories	Description	Type
	Auxiliary switch, add-on, 1 x SPDT	S1A
	Auxiliary switch, add-on, 2 x SPDT	S2A
	Feedback potentiometer 140 Ohm, add-on	P140A
	Feedback potentiometer 200 Ohm, add-on	P200A
	Feedback potentiometer 500 Ohm, add-on	P500A
	Feedback potentiometer 1 kOhm, add-on	P1000A
	Feedback potentiometer 2.8 kOhm, add-on	P2800A
	Feedback potentiometer 5 kOhm, add-on	P5000A
	Feedback potentiometer 10 kOhm, add-on	P10000A
	Heating with adjustable thermostat	HT24-MG

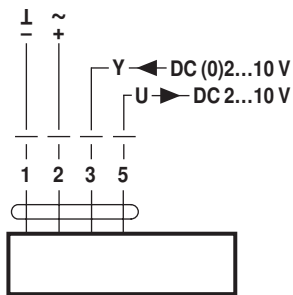
Electrical installation

**Notes**

- Connection via safety isolating transformer.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2.

Wiring diagrams

AC/DC 24 V, modulating

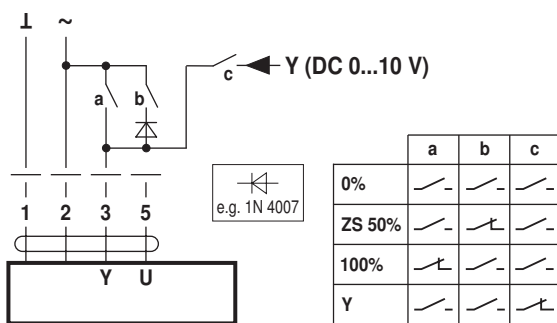


**Cable colours:**  
 1 = black  
 2 = red  
 3 = white  
 5 = orange

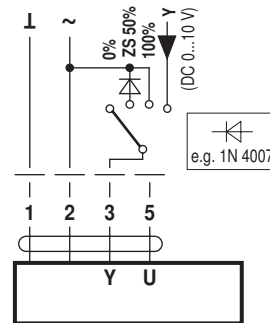
Functions

Functions with basic values (conventional mode)

Override control with AC 24 V with relay contacts

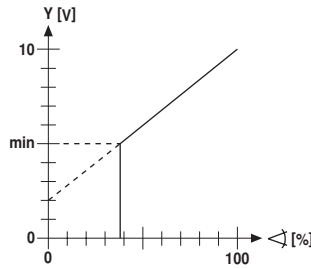
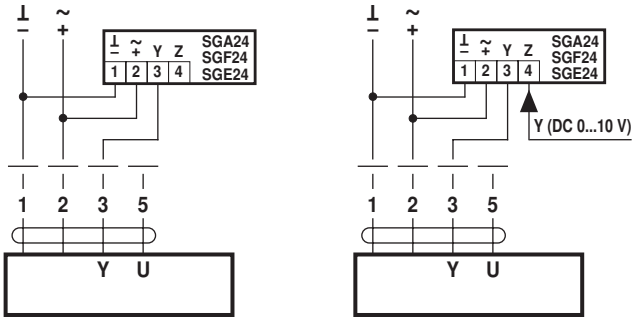


Override control with AC 24 V with rotary switch



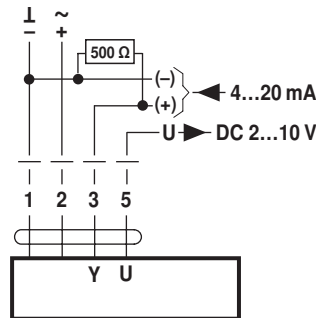
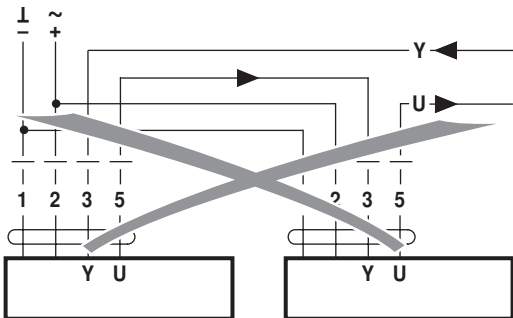
**Functions**

Remote control 0...100% with positioner SG.. Minimum limit with positioner SG..  
positioner SG..



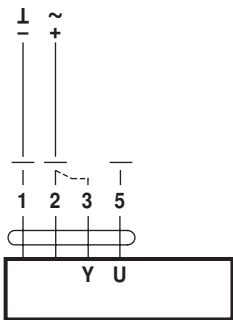
Follow-up control (position-dependent)

Control with 4...20 mA via external resistor



**Caution:**  
The operating range must be set to DC 2...10 V.  
The 500 Ω resistor converts the 4...20 mA current signal to a voltage signal DC 2...10 V

Functional check



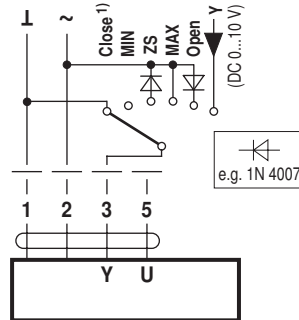
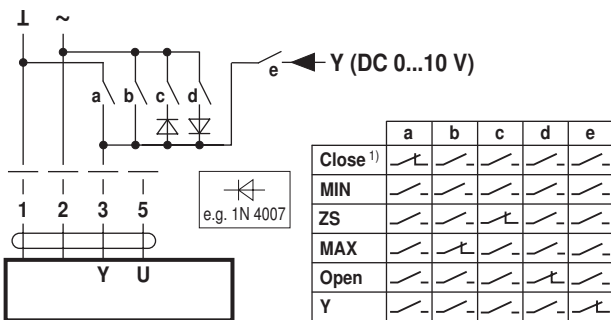
**Procedure**

1. Connect 24V to connections 1 and 2
2. Disconnect connection 3:
  - with direction of rotation Y1: Actuator rotates to the left
  - with direction of rotation Y2: Actuator rotates to the right
3. Short-circuit connections 2 and 3:
  - Actuator runs in opposite direction

**Functions for actuators with specific parameters (Parametrisation with PC-Tool necessary)**

Override control and limiting with AC 24 V with relay contacts

Override control and limiting with AC 24 V with rotary switch

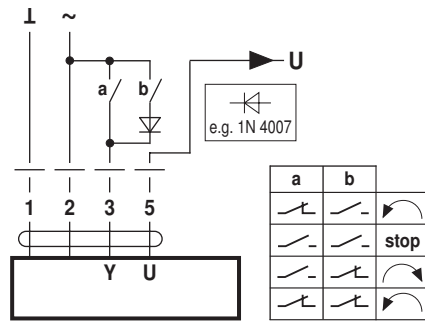
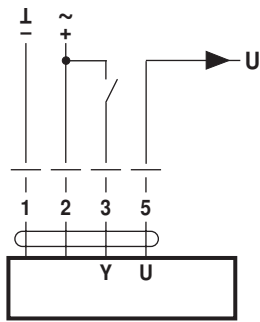


1) **Caution:** This function is only guaranteed if the start point of the operating range is defined as min. 0.5 V.

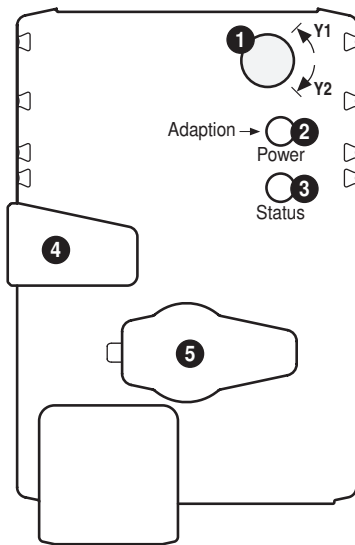
**Functions**

Control open-close

Control 3-point with AC 24 V



**Operating controls and indicators**



- 1 Direction of rotation switch**  
Switch over: Direction of rotation changes
- 2 Push-button and LED display green**  
Off: No power supply or malfunction  
On: In operation  
Press button: Triggers angle of rotation adaptation, followed by standard mode
- 3 Push-button and LED display yellow**  
Off: Standard mode  
On: Adaptation or synchronising process active  
Press button: No function
- 4 Gear disengagement button**  
Press button: Gear disengages, motor stops, manual override possible  
Release button: Gear engages, synchronisation starts, followed by standard mode
- 5 Service plug**  
For connecting parameterisation and service tools

**Check power supply connection**

- 2** Off and **3** On Possible wiring error in power supply

**Service**



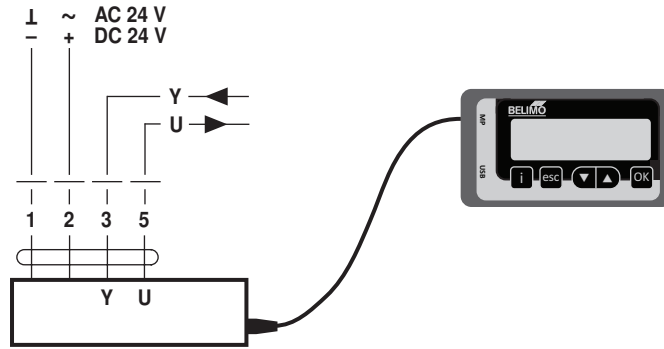
**Notes**

- The actuator can be parameterised by PC-Tool and ZTH EU via the service socket.

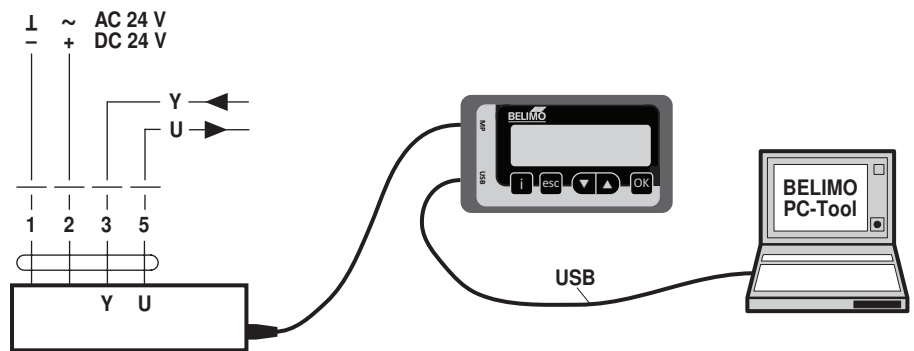
**Service**

**Service Tools connection**

**ZTH EU connection**



**PC-Tool connection**



**Dimensions [mm]**

**Dimensional drawings**

