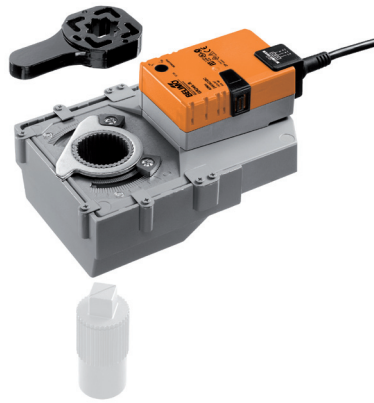


Parameterisable Retrofit rotary actuator for rotary valves and butterfly valves

- Nominal torque 40 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/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	4 W
	Power consumption at rest	1.5 W
	Power consumption for wire sizing	7 VA
	Connection supply / control	Cable 1 m, 4 x 0.75 mm ²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	Min. 40 Nm
	Control signal Y	DC 0...10 V
	Control signal Y note	Input impedance 100 kΩ
	Control signal Y variable	Open-close 3-point (AC only)
	Operating range Y	DC 2...10 V
	Operating range Y variable	Start point DC 0.5...30 V End point DC 2.5...32 V
	Position feedback U	DC 2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	Start point DC 0.5...8 V End point DC 2.5...10 V
	Position accuracy	±5%
	Manual override	Gear disengagement with push-button, can be locked
	Running time motor	90 s / 90°
	Motor running time variable	70...290 s
	Automatic adjustment of operating range to match the mechanical angle of rotation	Automatic adaptation of operating range and feedback to match the mechanical angle of rotation: Manual triggering of the adaption by pressing the «Adaption» button or with the PC-Tool
	Angle of rotation adaption variable	Automatic adaption whenever the supply voltage is switched on, or manual triggering
	Override_control_6692	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%
	Override_control_variable_6693	MAX = (MIN + 30°)...100% MIN = 0°...(MAX - 30°) ZS = MIN...MAX
	Sound power level motor max.	45 dB(A)
Sound power level variable	50 dB(A) @ 70 s running time <40 dB(A) @ 290 s running time	
Position indication	Mechanical, pluggable	
Safety	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMV	CE according to 2004/108/EC

Technical data

Safety	Certification IEC/EN	Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated current voltage motor	0.8 kV
	Control pollution degree	3
	Ambient temperature	0...50°C
	Non-operating temperature	-40...80°C
	Ambient humidity	95% r.h., non-condensing
Maintenance	Maintenance-free	
Mechanical data	Connection flange	F05/F07
Weight	Weight approx.	2.1 kg

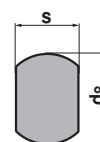
Safety notes



- This 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.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The switch for changing the direction of rotation may only be operated by authorized personnel. The direction of rotation must not in particular be reversed in a frost protection circuit.
- The surface temperature between actuator and fitting may not exceed 50°C.
- 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.
- 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 connected with a standard modulating signal of DC 0 ... 10V and travels to the position defined by the positioning signal. The 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 PC-Tool MFT-P or with the Service tool ZTH-GEN.
Application	For rotary valves and butterfly valves with the following mechanical specifications: <ul style="list-style-type: none"> – ISO 5211: F05 or F07 (hole circle diameter on the flange for mounting the fitting) – ISO 5211: quadratic or flat head stem head geometry
Tappet shaft	The tappet shaft is not included in the scope of delivery (see «Accessories»).






Type	s [mm]
ZGV-14	14
ZGV-16	16
ZGV-17	17
ZGV-19	19

Type	s [mm]	d ₈ [mm]
ZGF-14	14	18
ZGF-17	17	22

Product features

Direct mounting	Simple direct mounting on the rotary actuator or butterfly valve with mounting flange. The mounting orientation in relation to the fitting can be selected in 90° steps.
Manual override	Manual operation ist possible with the push-button (the gearing latch remains disengaged as long as the push-button is pressed or detented).
Adjustable angle of rotation	Adjustable angle of rotation with mechanical end stop.
High functional reliability	The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.
Home position	The actuator moves to the home position when the supply voltage is switched on for the first time, i.e. at the time of commissioning or after pressing the «gear disengagement» key Factory setting: Y2 (counter-clockwise rotation). The actuator then moves into the position defined by the positioning signal.

Y	
	A - AB = 0%
	A - AB = 100%

Accessories

	Description	Type
Electrical accessories	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
Mechanical accessories	Description	Type
	Form fit adapter GR, 14x14x40 mm	ZGV-14
	Form fit adapter GR, 16x16x40 mm	ZGV-16
	Form fit adapter GR, 17x17x20 mm	ZGV-17
	Form fit adapter GR, 19x19x40 mm	ZGV-19
	Form fit adapter GR, 14xØ18x33 mm	ZGF-14
Form fit adapter GR, 17xØ22x33 mm	ZGF-17	
Service Tools	Description	Type
	Service tool, for MF/MP/Modbus/LonWorks actuators and VAV-Control Belimo PC-Tool, software for adjustments and diagnostics	ZTH-GEN MFT-P

Electrical installation

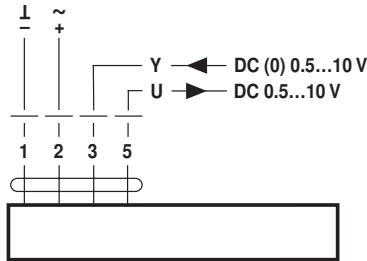


Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.
- Direction of rotation switch is covered. Factory setting: Direction of rotation Y2.

Wiring diagrams

AC/DC 24 V, modulating



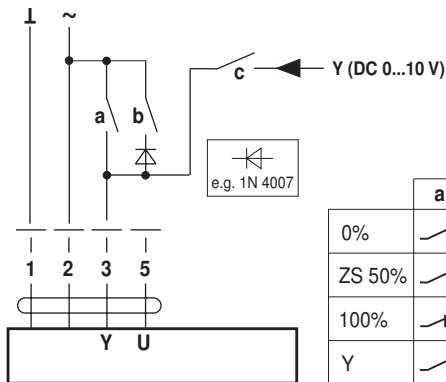
Cable colours:

- 1 = black
- 2 = red
- 3 = white
- 5 = orange

Electrical installation

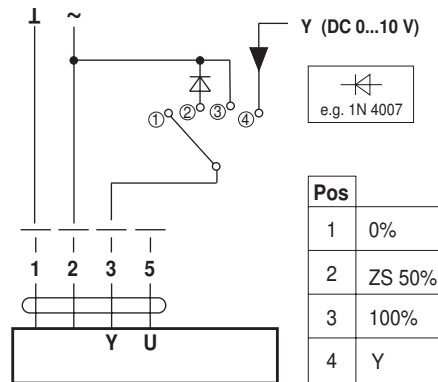
Functions with basic values (only in conventional mode)

Override control with AC 24 V with relay contacts



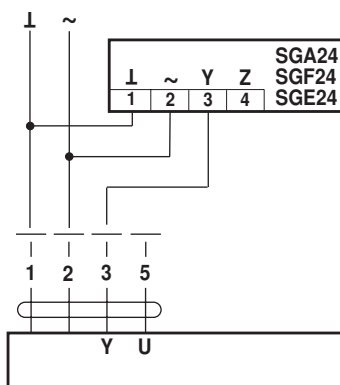
	a	b	c
0%	—	—	—
ZS 50%	—	—	—
100%	—	—	—
Y	—	—	—

Override control with AC 24 V with rotary switch

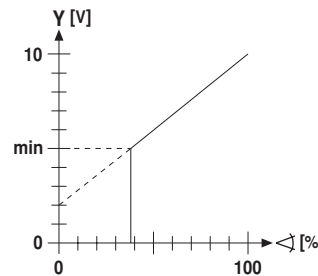
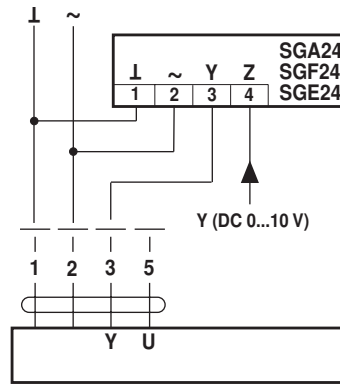


Pos	
1	0%
2	ZS 50%
3	100%
4	Y

Remote control 0...100%

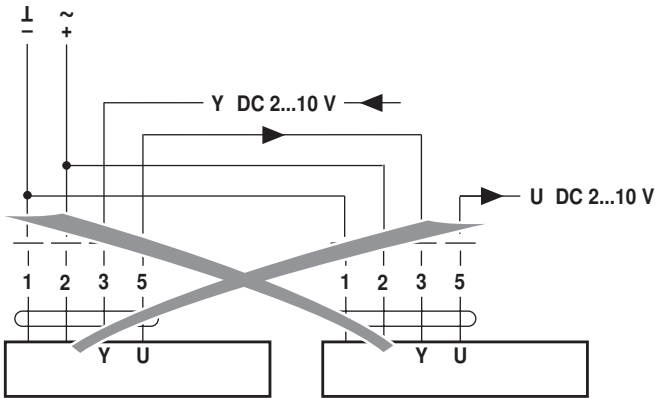


Minimum limit

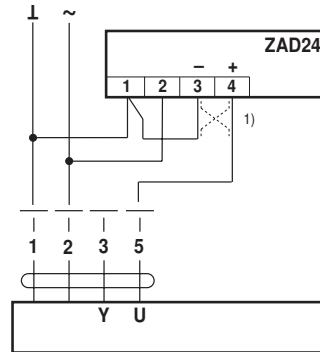


Electrical installation

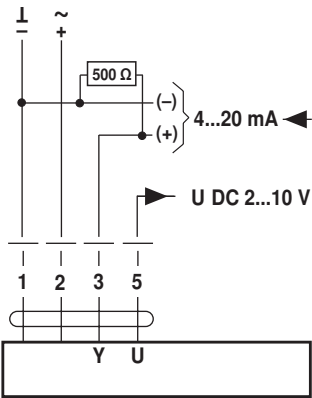
Follow-up control (position-dependent)



Position indication

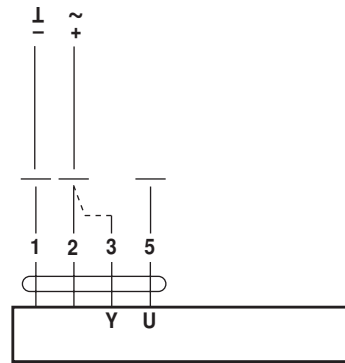


Control with 4...20 mA via external resistor



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

Functional check

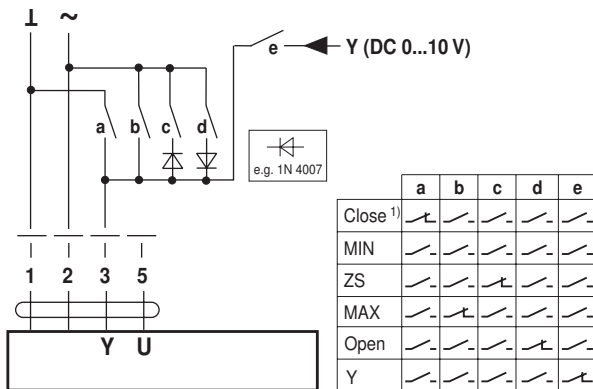


Procedure

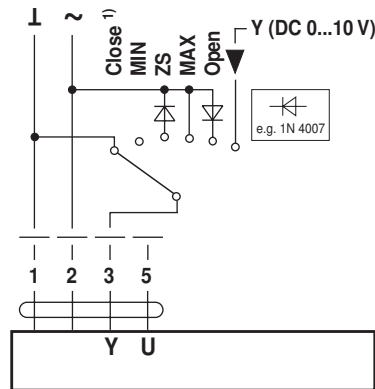
1. Connect 24V to connections 1 and 2
2. Disconnect connection 3:
 - with direction of rotation 0: Actuator rotates to the left
 - with direction of rotation 1: Actuator rotates to the right
3. Short-circuit connections 2 and 3:
 - Actuator runs in opposite direction

Functions for actuators with specific parameters

Override control and limiting with AC 24V with relay contacts



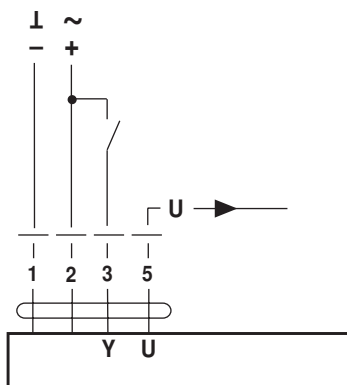
Override control and limiting with AC 24V with rotary switch



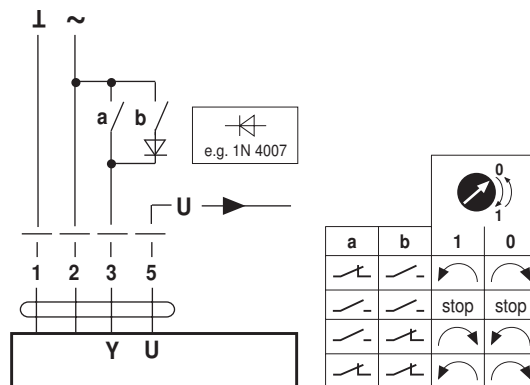
1) **Caution:** This function is only guaranteed if the start point of the operating range is defined as min. 0.6V.

Electrical installation

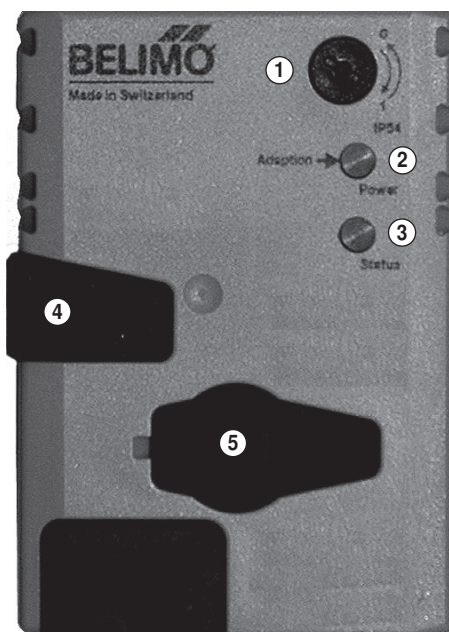
AC/DC 24, Open-close



AC/DC 24 V, 3-point



Operating controls and indicators



(1) Direction of rotation switch

Switching: Direction of rotation changes

(2) Push-button and LED display green

Off: No power supply or malfunction

Illuminated: In operation

Press button: Switches on angle of rotation adaptation, followed by standard mode

(3) Push-button and LED display yellow

Off: Standard mode

Illuminated: 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 the parameterisation and service tools

Check power supply connection

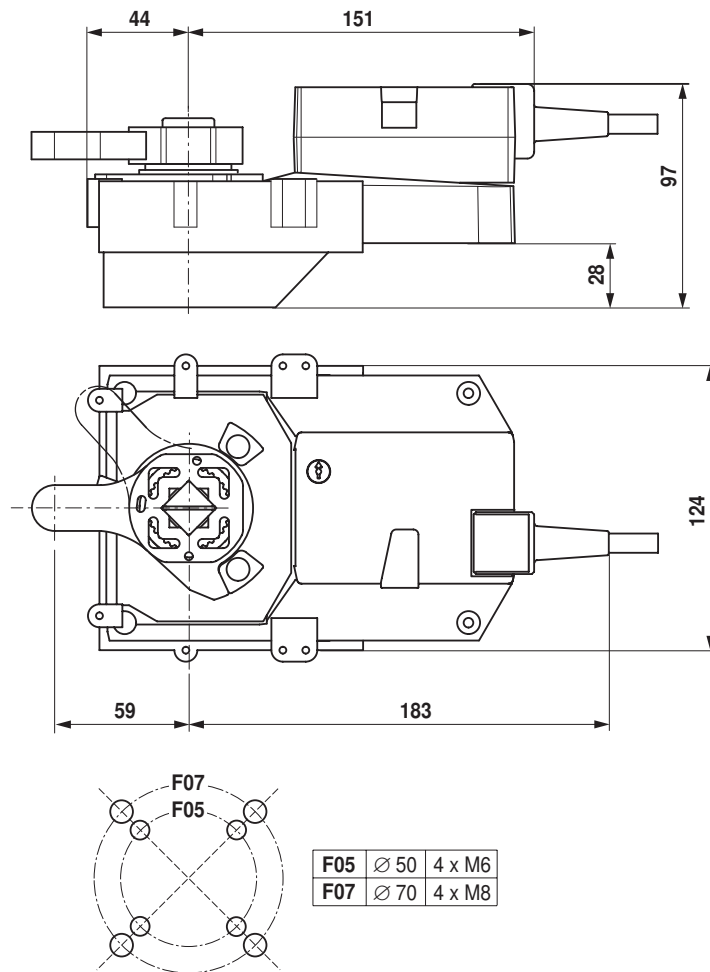
a) (2) Off and (3) Blinking

b) (2) Blinking and (3) Blinking

Check the supply connections. The phases may have been switched.

Dimensions [mm]

Dimensional drawings



Further documentation

- Overview Valve-actuator combinations
- Data sheets for rotary valves and butterfly valves
- Installation instructions for actuators and/or rotary valves and butterfly valves
- Notes for project planning for butterfly valves