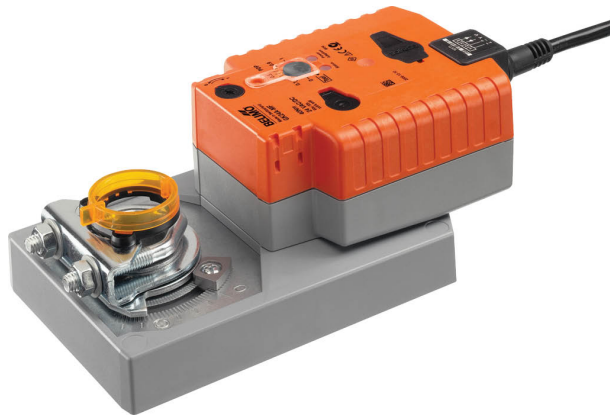# BELIMO

Rotary actuator fail-safe and extended functionalities for adjusting dampers in technical building installations

- Air damper size up to approx. 8 m²
- Torque motor 40 Nm
- Nominal voltage AC/DC 24 V
- Control Open/close

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	11 W
	Power consumption in rest position	3 W
	Power consumption for wire sizing	21 VA
	Connection supply / control	Cable 1 m, 3 x 0.75 mm²
	Parallel operation	Yes (note the performance data)
Functional data	Torque motor	40 Nm
	Setting fail-safe position	0...100%, adjustable in increments of 10% (POP rotary knob on 0 corresponds to left end stop)
	Bridging time (PF)	2 s
	Direction of motion motor	selectable with switch 0 (ccw rotation) / 1 (cw rotation)
	Direction of motion fail-safe	selectable with switch 0...100%
	Manual override	with push-button
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Running time motor	150 s / 90°
	Running time fail-safe	35 s / 90°
	Sound power level, motor	53 dB(A)
	Sound power level, fail-safe	61 dB(A)
	Mechanical interface	Universal shaft clamp reversible 12...26.7 mm
	Position indication	Mechanical, pluggable
Safety data	Protection class IEC/EN	III, Safety Extra-Low Voltage (SELV)
	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	UL Approval	cULus according to UL60730-1A, UL60730-2-14 and CAN/CSA E60730-1 The UL marking on the actuator depends on the production site, the device is UL-compliant in any case
	Type of action	Type 1.AA
	Rated impulse voltage supply / control	0.8 kV
	Pollution degree	3

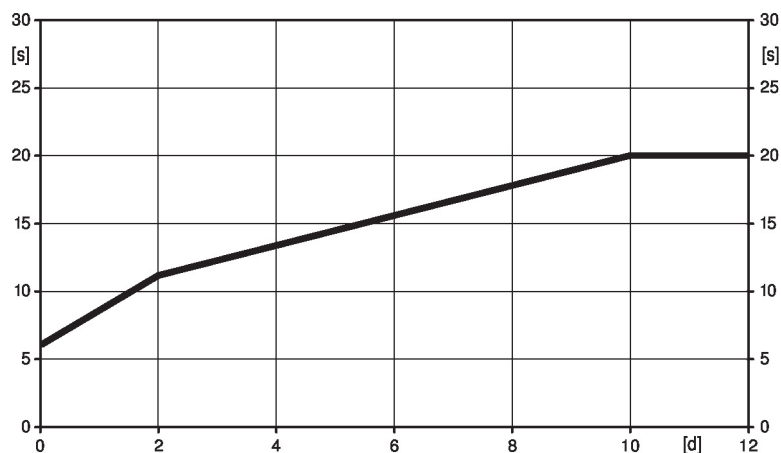| Safety data	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-30...50°C [-22...122°F]
	Storage temperature	-40...80°C [-40...176°F]
	Servicing	maintenance-free
Weight	Weight	1.9 kg
Terms	Abbreviations	POP = Power off position / fail-safe position PF = Power fail delay time / bridging time

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.
- Outdoor application: only possible in case that no (sea) water, snow, ice, insolation or aggressive gases interfere directly with the device and that it is ensured that the ambient conditions remain within the thresholds according to the data sheet at any time.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- 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.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation situation and the ventilation conditions must be observed.
- 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.

Product features

Mode of operation

The actuator moves the damper to the desired operating position at the same time as the integrated capacitors are charged. Interrupting the supply voltage causes the damper to be rotated back into the fail-safe position by means of stored electrical energy.

Pre-charging time (start up)

The capacitor actuators require a pre-charging time. This time is used for charging the capacitors up to a usable voltage level. This ensures that, in the event of a power failure, the actuator can move at any time from its current position into the preset fail-safe position. The duration of the pre-charging time depends mainly on how long the power was interrupted.

Typical pre-charging time

[d] = Electricity interruption in days
[s] = Pre-charging time in seconds

	[d]				
	0	**1**	**2**	**7**	**≥10**
[s]	6	9	11	16	20

Delivery condition (capacitors)	The actuator is completely discharged after delivery from the factory, which is why the actuator requires approximately 20 s pre-charging time before initial commissioning in order to bring the capacitors up to the required voltage level.
Setting fail-safe position (POP)	The rotary knob fail-safe position can be used to adjust the desired fail-safe position. The setting range is always in reference to the maximum angle of rotation of the actuator.
	The rotary knob always refers to an angle-of-rotation range of 95° and does not take into account any retroactively adjusted end stops.
	In the event of a power failure, the actuator will move to the selected fail-safe position, taking into account the bridging time (PF) of 2 s set at the factory.
Simple direct mounting	Simple direct mounting on the damper shaft with a universal shaft clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
Manual override	Manual control with push-button possible - temporary. The gear train is disengaged and the actuator decoupled for as long as the button is pressed.
Adjustable angle of rotation	Adjustable angle of rotation with mechanical end stops.
High functional reliability	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
Home position	The shaft clamp of the actuator is set by default to 0°. After the supply voltage has been applied, the actuator moves into the position defined by the control signal.
Setting direction of motion	When actuated, the direction of the rotation switch changes the running direction in normal operation. The direction of the rotation switch has no influence on the fail-safe position which has been set.

Accessories

Electrical accessories	Description	Type
	Auxiliary switch 1 x SPDT add-on	S1A
	Auxiliary switch 2 x SPDT add-on	S2A
	Feedback potentiometer 140 Ω add-on	P140A
	Feedback potentiometer 200 Ω add-on	P200A
	Feedback potentiometer 500 Ω add-on	P500A
	Feedback potentiometer 1 kΩ add-on	P1000A
	Feedback potentiometer 2.8 kΩ add-on	P2800A
	Feedback potentiometer 5 kΩ add-on	P5000A
	Feedback potentiometer 10 kΩ add-on	P10000A
	Adapter for auxiliary switch and feedback potentiometer	Z-SPA
Mechanical accessories	Description	Type
	Actuator arm for standard shaft clamp	AH-GMA
	Damper crank arm Slot width 8.2 mm, clamping range Ø14...25 mm	KH10
	Mounting kit for linkage operation for flat installation	ZG-GMA

* Adapter Z-SPA

It is imperative that this adapter will be ordered if an auxiliary switch or a feedback potentiometer is required and if at the same time the shaft clamp is installed on the rear side of the actuator (e.g. with short shaft installation).

Electrical installation

Supply from isolating transformer.

Parallel connection of other actuators possible. Observe the performance data.
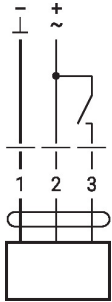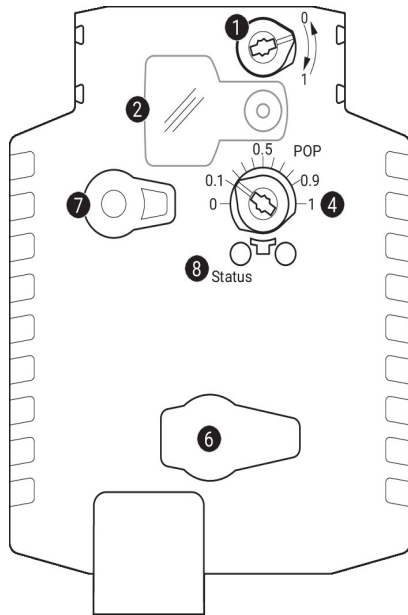
Wire colours:
1 = black
2 = red
3 = white

Wiring diagrams

AC/DC 24 V, open/close

Operating controls and indicators

❶ Direction of rotation switch

Switch over: Direction of rotation changes

❷ Cover, POP button

❸ POP button

❹ Scale for manual adjustment

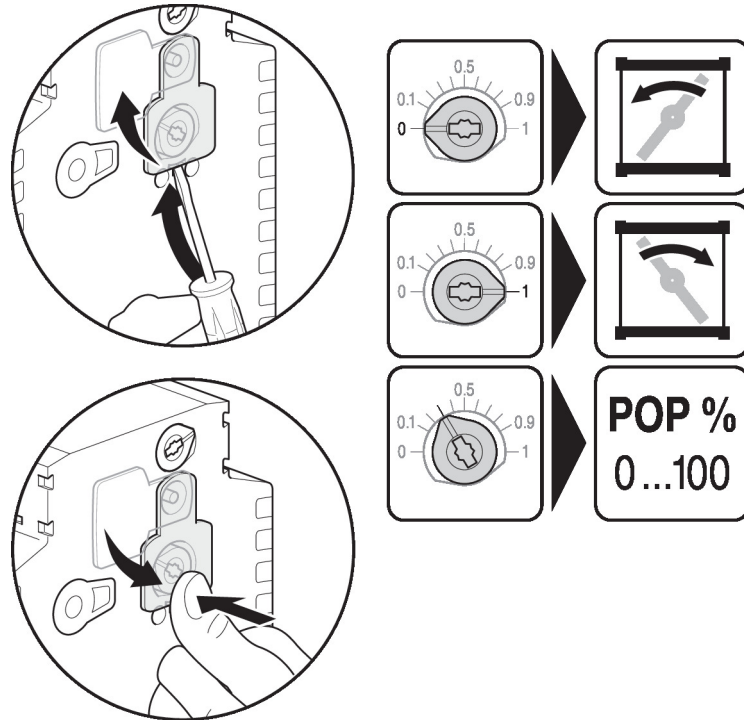**❻ (no function)**

❼ Manual override button

Press button: Gear train disengages, motor stops, manual override possible
Release button: Gear train engages, standard mode

LED displays

green ❽	Meaning / function
On	Operation OK
Flashing	POP function active
Off	- Not in operation - Pre-charging time SuperCap - Fault SuperCap

Setting emergency setting position (POP)

Dimensions

Spindle length

		Min. 52
		Min. 20

Clamping range

	12...22	12...18
	22...26.7	12...18

*Option: Shaft clamp mounted below: If an auxiliary switch or a feedback potentiometer is used the adapter Z-SPA is required.