

**Modulating rotary actuator fail-safe for adjusting dampers in technical building installations**

- Air damper size up to approx. 4 m<sup>2</sup>
- Torque motor 20 Nm
- Nominal voltage AC/DC 24 V
- Control modulating 2...10 V
- Position feedback 2...10 V
- with 2 integrated auxiliary switches
- Optimum weather protection for use outdoors (for use in ambient temperatures up to -40 °C, there is a separate actuator available with built-in heater ex works)


**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 21.6...28.8 V	
	Power consumption in operation	5 W	
	Power consumption in rest position	3 W	
	Power consumption for wire sizing	7 VA	
	Auxiliary switch	2 x SPDT, 1 x 10% / 1 x 11...90%	
	Switching capacity auxiliary switch	1 mA...3 A (0.5 A inductive), AC 250 V	
	Connection supply / control	Cable 1 m, 4 x 0.75 mm <sup>2</sup> (halogen-free)	
	Connection auxiliary switch	Cable 1 m, 6 x 0.75 mm <sup>2</sup> (halogen-free)	
	Parallel operation	Yes (note the performance data)	
	<b>Functional data</b>	Torque motor	20 Nm
		Torque fail-safe	20 Nm
Operating range Y		2...10 V	
Input Impedance		100 kΩ	
Position feedback U		2...10 V	
Position feedback U note		Max. 0.5 mA	
Position accuracy		±5%	
Direction of motion motor		selectable with switch L/R	
Direction of motion fail-safe		L (ccw)	
Manual override		by means of hand crank and locking switch	
Angle of rotation		Max. 95°	
Angle of rotation note		adjustable starting at 33% in 2.5% steps (with mechanical end stop)	
Running time motor		150 s / 90°	
Running time fail-safe		<20 s / 90°	
Running time fail-safe note		@ -20...50 °C / <60 s @ -30 °C	
Sound power level, motor		40 dB(A)	
Mechanical interface		Universal shaft clamp 12...26.7 mm	
Position indication		Mechanically, pluggable	
Service life		Min. 60'000 fail-safe positions	
<b>Safety</b>		Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)
	Protection class UL	UL Class 2 Supply	
	Protection class auxiliary switch IEC/EN	II reinforced insulation	
	Degree of protection IEC/EN	IP66/67	
	Degree of protection NEMA/UL	NEMA 4X	
	Enclosure	UL Enclosure Type 4X	
	EMC	CE according to 2014/30/EU	
	Low voltage directive	CE according to 2014/35/EU	
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14	
	Certification UL	cULus according to UL60730-1A, UL60730-2-14 and CAN/CSA E60730-1:02	
	Certification UL note	The UL marking on the actuator depends on the production site, the device is UL-compliant in any case	
	Mode of operation	Type 1.AA.B	
	Rated impulse voltage supply / control	0.8 kV	
	Rated impulse voltage auxiliary switch	2.5 kV	
Control pollution degree	4		

## Technical data

<b>Safety</b>	Ambient temperature	-30...50 °C
	Ambient temperature note	-40...50 °C for actuator with integrated heating
	Storage temperature	-40...80 °C
	Ambient humidity	Max. 100% r.H.
	Servicing	maintenance-free
<b>Weight</b>	Weight	5.2 kg

## Safety notes



- The device must not be used outside the specified field of application, especially not 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 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 cables must not be removed from the device installed in the interior.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The two switches integrated in the actuator are to be operated either on power supply voltage or at safety extra-low voltage. The combination power supply voltage/safety extra-low voltage is not permitted.
- 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.
- Flexible metallic cable conduits or threaded cable conduits of equal value are to be used for UL (NEMA) Type 4X applications.
- When used under high UV loads, e.g. extreme sunlight, the use of flexible metallic or equivalent cable conduits is recommended.

## Product features

- Fields of application** The actuator is particularly suitable for utilisation in outdoor applications and is protected against the following weather conditions:
- UV radiation
  - Rain / Snow
  - Dirt / Dust
  - Air humidity
  - Alternating climate / frequent and severe temperature fluctuations (Recommendation: use the actuator with integrated factory-installed heating which can be ordered separately to prevent internal condensation)
- Mode of operation** The actuator is connected with a standard modulating signal of 0...10 V and moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the fail-safe position by spring force when the supply voltage is interrupted.

## Product features

<b>Simple direct mounting</b>	Simple direct mounting on the damper shaft with a universal shaft clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
<b>Manual override</b>	By using the hand crank the damper can be actuated manually and engaged with the locking switch at any position. Unlocking is carried out manually or automatically by applying the operating voltage. The housing cover must be removed for manual override.
<b>Adjustable angle of rotation</b>	Adjustable angle of rotation with mechanical end stop. The housing cover must be removed to set the angle of rotation.
<b>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
<b>Flexible signalization</b>	The actuator has one auxiliary switch with a fixed setting and one adjustable auxiliary switch. They permit a 10% or 11...90% angle of rotation to be signaled. The housing cover must be removed to set the auxiliary switch.

## Accessories

	Description	Type
<b>Electrical accessories</b>	Auxiliary switch 2 x SPDT	S2A-F
	Feedback potentiometer 200 Ω	P200A-F
	Feedback potentiometer 1 kΩ	P1000A-F
	Signal converter voltage/current 100 kΩ Supply AC/DC 24 V	Z-UIC
	Range controller for wall mounting	SBG24
	Positioner for wall mounting	SGA24
	Positioner for built-in mounting	SGE24
	Positioner for front-panel mounting	SGF24
<b>Mechanical accessories</b>	Positioner for wall mounting	CRP24-B1
	<b>Description</b>	<b>Type</b>
	Cable gland for cable diameter Ø 4...10 mm	Z-KB-PG11
	- Combination with auxiliary switch only on request. Please contact your Belimo representative!	
	- Combination with feedback potentiometer only on request. Please contact your Belimo representative!	

## Electrical installation



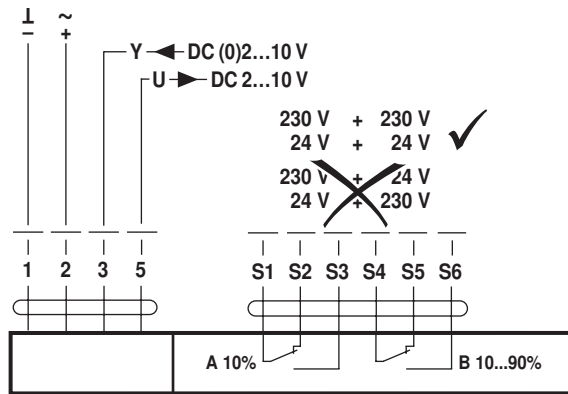
### Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

## Wiring diagrams

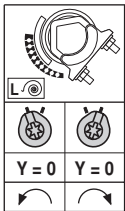
## Electrical installation

AC/DC 24 V, modulating



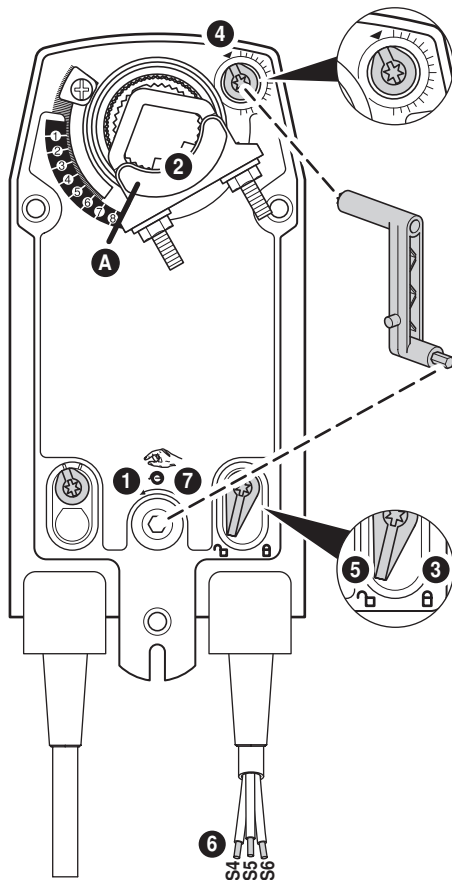
### Cable colours:

1 = black  
 2 = red  
 3 = white  
 5 = orange  
 S1 = violet  
 S2 = red  
 S3 = white  
 S4 = orange  
 S5 = pink  
 S6 = grey



## Operating controls and indicators

### Auxiliary switch settings



**Note:** Perform settings on the actuator only in deenergised state.

- 1 Manual override**  
Turn the hand crank until the desired switching position is set.
- 2 Spindle clamp**  
Edge line **A** displays the desired switching position of the actuator on the scale.
- 3 Fasten the locking device**  
Turn the locking switch to the „Locked padlock“ symbol.
- 4 Auxiliary switch**  
Turn rotary knob until the notch points to the arrow symbol.
- 5 Unlock the locking device**  
Turn the locking switch to the „Unlocked padlock“ symbol or unlock with the hand crank.
- 6 Cable**  
Connect continuity tester to S4 + S5 or to S4 + S6.
- 7 Manual override**  
Turn the hand crank until the desired switching position is set and check whether the continuity tester shows the switching point.

Dimensions [mm]

Spindle length

	-
	16...105 (Ø12...19) 16...45 (Ø19...26.7)

Clamping range


Dimensional drawings

