

Modulating damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 0.8 m<sup>2</sup>
- Torque motor 4 Nm
- Nominal voltage AC/DC 24 V
- Control modulating 2...10 V
- Position feedback 2...10 V
- Running time motor 2.5 s
- PWIS/LABS-compliant according to VDMA 24364



## 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	13 W
	Power consumption in rest position	2 W
	Power consumption for wire sizing	23 VA
	Power consumption for wire sizing note	Imax 20 A @ 5 ms
	Connection supply / control	Cable 1 m, 4x 0.75 mm <sup>2</sup>
	Parallel operation	Yes (note the performance data)
<b>Functional data</b>	Torque motor	4 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 0/1
	Direction of motion note	Y = 0 V: At switch position 0 (ccw rotation) / 1 (cw rotation)
	Manual override	with push-button, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Minimum angle of rotation	Min. 30°
	Running time motor	2.5 s / 90°
	Sound power level, motor	54 dB(A)
	Adaptation setting range	manual (automatic on first power-up)
Mechanical interface	Universal shaft clamp 8...26.7 mm	
Position indication	Mechanical, pluggable	
<b>Safety data</b>	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
	Low voltage directive	CE according to 2006/95/EC
Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14	

**Technical data**

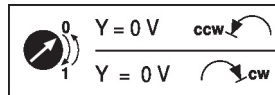
<b>Safety data</b>	UL Approval	cULus according to UL60730-1A, UL60730-2-14 and CAN/CSA E60730-1 The UL marking on the actuator depends on the production site, the device is UL-compliant in any case
	PWIS/LABS-conformity	According to VDMA 24364 (test class C1) Approved for use in zone II Cleaning with low-pressure plasma treatment
	Hygiene test	According to VDI 6022 Part 1 / SWKI VA 104-01, cleanable and disinfected, low emission
	Type of action	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Pollution degree	3
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-30...40°C [-22...104°F]
	Ambient temperature note	Caution: 40...50°C [104...122°F] utilisation possible only under certain restrictions. Please contact your supplier.
	Storage temperature	-10...40°C [14...104°F]
	Servicing	maintenance-free
<b>Weight</b>	Weight	0.99 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.
- 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 with 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.
- Self adaptation is necessary when the system is commissioned and after each adjustment of the angle of rotation (press the adaptation push-button once).
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section and the design, as well as 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.
- PWIS/LABS-conformity is guaranteed as long as the packaging is unopened. Once the PWIS/LABS-compliant packaging has been opened, the proper handling of the products is the responsibility of the customer. PWIS/LABS-conformity of unopened products is guaranteed for a period of one year after cleaning, provided they are handled properly, professionally and cleanly. Proof of proper, professional and clean handling is the responsibility of the purchaser. Ensure that the required cleanliness of the products is maintained. Do not touch the products with bare hands. Belimo accepts no liability for the consequences resulting from the contamination of a product caused by the customer.

**Product features**

<b>Operating mode</b>	The actuator is connected with a standard control signal of 0...10 V and drives to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0...100% and as control signal for other actuators.
<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>	Manual override with push-button possible (the gear train is disengaged for as long as the button is pressed or remains locked).
<b>Adjustable angle of rotation</b>	Adjustable angle of rotation with mechanical end stops. A minimum permissible angle of rotation of 30° must be allowed for.
<b>Home position</b>	<p>The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaptation, which is when the operating range and position feedback adjust themselves to the mechanical setting range.</p> <p>The detection of the mechanical end stops enables a gentle approach to the end positions, thus protecting the actuator mechanics.</p> <p>The actuator then moves into the position defined by the control signal.</p>



<b>Adaptation and synchronisation</b>	<p>An adaptation can be triggered manually by pressing the "Adaptation" button. Both mechanical end stops are detected during the adaptation (entire setting range). Automatic synchronisation after pressing the manual override button is configured. The synchronisation is in the home position (0%).</p> <p>The actuator then moves into the position defined by the control signal.</p>
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**Accessories**

<b>Electrical accessories</b>	<b>Description</b>	<b>Type</b>
	Auxiliary switch 1x SPDT add-on	S1A
	Auxiliary switch 2x SPDT add-on	S2A
	Feedback potentiometer 140 Ω add-on	P140A
	Feedback potentiometer 1 kΩ add-on	P1000A
	Feedback potentiometer 10 kΩ add-on	P10000A
	Adapter for auxiliary switch and feedback potentiometer, Multipack 20 pcs.	Z-SPA
	Signal converter voltage/current 100 kΩ 4...20 mA, Supply AC/DC 24 V	Z-UIC
	Positioner for wall mounting	SGA24
	Positioner for built-in mounting	SGE24
	Positioner for front-panel mounting	SGF24
	Positioner for wall mounting	CRP24-B1
<b>Mechanical accessories</b>	<b>Description</b>	<b>Type</b>
	Actuator arm for standard shaft clamp (one-sided)	AH-25
	Shaft extension 240 mm ø20 mm for damper shaft ø8...22.7 mm	AV8-25
	Ball joint suitable for damper crank arm KH8	KG8
	Ball joint suitable for damper crank arm KH8 / KH10	KG10A
	Damper crank arm Slot width 8.2 mm, clamping range ø10...18 mm	KH8
	Shaft clamp one-sided, clamping range ø8...26 mm with insert, Multipack 20 pcs.	K-ENMA
	Shaft clamp one-sided, clamping range ø8...26 mm, Multipack 20 pcs.	K-ENSA
	Shaft clamp reversible, clamping range ø8...20 mm	K-NA
	Form fit insert 8x8 mm, Multipack 20 pcs.	ZF8-NMA
	Form fit insert 10x10 mm, Multipack 20 pcs.	ZF10-NSA

Accessories

Description	Type
Form fit insert 12x12 mm, Multipack 20 pcs.	ZF12-NSA
Form fit insert 15x15 mm, Multipack 20 pcs.	ZF15-NSA
Form fit insert 16x16 mm, Multipack 20 pcs.	ZF16-NSA
Mounting kit for linkage operation for flat installation	ZG-NMA
Anti-rotation mechanism 180 mm, Multipack 20 pcs.	Z-ARS180
Baseplate extension for NM..A to NM..	Z-NMA
Position indicator, Multipack 20 pcs.	Z-PI

\* 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.

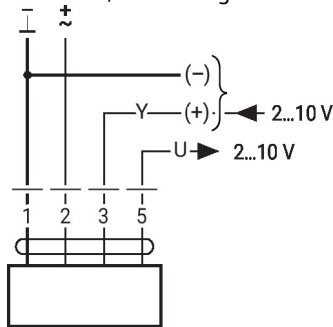
Parallel connection of other actuators possible. Observe the performance data.

Wire colours:

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

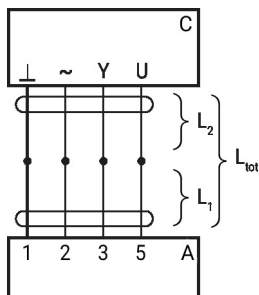
Wiring diagrams

AC/DC 24 V, modulating



1	2	3		
		2 V		
		10 V		

Signal cable lengths



L <sub>2</sub>	L <sub>tot</sub> = L <sub>1</sub> + L <sub>2</sub>	
	AC	DC
0.75 mm <sup>2</sup>	≤30 m	≤5 m
1.00 mm <sup>2</sup>	≤40 m	≤8 m
1.50 mm <sup>2</sup>	≤70 m	≤12 m
2.50 mm <sup>2</sup>	≤100 m	≤20 m

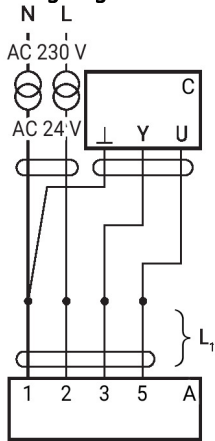
- A = Actuator
- C = Control unit (controlling unit)
- L1 = Connecting cable of the actuator
- L2 = Customer cable
- Ltot = Maximum signal cable length

Note:

When several actuators are connected in parallel, the maximum signal cable length must be divided by the number of actuators.

Electrical installation

Wiring diagrams

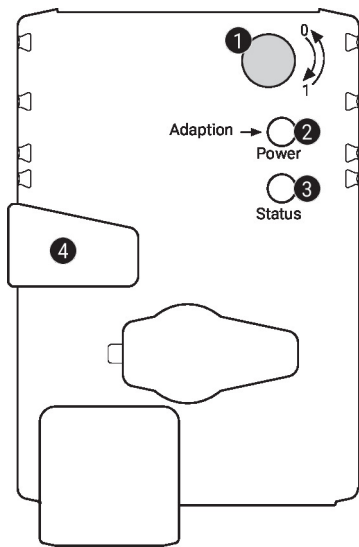


A = Actuator  
 C = Control unit (controlling unit)  
 L1 = Connecting cable of the actuator

**Note:**

There are no special restrictions on installation if the supply and the data cable are routed separately.

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 synchronisation process active  
 Press button: No function

**4 Manual override button**

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

**Check power supply connection**

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

Installation notes

**Negative torque** Max. 50% of the torque (Caution: Application possible only with restrictions. Please contact your supplier.)

## Dimensions

## Spindle length

	Min. 40
	Min. 20 mm [0.75"]

## Clamping range

	8...26.7	≥8	≤26.7
	8...20	≥8	≤20

- \*Option: Shaft clamp mounted below (accessories K-NA needed)
- \*Option: Shaft clamp mounted below: If an auxiliary switch or a feedback potentiometer is used the adapter Z-SPA is required.

