

Modulating damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 0.8 m<sup>2</sup>
- Nominal torque 4 Nm
- Nominal voltage AC/DC 24 V
- Control modulating DC (0)2...10 V
- Position feedback DC 2...10 V
- Running time motor 2.5 s


**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	I <sub>max</sub> 20 A @ 5 ms	
	Connection supply / control	Cable 1 m, 4 x 0.75 mm <sup>2</sup>	
	Parallel operation	Yes (note the performance data)	
	<b>Functional data</b>	Torque motor	Min. 4 Nm
Positioning signal Y		DC 0...10 V	
Positioning signal Y note		Input impedance 100 kΩ	
Operating range Y		DC 2...10 V	
Position feedback U		DC 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°	
Adaption setting range		manual (automatic on first power-up)	
Sound power level motor		54 dB(A)	
Spindle driver		Universal spindle clamp 8...26.7 mm	
Position indication		Mechanically, pluggable	
<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	IP54	
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2	
	EMC	CE according to 2014/30/EU	
	Certification IEC/EN	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 impulse voltage supply / control	0.8 kV	
	Control pollution degree	3	
	Ambient temperature	-30...40 °C	
	Ambient temperature note	Caution: +40...+50 °C utilisation possible only under certain restrictions. Please contact your supplier.	
	Non-operating temperature	-40...80 °C	
Ambient humidity	95% r.h., non-condensing		
Maintenance	Maintenance-free		
<b>Weight</b>	Weight	0.98 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.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- 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.
- Self adaption is necessary when the system is commissioned and after each adjustment of the angle of rotation (press the adaption push-button once).
- 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 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

<b>Mode of operation</b>	The actuator is connected with a standard modulating signal of DC 0...10V and drives to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the damper position 0...100% and as slave control signal for other actuators.
<b>Simple direct mounting</b>	Simple direct mounting on the damper spindle with an universal spindle 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 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>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
<b>Home position</b>	The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out an adaption, which is when the operating range and position feedback adjust themselves to the mechanical setting range. The detection of the mechanical end stops enables a gentle approach to the end positions, thus protecting the actuator mechanics. The actuator then moves into the position defined by the positioning signal.
<b>Adaption and synchronisation</b>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> </div> <p>An adaption can be triggered manually by pressing the "Adaption" button. Both mechanical end stops are detected during the adaption (entire setting range). Automatic synchronisation after pressing the gear disengagement button is configured. The synchronisation is in the home position (0%). The actuator then moves into the position defined by the positioning signal.</p>

## Accessories

	Description	Type
<b>Electrical accessories</b>	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 140 Ohm, add-on, grey	P140A GR
	Feedback potentiometer 200 Ohm, add-on	P200A
	Feedback potentiometer 500 Ohm, add-on	P500A
	Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
	Feedback potentiometer 1 kOhm, add-on	P1000A
	Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
	Feedback potentiometer 2.8 kOhm, add-on	P2800A
	Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
	Feedback potentiometer 5 kOhm, add-on	P5000A
	Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
	Feedback potentiometer 10 kOhm, add-on	P10000A
	Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR
	Adapter for auxiliary switch and feedback potentiometer	Z-SPA*
	Signal converter voltage/current, supply AC/DC 24V	Z-UIC
	Digital position indicator for front-panel mounting, 0...99%, front mass 72 x 72 mm	ZAD24
	Range controller for wall mounting, adjustable electron. Min./max. angle of rotation limitation	SBG24
	Positioner for wall mounting, range 0...100%	SGA24
Positioner in a conduit box, range 0...100%	SGE24	
Positioner for front-panel mounting, range 0...100%	SGF24	
Positioner for wall mounting, range 0...100%	CRP24-B1	
<b>Mechanical accessories</b>	<b>Description</b>	<b>Type</b>
	Actuator arm, for one-sided spindle clamp K-ENSA	AH-25
	Shaft extension 250 mm, for damper spindles Ø 8...25 mm	AV8-25
	Angled ball joint with M8, suitable for damper crank arms KH8	KG8
	Straight ball joint with M8, suitable for damper crank arms KH8	KG10A
	Damper crank arm, for damper spindles	KH8
	Spindle clamp, one side for NM..A	K-ENMA
	Spindle clamp, one side for NM..A, SM..A	K-ENSA
	Spindle clamp, reversible for NM..A and LMQ..	K-NA
	Angle of rotation limiter, for K-NA	20334-00001
	Form fit insert 8x8 mm, for NM..A	ZF8-NMA
	Form fit insert 10x10 mm, for NM..A / SM..A	ZF10-NSA
	Form fit insert 12x12 mm, for NM..A / SM..A	ZF12-NSA
	Form fit insert 15x15 mm	ZF15-NSA
	Form fit insert 16x16 mm, for NM..A / SM..A	ZF16-NSA
	Mounting kit for linkage operation, NM..A for flat installation	ZG-NMA
	Universal mounting bracket 180 mm	Z-ARS180
	Base plate extension from NM..A to NM..	Z-NMA
	Position indication for LM..A, NM..A, SM..A, GM..A	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 spindle clamp is installed on the rear side of the actuator (e.g. with short-axis installation).

## Electrical installation



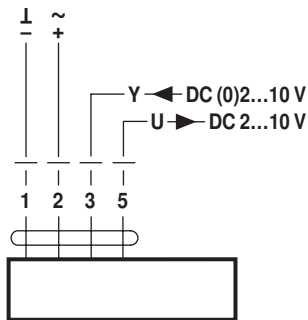
## Notes

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

**Electrical installation**

**Wiring diagrams**

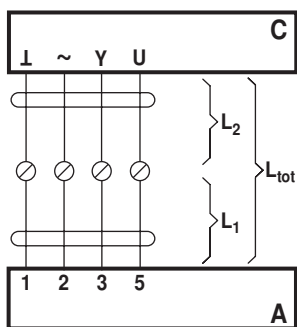
AC/DC 24 V, modulating



**Cable colours:**

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

**Signal cable lengths**

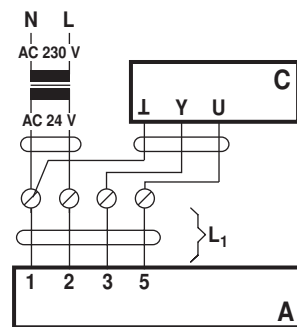


L <sub>2</sub> ┃ / ~	L <sub>tot</sub> = L <sub>1</sub> + L <sub>2</sub>	
	AC	DC
0.75 mm <sup>2</sup>	≤30 m	≤5 m
1.00 mm <sup>2</sup>	≤40 m	≤8 m
1.50 mm <sup>2</sup>	≤70 m	≤12 m
2.50 mm <sup>2</sup>	≤100 m	≤20 m

- A = actuator
- C = control unit
- L<sub>1</sub> = actuator connecting cable
- L<sub>2</sub> = customer cable
- L<sub>tot</sub> = maximum signal cable length

**Note:**

In the event of several actuators switched in parallel, the maximum signal cable length is to be divided by the number of actuators.

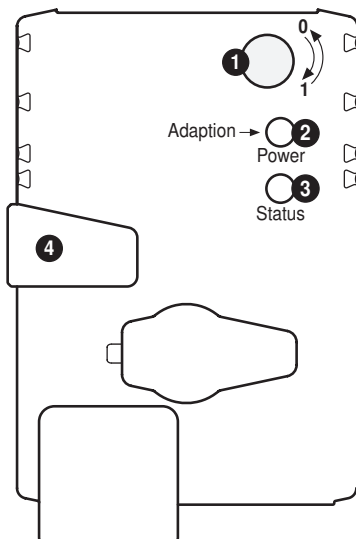


- A = actuator
- C = control unit
- L<sub>1</sub> = actuator connecting cable

**Note:**

If supply and data line are handled separately, then no special limitations apply for the installation.

**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

**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 [mm]

Spindle length

		Min. 40
		Min. 20

Clamping range

	8...26.7	≥8	≤26.7
	8...20	≥8	≤20

\*Option: Spindle clamp mounted below (accessories K-NA needed)

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

Dimensional drawings

