

Modulating damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 0.8 m²
- 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


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	13 W
	Power consumption in rest position	2 W
	Power consumption for wire sizing	23 VA
	Power consumption for wire sizing note	I _{max} 20 A @ 5 ms
	Connection supply / control	Cable 1 m, 4 x 0.75 mm ²
	Parallel operation	Yes (note the performance data)
	Functional data	Torque motor
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°
Adaptation setting range		manual (automatic on first power-up)
Sound power level, motor		54 dB(A)
Mechanical interface		Universal shaft clamp 8...26.7 mm
Position indication		Mechanically, pluggable
Safety	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
	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
	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
	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.
	Storage temperature	-40...80°C
Ambient humidity	Max. 95% r.H., non-condensing	

Technical data

Safety	Servicing	maintenance-free
Weight	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

Mode of operation	The actuator is connected with a standard modulating signal of 0...10 V and drives to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the damper position 0.5...100% and as slave control signal for other actuators.
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 override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
Adjustable angle of rotation	Adjustable angle of rotation with mechanical end stops. A minimum permissible angle of rotation of 30° must be allowed for.
High functional reliability	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
Home position	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.
Adaption and synchronisation	<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	
Electrical accessories	Auxiliary switch 1 x SPDT add-on	S1A	
	Auxiliary switch 2 x SPDT add-on	S2A	
	Auxiliary switch 2 x SPDT add-on, grau	S2A/300 GR	
	Auxiliary switch 2 x SPDT add-on, grau	S2A/500 GR	
	Feedback potentiometer 140 Ω add-on	P140A	
	Feedback potentiometer 140 Ω add-on, grau	P140A GR	
	Feedback potentiometer 200 Ω add-on	P200A	
	Feedback potentiometer 500 Ω add-on	P500A	
	Feedback potentiometer 500 Ω add-on, grau	P500A GR	
	Feedback potentiometer 1 kΩ add-on	P1000A	
	Feedback potentiometer 1 kΩ add-on, grau	P1000A GR	
	Feedback potentiometer 2.8 kΩ add-on	P2800A	
	Feedback potentiometer 2.8 kΩ add-on, grau	P2800A GR	
	Feedback potentiometer 5 kΩ add-on	P5000A	
	Feedback potentiometer 5 kΩ add-on, grau	P5000A GR	
	Feedback potentiometer 10 kΩ add-on	P10000A	
	Feedback potentiometer 10 kΩ add-on, grau	P10000A GR	
	Adapter for auxiliary switch and feedback potentiometer	Z-SPA	
	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	
Positioner for wall mounting	CRP24-B1		
Mechanical accessories	Description	Type	
	Actuator arm for standard shaft clamp (one-sided)	AH-25	
	Shaft extension 240 mm Ø20 mm for damper shaft Ø 8...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, Multipack 20 pcs.	K-NA	
	Form fit insert 8x8 mm, Multipack 20 pcs.	ZF8-NMA	
	Form fit insert 10x10 mm, Multipack 20 pcs.	ZF10-NSA	
	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	
	Base plate extension for NM..A to NM..., Multipack 20 pcs.	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-axis installation).		

Electrical installation



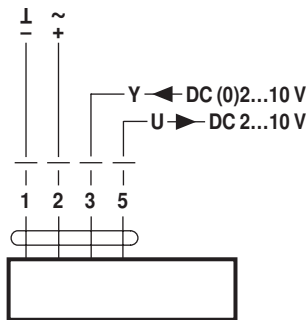
Notes

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

Electrical installation

Wiring diagrams

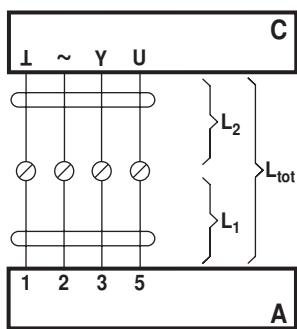
AC/DC 24 V, modulating



Cable colours:

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

Signal cable lengths

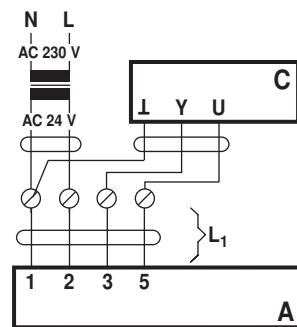


L ₂ ┴ / ~	L _{tot} = L ₁ + L ₂	
	AC	DC
0.75 mm ²	≤30 m	≤5 m
1.00 mm ²	≤40 m	≤8 m
1.50 mm ²	≤70 m	≤12 m
2.50 mm ²	≤100 m	≤20 m

- 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.

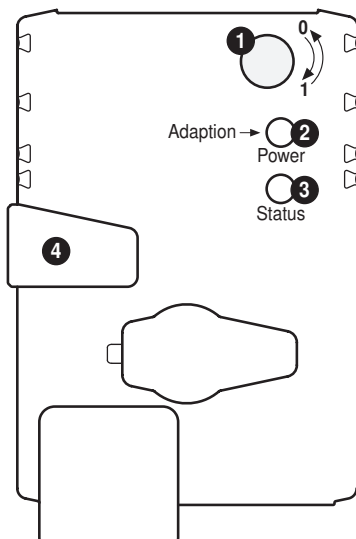


- A = Actuator
- C = Control unit (controlling unit)
- L1 = Connecting cable of the actuator

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 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: 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.

Dimensional drawings

