

Modulating SuperCap rotary actuator with emergency control function and extended functionalities for adjusting dampers in technical building installations and in laboratories

- Air damper size up to approx. 1.2 m²
- Nominal torque 6 Nm
- Nominal voltage AC/DC 24 V
- Control modulating DC (0)0.5...10 V
- Position feedback DC 0.5...10 V
- Running time motor 4 s
- Design life SuperCaps: 15 years


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 | 22 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 |
| Positioning signal Y | | DC 0...10 V |
| Positioning signal Y note | | Input impedance 100 kΩ |
| Operating range Y | | DC 0.5...10 V |
| Position feedback U | | DC 0.5...10 V |
| Position feedback U note | | Max. 0.5 mA |
| Setting emergency setting position (POP) | | 0...100%, adjustable in increments of 10% (POP rotary knob on 0 corresponds to left end stop) |
| 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) |
| Direction of motion emergency control function | | 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 |
| Minimum angle of rotation | | Min. 30° |
| Running time motor | | 4 s / 90° |
| Running time emergency control position | | 4 s / 90° |
| Running time emergency setting position note | | <4 s @ 0...50°C |
| Adaption setting range | | manual (automatic on first power-up) |
| Sound power level motor | | 60 dB(A) |
| Sound power level emergency control position | | 60 dB(A) |
| Spindle driver | | Universal spindle 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, 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.AA |
| | Rated impulse voltage supply / control | 0.8 kV |

Technical data

| | | |
|---------------|---------------------------|---|
| Safety | Control pollution degree | 3 |
| | Ambient temperature | -30...50 °C |
| | Non-operating temperature | -40...80 °C |
| | Ambient humidity | 95% r.h., non-condensing |
| | Maintenance | Maintenance-free |
| Weight | Weight | 1.4 kg |
| Terms | Abbreviations | POP = Power off position / emergency setting position |
| | | PF = Power fail delay time / bridging time |

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.
- 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.
- Self adaption is necessary when the system is commissioned and after each adjustment of the angle of rotation (press the adaption push-button once).
- 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 emergency setting position (POP) by means of stored electrical energy.
- 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.

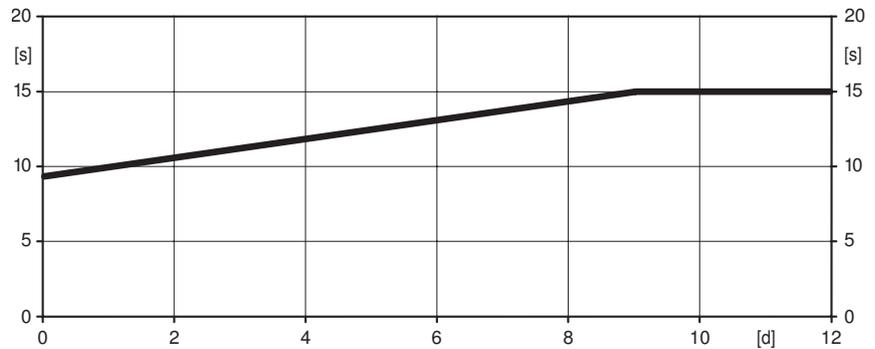
Product features

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 an electricity interruption, the actuator can move at any time from its current position into the preset emergency setting position (POP).

The duration of the pre-charging time depends mainly on following factors:

- Duration of the electricity interruption
- PF delay time (bridging time)

Typical pre-charging times



[d] = Electricity interruption in days

[s] = Pre-charging time in seconds

PF[s] = Bridging time

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.

Simple direct mounting

Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device to prevent the actuator from rotating.

Manual override

Manual control with push-button possible - temporary. The gear 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. 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.

Direction of rotation switch

When actuated, the direction of rotation switch changes the running direction in normal operation. The direction of rotation switch has no influence on the emergency setting position (POP) which has been set.

Adaption and synchronisation

An adaption can be triggered manually by pressing the "Adaption" button. Both mechanical end stops are detected during the adaption (entire setting range).

Emergency setting position (POP) rotary knob

The «Emergency setting position» rotary knob can be used to adjust the desired emergency setting position (POP) between 0 and 100% in 10% increments.

The rotary knob refers only to the adapted angle of rotation range between 30 and 95°. No set Min or Max values are observed.

In the event of a electricity interruption, the actuator will move into the selected emergency setting position (POP), taking into account the bridging time that has been set.

Accessories

| | Description | Type |
|---|---|--|
| Electrical accessories | 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 |
| | Mechanical accessories | Positioner for wall mounting, range 0...100% |
| 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 |
| Description | | Type |
| Actuator arm, for one-sided spindle clamp K-ENSA | | AH-25 |
| Shaft extension 250 mm, for damper spindles Ø 8...25 mm | | AV8-25 |
| Mounting kit for linkage operation, NM..A for flat installation | ZG-NMA | |

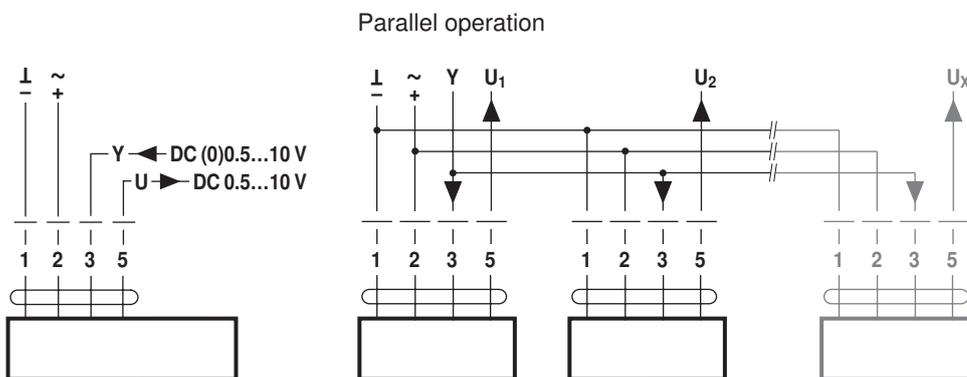
* Adapter Z-SPA
It is imperative that this adapter will be ordered if an auxiliary switch or a feedback potentiometer is required.

Electrical installation

Notes

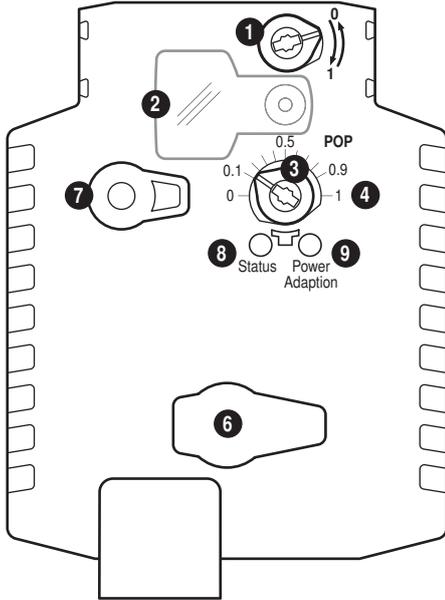
- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams



- Notes**
- A maximum of eight actuators can be connected in parallel.
 - Parallel operation is permitted only on non-connected axes.
 - Do not fail to observe performance data with parallel operation.

Operating controls and indicators



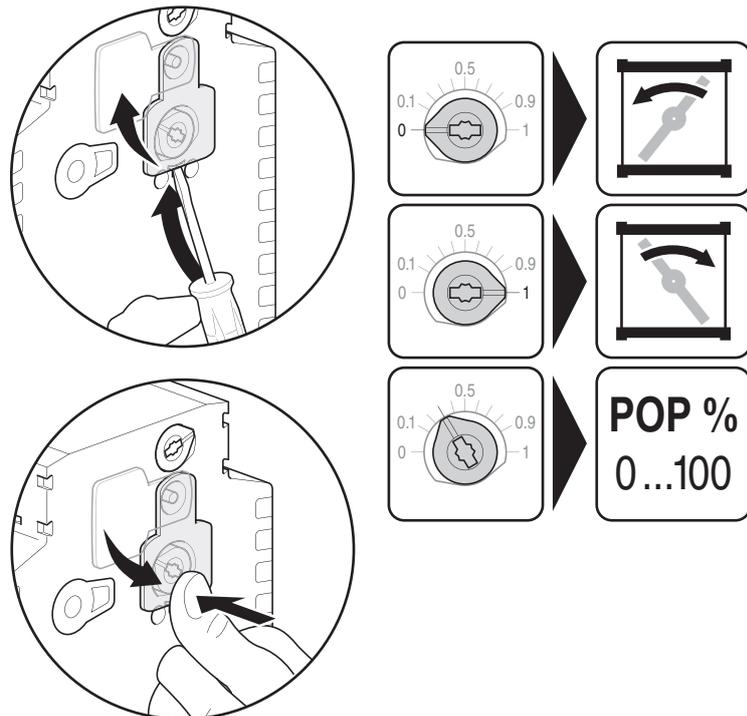
- 1 Direction of rotation switch
- 2 Cover, POP button
- 3 POP button
- 4 Scale for manual adjustment

- 6 (no function)
- 7 Disengagement button

| LED displays | | Meaning / function |
|--------------|----------|------------------------------|
| 8 yellow | 9 green | |
| Off | On | Operation OK / without fault |
| Off | Flashing | POP function active |
| On | Off | Fault |
| Off | Off | Not in operation |
| On | On | Adaptation procedure running |

- 9 Press button: Triggers angle of rotation adaption, followed by standard operation

Setting emergency setting position (POP)



Dimensions [mm]

Spindle length

| | |
|--|---------|
| | Min. 42 |
| | Min. 20 |

Clamping range

| | 8...26.7 | ≥8 | ≤26.7 |
|--|----------|----|-------|
| | 8...20 | ≥8 | ≤20 |

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

Dimensional drawings

