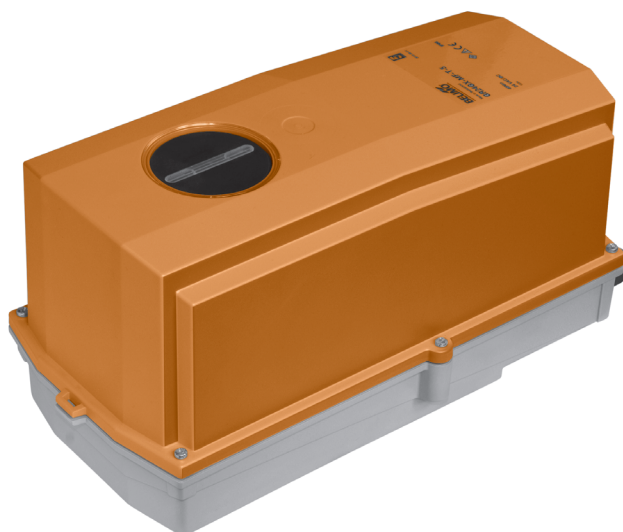


Modulating spring return actuator with emergency function in the IP66 protective housing for adjusting air dampers in industrial plants and in technical building installations

- For air dampers up to approx. 2 m<sup>2</sup>
- Torque 10 Nm
- Nominal voltage AC/DC 24 V
- Control: modulating DC 0 ... 10 V
- Position feedback DC 2 ... 10 V
- Two integrated auxiliary switches

Optimum weather protection (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 24 V, 50/60 Hz / DC 24 V  |  |
|                        | Nominal voltage range   | AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V  |  |
|                        | Power consumption   | In operation   | 3.5 W @ nominal torque                   |
|                        |   | At rest  | 2.5 W                                    |
|                        | For wire sizing   | 5.5 VA (I <sub>max</sub> 20 A @ 5 ms)  |  |
| Auxiliary switch       | 2 x SPDT, 1 mA ... 3 (0.5) A, AC 250 V ☐<br>(1 x fix 10% / 1 x adjustable 10 ... 90%) |  |  |
| Connection             | Motor   | Cable 1 m, 4 x 0.75 mm <sup>2</sup>  |  |
|                        | Auxiliary switch  | Cable 1 m, 6 x 0.75 mm <sup>2</sup>  |  |
| <b>Functional data</b> | Torque  | Motor  | Min. 10 Nm @ nominal voltage             |
|                        |   | Spring return  | Min. 10 Nm                               |
|                        | Control   | Control signal Y   | DC 0 ... 10 V, input impedance 100 kΩ    |
|                        |   | Operating range  | DC 2 ... 10 V                            |
|                        | Position feedback (measuring voltage U)   | DC 2 ... 10 V, max. 0.5 mA   |  |
|                        | Position accuracy   | ±5%  |  |
|                        | Direction of rotation   | Motor  | Reversible with switch ↻ / ↻             |
|                        |   | Spring return  | L (ccw)                                  |
|                        | Manual override   | With hand crank and interlocking switch  |  |
|                        | Angle of rotation   | Max. 95°↔, can be limited with adjustable mechanical end stop  |  |
|                        | Running time  | Motor  | ≤150 s (0 ... 10 Nm)                     |
|                        |   | Spring return  | ≤20 s @ -20 ... 50°C / max. 60 s @ -30°C |
|                        | Sound power level   | Motor  | ≤40 dB (A) @ 150 s running time          |
|                        |   | Spring return  | ≤62 dB (A)                               |
|                        | Service life  | Min. 60,000 emergency positions  |  |
| Position indication    | Mechanical  |  |  |
| <b>Safety</b>          | Protection class  | III Safety extra-low voltage<br>UL Class 2 Supply  |  |
|                        | Degree of protection  | IP66   |  |
|                        |   | NEMA 4, UL Enclosure Type 4  |  |
|                        | EMC   | CE according to 2004/108/EC  |  |
|                        | Low-voltage directive   | CE according to 2006/95/EC   |  |
|                        | Certification   | Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14<br>cULus according to UL 60730-1A and UL 60730-2-14<br>and CAN/CSA E60730-1:02 |  |
|                        | Mode of operation   | Type 1.AA.B  |  |
|                        | Rated impulse voltage   | Actuator   | 0.8 kV                                   |
|                        |   | Auxiliary switch   | 2.5 kV                                   |
|                        | Control pollution degree  | 4  |  |
|                        | Ambient temperature   | -30 ... +50°C<br>(actuator with built-in heater -40 ... +50°C)   |  |
|                        | Non-operating temperature   | -40 ... +80°C  |  |
|                        | Ambient humidity  | 100% r.h.  |  |
|                        | Maintenance   | Maintenance-free   |  |

## Technical data

|                     |            |                            |
|---------------------|------------|----------------------------|
| Dimensions / Weight | Dimensions | See «Dimensions» on page 4 |
|                     | Weight     | Approx. 5.0 kg             |

## Safety notes



- The actuator is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during installation.
- 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 on the inside may only be opened up in the factory. It does not contain any parts that can be replaced or repaired by the user.
- The cable must not be removed from the device on the inside.
- When calculating the required torque, the specifications supplied by the damper manufacturers (cross-section, design, installation site), and the air flow conditions must be observed.
- The integrated switches of this actuator have to be connected either to Power supply voltage or safety extra low voltage. The combination Power supply voltage / safety extra low voltage is not allowed.
- The device contains electrical and electronic components and is not allowed to 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 materials used may be subjected to external influences (temperature, pressure, constructional fixture, 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.
- For UL (NEMA) Type 4 applications flexible metallic cable conduits or threaded cable conduits of equal value are to be used.
- The actuator may not be used in plenum applications (e.g. suspended ceilings or raised floors).

## Product features

|                              |  |
|------------------------------|--|
| <b>Fields of application</b> | <p>The actuator is particularly suitable for utilisation in outdoor applications and is protected against the following weather conditions:</p> <ul style="list-style-type: none"> <li>– UV radiation</li> <li>– rain / snow</li> <li>– dirt / dust</li> <li>– humidity</li> <li>– Changing atmosphere / frequent and severe temperature fluctuations (recommendation: use the actuator with integrated factory-installed heating which can be ordered separately to prevent internal condensation)</li> </ul> |
|------------------------------|--|

Product features

(continued)

|                                     |   |
|-------------------------------------|---|
| <b>Mode of operation</b>            | The actuator is controlled with a standard signal of DC 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 emergency position by spring force if the supply voltage is interrupted. |
| <b>Simple direct mounting</b>       | Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.  |
| <b>Manual override</b>              | Manual operation of the damper with the hand crank, locking in any position with the interlocking switch. Unlocking is manual or automatic by applying the operating voltage. The housing cover must be removed to set the 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 operational reliability</b> | The actuator is overload-proof, 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 10 ... 90% angle of rotation to be signalled.  |

Accessories

|                        | Description                                  | Data sheet      |
|------------------------|--|-----------------|
| Electrical accessories | Auxiliary switch unit S2A-F *                | T2 - S2A-F      |
|                        | Feedback potentiometer unit P200A-F **       | T2 - P200A-F    |
|                        | Cable socket IP66/NEMA4 housing Z-KB-PG11    |                 |
|                        | Range controller SBG24                       | T2 - SBG24      |
|                        | Position positioner SGA24, SGE24 and SGF24   | T2 - SG..24     |
|                        | Digital position indication ZAD24            | T2 - ZAD24      |
|                        | Heating with mechanical hygrostat HH24-FG *  | T2/T5 - HH24-FG |
|                        | Heating with mechanical thermostat HT24-FG * | T2/T5 - HT24-FG |

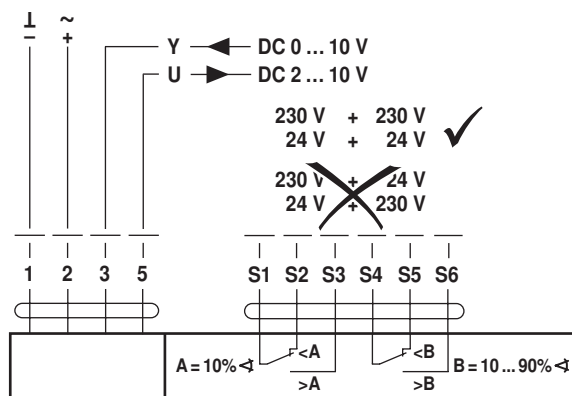
\* only available fitted in separate actuator  
 \*\* only available fitted in separate actuator, just as further feedback potentiometer units

Electrical installation

Wiring diagram

Notes

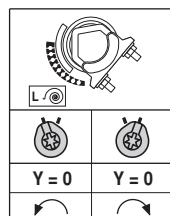
- Connect via safety isolation transformer.
- Parallel connection of other actuators possible. Note the performance data.



Cable colours:


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

Direction of rotation



Dimensions [mm]

Dimensional drawings

| Damper spindle | Length     |  |
|----------------|------------|---|
|                | 16 ... 105 | 12 ... 19   |
|                | 16 ... 45  | 19 ... 26,7   |

