Spring-return actuator, combined with thermoelectric tripping device BAT (72°C), for fire and smoke dampers 90° in ventilation and air-conditioning systems, with connection plugs for simple integration in control and monitoring systems or bus networks via communication and power supply units

- Torque 9 Nm / 7 Nm
- Nominal voltage AC/DC 24 V
- Control Open/close
- Mechanical interface Form fit 12x12 mm, continuous hollow shaft



Picture may differ from product

## 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 | 4 W |
| | Power consumption in rest position | 1.4 W |
| | Power consumption for wire sizing | 6 VA |
| | Inrush current (Imax) | 8.3 A @ 5 ms |
| | Auxiliary switch | 2x SPDT |
| | Switching capacity auxiliary switch | 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V |
| | Switching points auxiliary switch | 5° / 80° |
| | Connection supply / control | Cable with connector plug 5 m, 2x 0.75 mm² (halogen-free) |
| | Connection auxiliary switch | Cable with connector plug 5 m, 6x 0.75 mm² (halogen-free) |
| | Connection plug | Supply / control: 3-pole plug, suitable for communication and power supply units (see "Accessories")<br>Auxiliary switch: 6-pole plug, suitable for communication and power supply units (see "Accessories") |
| | Cable length thermoelectric tripping device | 1 m |
| **Functional data** | Torque motor | 9 Nm |
| | Torque fail-safe | 7 Nm |
| | Direction of motion motor | selectable by mounting L/R |
| | Manual override | with position stop |
| | Angle of rotation | Max. 95° |
| | Running time motor | <60 s / 90° |
| | Running time fail-safe | 20 s @ -10...55°C, <60 s @ -30...-10°C |
| | Sound power level, motor | 55 dB(A) |
| | Sound power level, fail-safe | 67 dB(A) |
| | Mechanical interface | Form fit 12x12 mm, continuous hollow shaft |
| | Position indication | Mechanical, with pointer |
| | Service life | Min. 60'000 safety positions |
| **Safety data** | Response temperature thermal fuse | Duct outside temperature 72°C<br>Duct inside temperature 72°C (colour black) |
| | Protection class IEC/EN | III, Safety Extra-Low Voltage (SELV) |

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## Technical data

| | | |
|---|---|---|
| **Safety data** | Protection class auxiliary switch IEC/EN | II, reinforced insulation |
| | Degree of protection IEC/EN | IP54<br>IP protection in all mounting orientations |
| | EMC | CE according to 2014/30/EU |
| | Low voltage directive | CE according to 2014/35/EU |
| | Certification IEC/EN | IEC/EN 60730-1 and IEC/EN 60730-2-14 |
| | Type of action | Type 1.AA.B |
| | Rated impulse voltage supply / control | 0.8 kV |
| | Pollution degree | 3 |
| | Ambient humidity | Max. 95% RH, non-condensing |
| | Ambient temperature normal operation | -30...55°C [-22...131°F] |
| | Ambient temperature safety operation | The safety position will be attained up to max. 75°C [167°F] |
| | Storage temperature | -40...55°C [-40...131°F] |
| | Servicing | maintenance-free |
| **Weight** | Weight | 2.3 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.
- The actuator is adapted and installed on the fire and smoke damper by the damper manufacturer. For this reason, the actuator is only supplied directly to safety damper manufacturers. The manufacturer then bears full responsibility for the proper functioning of the damper.
- The two switches integrated in the actuator are to be operated either on mains voltage or on safety extra-low voltage. The combination mains voltage/safety extra-low voltage is not permitted.
- Cables must not be removed from the device.
- 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.
- 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

**Operating mode** The actuator moves the damper to the operating position at the same time as tensioning the return spring. The damper is turned back to the safety position by spring energy when the supply voltage is interrupted.

**Safety Position Lock™** The Safety Position Lock™ reliably holds the fire damper in the safety position in case of fire therefore ensuring maximum safety. The technical solution for this function of the BFL and BFN actuators has a patent pending.

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## Product features

**Thermoelectric tripping device**

Complies with the specific requirements of the standard ISO 10294-4.

BAT: If the ambient temperature of 72°C is exceeded, the duct outside temperature fuse will respond. If the duct inside temperature of 72°C is exceeded, then the duct inside temperature fuse will respond. When one of the thermal fuses responds, the supply voltage is interrupted permanently and irreversibly.

The LED is on when

- supply voltage is available
- the thermal fuses are OK and
- the test button is not pressed.

The temperature fuse for the ambient temperature protects the actuator from overheating and cannot be replaced. The actuator must be replaced when the duct outside temperature fuse is triggered. The temperature fuse for the duct inside temperature can be replaced, see section "Accessories".

The function of the system (interruption of the supply voltage) can be checked by pressing the test button.

Note: The function of the thermal fuses and the control key is only warranted if the actuator is connected to the supply voltage (LED on).

**Manual override**

Without power supply, the actuator can be operated manually and fixed in any required position. It can be unlocked manually or automatically by applying the supply voltage.

**Signalling**

Two microswitches with fixed settings are installed in the actuator for indicating the damper end positions. The electrical contacts of these microswitches are equipped with a gold/silver coating that permits integration both in circuits with low currents (mA range) and in ones with larger-sized currents (A range) in accordance with the specifications in the data sheet. It should be noted with this application however that the contacts can no longer be used in the milliampere range after larger currents have been applied to them, even if this has taken place only once.

The position of the damper blade can be read off on a mechanical position indicator.

**Standards / Regulations**

The design of the actuator is based on the specific requirements from the European standards:

- EN 15650 Ventilation for buildings – Fire dampers
- EN 1366-2 Fire resistance tests on service installations

(Part 2: Fire dampers)

- EN 13501-3 Fire classification of construction products and building elements

(Part 3: Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers)

**Recommendation for application**

The regular operational check (open/close control of the fire damper) enhances the safety of people, animals, property and the environment. Unless other requirements are stipulated – e.g. in the damper manufacturer's operating instructions – Belimo recommends the performance of a monthly operational check. Fire damper actuators from Belimo are designed in accordance with service life specifications contained in the technical data sheet for regular operational checks. Notes for regular operational checks can be found in the European Product Standard for Fire Dampers (EN 15650) under "Maintenance information".

**Connection**

The actuator is equipped with connection plugs. This allows it to be integrated into control and monitoring systems (e.g. SBS-Control) or bus networks (e.g. MP-Bus solutions) via communication and power supply units (see "Accessories").



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## Parts included

Hand crank
Pointer
Protective bag

## Accessories

| Electrical accessories | Description | Type |
|---|---|---|
| | Communication and power supply unit for fire damper actuators 24 V with connector | BKN230-24-MOD |
| | Communication and power supply unit for fire damper actuators, Control by pulse release | BSIA24-48 |
| | Communication and power supply unit for fire damper actuators, Control by interrupt release | BSIA24-48-R |
| | Auxiliary switch 2x SPDT cable length 5 m | SN2-C7/500 |
| | Blanking cover for BAT (without thermal fuse for duct inside temperature) | ZBAT0 |
| | Spare tripping element for BAT, Duct inside temperature 72°C (colour black), Probe length 65 mm | ZBAT72 |
| | Spare tripping element for BAT, Duct inside temperature 72°C (colour black), Probe length 90 mm | ZBAT72/9 |
| | Spare tripping element for BAT, Duct inside temperature 95°C (colour grey), Probe length 65 mm | ZBAT95 |
| | Spare tripping element for BAT, Duct inside temperature 95°C (colour grey), Probe length 90 mm | ZBAT95/9 |
| | Spare tripping element for BAT, Duct inside temperature 120°C (colour orange), Probe length 65 mm | ZBAT120 |
| | Spare tripping element for BAT, Duct inside temperature 140°C (colour red), Probe length 65 mm | ZBAT140 |

| Mechanical accessories | Description | Type |
|---|---|---|
| | Bracket for SN2-C7 for BFN/BFL, BEN/BEE, BFA | ZSN-B |
| | Pointer 12x12 mm | ZZN12-B |
| | Hand crank 40 mm | ZKN1-B |
| | Hand crank 63 mm | ZKN2-B |
| | Form fit insert 12/11 mm | ZA11-B |
| | Protective bag with wire, Multipack 100 pcs. | ZSD-B.1 |

## Electrical installation



**Supply from isolating transformer.**

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

**Combination of mains voltage and safety extra-low voltage not permitted at the two auxiliary switches.**

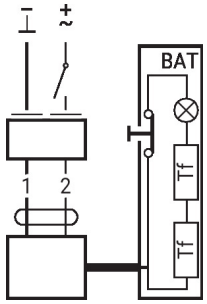
**Wire colours:**
1 = black
2 = red
S1 = violet
S2 = red
S3 = white
S4 = orange
S5 = pink
S6 = grey
Tf = Thermal fuse (see "Technical data")

**Additional info:**
Plug connection to communication and power supply units: Application examples for integration into monitoring and control systems or into bus networks can be found in the documentation of the connected communication and power supply unit (see "Accessories").

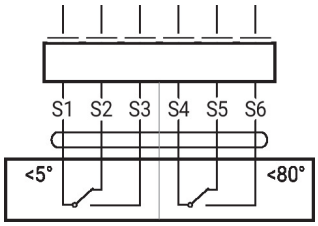
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## Electrical installation

AC/DC 24 V, open/close

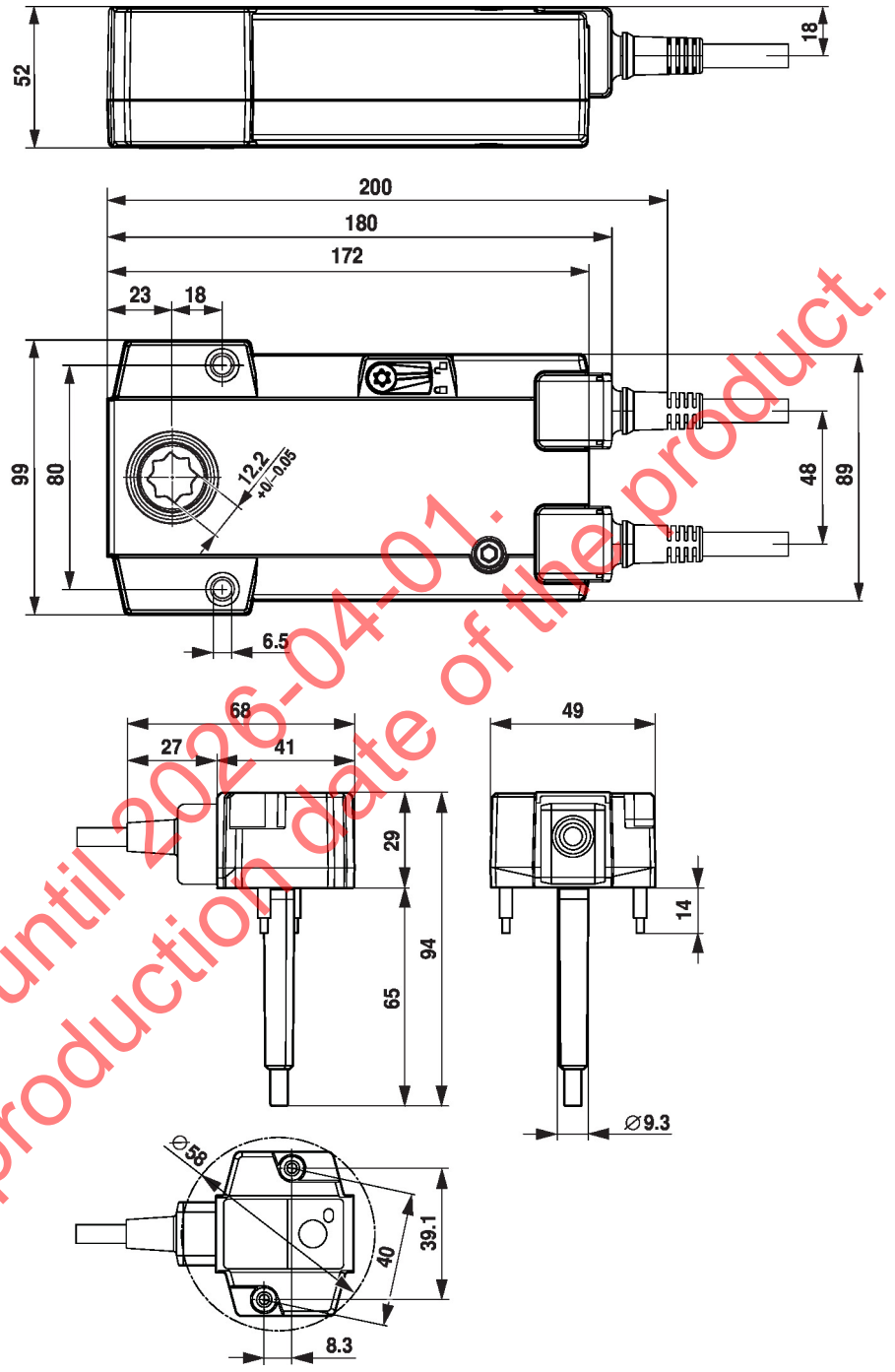



Auxiliary switch




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## Dimensions




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