BELIMO

Technical data sheet BFN24-T-ST

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



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
	Power consumption for wire sizing note	Imax 8.3 A @ 5 ms
	Auxiliary switch	2 x SPDT
	Switching capacity auxiliary switch	1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V (II, reinforced insulation)
	Switching points auxiliary switch	5° / 80°
	Connection supply / control	Cable with connector plug 1 m, 2 x 0.75 mm² (halogen-free)
	Connection auxiliary switch	Cable with connector plug 1 m, 6 x 0.75 mm² (halogen-free)
	Connection plug	Supply / control: 3-pole plug, suitable for communication and power supply units (see "Accessories") 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	Mechanically, with pointer
	Service life	Min. 60'000 safety positions
Safety data	Response temperature thermal fuse	Duct outside temperature 72°C Duct inside temperature 72°C (colour black)
	Protection class IEC/EN	III, Safety Extra-Low Voltage (SELV)
	Protection class auxiliary switch IEC/EN	II, reinforced insulation
	Degree of protection IEC/EN	IP54 IP protection in all mounting positions
	EMC	CE according to 2014/30/EU

Safety data	Low voltage directive	CE according to 2014/35/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	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
	Ambient temperature safety operation	The safety position will be attained up to max. 75°C
	Storage temperature	-40...55°C [-40...131°F]
	Servicing	maintenance-free
Weight	Weight	1.6 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 power supply voltage or at safety extra-low voltage. The combination power supply 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

Mode of operation

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.

Thermoelectric tripping device

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

BAT: if the ambient temperature of 72°C is exceeded, then 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 switch is not pressed.

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 indication.

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").



Delivery notes

Incl. 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
Communication and power supply unit for fire damper actuators 24 V with connector	BKN230-24-C-MP
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 2 x SPDT	SN2-C7
Blanking cover for BAT (without thermal fuse for duct inside temperature), Multipack 20 pcs.	ZBAT0
Spare tripping element for BAT, Duct inside temperature 72°C (colour black)	ZBAT72
Spare tripping element for BAT, Duct inside temperature 72°C (colour black)	ZBAT72/9
Spare tripping element for BAT, Duct inside temperature 95°C (colour grey)	ZBAT95
Spare tripping element for BAT, Duct inside temperature 95°C (colour grey)	ZBAT95/9
Spare tripping element for BAT, Duct inside temperature 120°C (colour orange)	ZBAT120
Spare tripping element for BAT, Duct inside temperature 140°C (colour red)	ZBAT140

Mechanical accessories

Description	Type
Bracket for SN2-C7 for BFL, BFN	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

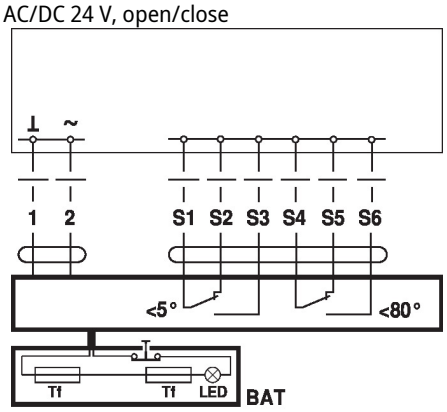
Supply from isolating transformer.

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

Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.

Wiring diagrams

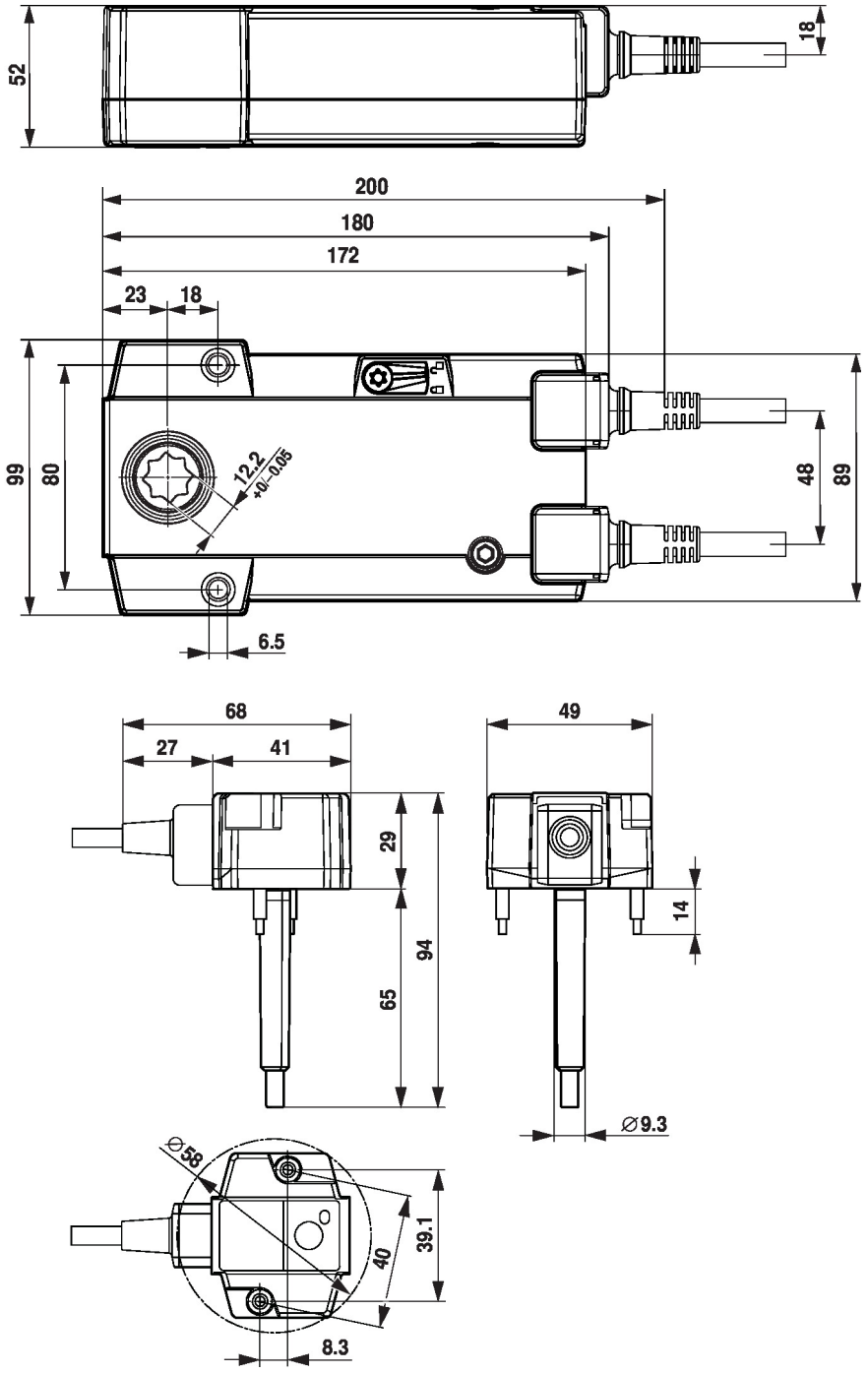
AC/DC 24 V, open/close



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").

Dimensions


52
18
200
180
172
23
18
99
80
12.2
+0.-0.05
48
89
6.5
68
27
41
29
94
65
49
14
Ø9.3
Ø58
40
39.1
8.3