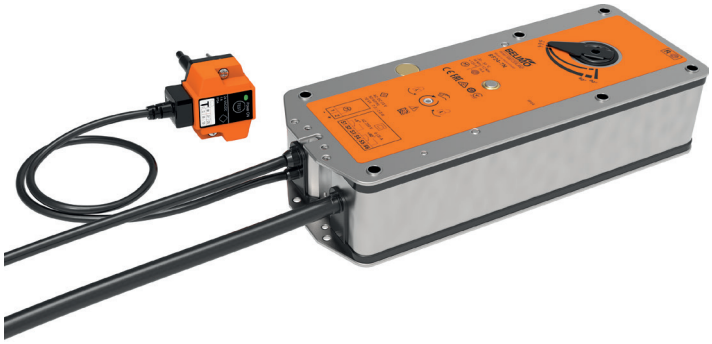
Manufactured by Belimo and available for retrofit use from MHServices.co.uk

BELIMO

Technical data sheet BF24-TN

Spring-return actuator, combined with thermoelectric tripping device BAT (72°C), for fire and smoke dampers 90° in ventilation and air-conditioning systems.

- **Torque 18 Nm / 12 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control Open/close**
- **Mechanical interface Form fit 12x12 mm, Non-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	7 W
	Power consumption in rest position	2 W
	Power consumption for wire sizing	10 VA
	Power consumption for wire sizing note	Imax 8.3 A @ 5 ms
	Auxiliary switch	2 x SPDT
	Switching capacity auxiliary switch	1 mA...6 A (3 A inductive), DC 5 V...AC 250 V (II reinforced insulation)
	Switching points auxiliary switch	5° / 80°
	Connection supply / control	Cable 1 m, 2 x 0.75 mm² (halogen-free)
	Connection auxiliary switch	Cable 1 m, 6 x 0.75 mm² (halogen-free)
Functional data	Torque motor	18 Nm
	Torque fail-safe	12 Nm
	Direction of rotation motor	Can be selected by mounting L/R
	Manual override	with position stop
	Angle of rotation	Max. 95°
	Running time motor	<120 s / 90°
	Running time fail-safe	16 s tamb = 20°C
	Running time fail-safe note	tamb = 20°C
	Sound power level, motor	45 dB(A)
	Sound power level, fail-safe	63 dB(A)
	Mechanical interface	Form fit 12x12 mm, Non-continuous hollow shaft
	Position indication	Mechanically, with pointer
	Service life	Min. 60'000 safety positions
Safety	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 in all mounting positions
	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
	Mode of operation	Type 1.AA.B
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature normal operation	-30...50°C
	Ambient temperature safety operation	The safety position will be attained up to max. 75°C
	Storage temperature	-40...50°C
	Ambient humidity	Max. 95% r.H., non-condensing
	Servicing	maintenance-free
Weight	Weight	2.8 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.
- 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.

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).

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.

Manual operation

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.

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

Regular operational checks (open/close control of the fire damper) enhance 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 monthly operational checks. 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".

Delivery notes

Incl. Hand crank, Pointer, Protective bag, Form fit insert 12/10 mm

Accessories

	Description	Type
Electrical accessories	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, Probe length 65 mm	ZBAT72
	Spare tripping element for BAT, duct inside temperature 72°C	ZBAT72/9
	Spare tripping element for BAT, duct inside temperature 95°C, Probe length 65 mm	ZBAT95
	Spare tripping element for BAT, duct inside temperature 95°C	ZBAT95/9
	Spare tripping element for BAT, duct inside temperature 120°C, Probe length 65 mm	ZBAT120
	Spare tripping element for BAT, duct inside temperature 140°C, Probe length 65 mm	ZBAT140
	Cable set with plug 0.5 m for communication and power supply unit	ZST-BS
	Description	**Type**
Mechanical accessories	Pointer 12x12 mm for BLF, BF, BLE	ZZ12-B
	Hand crank 40 mm for BLF, BF, BLE, BE	ZK1-B
	Hand crank 70 mm for BLF, BF, BLE, BE	ZK2-B
	Bracket for SN2-C7 to BF	ZSN-BF
	Adapter for form fit with clamp for round shaft 10...20 mm / square 10...16 mm for BF	ZK-BF
	Adapter for form fit 12 mm with round shaft 18 mm, L = 33 mm for BF	ZA18-BF
	Form fit insert 12/8 mm for BFL, BLF, BFN, BF, BLE	ZA8-B
	Form fit insert 12/10 mm for BFL, BLF, BFN, BF, BLE	ZA10-B
	Form fit insert 12/11 mm for BFL, BLF, BFN, BF, BLE	ZA11-B
	Protective bag with wire Multipack 100 pcs.	ZSD-B.1

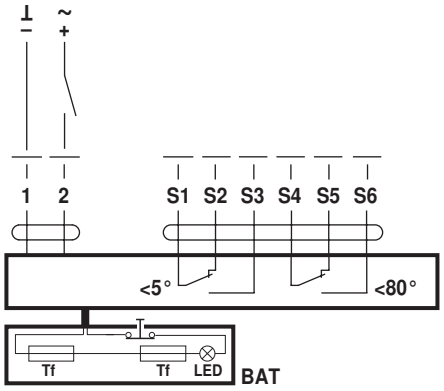
Electrical installation

Notes

- Connection via safety 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



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

Dimensions [mm]

Dimensional drawings

