BELIMO

# Technical data sheet FSNF24 US

On/Off, Spring Return, 350°F [177°C] for half an hour, 15 s Cycle Time

- Torque 8 Nm / from 32...350°F [0...177°C]
- Nominal voltage AC/DC 24 V
- Control On/Off

5-year warranty

LISTED 94 D5 TEMP. IND. & REG. EQUIP. c UL us

## Technical data

| | | |
|---|---|---|
| **Electrical data** | Nominal voltage | AC/DC 24 V |
| | Nominal voltage frequency | 50/60 Hz |
| | Power consumption in operation | 27 VA |
| | Power consumption in rest position | 3 W, 6.5 VA, End stop 55 VA, 2.5 A slow blow fuse * |
| | Transformer sizing | 40 VA |
| | Electrical Connection | 18 GA, 1 m, 2 color coded wires |
| | Overload Protection | electronic throughout 0...95° rotation |
| | Electrical Protection | actuators are double insulated |
| **Functional data** | Torque motor | 70 in-lb [8 Nm] from 32...350°F [0...177°C] |
| | Direction of motion motor | selectable by ccw/cw mounting |
| | Direction of motion fail-safe | reversible with cw/ccw mounting |
| | Angle of rotation | 95° |
| | Running Time (Motor) | 15 s / 90° |
| | Running time motor note | between 32...350°F [0...177°C], <15 s at rated voltage & torque |
| | Running time fail-safe | 15 s |
| | Noise level, motor | 45 dB(A) |
| | Noise level, fail-safe | 62 dB(A) |
| | Position indication | Mechanical |
| **Safety data** | Power source UL | Class 2 Supply |
| | Degree of protection IEC/EN | IP40 |
| | Degree of protection NEMA/UL | NEMA 1 |
| | Enclosure | UL Enclosure Type 1 |
| | Agency Listing | cULus listed to UL873 and CAN/CSA C22.2 No.24<br>NYC Department of Buildings MEA 197-07-M<br>California State Fire Marshal Listing 3210-1593:101 |
| | Quality Standard | ISO 9001 |
| | UL 2043 Compliant | Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC |
| | Ambient humidity | Max. 95% RH, non-condensing |
| | Ambient temperature | 32...122°F [0...50°C ] |
| | Storage temperature | -40...176°F [-40...80°C] |
| | Servicing | maintenance-free |
| **Weight** | Weight | 5.7 lb [2.8 kg] |
| **Materials** | Housing material | galvanized steel |

| | | |
|---|---|---|
| **Materials** | Gears | steel, permanently lubricated |

**Footnotes** † UL File XAPX.E108966

## Safety notes

- * Neither UL nor Belimo require local over-current protection. The FSNF actuators draw higher peak current when driving against any type of stop. If used, this requires the value of a local fuse or breaker to be increased to avoid nuisance opening or tripping. A 2.5 A slow blow should be used for AC 24 V. A 0.5 A slow blow should be used for AC 120 V. A 0.25 A slow blow should be used for 230 V and a 0.3 A slow blow for AC 208 V. Transformers: Note that while a 24 V 100 VA transformer would handle 2 actuators, a 4 A breaker or plug fuse is insufficient. A 5 A slow blow would be required.
- Belimo Fire & Smoke actuators have passed the AMCA 520 and UL 555S Long Term Holding test. No special cycling is required during prolonged periods when actuator is driven open and held there. Periodic testing of dampers and actuators per local codes and NFPA 80 and NFPA 105 are required.
- The actuator contains no components which the user can replace or repair. A 1/2" threaded connector is standard. FSNFxx-FC models have a 3/8" Flex Connector. Other than the connector, these actuators are identical to the conduit connector version.

## Product features

**Application** The FS series of spring-return actuators are designed for the operation of UL555 and UL555S listed fire/smoke dampers in ventilation and air-conditioning systems.

**Operation** The actuator is mounted in its fail safe position with the damper blade(s) typically closed. Upon applying power, the actuator drives the damper to the open position. The internal spring is tensioned at the same time. If the power supply is interrupted, the spring moves the damper back to its fail-safe position.

**Typical specification** All smoke and combination fire and smoke dampers shall be provided with Belimo FSTF, FSLF, FSNF, or FSAF series actuators. All substitutions must be approved before submission of bid. Damper and actuator shall have UL555S Listing for 250°F and/or 350°F. Actuator shall have been tested to UL2043 per requirements of IMC 602.2 and NEC 300.22 (c). Where position indication is required -S models with auxiliary switches shall be provided.

## Accessories

**Electrical accessories**

| Description | Type |
|---|---|
| Thermoelectric tripping device, Duct inside temperature 165°F | BAE165 US |
| Auxiliary switch 2 x SPDT | S2A-F US |

**Mechanical accessories**

| Description | Type |
|---|---|
| Anti-rotation bracket, for AF / NF | AF-P |
| End stop indicator for AF / NF | IND-AF2 |
| Shaft clamp<br>for AF.. | K4-1 US |
| Classic AF/NF crankarm for Jackshaft to 1.05". | KH-AF-1 US |
| Actuator arm, clamping range Ø10...20 mm | KH-AF |
| Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter). | SH8 |
| Angle of rotation limiter for Classic AF/NF. | ZDB-AF2 US |
| Mounting bracket for AF.. | ZG-100 |
| Mounting bracket | ZG-101 |
| Classic AF/NF crankarm adaptor kit. | ZG-AF US |
| Classic AF/NF crankarm adaptor kit with ZG-108. | ZG-AF108 |
| Damper clip for damper blade, 3.5" width. | ZG-DC1 |
| Damper clip for damper blade, 6" width. | ZG-DC2 |
| Weather shield 330x203x152 mm [13x8x6"] (LxBxH) | ZS-100 |
| Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH) | ZS-150 |
| Explosion proof housing 406x254x164 mm [16x10x6.435"] (LxBxH), UL and CSA, Class I, Zone 1&2, Groups B, C, D, (NEMA 7), Class III, Hazardous (classified) Locations | ZS-260 |
| Weather shield 438x222x140 mm [17-1/4x8-3/4x5-1/2"] (LxBxH), NEMA 4X, with mounting brackets | ZS-300 |

## Electrical installation

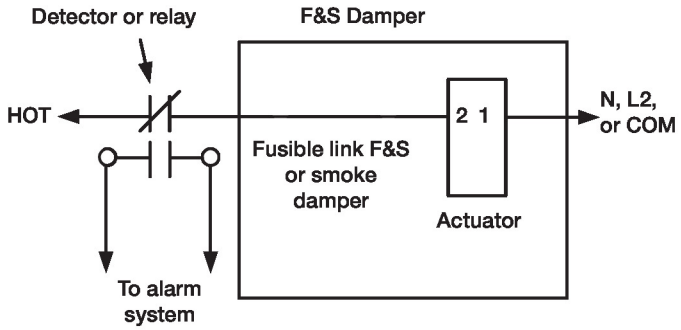
**INSTALLATION NOTES**

1 Provide overload protection and disconnect as required.

45 Actuators may be powered in parallel. Power consumption must be observed.

75 Ground present on some models.

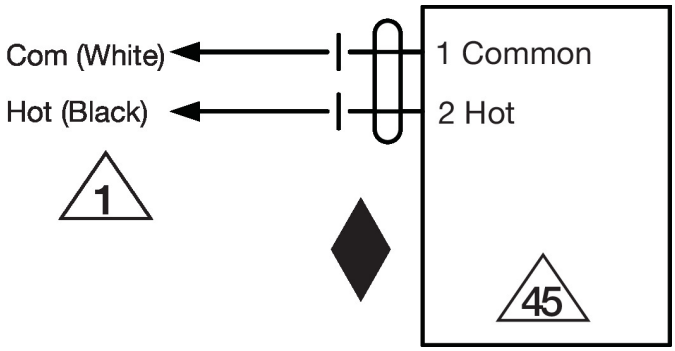
Meets cULus requirements without the need of an electrical ground connection.



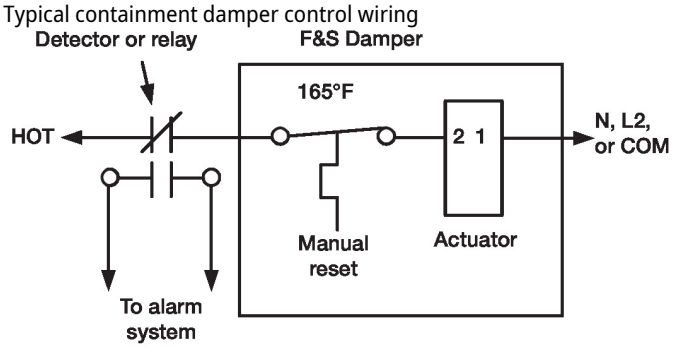

Typical smoke or fusible link damper wiring

**Wiring diagrams**

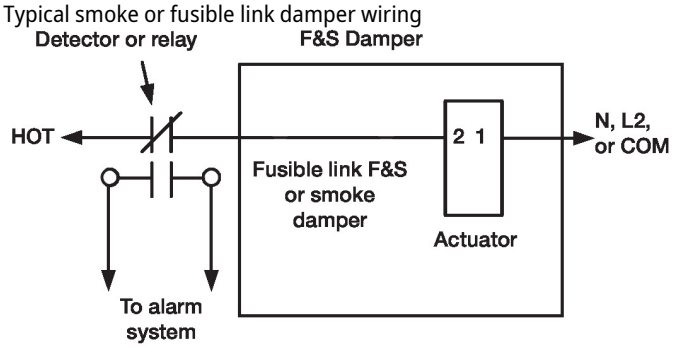
AC/DC 24 V



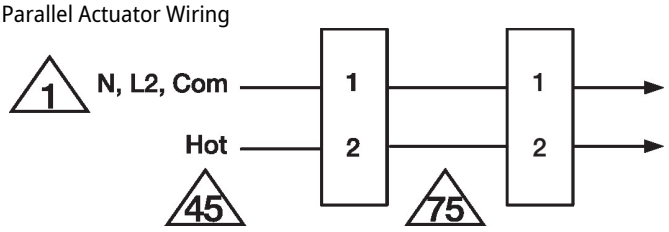
Typical containment damper control wiring



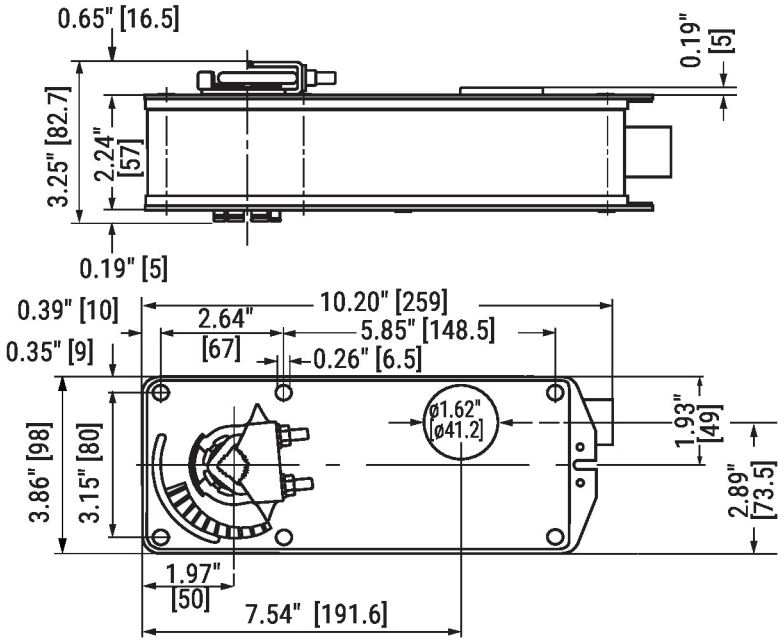

Typical smoke or fusible link damper wiring




Parallel Actuator Wiring




## Dimensions




Standard:
1/2" to 1.05"

Optional*
3/8" to 3/4"

*with K4 US clamp

# SALES CONTACT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