

Fail-Safe actuator used in typical Fire and Smoke damper applications

- Torque motor 180 in-lb [20 Nm]
- Nominal voltage AC 120 V
- Control On/Off
- @ 350°F [177°C] for 30 min
- 25 s, <15 s Motor/Fail-safe
- 2x SPST



5-year warranty



## Technical data

|                 |                                     |                                                                                             |
|-----------------|-------------------------------------|---------------------------------------------------------------------------------------------|
| Electrical data | Nominal voltage                     | AC 120 V                                                                                    |
|                 | Nominal voltage frequency           | 50/60 Hz                                                                                    |
|                 | Nominal voltage range               | AC 96...132 V                                                                               |
|                 | Power consumption in operation      | 30 VA                                                                                       |
|                 | Power consumption in rest position  | 7.5 W, 12 VA (50 Hz 20 VA), end stop 47 VA, 0.5 A slow blow fuse *                          |
|                 | Inrush current                      | 3.2 A                                                                                       |
|                 | Auxiliary switch                    | 2x SPST, 6 A resistive (2.5 A inductive) @ AC 250 V, 1x 5° / 1x 85°                         |
|                 | Switching capacity auxiliary switch | 6 A resistive (2.5 A inductive) @ AC 250 V                                                  |
|                 | Connection auxiliary switch         | cabl 32" [0.9 m], 4x 18 AWG appliance cable with 1/2" NPT conduit connector                 |
|                 | Electrical connection               | 3 Leads 32" [0.9 m], 18 AWG with 1/2" NPT conduit connector                                 |
|                 | Overload Protection                 | electronic throughout 0...95° rotation                                                      |
|                 | Electrical Protection               | grounded housing, 120 V                                                                     |
| Functional data | Torque motor                        | 180 in-lb [20 Nm] @ 350°F [177°C] for 30 min                                                |
|                 | 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)                | 25 s / 90°                                                                                  |
|                 | Running time fail-safe              | <15 s                                                                                       |
|                 | Noise level, motor                  | 70 dB(A)                                                                                    |
|                 | Noise level, fail-safe              | 73 dB(A)                                                                                    |
|                 | Position indication                 | Mechanical                                                                                  |
| Safety data     | Degree of protection NEMA/UL        | NEMA 1                                                                                      |
|                 | Housing                             | UL Enclosure Type 1                                                                         |
|                 | Agency Listing                      | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02                                         |
|                 | Quality Standard                    | ISO 9001, RoHS (EU-Directive 2011/65/EU)                                                    |
|                 | 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                              | 6.8 lb [3.1 kg]                                                                             |
| Materials       | Housing material                    | galvanized steel                                                                            |

## Technical data

|                  |       |                               |
|------------------|-------|-------------------------------|
| <b>Materials</b> | Gears | steel, permanently lubricated |
|------------------|-------|-------------------------------|

## Safety notes



- \* Neither UL nor Belimo require local over-current protection. The FSAF\_A actuators draw higher peak current when driving against any type of stop. After 10 seconds current drops to the lower holding level. If used, this requires the value of a local fuse or breaker to be increased to avoid nuisance opening or tripping. A 2 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 AC 230 V and a 0.3 A slow blow for AC 208 V.

## Product features

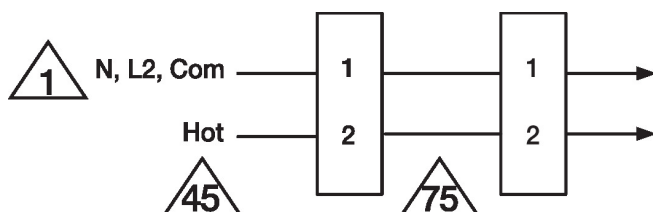
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Application</b>           | 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.                                                                                                                                                                                                                                                                                   |
| <b>Operation</b>             | 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.                                                                                                                            |
| <b>Typical specification</b> | 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 2x SPDT                                                                                                                                            | S2A-F US  |
| Mechanical accessories | Description                                                                                                                                                         | Type      |
|                        | Anti-rotation bracket, for AF / NF                                                                                                                                  | AF-P      |
|                        | End stop indicator                                                                                                                                                  | IND-AFB   |
|                        | Shaft clamp reversible, for central mounting, for damper shafts $\varnothing 12.7$ / 19.0 / 25.4 mm                                                                 | K7-2      |
|                        | Ball joint suitable for damper crank arm KH8                                                                                                                        | KG8       |
|                        | Actuator arm, for 3/4" shafts, clamping range $\varnothing 10 \dots 22$ mm, Slot width 8.2 mm                                                                       | KH-AFB    |
|                        |                                                                                                                                                                     | SH8       |
|                        | Wrench 0.32 in and 0.39 in [8 mm and 10 mm]                                                                                                                         | TOOL-06   |
|                        | Mounting bracket for AF..                                                                                                                                           | ZG-100    |
|                        | Mounting bracket for AF / NF                                                                                                                                        | ZG-101    |
|                        | Dual actuator mounting bracket.                                                                                                                                     | ZG-102    |
|                        | Weather shield 13x8x6" [330x203x152 mm] (LxWxH)                                                                                                                     | ZS-100    |
|                        | Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH)                                                                                                                 | ZS-150    |
|                        | Explosion proof housing 16x10x6.435" [406x254x164 mm] (LxWxH), UL and CSA, Class I, Zone 1&2, Groups B, C, D, (NEMA 7), Class III, Hazardous (classified) Locations | ZS-260    |
|                        | Weather shield 17-1/4x8-3/4x5-1/2" [438x222x140 mm] (LxWxH), NEMA 4X, with mounting brackets                                                                        | ZS-300    |
|                        |                                                                                                                                                                     | ZG-AFA108 |
|                        | Mounting kit for AF..                                                                                                                                               | ZG-AFA    |
|                        |                                                                                                                                                                     | ZG-DC1    |
|                        |                                                                                                                                                                     | ZG-DC2    |

### Electrical installation

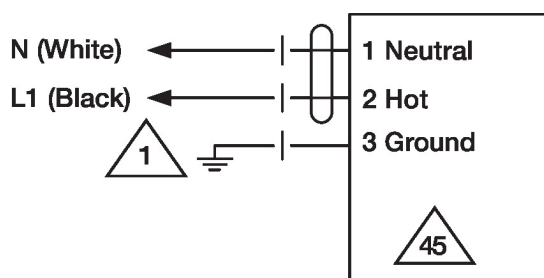
- 1 Provide overload protection and disconnect as required.
- 45 Actuators may be powered in parallel. Power consumption must be observed.
- 72 S4 makes to S6 when actuator is powered open.
- 73 Auxiliary switches are for end position indication or interlock control.
- 74 Double insulated.
- 75 Ground present on some models.



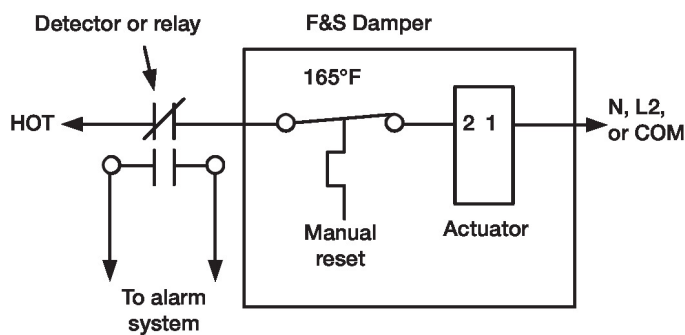
Parallel Actuator Wiring

### Wiring diagrams

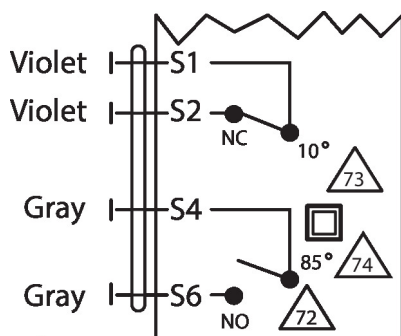
AC 120 V



### Typical containment damper control wiring



### Auxiliary Switch Wiring



## Dimensions

