

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

- Torque motor 180 in-lb [20 Nm]
- Nominal voltage AC/DC 24 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/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Power consumption in operation	32 VA	
	Power consumption in rest position	5 W, 8.5 VA, End stop 47 VA, 2 A slow blow fuse *	
	Transformer sizing	40 VA	
	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 supply	2 Leads 32" [0.9 m], 18 AWG with 1/2" NPT conduit connector	
	Connection auxiliary switch	cable 32" [0.9 m], 4x 18 AWG appliance cable with 1/2" NPT conduit connector	
	Overload Protection	electronic throughout 0...95° rotation	
	Electrical Protection	actuators are double insulated	
	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	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 UL60730-1A:02; UL 60730-2-14:02 and 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]	

Technical data

Safety data	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	5.9 lb [2.7 kg]
Materials	Housing material	galvanized steel
	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.
- Transformers: Note that while a 24 V 100 VA transformer would handle 3 actuators run current, a 4 A breaker or plug fuse is insufficient. A 6 A slow blow would be required.

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

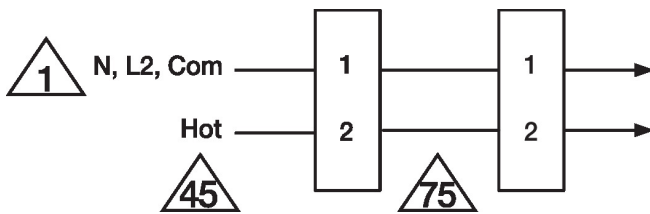
Electrical accessories	Description	Type
	Thermoelectric tripping device, Duct inside temperature 165°F	BAE165 US
	Auxiliary switch 2x SPDT	S2A-F US
Mechanical accessories	Description	Type
	Anti-rotation bracket, for AF / NF	AF-P
	End stop indicator	IND-AFB
	Shaft clamp reversible, for central mounting, 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...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

Accessories

Description	Type
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
Mounting kit for AF..	ZG-AFA108 ZG-AFA ZG-DC1 ZG-DC2

Electrical installation

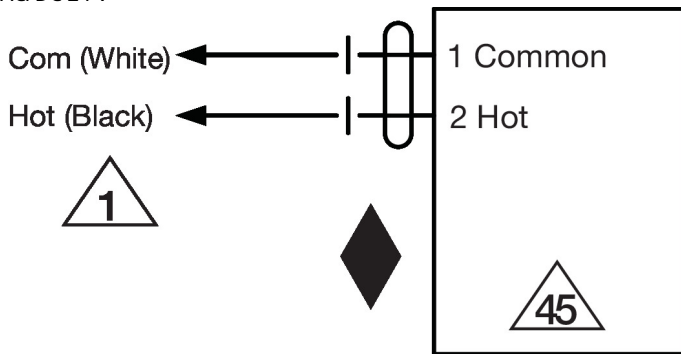
- ▲1 Provide overload protection and disconnect as required.
- ▲45 Actuators may be powered in parallel. Power consumption must be observed.
- ▲72 S4 makes to S6 when actuator is powered open.
- ▲73 Auxiliary switches are for end position indication or interlock control.
- ▲74 Double insulated.
- ▲75 Ground present on some models.
- ◆ Meets cULus requirements without the need of an electrical ground connection.



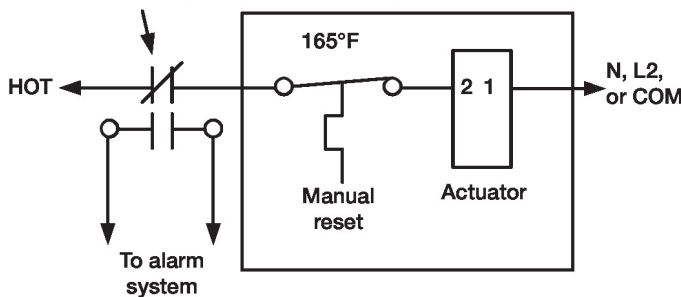
Parallel Actuator Wiring

Wiring diagrams

AC/DC 24 V



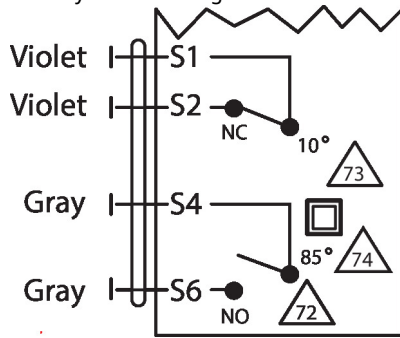
Typical containment damper control wiring



Electrical installation

Wiring diagrams

Auxiliary Switch Wiring



Dimensions

