

- Torque motor 180 in-lb [20 Nm]
- Nominal voltage AC/DC 24 V
- Control modulating
- @ 250°F [121°C] for 30 min
- 75 s, <20 s Motor/Fail-safe
- 2 x SPDT



5-year warranty



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	6.5 W/6 W, 9.5 VA
	Power consumption in rest position	3 W, 5 VA
	Transformer sizing	10 VA
	Auxiliary switch	2 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, one set at 10°, one adjustable 10...90°
	Switching capacity auxiliary switch	3 A resistive (0.5 A inductive) @ AC 250 V
	Electrical Connection	(2) 18 GA appliance cables, 1 m, with 1/2" conduit connectors
	Overload Protection	electronic throughout 0...95° rotation
Electrical Protection	actuators are double insulated	
Functional data	Torque motor	180 in-lb [20 Nm] @ 250°F [121°C] for 30 min
	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Direction of motion motor	selectable by ccw/cw mounting
	Direction of motion fail-safe	reversible with cw/ccw mounting
	Manual override	5 mm hex crank (3/16" Allen), supplied
	Angle of rotation	95°
	Angle of rotation note	adjustable with mechanical end stop, 35...95°
	Running Time (Motor)	75 s / 90°
	Running time motor note	@ 250°F [121°C]
	Running time fail-safe	<20 s
	Noise level, motor	40 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	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Agency Listing	CE, UL 60730-1, CSA C22.2 No. 139 certified
	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

Safety data	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	5.7 lb [2.6 kg]
Materials	Housing material	Galvanized steel and plastic housing
	Gears	steel, permanently lubricated

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

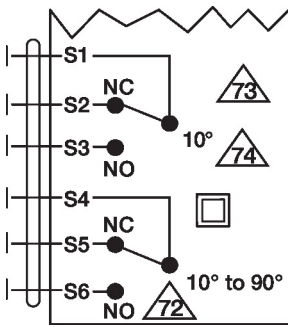
Electrical accessories	Description	Type
	Thermoelectric tripping device, Duct inside temperature 165°F	BAE165 US
	Auxiliary switch 2 x SPDT	S2A-F US
	Positioner for wall mounting	SGA24
Mechanical accessories	Description	Type
	Anti-rotation bracket, for AF / NF	AF-P
	End stop indicator	IND-AFB
	Shaft clamp reversible, for central mounting, for damper shafts Ø12.7 / 19.0 / 25.4 mm	K7-2
	Ball joint suitable for damper crank arm KH8, Multipack 10 pcs.	KG8
	Actuator arm, for 3/4" shafts, clamping range Ø10...22 mm, Slot width 8.2 mm	KH-AFB
	Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).	SH8
	Wrench 0.32 in and 0.39 in [8 mm and 10 mm]	TOOL-06
	Mounting bracket for AF..	ZG-100
	Mounting bracket	ZG-101
	Mounting bracket for AF / NF	ZG-118
	Mounting kit for linkage operation for flat and side installation	ZG-AFB
	Mounting kit for foot mount installation	ZG-AFB118
	Damper clip for damper blade, 3.5" width.	ZG-DC1
	Damper clip for damper blade, 6" width.	ZG-DC2
	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

Electrical installation

APPLICATION NOTES

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

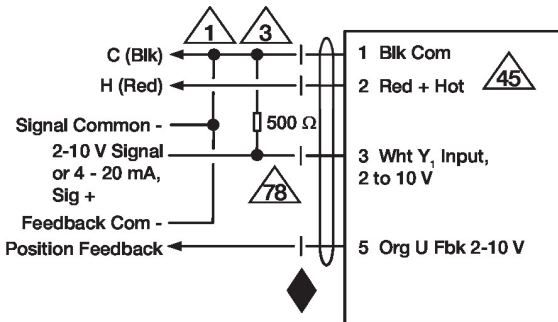
- ▲1 Provide overload protection and disconnect as required.
- ▲3 Actuators may also be powered by DC 24 V.
- ▲45 Actuators may be powered in parallel. Power consumption must be observed.
- ▲72 S4 makes to S6 when actuator is powered open.
- ▲73 Auxiliary switches are for end position indication or interlock control.
- ▲74 Double insulated.
- ▲78 500 ohm load resistor for 4...20 mA. Only one resistor for multiple actuators.
- ▲79 Primary/secondary operation/wiring of mechanically paralleled ("piggyback") Fire and Smoke actuators will not function.
- ▲80 Actuators may be electrically paralleled on different damper sections that are not mechanically connected to one another.
- ▲81 Smoke relay and primary heat responsive sensor may be located in hot wire.
- ▲82 Only one smoke signal and/or thermal sensor may be employed for all paralleled actuators.
- ▲83 Any wire 5 feedback could be used to indicate position or to drive actuators that are not mechanically paralleled. That is, they are on other dampers.



Auxiliary Switch

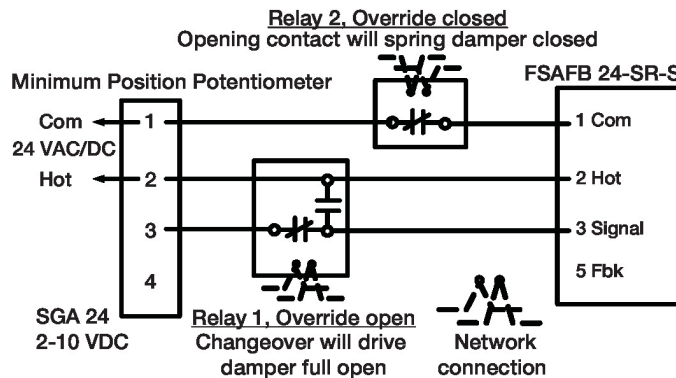
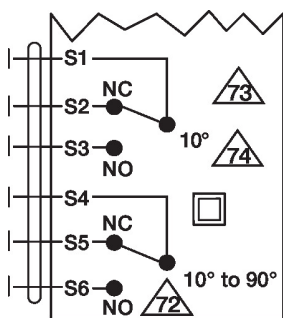
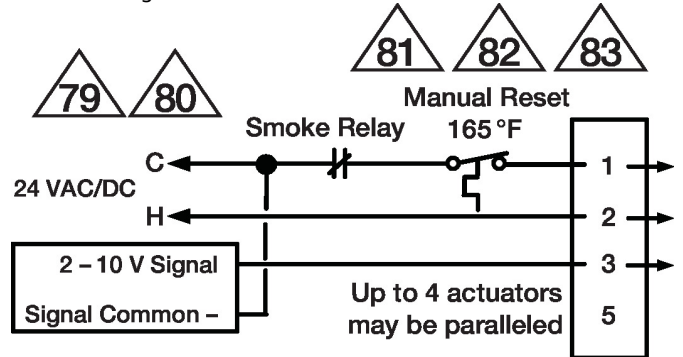
Wiring diagrams

AC/DC 24 V



Auxiliary Switch

Parallel wiring



Dimensions

K7-2 (supplied)

- ∅ 1/2" Centered (Default)
- 3/4" Centered (Field Selectable)
- 1.05" Centered (Field Selectable)

