

# ACTUATORS & DAMPERS

## FIRE AND SMOKE DAMPER ACTUATORS

FSLF, FSNF, FSAF, FSAFXA, FSTF SERIES

### DESCRIPTION

Belimo's broad product line of fire and smoke damper actuators covers the established range of system applications including active smoke control for stairwell, under-floor and other pressurization applications.

### FEATURES

- ISO 9001 Certified Quality Control and a 5-year warranty assure reliable operation
- 24, 120 and 230 VAC availability to meet various installation requirements
- 24 VDC model (FSAF only) with 2-position and proportional control for DC power applications
- Unique FSAF24-BAL actuator allows duct balancing capabilities in fire and smoke dampers
- UL555 and UL555S listed with U.S. damper manufacturers



FSAF24



FSLF120

**BELIMO**



### COMMON SPECIFICATIONS

<b>Wiring</b>	3-foot leads, 18 AWG, 1/2" NPT conduit connection	<b>Housing Material</b>	Zinc-coated metal (except FSTF), UL94-5VA (FSTF)
<b>Feedback</b>	2-10 VDC (FSAF24-SR/FSAFB24-SR only)	<b>Operating Temperature</b>	32° to 122°F (0° to 50°C) (except FSAF), -22° TO 122°F (-30° TO 50°C) (FSAF)
<b>Rotation Direction</b>	CW/CCW mounting method	<b>Operating Humidity</b>	5 to 95% RH
<b>Rotation Angle</b>	95°	<b>Enclosure Rating</b>	
<b>Override</b>	3 mm hex crank (FSAF only)	<b>FSTF</b>	NEMA 2, IP42, UL enclosure type 2
<b>Shaft Diameter</b>		<b>FSLF, FSNF, FSAF24/120, FSAFXA, FSAFB</b>	NEMA 1 (IP40)
<b>FSTF</b>	1/4" to 1/2", centers on 1/2"	<b>FSAF230/24-BAL</b>	NEMA type 1/IP40 (with flex conduit)
<b>FSLF, FSNF, FSAF</b>	3/8" to 1.05"	<b>FSAF24-SR</b>	NEMA type 2/IP40
<b>FSAFXA, FSAFB</b>	1/2" to 1.05" round, centers on 3/4" with insert, 1" without	<b>Approvals</b>	UL File #E108966, UL555, UL555s
<b>Noise</b>	<45 dB(A) drive, <62 dB (A) return	<b>Warranty</b>	5 years
<b>Life Expectancy</b>	20,000 cycles per UL555S		
<b>Auxiliary Switch</b>	2-SPDT, 7A resistive, 125/250 VAC		

### INDIVIDUAL SPECIFICATIONS

Model	Torque	Supply Voltage	Supply VA	Control Signal	Drive Time	Spring Return Time	Weight
FSTF24	18 in-lb (2 Nm)	24 VAC	5 VA	Two-position	75 seconds	25 seconds	1.26 lb (0.57 kg)
FSTF120	18 in-lb (2 Nm)	120 VAC	5 VA	Two-position	75 seconds	25 seconds	1.26 lb (0.57 kg)
FSTF230	18 in-lb (2 Nm)	230 VAC	5 VA	Two-position	75 seconds	25 seconds	1.26 lb (0.57 kg)
FSLF24	30 in-lb (3.5 Nm)	24 VAC	15 VA	Two-position	15 seconds	15 seconds	3.4 lb (1.5 kg)
FSLF120	30 in-lb (3.5 Nm)	120 VAC	18 VA	Two-position	15 seconds	15 seconds	4.0 lb (1.8 kg)
FSLF230	30 in-lb (3.5 Nm)	230 VAC	17 VA	Two-position	15 seconds	15 seconds	4.0 lb (1.8 kg)
FSNF24	70 in-lb (7.8 Nm)	24 VAC	24 VA	Two-position	15 seconds	15 seconds	6.0 lb (2.7 kg)
FSNF120	70 in-lb (7.8 Nm)	120 VAC	23 VA	Two-position	15 seconds	15 seconds	6.1 lb (2.8 kg)
FSNF230	70 in-lb (7.8 Nm)	230 VAC	23 VA	Two-position	15 seconds	15 seconds	6.1 lb (2.8 kg)
FSAF24	133 in-lb (15 Nm)	24 VAC	10 VA	Two-position	75 seconds	20 seconds	5.7 lb (2.6 kg)
FSAF120	133 in-lb (15 Nm)	120 VAC	11 VA	Two-position	75 seconds	20 seconds	6.1 lb (2.8 kg)
FSAF230	133 in-lb (15 Nm)	230 VAC	12 VA	Two-position	75 seconds	20 seconds	6.1 lb (2.8 kg)
FSAF24-SR	133 in-lb (15 Nm)	24 VAC/VDC	11 VA	Proportional 2-10 VDC, 4-20 mA	75 seconds	20 seconds	5.7 lb (2.6 kg)
FSAF24-BAL	133 in-lb (15 Nm)	24 VAC/VDC	10 VA	Floating/3-position, built in potentiometer	75 seconds	20 seconds	5.7 lb (2.6 kg)
FSAF24A	180 in-lb (20 Nm)	24 VAC	32 VA	Two-position	25 seconds	15 seconds	5.5 lb (2.5 kg)
FSAF120A	180 in-lb (20 Nm)	120 VAC	38 VA	Two-position	25 seconds	15 seconds	6.5 lb (2.95 kg)
FSAF230A	180 in-lb (20 Nm)	230 VAC	37 VA	Two-position	25 seconds	15 seconds	6.5 lb (2.95 kg)
FSAFB24-SR	180 in-lb (20 Nm)	24 VAC	10 VA	Proportional 2-10 VDC, 4-20 mA	75 seconds	20 seconds	4.6 lb (2.1 kg)

# ACTUATORS & DAMPERS

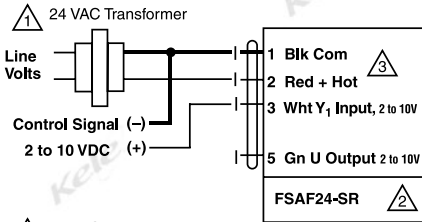
## FIRE AND SMOKE DAMPER ACTUATORS FSLF, FSNF, FSAF, FSAFXA, FSTF SERIES



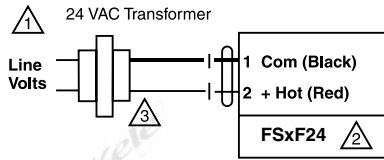
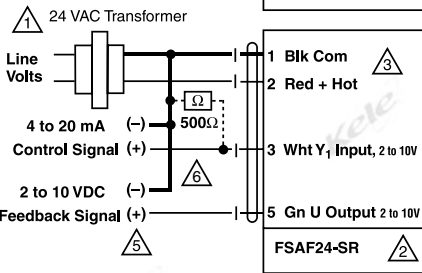
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ACTUATORS & DAMPERS

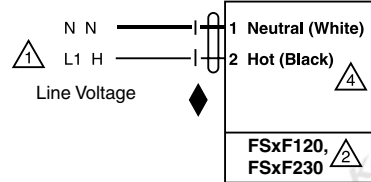
### WIRING



**FSAF24-SR, Proportional**



**FSLF, FSNF, FSAF,  
FSAFXA, FSTF, 2-position**



1 Provide overload protection and disconnect as required.

2 CAUTION Equipment Damage!  
Actuators may be connected in parallel.  
Power consumption and input impedance must be observed.

3 Actuator may also be powered by 24 VDC.

4 No ground connection required for AF models.  
Double insulated.

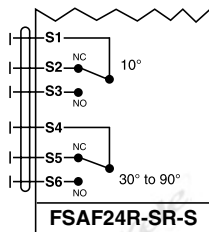
5 Only connect common to neg. (-) leg of control circuits.

6 The ZG-R01-500 Ω resistor converts a 4 to 20 mA control signal to 2 to 10 VDC.

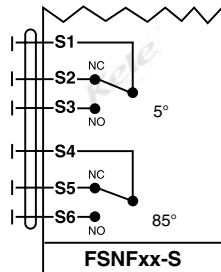
◆ AF models meet cULus or UL and CSA Standard requirements without the need of an electrical ground connection. LF and NF high voltage models require ground.

NOTE: Refer to Belimo FS Actuators Guide for complete wiring information.

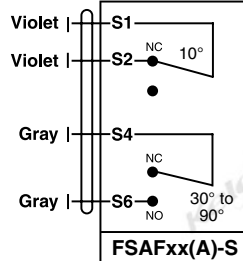
### AUXILIARY SWITCH WIRING



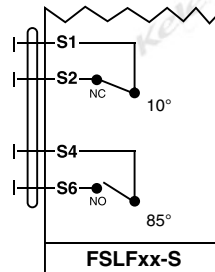
**FSAF24R-SR-S**



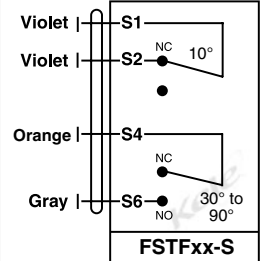
**FSNFxx-S**



**FSAFxx(A)-S**



**FSLFxx-S**



**FSTFxx-S**

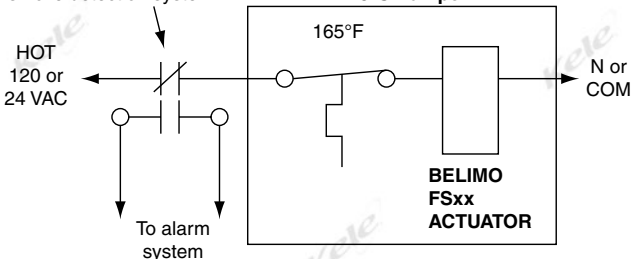
NOTE: Refer to Belimo FS Actuators Guide for complete wiring information.

**IMPORTANT:** In most jurisdictions, replacement is considered a normal repair and no permit is required. A record must be kept on site per NFPA 105. UL expects instructions to be used. See [www.belimo.com/firesmoke](http://www.belimo.com/firesmoke). Confirm with Local Authority Having Jurisdiction (AHJ).

### APPLICATION WIRING

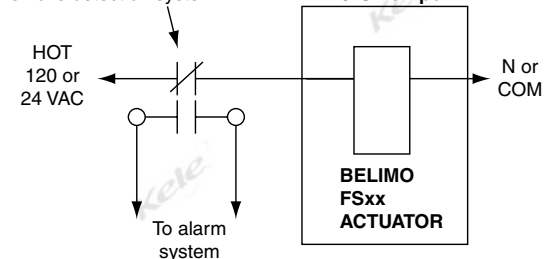
#### Thermal sensor application

Smoke detector or relay from area smoke detection system



#### Fusible link and shaft spring application

Smoke detector or relay from area smoke detection system



# ACTUATORS & DAMPERS

## FIRE AND SMOKE DAMPER ACTUATORS

FSLF, FSNF, FSAF, FSAFXA, FSTF SERIES

### DIMENSIONS

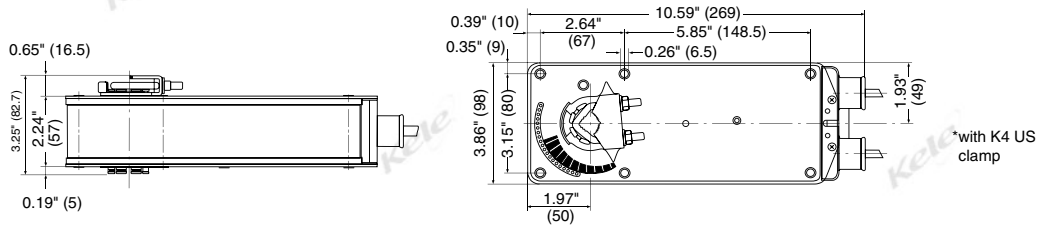
In.  
(cm)

**Standard:**

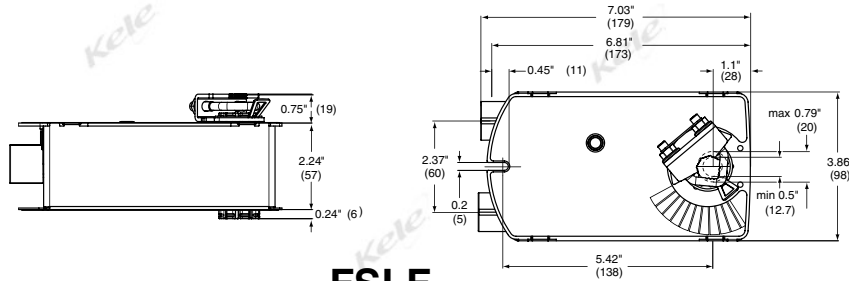
○ 1/2" to 1.05"

**Optional\***

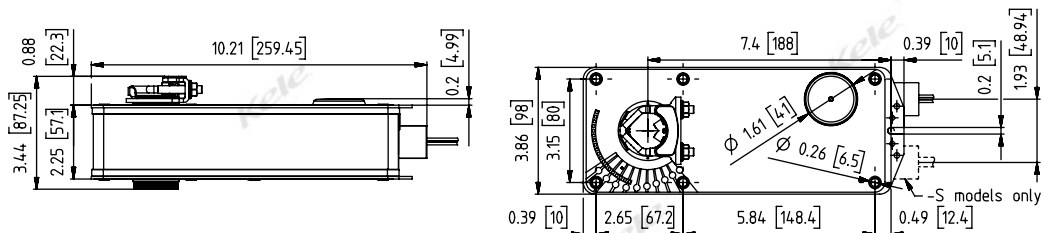
○ 3/8" to 3/4"



### FSAF, FSNF



### FSLF



### FSAF(A)

### ORDERING INFORMATION

MODEL	DESCRIPTION
<b>FSLF24</b>	Fire/smoke actuator, 30 in-lb (3.5 Nm), two-position, 24 VAC
<b>FSLF120</b>	Fire/smoke actuator, 30 in-lb (3.5 Nm), two-position, 120 VAC
<b>FSLF230</b>	Fire/smoke actuator, 30 in-lb (3.5 Nm), two-position, 230 VAC
<b>FSNF24</b>	Fire/smoke actuator, 70 in-lb (7.8 Nm), two-position, 24 VAC
<b>FSNF120</b>	Fire/smoke actuator, 70 in-lb (7.8 Nm), two-position, 120 VAC
<b>FSNF230</b>	Fire/smoke actuator, 70 in-lb (7.8 Nm), two-position, 230 VAC
<b>FSAF24</b>	Fire/smoke actuator, 133 in-lb (15 Nm), two-position, 24 VAC
<b>FSAF120</b>	Fire/smoke actuator, 133 in-lb (15 Nm), two-position, 120 VAC
<b>FSAF230</b>	Fire/smoke actuator, 133 in-lb (15 Nm), two-position, 230 VAC
<b>FSAF24-SR</b>	Fire/smoke actuator, 133 in-lb (15 Nm), proportional 2-10 VDC, 24 VAC
<b>FSAF24-BAL</b>	Fire/smoke actuator, 133 in-lb (15 Nm), 3-position with potentiometer, 24 VAC

**Note:** Add "-S" suffix to model number for models with auxiliary contacts: 2 SPST, 3A (0.5 A inductive) @ 125/250 VAC

**Note:** FSAFB24-SR model available with shorter 8" connection cable. Add "-SC" to the end of the model number.

### RELATED PRODUCTS

<b>DCPA-1.2</b>	Power supply, 120 VAC In to 24 VAC/24 VDC Out
<b>691-K0A</b>	Control transformer, 120:24 VAC, 40 VA, Class 2
<b>DCP-1.5-W</b>	Power supply, 24 VAC IN to 24 VDC OUT