


Technical Data FSLF24(-S)(-FC) US, FSLF120(-S)(-FC) US

Power supply		
	FSLF24(-S)(-FC) US	24 VAC \pm 20%, 50/60 Hz
	FSLF120(-S)(-FC) US	120 VAC \pm 10%, 50/60 Hz
Power consumption	running	50/60 Hz, 15 VA
	24 VAC holding	50/60 Hz, 3.5 VA
	end stop	50/60 Hz 25 VA
120 VAC	running	50/60 Hz 18 VA
	holding	50/60 Hz 6.5 VA
	end stop	50/60 Hz 27 VA
Fusing*		
	FSLF24	1 amp slow blow
	FSLF120	0.25 amp slow blow
Transformer sizing		25 VA per 24 VAC actuator
Electrical connection		
	FSLF24 US	3 ft, 18 ga, 2 color coded leads
	FSLF120 US	3 ft, 18 ga, 3 color coded leads
	FSLF...-S US	3 ft, 18 ga, appliance cable
Overload protection		electronic throughout 0 to 95° rotation auto-restart after temporary overload (FSLF120 US grounded enclosure)
Control		microprocessor
Angle of rotation		95°
Torque		30 in-lb [3.5 Nm] minimum from 32°F to 350°F [0°C to 177°C]
Direction of rotation		spring can be selected by CCW/CW mounting
Position indication		visual indicator, 0° to 95°
Running time	motor	< 15 sec at rated voltage and torque 32°F to +122°F [0°C to +50°C]
	spring	<15 seconds at rated voltage and torque
Humidity		5 to 95% RH non-condensing
Ambient temperature		32°F to 122°F [0°C to 50°C]
Storage temperature		-40°F to 176°F [-40°C to 80°C]
Housing		NEMA type 1
Housing material		zinc coated steel
Gears		permanently lubricated
Agency listings		cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No.24-93
Servicing		maintenance free
Quality standard		ISO 9001
Weight		
	FSLF24(-S) US	3.4 lbs [1.7 kg], (+ 0.3 lbs [+0.14 kg])
	FSLF120(-S) US	4.0 lbs [1.8 kg], (+ 0.3 lbs [+0.14 kg])

FSLF24(-S)(-FC) US, FSLF120(-S)(-FC) US

Auxiliary switch	2 x SPST 0.5 A inductive, 3A resistive @ 120/250VAC, minimum 1 mA @ 5 VDC, .3 A ind, .5A res @ 24VDC, UL listed, 10° and 85°. Double insulated <input type="checkbox"/>
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FSLF24(-S)(-FC) US, FSLF120(-S)(-FC) US

On/Off, Spring Return, 350°F for Half Hour, 15 Seconds Cycle Time

Application

The type FSLF spring-return actuator is intended for the operation of smoke and combination fire and smoke dampers in ventilation and air-conditioning systems. The actuator will meet requirements of UL555 and UL555S when tested as an assembly with the damper and will meet requirements of UBC for 15 second opening and closing. Square footage of damper operated will depend on make and model and the temperature required.

Operation

Mounting of the actuator to the damper axle shaft or jackshaft is via a cold-weld clamp. Teeth in the clamp and V-bolt dig into the metal of both solid and hollow shafts maintaining a perfect connection. The specially designed clamp will not crush hollow shafts. The bottom end of the actuator is held by an anti-rotation strap or by a stud provided by the damper manufacturer.

The actuator is mounted in its fail safe position with the damper blade(s) 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.

SAFETY NOTES

The actuator contains no components which the user can replace or repair. 24 VAC Connect via safety isolating transformer, Class 2 supply.

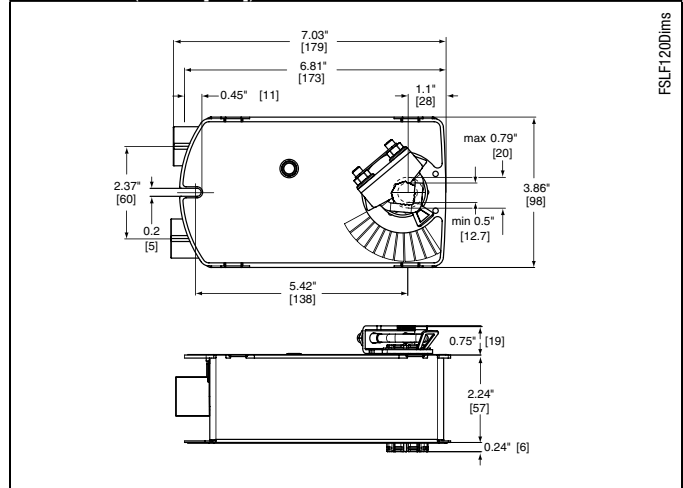
1/2" Threaded Connector

Screw a conduit fitting into the actuator's metal bushing. Jacket the actuator's input wiring with suitable flexible conduit. Properly terminate the conduit in a suitable junction box.

3/8" Flex Connector (-FC models)

Mount the flexible conduit into the actuator's metal bushing by means of the provided screw with a torque of 1.2 Nm. Jacket the actuator's input wiring with suitable flexible conduit. Properly terminate the conduit in a suitable junction box.

Dimensions (Inches [mm])



*Individual Fusing or Breakers are not required by Belimo.

The FSLF24 draws higher peak current when driving against any type of stop. Given the technology of fuses & breakers, this requires the value of fuse or breaker to be increased to avoid nuisance opening or tripping. A 1 amp slow blow should be used for 24VAC. A 0.25 amp slow blow should be used for 120VAC.

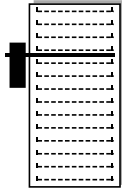
FSLF24(-S)(-FC) US, FSLF120(-S)(-FC) US

On/Off, Spring Return, 350°F for Half Hour, 15 Seconds Cycle Time

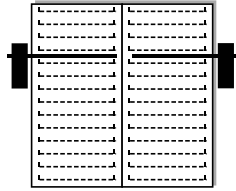


Typical Applications

The typical fire and smoke damper requires from 5-15 in-lb of torque per square foot at 250°F - 350°F under dynamic load (2000 fpm velocity). The FSLF is a single section damper actuator. For the multi section dampers, use the FSNF series. This is a direct coupled actuator. If linkages are needed use the FSNF series.



Single section for one FSLF actuator



Two section for two FSLF actuators

Typical Specification

Smoke Control and Combination Fire and Smoke Control Damper Actuators

All smoke and combination fire and smoke dampers shall be provided with Belimo FSLF, FSNF, or FSAF actuators. No substitutions allowed. Damper and actuator shall have UL555S Listing for 250°F (350°F) and shall comply with UBC if required by local codes. Where proof of closure switches are required, blade switches, actuator auxiliary switches, or proximity switches are allowed.

Replacement Applications

The number one "equal or better" requirement for use as a replacement for obsolete defective motors is the UL555S listing of the Belimo actuator with the damper for the application. The local authority having jurisdiction sets the requirements. In some cases a permit and inspection may be required.

Go to www.belimo.us/firesmoke for a Cross Reference from old damper actuators to Belimo. Extensive retrofit installation instructions are available, along with technical training information.

CAUTION

Caution must be used when replacing failed motors with new Belimo actuators. Many old motors did not have internal springs and depended on external springs on the side of the damper or wrapped around the damper shaft to close the damper. Old motor springs must be removed or disabled. Do not remove fusible link springs if they had only fire and no smoke functions

In some cases, a BAE 165 or equal thermal sensor must be installed.

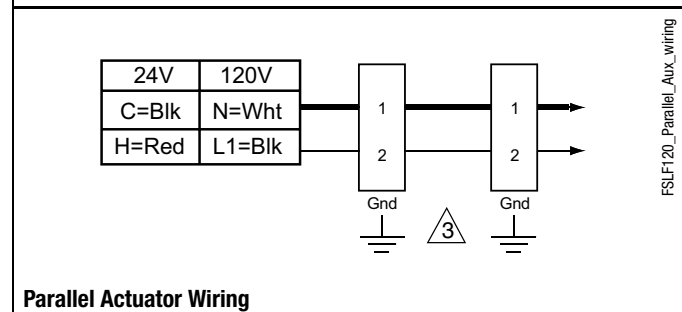
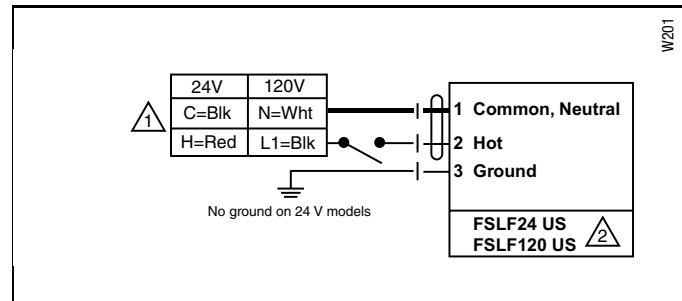
Wiring Diagrams

INSTALLATION NOTES

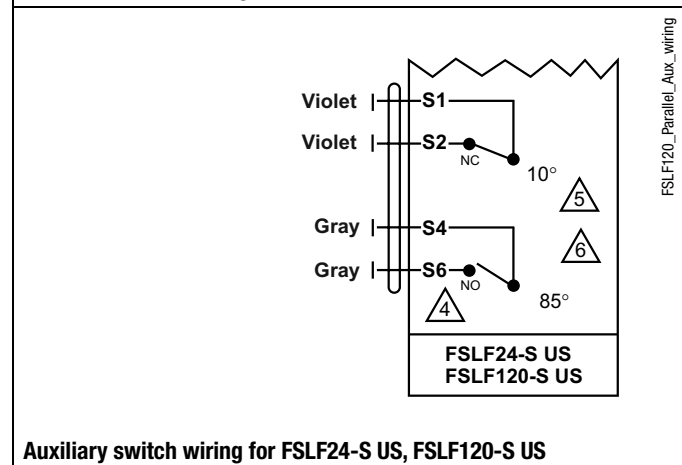
- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 No ground on 24 V models
- 4 S4 makes to S6 when the actuator is powered open.
- 5 For end position indication, interlock control, fan startup, etc., FSLF24-S US and FSLF120-S US incorporate two built-in auxiliary switches.
- 6 Double insulated

WARNING Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.



Parallel Actuator Wiring



Auxiliary switch wiring for FSLF24-S US, FSLF120-S US

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Technical Data FSLF24(-S)(-FC) US, FSLF230(-S) US

Power supply		
	FSLF24(-S)(-FC) US	24 VAC ± 20%, 50/60 Hz
	FSLF230(-S) US	230 VAC ± 10%, 50/60 Hz
Power consumption	running	50/60 Hz, 15 VA
	24 VAC holding	50/60 Hz, 3.5 VA
	end stop	50/60 Hz 25 VA
230 VAC	running	50/60 Hz 17 VA
	holding	50/60 Hz 6.5 VA
	end stop	50/60 Hz 27 VA
Fusing*		
	FSLF24	1 amp slow blow
	FSLF230	0.125 amp slow blow
Transformer sizing		25 VA per 24 VAC actuator
Electrical connection		
	FSLF24 US	3 ft, 18 ga, 2 color coded leads
	FSLF230 US	3 ft, 18 ga, 3 color coded leads
	FSLF...-S US	3 ft, 18 ga, appliance cable
Overload protection		electronic throughout 0 to 95° rotation auto-restart after temporary overload (FSLF230 US grounded enclosure)
Control		microprocessor
Angle of rotation		95°
Torque		30 in-lb [3.5 Nm] minimum from 32°F to 350°F [0°C to 177°C]
Direction of rotation		spring can be selected by CCW/CW mounting
Position indication		visual indicator, 0° to 95°
Running time	motor	< 15 sec at rated voltage and torque 32°F to +122°F [0°C to +50°C]
	spring	<15 seconds at rated voltage and torque
Humidity		5 to 95% RH non-condensing
Ambient temperature		32°F to 122°F [0°C to 50°C]
Storage temperature		-40°F to 176°F [-40°C to 80°C]
Housing		NEMA type 1
Housing material		zinc coated steel
Gears		permanently lubricated
Agency listings		cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No.24-93
Servicing		maintenance free
Quality standard		ISO 9001
Weight		
	FSLF24(-S) US	3.4 lbs [1.7 kg], (+ 0.3 lbs [+0.14 kg])
	FSLF230(-S) US	4.0 lbs [1.8 kg], (+ 0.3 lbs [+0.14 kg])

FSLF24(-S)(-FC) US, FSLF230(-S) US

Auxiliary switch	2 x SPST 0.5 A inductive, 3A resistive @ 120/250VAC, minimum 1 mA @ 5 VDC, .3 A ind, .5A res @ 24VDC, UL listed, 10° and 85°. Double insulated <input type="checkbox"/>
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Mounting of the actuator to the damper axle shaft or jackshaft is via a cold-weld clamp. Teeth in the clamp and V-bolt dig into the metal of both solid and hollow shafts maintaining a perfect connection. The specially designed clamp will not crush hollow shafts. The bottom end of the actuator is held by an anti-rotation strap or by a stud provided by the damper manufacturer.

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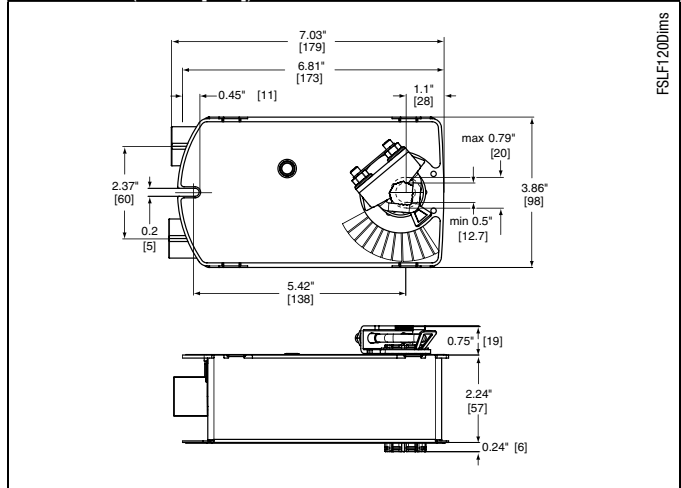
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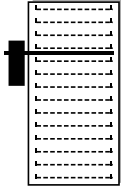
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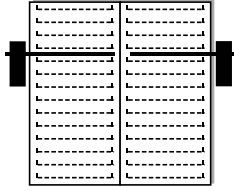


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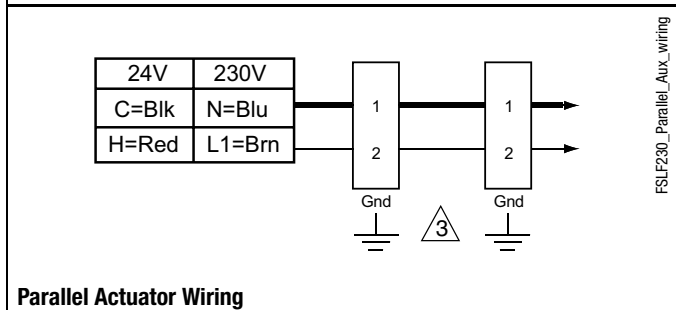
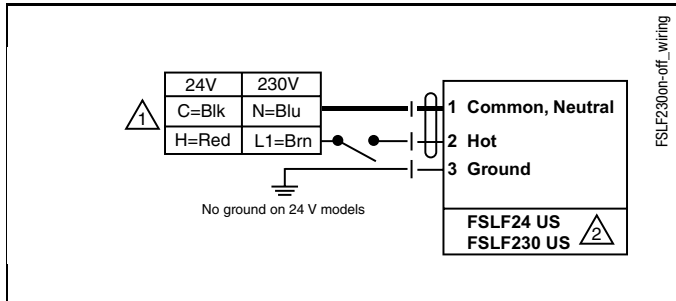
Wiring Diagrams

INSTALLATION NOTES

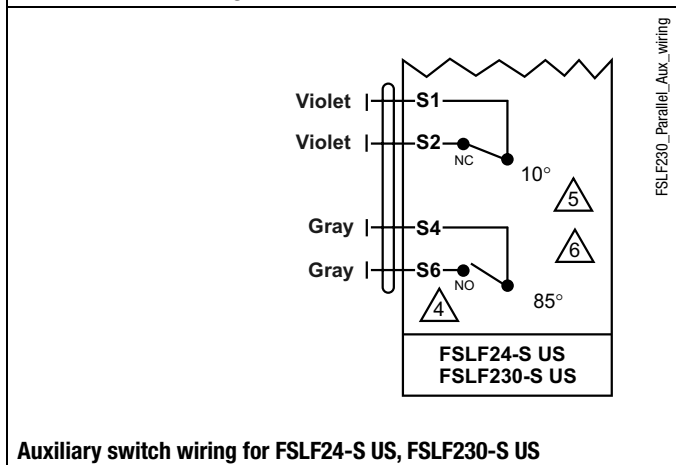
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