

TF24-SR (-S) US



Proportional damper actuator, spring return failsafe, 24 V for 2 to 10 VDC, or 4 to 20 mA control signal.



Torque min. 18 in-lb, for control of air dampers

Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft up to 1/2" in diameter by means of its universal clamp, 1/2" shaft centered at delivery. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

The actuator operates in response to a 2 to 10 VDC, or with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner.

Operation

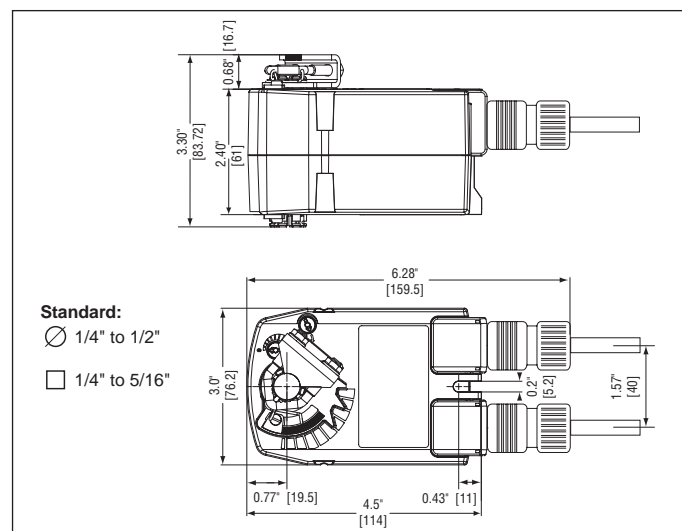
The TF series actuators provide true spring return operation for reliable fail-safe application and positive close-off on air tight dampers. The spring return system provides consistent torque to the damper with, and without, power applied to the actuator. The TF series provides 95° of rotation and is provided with a graduated position indicator showing 0 to 95°.

The TF24-SR (-S) US uses a brushless DC motor which is controlled by an Application Specific Integrated Circuit (ASIC) and a microprocessor. The microprocessor provides the intelligence to the ASIC to provide a constant rotation rate and to know the actuator's exact fail-safe position. The ASIC monitors and controls the brushless DC motor's rotation and provides a digital rotation sensing function to prevent damage to the actuator in a stall condition. The actuator may be stalled anywhere in its normal rotation without the need of mechanical end switches. Power consumption is reduced in holding mode.

The TF24-SR-S US version is provided with 1 built-in auxiliary switch. This SPDT switch is provided for safety interfacing or signaling, for example, for fan start-up. The switching function is adjustable between 0° and 95°. The auxiliary switch in the TF24-SR-S US is double insulated so an electrical ground in not necessary.

Technical Data	TF24-SR (-S) US
Power supply	24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power consumption	running: 2.5 W; holding: 1 W
Transformer sizing	4 VA (class 2 power source)
Electrical connection	TF24-SR US 3 ft, 18 GA plenum rated cable TF24-SR-S US 3 ft, 18 GA appliance cables (2) 1/2" conduit connector
Overload protection	electronic throughout 0 to 95° rotation
Operating range Y	2 to 10 VDC, 4 to 20mA
Input impedance	100 kΩ (0.1 mA), 500Ω
Angle of rotation	max. 95°, adjust. with mechanical stop
Torque	18 in-lb [2 Nm]
Direction of rotation	spring: reversible with cw/ccw mounting motor: reversible with built-in switch
Position indication	visual indicator, 0° to 95° (0° is spring return position)
Auxiliary switch (TF24-SR-S US)	1 x SPDT 3A (0.5A) @ 250 VAC, UL listed adjustable 0° to 95° (double insulated)
Running time (nominal)	motor: 95 sec constant, independent of load spring: < 25 sec @ -4°F to +122°F [-20°C to +50°C] < 60 sec @ -22°F [-30°C]
Humidity	5 to 95% RH non-condensing
Ambient temperature	-22°F to +122°F [-30°C to +50°C]
Storage temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA type 2 / IP42
Housing material	UL94-5VA
Agency listings	cULus listed acc. to UL 60730-1
Noise level	max: running < 35 db (A) spring return 62 dB (A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	TF24-SR 1.4 lbs (0.6 kg.) TF24-SR-S 1.5 lbs (0.7 kg.)

Dimensions [All numbers in brackets are in millimeters.]



Accessories

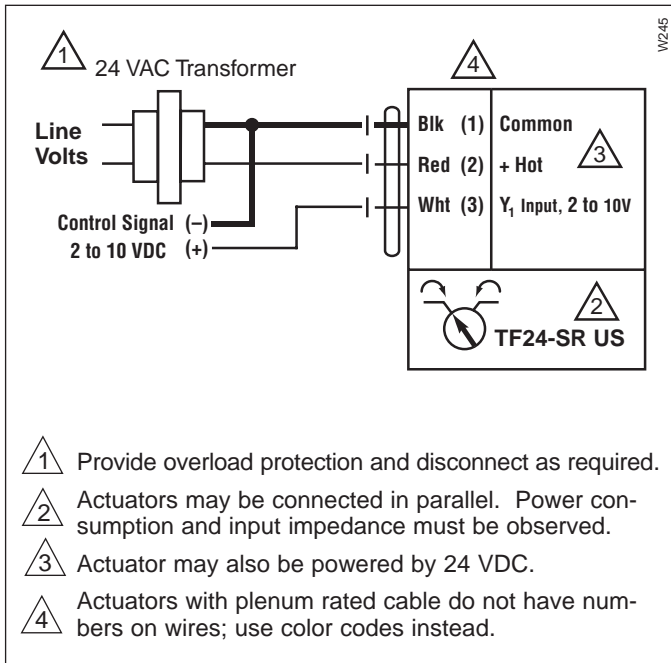
- Tool-06 8mm and 10 mm wrench
- KH-TF Crankarm for up to 1/2" round shaft
- ZG-TF2 Crankarm adaptor kit for TF
- ZG-TF112 Mounting bracket, kit for TF
- ZS-100 Weather shield (metal)
- ZS-150 Weather shield (polycarbonate)

Note: When using TF24-SR (-S) US actuators, only use accessories listed on this page.

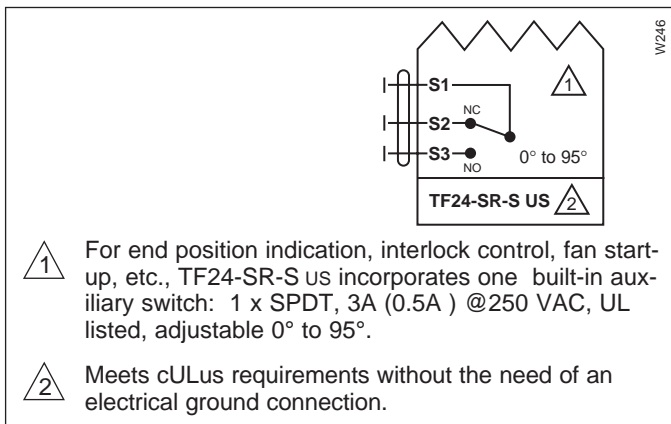
TF24-SR (-S) US Typical Specification

Spring return control damper actuators shall be direct coupled type which require no crankarm and linkage and be capable of direct mounting to a shaft up to a 1/2" diameter and center a 1/2" shaft. The actuator must provide proportional damper control in response to a 2 to 10 VDC or, with the addition of a 500Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. The actuators must be designed so that they may be used for either clockwise or counterclockwise fail-safe operation. Actuators shall use a brushless DC motor controlled by a microprocessor and be protected from overload at all angles of rotation. Run time shall be constant, and independent of torque. If required, 1 SPDT auxiliary switch shall be provided having the capability of being adjustable. Actuators with auxiliary switch must be constructed to meet the requirements for Double Insulation so an electrical ground is not required to meet agency listings. Actuators shall be cULus listed certified, have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

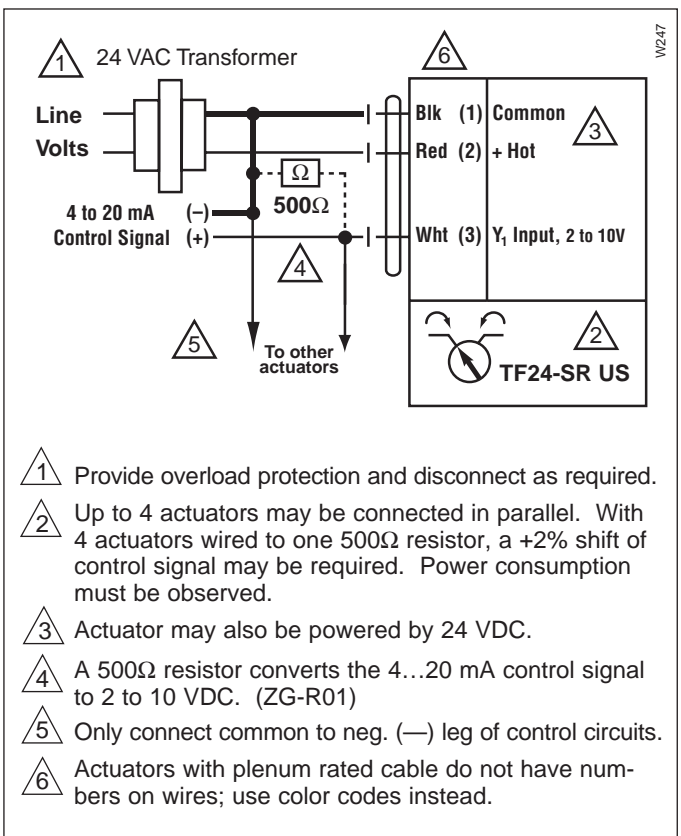
Wiring diagrams



2 to 10 VDC control of TF24-SR (-S) US



Auxiliary switch of TF24-SR-S US



4 to 20 mA control of TF24-SR (-S) US