

TF24-MFT US

Proportional, Spring Return, Multi-Function Technology®



MFT



Technical Data		TF24-MFT 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		3 ft, 18 GA, plenum rated cable 1/2" conduit connector
Overload protection		electronic throughout 0 to 95° rotation
Operating range Y*		2 to 10 VDC 4 to 20 mA (w/500 Ω, 1/4 Ω resistor) ZG-R01
Input impedance		100 kΩ for 2 to 10 VDC (0.1 mA) 500 Ω for 4 to 20 mA 1500 Ω for PWM, floating point and on/off control
Feedback output U*		2 to 10 VDC, 0.5 mA max
Torque		min 18 in-lb (2 Nm)
Direction of rotation*	spring	reversible with cw/ccw mounting
	motor	reversible with built-in switch
Mech. angle of rotation*		max 95°, adjust with mechanical stop
Running time	motor*	150 sec constant independent of load
	spring	<25 sec @ -4°F to 122°F [-20°C to 50°C] <60 sec @ -22°F [-30°C]
Angle of rotation adaptation*		off (default)
Override control*		Min. (Min Position) = 0% - ZS (Mid. Position) = 50% - Max. (Max. Position) = 100%
Position indication		visual indicator, 0° to 95°
Humidity		5 to 95% RH, non-condensing
Ambient temperature		-22 to 122° F (-30 to 50° C)
Storage temperature		-40 to 176° F (-40 to 80° C)
Housing		NEMA 2, IP42, UL enclosure type 2
Housing material		UL 94-5VA
Noise level (max)		<35 dB (A)
	spring return	<65 dB (A)
Agency listings		cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC
Quality standard		ISO 9001
Servicing		maintenance free
Weight		1.4 lbs. (0.6 kg)

* Variable when configured with MFT options

† Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3.

- Torque min. 18 in-lb.
- Control 2 to 10 VDC (Default)
- Feedback 2 to 10 VDC (Default)

Application

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

Default/Configuration

Default parameters for 2 to 10 VDC applications of the TF24-MFT US actuator are assigned during manufacturing. If required, custom versions of the actuator can be ordered. The parameters noted in the Technical Data table are variable.

These parameters can be changed by three means:

- Pre-set configurations from Belimo
- Custom configurations from Belimo
- Configurations set by the customer using the MFT PC tool software application.

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.

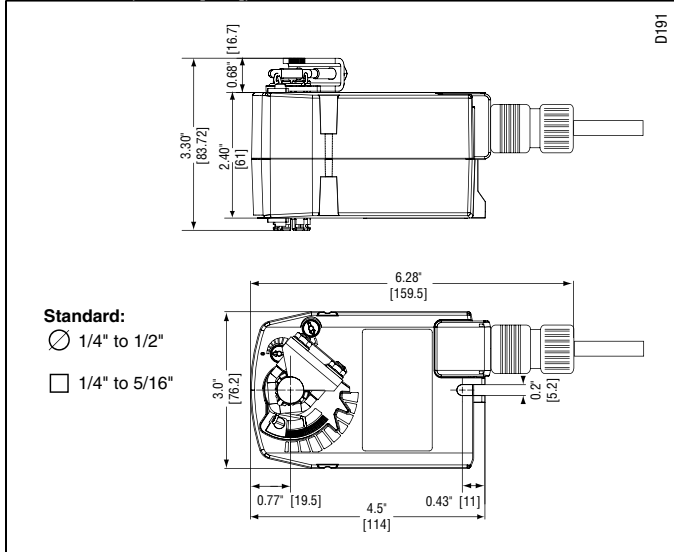
The TF series provides 95° of rotation and is provided with a graduated position indicator showing 0 to 95°.

The TF24-MFT 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.

SAFETY NOTE

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

Dimensions (Inches [mm])



M40024 - 05/10 - Subject to change. © Belimo Aircontrols (USA), Inc.

Wiring Diagrams

INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.

APPLICATION NOTES

- ◆ The ZG-R01 500 Ω resistor may be used.

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.

W025_08

4 to 20 mA control signal

W025_08

Override to Zero Position

A Open = 4 mA Position
A Closed = Normal Operation

W025_08

Override to 20 mA Position

B Closed = 20 mA Position
C Closed = Normal Operation

With a 4-20 mA Input, up to 4 actuators may be wired in parallel. A 2% shift in the signal is seen when using a 500Ω resistor. Power consumption must be observed.

W024_08

2 to 10 VDC control signal

W024_08

Override to Zero Position

A Open = 0 V Position
A Closed = Normal Operation

W024_08

Override to 10V Position

B Closed = 10 V Position
C Closed = Normal Operation

W024_08

Functions	a	b	c
Min*	0% ↖	↖	↖
Mid*	50% ↖	↖	↖
Max*	100% ↖	↖	↖
Normal**	Control mode acc. to Y	↖	↖

* Default selectable 0-100%. See Configuration Data Sheet.
** Customizable. See Configuration Data Sheet.

2 to 10 VDC control signal