



5-year warranty



**MFT**

Technical data

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Power consumption in operation	4.5 W	
	Power consumption in rest position	1.5 W	
	Transformer sizing	7 VA (class 2 power source)	
	Electrical Connection	18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 3 ft [1 m] 10 ft [3 m] and 16ft [5 m]	
	Overload Protection	electronic throughout 0...95° rotation	
<b>Functional data</b>	Torque motor	360 in-lb [40 Nm]	
	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, 1500 Ω for PWM, On/Off and Floating point	
	Operating range Y variable	Start point	0.5...30 V
		End point	2.5...32 V
	Options positioning signal	variable (VDC, on/off, floating point)	
	Position feedback U	2...10 V	
	Position feedback U note	Max. 0.5 mA	
	Position feedback U variable	VDC variable	
	Direction of motion motor	selectable with switch 0/1	
	Manual override	external push button	
	Angle of rotation	Max. 95°	
	Angle of rotation note	adjustable with mechanical stop	
	Running Time (Motor)	150 s / 90°	
	Running time motor variable	75...300 s	
	Noise level, motor	45 dB(A)	
	Shaft Diameter	1/2...1.05" round, centers on 1/2" and 3/4" with insert, 1.05" without insert	
	Position indication	Mechanically, 30...65 mm stroke	
	<b>Safety data</b>	Degree of protection IEC/EN	IP54
Degree of protection NEMA/UL		NEMA 2	
Enclosure		UL Enclosure Type 2	
Agency Listing		cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(c) of the NEC and Section 602.2 of the IMC	
Quality Standard		ISO 9001	
Ambient temperature		-22...122°F [-30...50°C]	

<b>Safety data</b>	Storage temperature	-40...176°F [-40...80°C]
	Ambient humidity	Max. 95% RH, non-condensing
	Servicing	maintenance-free
<b>Weight</b>	Weight	2.7 lb [1.2 kg]
<b>Materials</b>	Housing material	UL94-5VA

**Footnotes** †Rated Impulse Voltage 800V, Type action 1, Control Pollution Degree 3.

## Product features

<b>Application</b>	<p>For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.</p> <p>The actuator is mounted directly to a damper shaft up to 1.05" in diameter by means of its universal clamp. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.</p> <p>The default parameters for 2 to 10 VDC applications of the ...MFT actuator are assigned during manufacturing. If necessary, custom versions of the actuators can be ordered. The parameters can be changed by two means: pre-set and custom configurations from Belimo or on-site configurations using the Belimo PC-Tool software.</p>
<b>Operation</b>	<p>The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The anti-rotation strap supplied with the actuator will prevent lateral movement.</p> <p>The GMB(X) series provides 95° of rotation and a visual indicator indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover.</p> <p>The GMB(X)24-MFT actuators use a brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.</p> <p>Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.</p>
<b>Typical specification</b>	<p>Floating point, on/off control damper actuators shall be electronic direct-coupled type, which require no crank arm and linkage and be capable of direct mounting to a shaft up to 1.05" diameter. Actuators shall have brushless DC motor technology and be protected from overload at all angles of rotation. Actuators shall have reversing switch and manual override on the cover. Run time shall be constant and independent of torque. Actuators shall be cULus listed, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.</p>

## Accessories

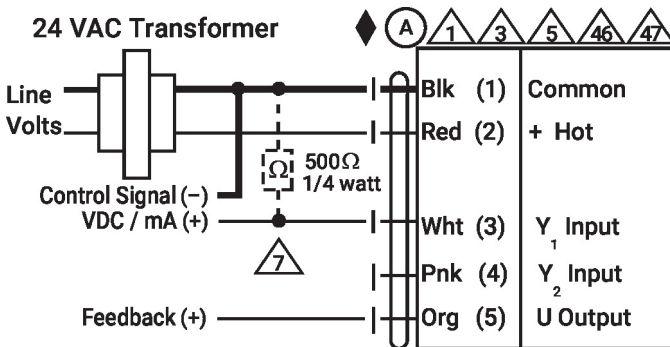
Gateways	Description	Type
	Gateway MP to BACnet MS/TP	UK24BAC
	Gateway MP to Modbus RTU	UK24MOD
	Gateway MP to LonWorks	UK24LON

Electrical accessories	Description	Type
	<p>DC Voltage Input Rescaling Module</p>	IRM-100
	Battery backup system, for non-spring return models	NSV24 US
	Battery, 12 V, 1.2 Ah (two required)	NSV-BAT
	Feedback potentiometer 10 kΩ add-on, grey	P10000A GR
	Feedback potentiometer 1 kΩ add-on, grey	P1000A GR
	Feedback potentiometer 140 Ω add-on, grey	P140A GR
	Feedback potentiometer 2.8 kΩ add-on, grey	P2800A GR
	Feedback potentiometer 5 kΩ add-on, grey	P5000A GR
	Feedback potentiometer 500 Ω add-on, grey	P500A GR
	Signal simulator, Power supply AC 120 V	PS-100
	<p>Convert Pulse Width Modulated Signal to a 2...10 V Signal for Belimo Proportional Actuators</p>	PTA-250
	Auxiliary switch 1 x SPDT add-on	S1A
	Auxiliary switch 2 x SPDT add-on	S2A
	Positioner for wall mounting	SGA24
	Cable conduit connector 1/2"	TF-CC US
	Gateway MP to LonWorks	UK24LON
	Resistor, 500 Ω, 1/4" wire resistor with 6" pigtail wires	ZG-R01
	Resistor kit, 50% voltage divider	ZG-R02
	Resistor kit, for -MFT95 actuator in 0...135 Ω control application	ZG-R03
	Transformer, AC 120 V to AC 24 V, 40 VA	ZG-X40
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US
Mechanical accessories	Description	Type
	Actuator arm for standard shaft clamp	AH-GMA
	Shaft extension 240 mm Ø20 mm for damper shaft Ø 8...22.7 mm	AV8-25
	Ball joint suitable for damper crank arm KH8, Multipack 10 pcs.	KG8
	Standard GK/GM clamp (1/2" to 1.05").	K-GM20
	Push rod for KG10A ball joint 36" L, 3/8" diameter	SH10
	Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).	SH8
	Wrench 0.512 in. [13 mm]	TOOL-07
	<p>17" Mounting Bracket for AF,NF,GM,AM,SM</p>	ZG-100
	<p>Mounting Bracket: AF,NF,LF,GM,AM,NM,SM</p>	ZG-101
	Dual actuator mounting bracket.	ZG-102
	<p>Mounting Bracket: GM,AM,SM</p>	ZG-103
	<p>Mounting Bracket: GM,AM,SM</p>	ZG-104
	<p>Mounting Bracket: ZS-260 Right Angle</p>	ZG-109
	<p>Linkage kit</p>	ZG-110
	Damper clip for damper blade, 3.5" width.	ZG-DC1
	Damper clip for damper blade, 6" width.	ZG-DC2
	Mounting kit for linkage operation for flat installation	ZG-GMA
	Base plate extension for GM..A to GM..	Z-GMA
	Weather shield 330x203x152 mm [13x8x6"] (LxBxH)	ZS-100
	Base plate, for ZS-100	ZS-101
	Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH)	ZS-150
	Explosion proof housing 406x254x164 mm [16x10x6.435"] (LxBxH), UL and CSA, Class I, Zone 1&2, Groups B, C, D, (NEMA 7), Class III, Hazardous (classified) Locations	ZS-260
	Weather shield 438x222x140 mm [17-1/4x8-3/4x5-1/2"] (LxBxH), NEMA 4X, with mounting brackets	ZS-300
	Weather shield 438x222x140 mm [17-1/4x8-3/4x5-1/2"] (LxBxH), NEMA 4X, with mounting brackets	ZS-300-5
	Shaft extension 1/2"	ZS-300-C1
	Shaft extension 3/4"	ZS-300-C2
	Shaft extension 1"	ZS-300-C3

Service tools	Description	Type
	Connection cable 16 ft [5 m], A: RJ11 6/4 ZTH EU, B: 6-pin for connection to service socket	ZK1-GEN
	Connection cable 16 ft [5 m], A: RJ11 6/4 ZTH EU, B: free wire end for connection to MP/PP terminal	ZK2-GEN
	Connection cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection	ZK4-GEN
	Connection cable 16 ft [5 m], A+B: RJ12 6/6	ZK6-GEN
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

Electrical installation

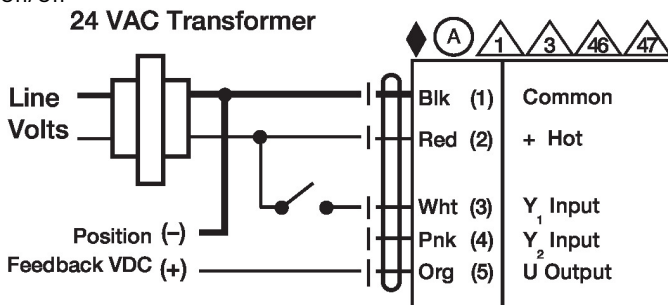
- (A) Actuators with appliance cables are numbered.
- ▲1 Provide overload protection and disconnect as required.
- ▲3 Actuators may also be powered by DC 24 V.
- ▲5 Only connect common to negative (-) leg of control circuits.
- ▲7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- ▲8 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.
- ▲10 For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.
- ▲12 IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- ▲46 Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- ▲47 Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).



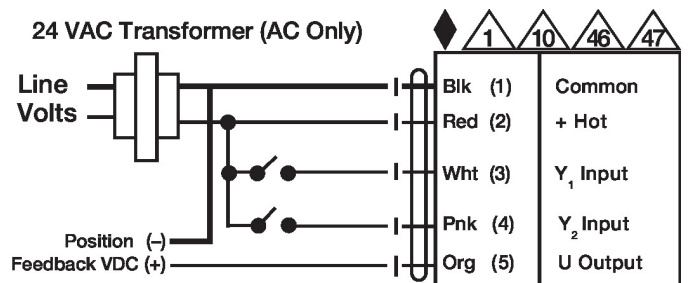
VDC/mA Control

Wiring diagrams

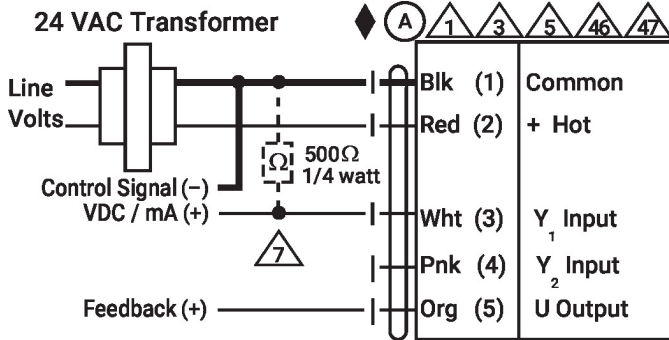
On/Off



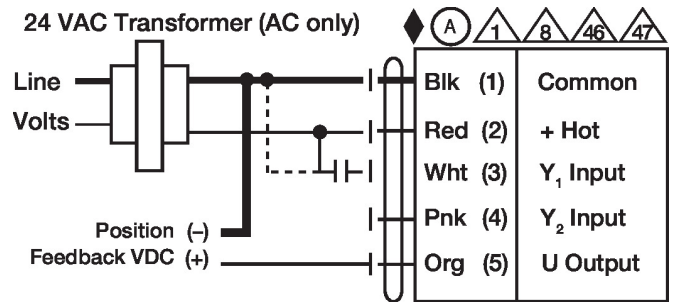
Floating Point



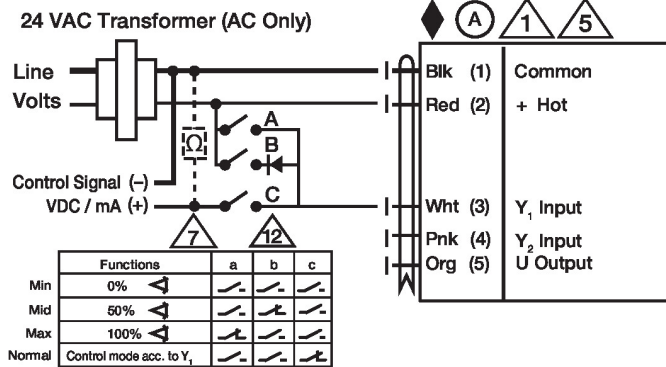
### VDC/mA Control



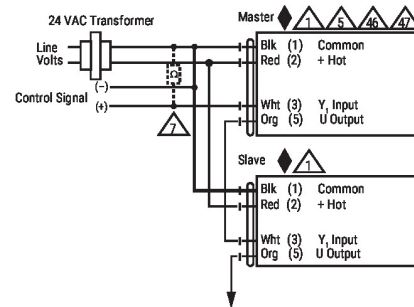
### PWM Control



### Override Control



### Master - Slave



## Dimensions

∅ 1/2" to 1.05" [12.7 to 26.67]

□ 2/5" to 1.05" [10 to 26.67]

