

Customizable Non Fail-Safe multifunction technology actuator for controlling dampers in typical commercial HVAC applications.

- Torque motor 360 in-lb [40 Nm]
- Nominal voltage AC/DC 24 V
- Control MFT/programmable
- Position feedback 2...10 V



5-year warranty



MFT

Technical data

| | | |
|------------------------|------------------------------------|---|
| Electrical data | Nominal voltage | AC/DC 24 V |
| | Nominal voltage frequency | 50/60 Hz |
| | Nominal voltage range | AC 19.2...28.8 V / DC 21.6...28.8 V |
| | Power consumption in operation | 4.5 W |
| | Power consumption in rest position | 1.5 W |
| | Transformer sizing | 7 VA |
| | Electrical Connection | 18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 1 m 3 m and 5 m |
| | Overload Protection | electronic throughout 0...95° rotation |
| Functional data | 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 |
| | Operating modes optional | 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) | |
| Position indication | Mechanical, 30...65 mm stroke | |
| Safety data | Power source UL | Class 2 Supply |
| | 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 |
| | Quality Standard | ISO 9001 |
| | UL 2043 Compliant | Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC |

| | | |
|--------------------|---------------------|-----------------------------|
| Safety data | Ambient humidity | Max. 95% RH, non-condensing |
| | Ambient temperature | -22...122°F [-30...50°C] |
| | Storage temperature | -40...176°F [-40...80°C] |
| | Servicing | maintenance-free |
| Weight | Weight | 2.7 lb [1.2 kg] |
| Materials | Housing material | UL94-5VA |

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

Product features

| | |
|------------------------------|--|
| Application | <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> |
| Operation | <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> |
| Typical specification | <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

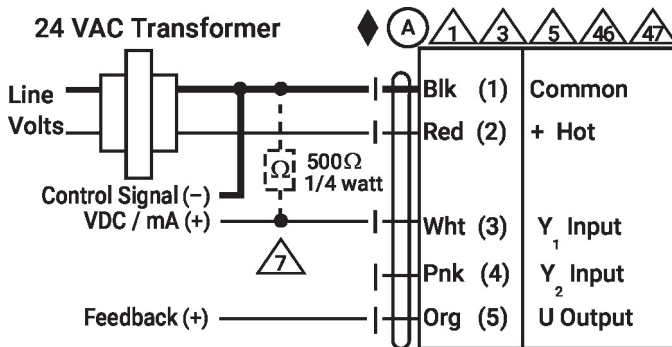
| Gateways | Description | Type |
|----------|----------------------------|---------|
| | Gateway MP to BACnet MS/TP | UK24BAC |
| | Gateway MP to Modbus RTU | UK24MOD |
| | Gateway MP to LonWorks | UK24LON |

| Electrical accessories | Description | Type |
|------------------------|---|------------|
| | DC Voltage Input Rescaling Module | 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 |
| | Convert Pulse Width Modulated Signal to a 2...10 V Signal for Belimo Proportional Actuators | 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 ø8...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 |
| | Mounting bracket for AF.. | ZG-100 |
| | Mounting bracket | ZG-101 |
| | Dual actuator mounting bracket. | ZG-102 |
| | Mounting bracket | ZG-103 |
| | Mounting bracket | ZG-104 |
| | Mounting bracket | ZG-109 |
| | Linkage kit | 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 13x8x6" [330x203x152 mm] (LxWxH) | ZS-100 |
| | Base plate, for ZS-100 | ZS-101 |
| | Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH) | ZS-150 |
| | Explosion proof housing 16x10x6.435" [406x254x164 mm] (LxWxH), UL and CSA, Class I, Zone 1&2, Groups B, C, D, (NEMA 7), Class III, Hazardous (classified) Locations | ZS-260 |
| | Weather shield 17-1/4x8-3/4x5-1/2" [438x222x140 mm] (LxWxH), NEMA 4X, with mounting brackets | ZS-300 |
| | Weather shield 17-1/4x8-3/4x5-1/2" [438x222x140 mm] (LxWxH), 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 |

| Tools | Description | Type |
|-------|---|---------|
| | Connecting cable 16 ft [5 m], A: RJ11 6/4 ZTH EU, B: 6-pin for connection to service socket | ZK1-GEN |
| | Connecting cable 16 ft [5 m], A: RJ11 6/4 ZTH EU, B: free wire end for connection to MP/PP terminal | ZK2-GEN |
| | Connecting cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection | ZK4-GEN |
| | Connecting 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

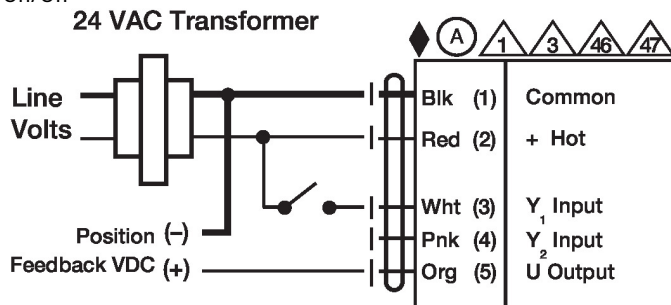
- (A) Actuators with appliance cables are numbered.
- ▲1 Provide overload protection and disconnect as required.
- ▲3 Actuators may also be powered by DC 24 V.
- ▲5 Only connect common to negative (-) leg of control circuits.
- ▲7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 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).



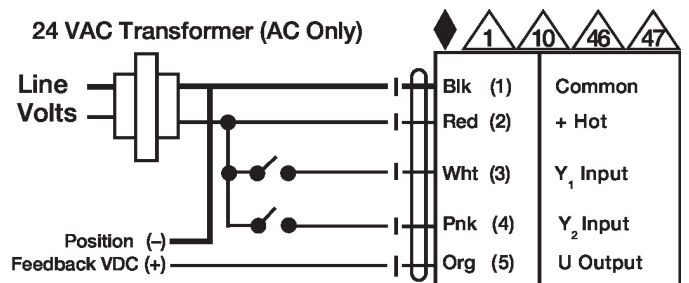
VDC/mA Control

Wiring diagrams

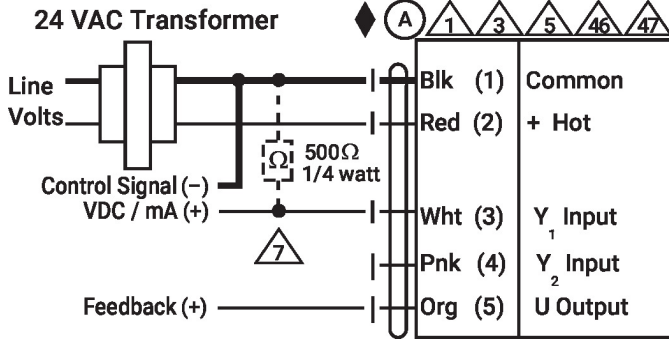
On/Off



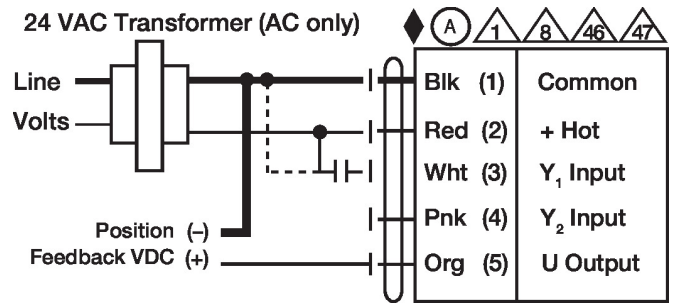
Floating Point



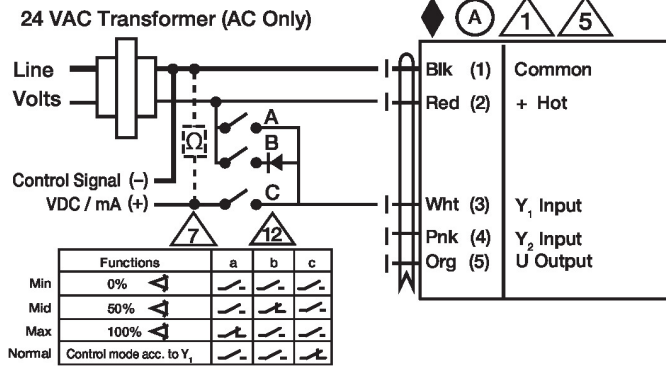
VDC/mA Control



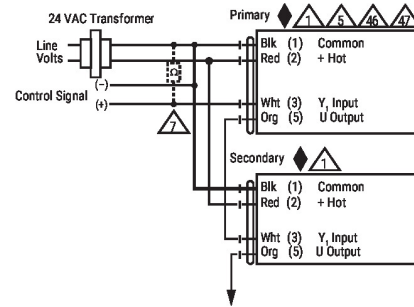
PWM Control



Override Control



Primary - Secondary



Dimensions

∅ 1/2" to 1.05" [12.7 to 26.67]

□ 2/5" to 1.05" [10 to 26.67]

