



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     | 15 W   |
|                        | Power consumption in rest position | 1.5 W  |
|                        | Power consumption for wire sizing  | 26 VA  |
|                        | Transformer sizing                 | 26 VA (class 2 power source)   |
|                        | Electrical Connection              | 18 GA plenum cable, 3 ft [1 m], with 1/2" conduit connector, degree of protection NEMA 2 / IP54  |
|                        | Overload Protection                | electronic throughout 0...95° rotation   |
| <b>Functional data</b> | Torque motor                       | 140 in-lb [16 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 On/Off   |
|                        | Operating range Y variable         | Start point 0.5...30 V<br>End point 2.5...32 V   |
|                        | Options positioning signal         | variable (VDC, on/off)   |
|                        | 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)               | 7 s / 90°  |
|                        | Running time motor note            | constant, independent of load  |
|                        | Running time motor variable        | 10, 15 or 20 s   |
|                        | Noise level, motor                 | 52 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 |

|                    |                     |                             |
|--------------------|---------------------|-----------------------------|
| <b>Safety data</b> | Quality Standard    | ISO 9001                    |
|                    | Ambient temperature | -22...122°F [-30...50°C]    |
|                    | Storage temperature | -40...176°F [-40...80°C]    |
|                    | Ambient humidity    | Max. 95% RH, non-condensing |
|                    | Servicing           | maintenance-free            |
| <b>Weight</b>      | Weight              | 4.2 lb [1.9 kg]             |
| <b>Materials</b>   | Housing material    | UL94-5VA                    |

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

**Product features**

**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 1.05" 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. The default parameters for 2...10 V 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.

**Operation** 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.

The AMQB(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.

The AMQB(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.

**Typical specification** Modulating 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 must provide modulating damper control in response to a 2 to 10 VDC or, with the addition of a 500 Ω resistor, a 4 to 20 mA control input from an electronic controller or positioner. 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.

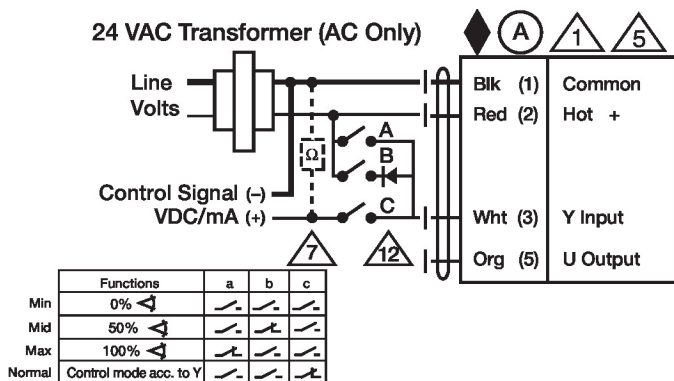
**Accessories**

| Electrical accessories | Description   | Type     |
|------------------------|---|----------|
|                        | Battery backup system, for non-spring return models   | NSV24 US |
|                        | Battery, 12 V, 1.2 Ah (two required)  | NSV-BAT  |
|                        | Auxiliary switch 2 x SPDT add-on  | S2A      |
|                        | Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices | ZTH US   |

| Mechanical accessories | Description   | Type              |
|------------------------|---|-------------------|
|                        | <p>Clamp NM/AM 1/2", 3/4", 1" </p>  | K-AM25            |
|                        | Shaft clamp reversible, clamping range Ø10...20 mm  | K-SA              |
|                        | <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            |
|                        | <p>Mounting Bracket: GM,AM,SM </p>  | ZG-103            |
|                        | <p>Mounting Bracket: GM,AM,SM </p>  | ZG-104            |
|                        | Mounting kit for linkage operation for flat installation  | ZG-NMA            |
|                        | 1" diameter jackshaft adaptor (11" L).  | ZG-JSA-1          |
|                        | 1-5/16" diameter jackshaft adaptor (12" L).   | ZG-JSA-2          |
|                        | 1.05" diameter jackshaft adaptor (12" L).   | ZG-JSA-3          |
|                        | Base plate extension for SM..A to SM../AM../SMD24R  | Z-SMA             |
|                        | Weather shield 330x203x152 mm [13x8x6"] (LxBxH)   | ZS-100            |
|                        | 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          |
|                        | <p>Terminal-strip cover for NEMA 2 rating (-T models). </p>   | ZS-T              |
|                        | Shaft extension 240 mm Ø20 mm for damper shaft Ø 8...22.7 mm  | AV8-25            |
|                        | Actuator arm for standard shaft clamp   | AH-GMA            |
|                        | Wrench 0.32 in and 0.39 in [8 mm and 10 mm]   | TOOL-06<br>ZG-JSL |

Electrical installation

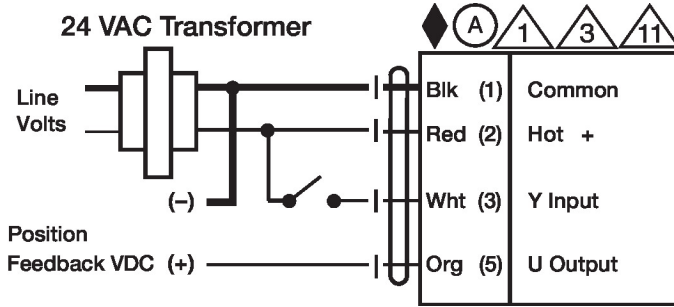
- Ⓐ Actuators with appliance cables are numbered.
- ⚠️ Provide overload protection and disconnect as required.
- ⚠️ Actuators may also be powered by DC 24 V.
- ⚠️ Only connect common to negative (-) leg of control circuits.
- ⚠️ A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- ⚠️ Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.
- ⚠️ IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).



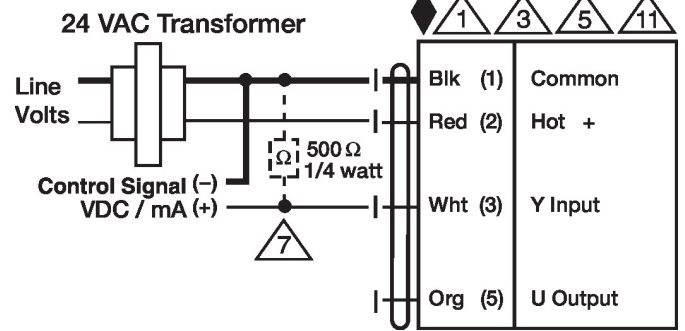
Override Control

### Wiring diagrams

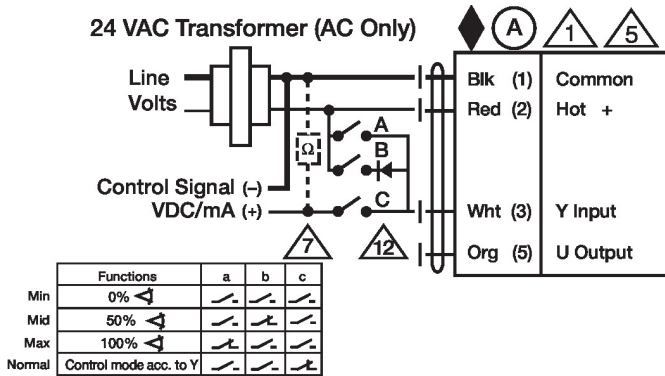
On/Off



VDC/mA Control



Override Control



### Dimensions

∅ 1/2" to 1.05" [12.7 to 26.67]

□ 2/5" to 1.05" [10 to 26.67]

