

Basic Non Fail-Safe actuator for controlling dampers in typical commercial HVAC applications.

- Torque motor 45 in-lb [5 Nm]
- Nominal voltage AC/DC 24 V
- Control On/Off, Floating point



5-year warranty



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 | 1.5 W |
| | Power consumption in rest position | 0.2 W |
| | Transformer sizing | 2 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 | 45 in-lb [5 Nm] |
| | 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) | 95 s / 90° |
| | Running time motor note | constant, independent of load |
| | 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 |
| | 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 | 1.2 lb [0.53 kg] |
| Materials | Housing material | UL94-5VA |

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

Product features

- Application** For On/Off and floating point control 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 from 1/4" up to 5/8" in diameter by means of its standard universal clamp. Shafts up to 3/4" diameter can be accommodated by an accessory clamp.
- 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 LMB series provides 95° of rotation and a visual indicator which indicates position of the actuator. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be disengaged with manual release on the actuator cover.
The LMB24-3... actuators use a sensorless 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.
The LMB24-3-S version is provided with one 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 0 to 95°. The auxiliary switch is double insulated so an electrical ground connection is not necessary.
Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.

Typical specification 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 from 1/4" to 5/8". Shafts up to 3/4" diameter can be accommodate with an accessory clamp. 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. If required, actuator will be provided with screw terminal strip for electrical connections [LMB(X)24-3-T]. If required, actuators shall be provided with one adjustable SPDT auxiliary switch. Actuators with auxiliary switches must be constructed to meet the requirements for double insulation so an electrical ground is not required to meet agency listings. 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.

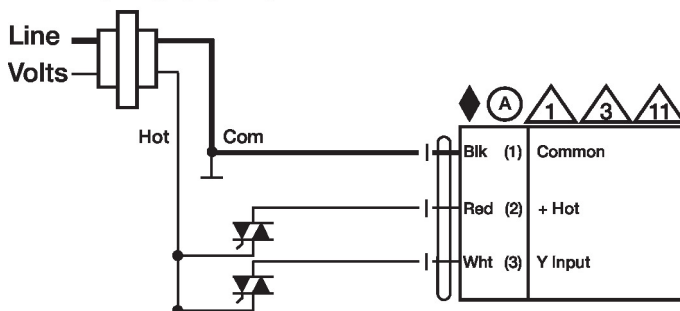
Accessories

| Electrical accessories | Description | Type |
|------------------------|---|--------------|
| | Auxiliary switch 1 x SPDT add-on | S1A |
| | Auxiliary switch 2 x SPDT add-on | S2A |
| | Auxiliary switch, mercury-free | P475 |
| | Auxiliary switch, mercury-free | P475-1 |
| | Feedback potentiometer 140 Ω add-on, grey | P140A GR |
| | Feedback potentiometer 500 Ω add-on, grey | P500A GR |
| | Feedback potentiometer 1 kΩ add-on, grey | P1000A GR |
| | Feedback potentiometer 2.8 kΩ add-on, grey | P2800A GR |
| | Feedback potentiometer 5 kΩ add-on, grey | P5000A GR |
| | Feedback potentiometer 10 kΩ add-on, grey | P10000A GR |
| | Feedback potentiometer 15 kΩ grey | P15000A-F GR |
| | Battery backup system, for non-spring return models | NSV24 US |
| | Battery, 12 V, 1.2 Ah (two required) | NSV-BAT |
| | Transformer, AC 120 V to AC 24 V, 40 VA | ZG-X40 |
| | Cable conduit connector 1/2" | TF-CC US |
| | Cable Gland (NEMA 4 models) | 43442-00001 |

| Mechanical accessories | Description | Type |
|------------------------|---|---------------|
| | Damper crank arm Slot width 6.2 mm, clamping range \varnothing 10...18 mm | KH6 |
| | Damper crank arm Slot width 8.2 mm, clamping range \varnothing 10...18 mm | KH8 |
| | Damper crank arm Slot width 8.2 mm, clamping range \varnothing 14...25 mm | KH10 |
| | Damper crank arm Slot width 8.2 mm, for \varnothing 1.05" | KH12 |
| | Ball joint suitable for damper crank arm KH8, Multipack 10 pcs. | KG6 |
| | Ball joint suitable for damper crank arm KH8, Multipack 10 pcs. | KG8 |
| | Ball joint suitable for damper crank arm KH8 / KH10, Multipack 10 pcs. | KG10A |
| | Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter). | SH8 |
| | Push rod for KG10A ball joint 36" L, 3/8" diameter | SH10 |
| | Damper clip for damper blade, 3.5" width. | ZG-DC1 |
| | Damper clip for damper blade, 6" width. | ZG-DC2 |
| | 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 |
| | Shaft extension 240 mm \varnothing 20 mm for damper shaft \varnothing 8...22.7 mm | AV8-25 |
| | Anti-rotation bracket TF/NKQ/AM/NM/LM. | TF-P |
| | Mounting bracket for AF.. | ZG-100 |
| | Mounting bracket | ZG-101 |
| | Wrench 0.32 in and 0.39 in [8 mm and 10 mm] | TOOL-06 |
| | Adapter for auxiliary switch and feedback potentiometer | Z-SPA |
| | LMB(X) clamp (3/8") | K-LM10 |
| | LMB(X) clamp (1/2") | K-LM12 |
| | Standard LMB(X) clamp (5/8"). | K-LM16 |
| | LMB(X) clamp (3/4"). | K-LM20 |
| | Shaft extension for 1/2" diameter shafts (3" L). | ZG-LMSA |
| | Shaft extension for 3/8" diameter shafts (4" L). | ZG-LMSA-1 |
| | Shaft extension for 1/2" diameter shafts (5" L). | ZG-LMSA-1/2-5 |
| | Shaft extension 170 mm \varnothing 10 mm for damper shaft \varnothing 6...16 mm | AV6-20 |
| Tools | Description | Type |
| | Signal simulator, Power supply AC 120 V | PS-100 |

Electrical installation

- Ⓐ Actuators with appliance cables are numbered.
- ⚠️ 1 Provide overload protection and disconnect as required.
- ⚠️ 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- ⚠️ 3 Actuators may also be powered by DC 24 V.
- ⚠️ 4 Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.
- ⚠️ 5 Only connect common to negative (-) leg of control circuits.
- ⚠️ 6 Actuators Hot wire must be connected to the control board common. Only connect common to neg. (-) leg of control circuits. Terminal models (-T) have no-feedback.
- ⚠️ 7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- ⚠️ 11 Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.

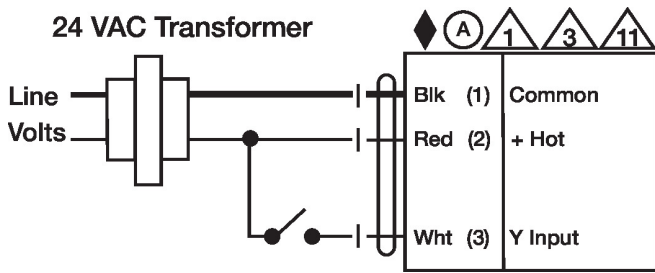
24 VAC Transformer


Floating Point - Triac Source

Wiring diagrams

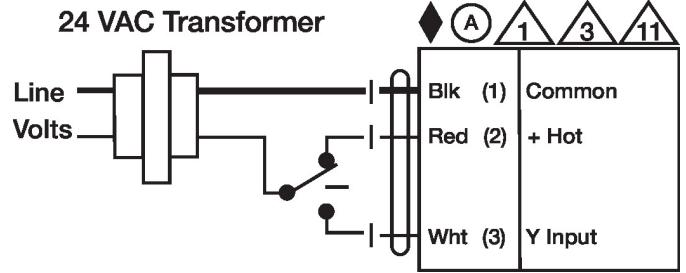
On/Off

24 VAC Transformer



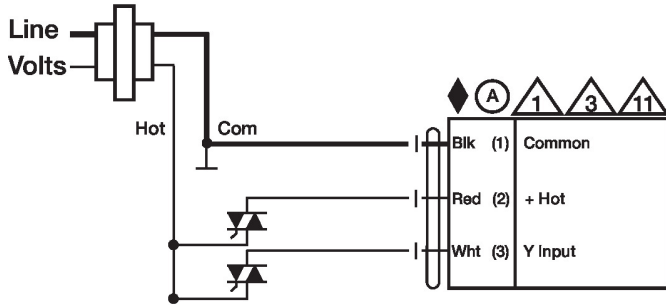
Floating Point

24 VAC Transformer



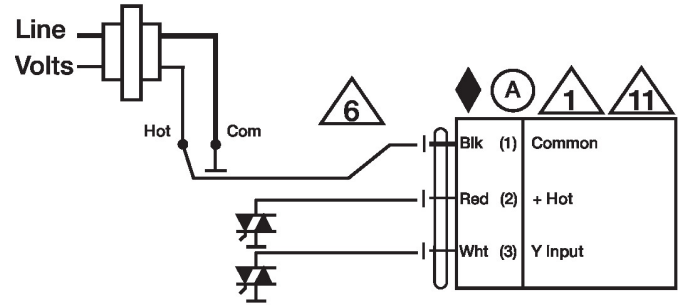
Floating Point - Triac Source

24 VAC Transformer



Floating Point - Triac Sink

24 VAC Transformer



Dimensions

