

# AMX24-SR Technical Data Sheet

Modulating, Non-Spring Return, 24 V, for DC 2...10 V or 4...20 mA



| Technical Data                     |   |
|------------------------------------|---|
| Power Supply                       | 24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10%  |
| Power consumption in operation     | 2.5 W   |
| Power consumption in rest position | 0.4 W   |
| Transformer sizing                 | 5 VA (class 2 power source)   |
| Shaft Diameter                     | 1/2...1.05" round, centers on 1/2" and 3/4" with insert, 1.05" without insert   |
| 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  |
| Operating Range                    | 2...10 V, 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   |
| Position Feedback                  | 2...10 V, Max. 0.5 mA   |
| Angle of rotation                  | Max. 95°, adjustable with mechanical stop   |
| Torque motor                       | 180 in-lb [20 Nm]   |
| Direction of motion motor          | selectable with switch 0/1  |
| Position indication                | Mechanically, 30...65 mm stroke   |
| Manual override                    | external push button  |
| Running Time (Motor)               | 90 s, constant, independent of load   |
| Ambient humidity                   | max. 95% r.H., non-condensing   |
| Ambient temperature                | -22...122°F [-30...50°C]  |
| Storage temperature                | -40...176°F [-40...80°C]  |
| Degree of Protection               | IP54, NEMA 2, UL Enclosure Type 2   |
| Housing material                   | UL94-5VA  |
| Agency Listing                     | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU                                 |
| Noise level, motor                 | 45 dB(A)  |
| Servicing                          | maintenance-free  |
| Quality Standard                   | ISO 9001  |
| Weight                             | 1.4 lb [0.64 kg]  |

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

**Torque min. 180 in-lb, for control of damper surfaces up to 45 sq. ft.**

## 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, 1/2" self-centered default. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

The actuator operates 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. A 2 to 10 VDC feedback signal is provided for position indication or master-slave applications.

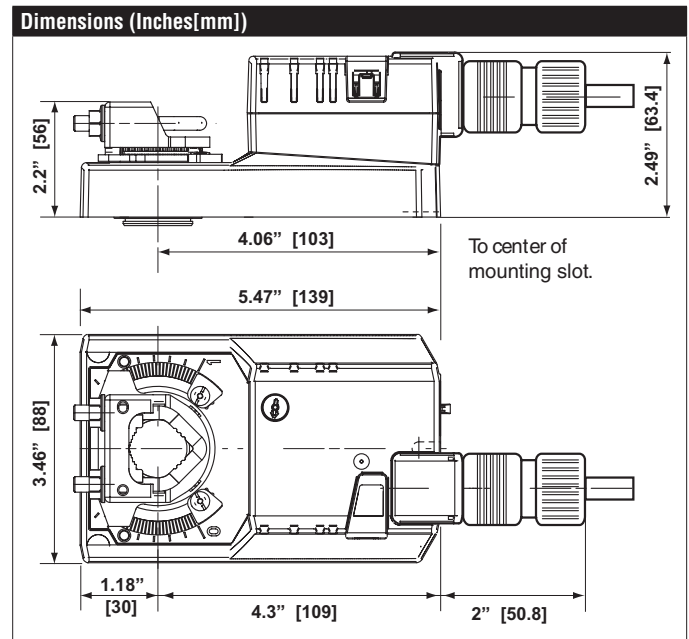
## Operation

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 AMB(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 AMB(X)24-SR... 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.

Add-on auxiliary switches or feedback potentiometers are easily fastened directly onto the actuator body for signaling and switching functions.








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### 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 3/4" diameter. Actuators must provide proportional 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. Run time shall be constant and independent of torque. A 2 to 10 VDC feedback signal shall be provided for position indication. Actuators shall be cULus listed, NEMA 4X, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

### Wiring Diagrams

-  Provide overload protection and disconnect as required.
-  Actuators may also be powered by 24 VDC.
-  Only connect common to negative (-) leg of control circuits.
-  A 500 Ω resistor (ZG-R01) converts the 4 to 20 mA control signal to 2 to 10 VDC.
-  Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.

