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 16 ft [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 (0.1 mA), 500 Ω

Position Feedback
2...10 V, Max. 0.5 mA

Angle of rotation
Max. 95°, adjustable with mechanical stop

Torque motor
90 in-lb [10 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)
95 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
2.1 lb [0.96 kg]

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

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 NMB(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 NMB(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.

Dimensions (Inches [mm])

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.36&quot; [60]</td>
<td></td>
</tr>
<tr>
<td>3.15&quot; [80]</td>
<td></td>
</tr>
<tr>
<td>4.88&quot; [124]</td>
<td></td>
</tr>
<tr>
<td>To center of mounting slot.</td>
<td></td>
</tr>
<tr>
<td>3.66&quot; [93]</td>
<td></td>
</tr>
<tr>
<td>3.9&quot; [99]</td>
<td></td>
</tr>
<tr>
<td>2&quot; [50.8]</td>
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</tbody>
</table>

To center of mounting slot.
**Typical Specification**

Proportional 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 1/2" diameter. Actuators must provide proportional damper control response to a 2 to 10 VDC or, with the addition of a 500 Ω resistor, a 2 to 10 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 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.

**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.**