

# GMB24-SR

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



Technical Data	
Power Supply	24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10%
Power consumption in operation	4.5 W
Power consumption in rest position	2 W
Transformer sizing	6.5 VA (class 2 power source)
Shaft Diameter	1/2" to 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° to 95° rotation
Operating Range	DC 2...10 V, 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
Input Impedance	100 kΩ for DC 2...10 V (0.1 mA), 500 Ω for 4...20 mA
Position Feedback	DC 2...10 V, Max. 0.5 mA
Angle of rotation	Max. 95°, adjustable with mechanical stop
Torque motor	360 in-lb [40 Nm]
direction of rotation motor	reversible with built-in switch
Position indication	reflective visual indicator (snap on)
Manual override	external push button
Running time motor	150 sec, constant, independent of load
Ambient humidity	5...95% r.H. non-condensing
Ambient temperature	-22...122°F [-30...50°C]
Non-operating 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 2004/108/EC and 2006/95/EC
Noise level, motor	<45 dB (A)
Maintenance	maintenance free
Quality Standard	ISO 9001
Weight	4.19 lb [1.9 kg]

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

**Torque min. 360 in-lb, for control of damper surfaces up to 90 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. 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.

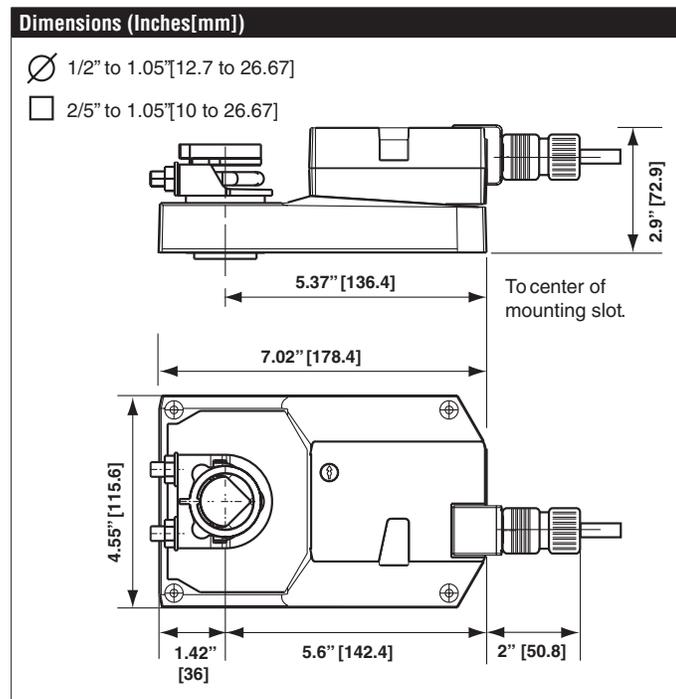
## Operation

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 actuator 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.

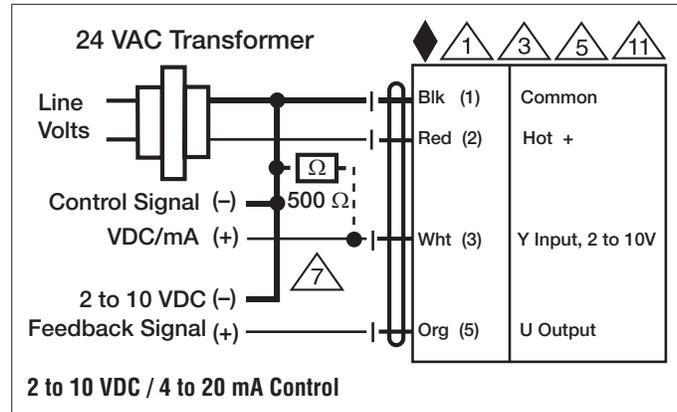
The actuators use a brushless DC motor, which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator's rotation and provides a digital rotation sensing (DRS) function to prevent damage to the actuator in a stall condition. Power consumption is reduced in holding mode.

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



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Accessories	
K-GM20	Standard GK/GM clamp (1/2" to 1.05").
ZG-102	Dual actuator mounting bracket.
Z-GMA	Base plate extension
ZG-GMA	Mounting and linkage kit
ZG-JSA-1	1" diameter jackshaft adaptor (11" L).
ZS-100	Weather shield - galvaneal 13x8x6" (LxWxD).
ZS-150	Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).
ZS-260	Explosion proof housing.
ZS-300	NEMA 4X, 304 stainless steel enclosure.
TOOL-07	13 mm wrench.
ZG-X40	120 to 24 VAC, 40 VA transformer.
ZG-R01	4 to 20 mA adaptor, 500Ω, 1/4 W resistor w 6" pigtail wires.
SGA24	Positioners suitable for use with the modulating damper actuators LM..A-SR, NM..A-SR, SM..A-SR and GM..A-SR
S2A	Auxiliary switch for damper actuators and rotary actuators
S1A	Auxiliary switch for damper actuators and rotary actuators
PTA-250	Pulse width modulation interface for modulating actuators.
PS-100	Actuator power supply and control simulator.
P370	Shaft mount auxiliary switch, 1/2" shaft.
P1000A GR	Feedback potentiometer for damper actuators and rotary actuators
NSV24 US	Battery back-up module for non-spring return actuators.
IRM-100	Input rescaling module for modulating actuators.
ADS-100	Analog to digital switch for modulating actuators.
SGF24	Positioners suitable for use with the modulating damper actuators LM..A-SR, NM..A-SR, SM..A-SR and GM..A-SR



### 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.

### 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.