BELIMO

Technical data sheet NMCB24-SR

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

- Torque motor 90 in-lb [10 Nm]
- Nominal voltage AC/DC 24 V
- Control modulating
- Position feedback 2...10 V

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	2.5 W
	Power consumption in rest position	0.4 W
	Transformer sizing	5 VA
	Overload Protection	electronic throughout 0...95° rotation
Functional data	Torque motor	90 in-lb [10 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 (0.1 mA), 500 Ω
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	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)	45 s / 90°
	Running time motor note	constant, independent of load
	Noise level, motor	45 dB(A)
	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	2.1 lb [0.96 kg]
Materials	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" 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...10 V, or with the addition of a 500 Ω resistor, a 4...20 mA control input from an electronic controller or positioner. A 2...10 V feedback signal is provided for position indication or primary/secondary operation.

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 NM 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 NMCB24-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.

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 500Ω 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 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

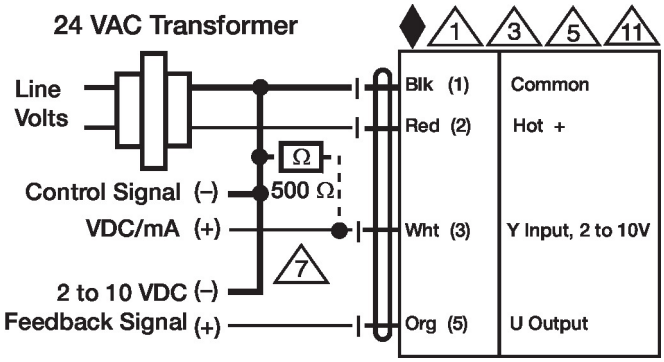
Electrical accessories

Description	Type
Auxiliary switch 1 x SPDT add-on	S1A
Auxiliary switch 2 x SPDT add-on	S2A
Feedback potentiometer 10 kΩ add-on, grey	P10000A GR
Feedback potentiometer 1 kΩ add-on, grey	P1000A GR
Feedback potentiometer 140 Ω add-on, grey	P140A GR
Feedback potentiometer 2.8 kΩ add-on, grey	P2800A GR
Feedback potentiometer 5 kΩ add-on, grey	P5000A GR
Feedback potentiometer 500 Ω add-on, grey	P500A GR
Positioner for wall mounting	SGA24
Convert Pulse Width Modulated Signal to a 2...10 V Signal for Belimo Proportional Actuators	PTA-250
DC Voltage Input Rescaling Module	IRM-100
Resistor, 500 Ω, 1/4" wire resistor with 6" pigtail wires	ZG-R01
Battery backup system, for non-spring return models	NSV24 US
Transformer, AC 120 V to AC 24 V, 40 VA	ZG-X40

Mechanical accessories	Description	Type
	Shaft clamp reversible, clamping range ø8...20 mm	K-NA
	Mounting bracket for AF..	ZG-100
	Mounting bracket	ZG-101
	Mounting bracket	ZG-103
	Mounting bracket	ZG-104
	Mounting kit for linkage operation for flat installation	ZG-NMA
	Shaft extension 240 mm ø20 mm for damper shaft ø8...22.7 mm	AV8-25
	Shaft extension for 1/2" diameter shafts (3.8" L).	ZG-NMSA-1
	Weather shield 13x8x6" [330x203x152 mm] (LxWxH)	ZS-100
	Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH)	ZS-150
	Wrench 0.32 in and 0.39 in [8 mm and 10 mm]	TOOL-06
	Linkage kit	ZG-JSL
	Jackshaft Retrofit Linkage with Belimo Rotary Actuators	

Electrical installation

1 Provide overload protection and disconnect as required.
3 Actuators may also be powered by DC 24 V.
5 Only connect common to negative (-) leg of control circuits.
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.



2...10 V / 4...20 mA Control

Dimensions