BELIMO

On/Off, Floating Point, Non-Spring Return, 24 V

Technical data sheet LMX24-3-S

5-year warranty

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Power consumption in operation	1.5 W
	Power consumption in rest position	0.2 W
	Transformer sizing	2.5 VA (class 2 power source)
	Auxiliary switch	1 x SPDT, 3 A resistive (0.5 A inductive) @ AC 250 V, adjustable 0...100%
	Switching capacity auxiliary switch	3 A resistive (0.5 A inductive) @ AC 250 V
	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
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
	Running time motor variable	35, 45, 60, 150 s
	Noise level, motor	35 dB(A)
	Shaft Diameter	1/4...5/8" round, centers on 5/8", 3/4" clamp available
	Position indication	Mechanically, 30...65 mm stroke
Safety data	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; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(c) of the NEC and Section 602.2 of the IMC
	Quality Standard	ISO 9001
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Ambient humidity	Max. 95% RH, non-condensing
	Servicing	maintenance-free
Weight	Weight	0.62 lb [0.28 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 gray	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 Ø10...18 mm	KH6
	Damper crank arm Slot width 8.2 mm, clamping range Ø10...18 mm	KH8
	Damper crank arm Slot width 8.2 mm, clamping range Ø14...25 mm	KH10
	Damper crank arm Slot width 8.2 mm, for Ø1.05"	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 330x203x152 mm [13x8x6"] (LxBxH)	ZS-100
	Base plate, for ZS-100	ZS-101
	Weather shield 406x213x102 mm [16x8-3/8x4"] (LxWxH)	ZS-150
	Shaft extension 240 mm Ø20 mm for damper shaft Ø 8...22.7 mm	AV8-25
	Anti-rotation bracket TF/NKQ/AM/NM/LM.	TF-P
	17" Mounting Bracket for AF,NF,GM,AM,SM	ZG-100
	Mounting Bracket: AF,NF,LF,GM,AM,NM,SM	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 Ø10 mm for damper shaft Ø 6...16 mm	AV6-20

Service tools	Description	Type
	Signal simulator, Power supply AC 120 V	PS-100

Electrical installation

⚠ Apply only AC line voltage or only UL-Class 2 voltage to the terminals of auxiliary switches. Mixed or combined operation of line voltage/safety extra low voltage is not allowed.

Ⓐ Actuators with appliance cables are numbered.

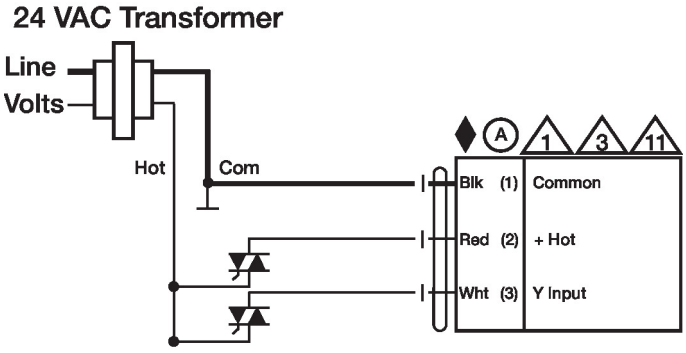
⚠1 Provide overload protection and disconnect as required.

⚠3 Actuators may also be powered by DC 24 V.

⚠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.

⚠11 Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.

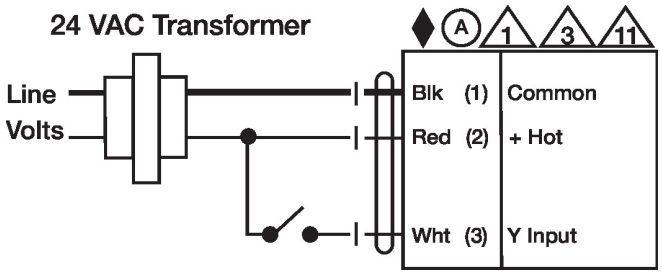
⚠44 One built-in auxiliary switch (1x SPDT), for end position indication, interlock control, fan startup, etc.



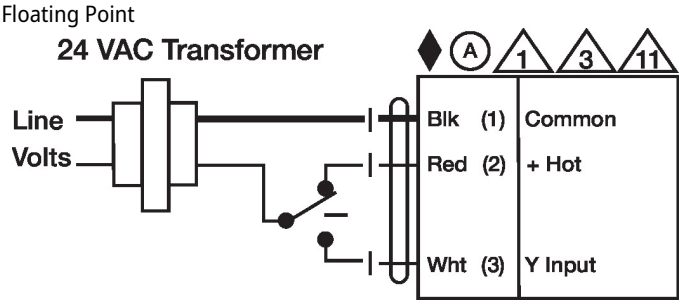
Floating Point - Triac Source

Wiring diagrams

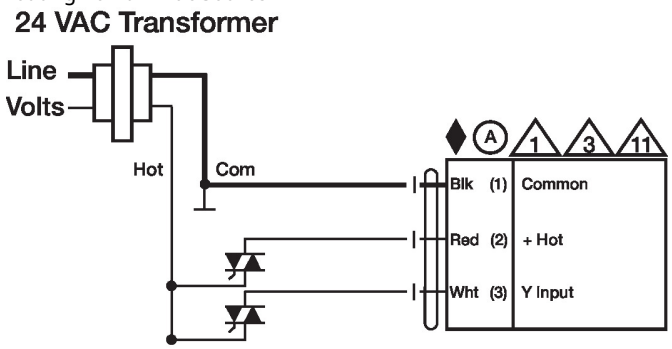
On/Off



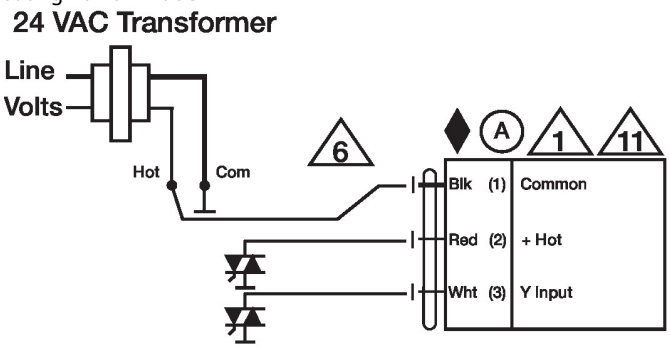
Floating Point



Floating Point - Triac Source



Floating Point - Triac Sink



Dimensions