

AHX24-SR-100

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



Technical Data	
Power Supply	24 VAC, ±20%, 50/60 Hz, 24 VDC, ±20%
Power Consumption Running	2.5 W
Power Consumption Holding	0.5 W
Transformer Sizing	4.5 VA (class 2 power source)
Electrical Connection	18 GA plenum rated cable with 1/2" conduit connector protected NEMA 2 (IP54) 3ft [1m] 10ft [3m] and 16ft [5m]
Overload Protection	electronic throughout full stroke
Input Impedance	100 kΩ for 2 to 10 VDC (0.1 mA), 500 Ω for 4 to 20 mA
Feedback Output U	DC 2...10 V, Max. 0.5 mA
Stroke	4" [100 mm]
Actuating force motor	101 lbf [450 N]
Stroke Direction	758
Manual Override	external push button
Running Time (Motor)	150 sec per 4 inches [100mm]
Ambient Humidity	5 to 95% RH non condensing (EN 60730-1)
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]
Housing	IP54, NEMA 2, UL Enclosure Type 2
Housing Material	UL94-5VA
Agency Listings†	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)	<35 dB (A)
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	2.6 lb [1.2 kg]
Degree of Protection IEC/EN	IP54

†Rated Impulse Voltage 800V, Type of Action 1, Control Pollution Degree 2.

Linear force min. 101 lbf for control of damper surfaces up to 32 sq. ft.

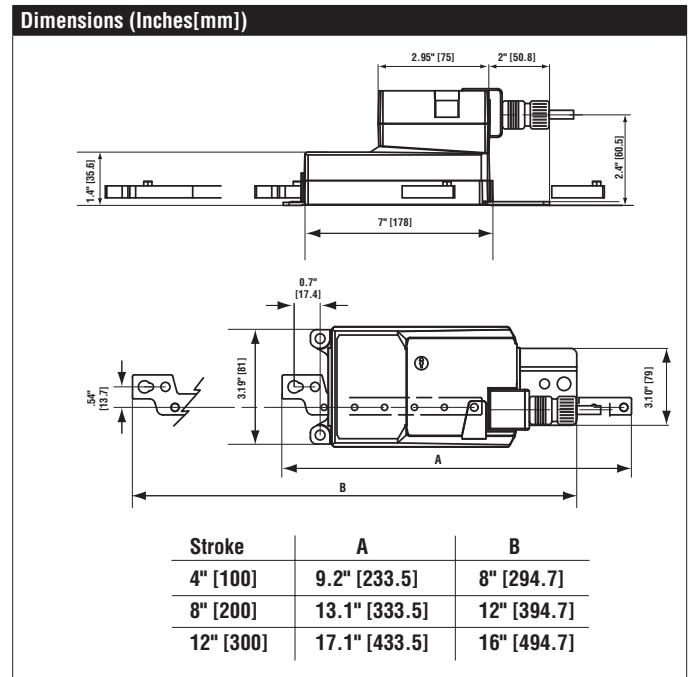
Application

For proportional modulation of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. The actuator 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.

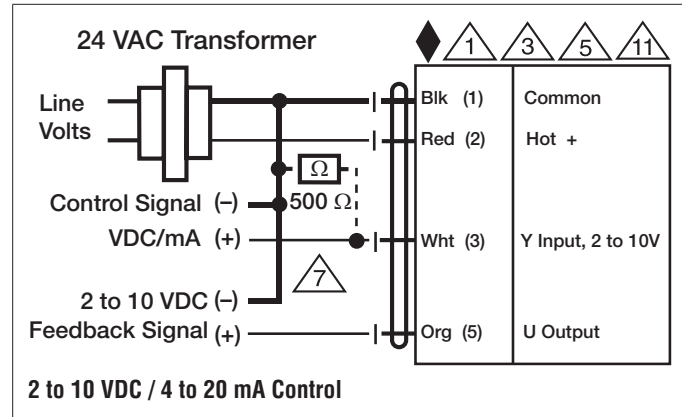
A 2 to 10 VDC feedback signal is provided for position indication or master-slave applications.

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 4 or 8 inches of linear stroke. The stroke of the gear rack can be adjusted on both sides in increments of 0.8 in [20 mm] by means of the mechanical end stops. 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 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.



Accessories	
TF-CC US	Cable conduit connector, 1/2".
Z-DS1	Rotary support for lateral force compensation in AHK/AH/LH.
ZK1-GEN	Cable for ZTH US to diagnostic/programming socket.
ZK2-GEN	Cable for ZTH US to actuators w/o diagnostics socket.
ZK3-GEN	Cable to ZIP-RS232 US to diagnostic/programming socket.
Z-KSC	3/8"-16 shaft clevis for AHK/AH.
ZKS-MP	Cable for ZIP-RS232 US and ZIP-USB-MP US to Belimo gateways.
MFT-P	Belimo MFT configuration software (hardware not included).
ZK6-GEN	Cable for ZTH US to connect to SY actuators via RJ11 port.
ZTH-GEN US	Hand held programming tool with ZK1-GEN.
ZTH-GEN US PLUS	Hand held programming tool with ZK1-GEN, ZK2-GEN & ZK6-GEN.
ADS-100	Analog to digital switch for modulating actuators.
IRM-100	Input rescaling module for modulating actuators.
MFT-P US	Belimo MFT configuration software (hardware not included).
MFT-XFMR	24 V transformer (120V to 24V) for PS-100.
NSV24 US	Battery back-up module for non-spring return actuators.
NSV-BAT	12V 1.2AH battery (two required for NSV24 US).
P370	Shaft mount auxiliary switch, 1/2" shaft.
PS-100	Actuator power supply and control simulator.
PTA-250	Pulse width modulation interface for modulating actuators.
SGA24	Positioner control for modulating actuators (surface mount).
UK24LON	LON gateway module for up to 8 MFT actuators.
ZAD24	Digital position indicator for modulating actuators.
ZG-R01	4 to 20 mA adaptor, 500Ω, 1/4 W resistor w 6" pigtail wires.
ZG-R02	50% voltage divider kit (resistors with wires).
ZG-SGF	Mounting plate for SGF.
ZG-X40	120 to 24 VAC, 40 VA transformer.
ZIP-RS232 US	PC Tool computer programming interface, serial port.
ZIP-USB-MP US	PC Tool computer programming interface, USB port.
NSV-BAT US	12VDC 1.2 AH battery (2 required).







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 up to 1.05" 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. Actuators shall have reversing switch and manual override on the cover. If required, actuator will be provided with screw terminal strip for electrical connections (NMX24-SR-T). 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, have a 5-year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

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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.