

On-Off/Floating Control, 24 VAC/DC Power

NM24 us

Proportional Control, 24 VAC/DC Power

NM24-SR us

Control signal: 2 to 10 VDC
(4 to 20 mA with 500Ω resistor)
Input impedance: 100kΩ (500Ω)
Feedback output: 2 to 10 VDC

NM24-SRS us

(AC only)
Control signal: 0 to 29 VDC adjustable
(4 to 20 mA with 500Ω resistor)
Input impedance: 100kΩ (500Ω)
Start point: adjustable, 0 to 15 VDC
Span: adjustable, 2 to 14 VDC
Feedback output: 2 to 10 VDC

NM24-PWM us

(AC only)
Control signal: pulse width modulating, external select
Input impedance: 1.5kΩ
Operating range: 0.59 sec. to 2.93 sec.
0.02 sec. to 5.0 sec.
0.02 sec. to 6.0 sec.
0.1 sec. to 25.5 sec.
Feedback output: 2 to 10 VDC

Common Data

Power consumption: 2.0 W (NM24 us)
1.3 W (NM24-SR us, NM24-SRS us)
1.8 W (NM24-PWM us)
Transformer sizing: 3.5 VA class 2 power source
Electrical connection: 3 ft, 18 GA plenum rated cable,
1/2" conduit fitting
Overload protection: electronic throughout rotation
Angle of rotation: 95° (adjustable with integral stop)
Direction or rotation: L/R external switch
Position indication: visual indicator
Manual override: push button
Running time: 75 to 150 sec. (NM24 us)
150 sec. independent of load
(proportional)
Ambient temperature: -4° F to 122° F [-20° C to 50° C]
Housing: NEMA 2 / IP54
Housing material: UL 94-5V (flamability rating)
Agency listings: UL 873, CSA 4813 02, CE
Noise level: less than 35 dB(A)
Weight: 1.8 lbs

Application/Operation

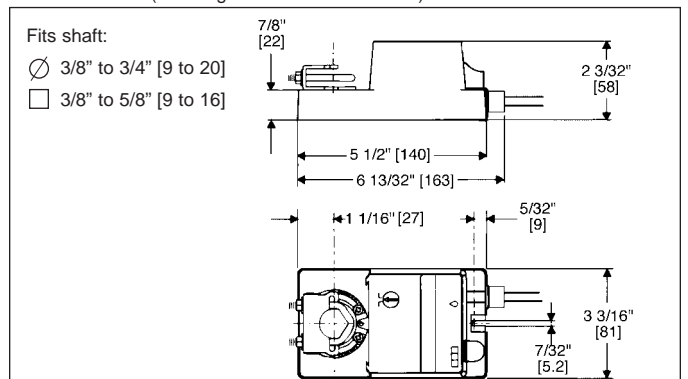
For control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. The actuator mounts directly to a damper shaft with a universal V-bolt clamp assembly. The supplied antirotation bracket will prevent lateral movement of the actuator. The actuator is protected against overloading, and does not require limit switches. The angle of rotation is mechanically limited to 95°. When reaching the damper or actuator end position, the motor stops automatically. A spring-loaded button on the actuator cover allows the gears to be manually disengaged and the damper blades adjusted by hand. The position of the actuator is indicated by a visual pointer. Auxiliary switches are fastened to the actuator body for signaling and switching functions.



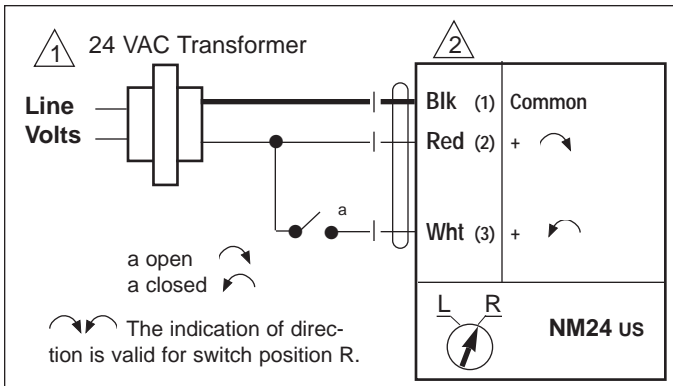
NM24 us control is on-off from an auxiliary contact of a fan motor contactor, or a manual switch, with the direction of rotation reversible, for use with a floating point type control. The **NM24-SR us** operates in response to a 2 to 10 VDC control input from an electronic controller or positioner, or 4 to 20 mA with the addition of a 500Ω resistor. The **NM24-PWM us** actuator is controlled with a pluse width modulating positioning signal. The signal range is externally selectable in four ranges. The **NM24-SRS us** is designed to work with input signals in the range of 0 to 29 VDC from an electronic controller or positioner. Two potentiometers to adjust the starting point and working span of the actuator allow for non-standard control ranges or sequencing of multiple actuators from one control signal. The NM24-SR us, NM24-SRS us and NM24-PWM us have a built-in microprocessor that automatically tests for the amount of rotation required to modulate the damper fully closed to fully open. The actuator will self-adjust to a consistent running time of 150 sec., and rescale the input signal so the entire 8 volt control range is used to provide maximum resolution of the control system. The microprocessor will correct for compression of tight close-off gaskets with age, providing the actuator is not on its mechanical stops. A functional test of the actuator/damper assembly may be done by pressing down the manual override button, this will activate the actuator's test mode and cycle the actuator fully open and closed. A 2 to 10 VDC feedback (U) is provided with full 8-volt output range proportional to the operational rotation of the damper. A digital rotation sensing circuit protects the actuator in a stall anywhere in its 95° working range without limit switches.

* Based on 4 in-lb/ft² damper torque loading. Parallel blade. No edge seals.

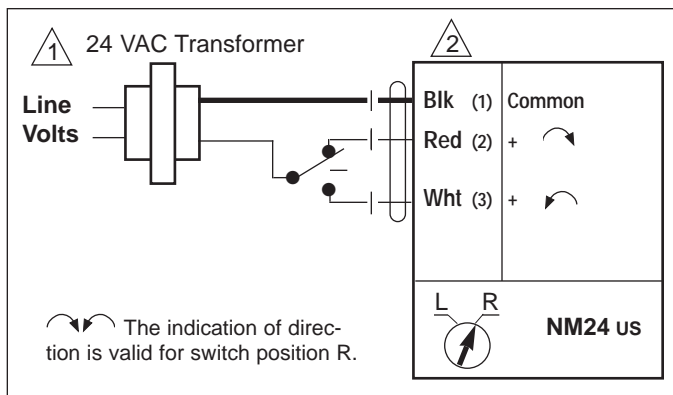
Dimensions (All ratings in brackets are metric.)



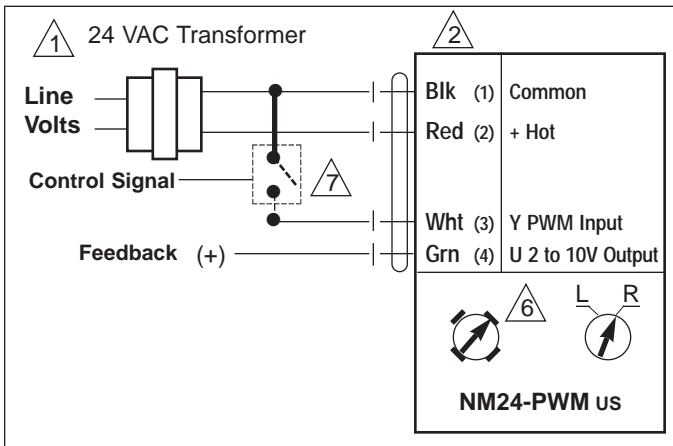
Wiring diagrams



On-Off control of NM24 us



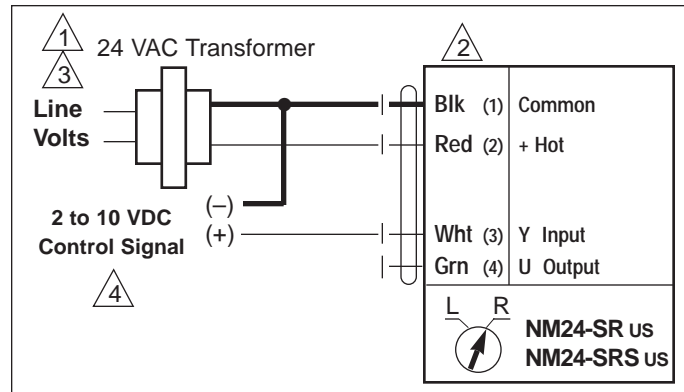
Floating point control of NM24 us



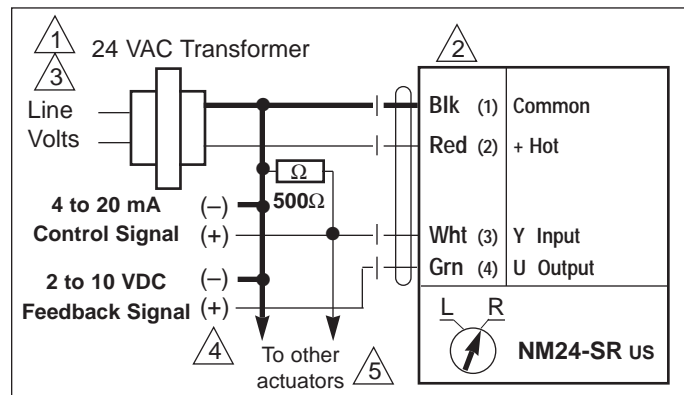
Pulse width modulation control of NM24-PWM us

Wiring notes

- 1 Provide overload protection and disconnect as required.
- 2 Actuators are provided with color coded wires. Wire numbers are provided for reference.
- 3 Actuator and controller must have separate transformers.
- 4 Connect actuator common (Wire 1) to Negative (-) leg of control circuits only.
- 5 Multiple actuators may be controlled from one control signal. Up to 4 actuators may be paralleled from 1 resistor.
- 6 PWM range is selectable in 4 ranges.
- 7 See NM24-PWM us data sheet for other wiring configurations.



2 to 10 VDC control of NM24-SR us / NM24-SRS us



4 to 20 mA control of NM24-SR us with 2 to 10 VDC feedback output

Typical Specification:

NM24-24 us and General: Control damper actuators shall be electronic direct coupled type which require no crank arm and linkage. Actuators shall be UL and CSA listed, have a 2 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall have reversing switch and manual override on the cover, and be protected from overload at all angles of rotation. Actuators shall be as manufactured by Belimo.

NM24-SR us: Actuators shall respond to a 2 to 10VDC output relative to position regardless of the amount of damper rotation.

NM24-PWM us: Actuators shall have an input pulse length selector switch which will allow the use of the following pulse lengths: 0.02 to 6.0 seconds, 0.02 to 5.0 seconds, 0.1 to 25.5 seconds, 0.59 to 2.93 seconds. The length of the pulse as compared to the pulse length selected, shall position the actuator proportionately regardless of the amount of damper rotation.

NM24-SRS us: Actuators shall have an adjustable control start point of 0 to 15 VDC and a working span of 2 to 14 VDC. The response to the working span will produce a proportional change in damper position regardless of the amount of damper rotation.

NM24-SR us, NM24-SRS us, NM24-PWM us: Actuators shall have a brushless DC motor, run time independent of load and angular rotation between 35° and 95°, and a 2 to 10 VDC feedback signal shall be provided for position indication or master-slave applications.