

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

- AM24 us**
- AM24-S us** (AM24 us with auxiliary switches)

### Proportional Control, 24 VAC/DC Power

- AM24-SR us**
- Control signal: 2 to 10 VDC  
(4 to 20 mA with 500Ω resistor)
- Input impedance: 45 kΩ (500Ω)
- Feedback output: 2 to 10 VDC



Features Multi-Function Technology™ with programmable control, feedback and mechanical properties. See Multi-Function Technology Documentation.

- AM24-SRS us**
- Control signal: 3 fixed voltage ranges:
- AM24-SRS.A us:** 4.0 to 7.0 VDC
  - AM24-SRS.B us:** 6.0 to 9.0 VDC
  - AM24-SRS.C us:** 10.5 to 13.5 VDC
- Input impedance: 47 kΩ
- Feedback output: 2 to 10 VDC

- AM24-PWM us**
- Control signal: 3 fixed pulse width modulation ranges:
- AM24-PWM.A us:** 0.02 to 5.0 sec.
  - AM24-PWM.B us:** 0.1 to 25.5 sec.
  - AM24-PWM.C us:** 0.59 to 2.93 sec.
- Input impedance: 750Ω
- Feedback output: 2 to 10 VDC

### Common Data

Power consumption:	2.5 W (on-off) 2.5 W running, 1.2 W holding (proportional)
Transformer sizing:	4.5 VA (on-off), 5 VA (proportional) class 2 power source
Electrical connection:	3 ft, 18 GA appliance cable, 1/2" conduit fitting
Overload protection:	electronic throughout rotation
Angle of rotation:	95° (adjustable with integral stop)
Direction of rotation:	CW/CCW external switch. proportional: CW=CW with decrease signal CCW=CCW with decrease signal
Position indication:	visual indicator
Manual override:	push button
Auxiliary switches:	2 x SPDT. 0° to 95° (AM24-S us)
Running time:	100 to 150 sec. for 0 to 160 in-lb (on/off) 150 sec. independent of load (proportional)
Ambient temperature:	-22° F to 122° F [-30° 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:	max. 45 dB(A)
Weight:	2.8 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 up to 3/4" diameter by means of its universal clamp, or up to a 1.05" jackshaft with the optional K4-1 clamp. A crankarm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft. The AM24-S us is constructed to meet the requirements for double insulated devices.



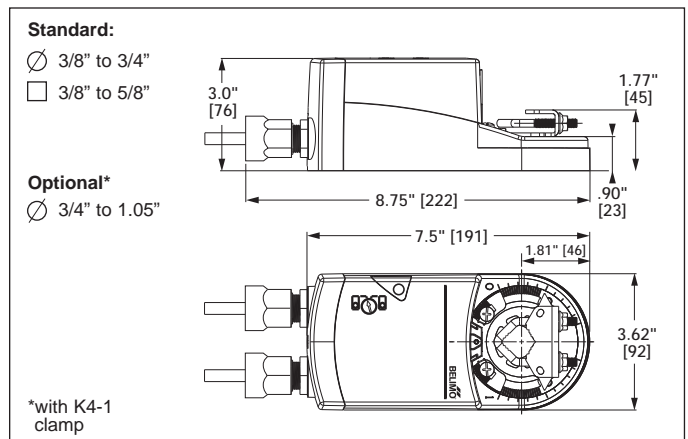
The actuator is not provided with and does not require any limit switches, but is electronically protected against overload. The angle of rotation is mechanically limited to 95°. When reaching the damper or actuator end position, the actuator automatically stops. The gears can be manually disengaged with a button on the actuator cover. The position of the actuator is indicated by a visual pointer. The anti-rotation strap supplied with the actuator will prevent lateral movement. The **AM24-S us** is provided with two built-in auxiliary switches. These SPDT switches are provided for safety interfacing or signaling. The switching function is adjustable between 0° and 95°. The AM24-SR us operates in response to a 2 to 10 VDC control input from an electronic controller or positioner (4 to 20 mA with the addition of a 500Ω resistor). The **AM24-SRS us** is designed to work with input signals in the range of 0 to 32 VDC. Three fixed ranges are available: 4.0 to 7.0 VDC, 6.0 to 9.0 VDC, and 10.5 to 13.5 VDC. The **AM24-PWM us** is controlled with a pulse width modulating positioning signal. Three fixed ranges are available: 0.02 to 5.0 sec., 0.1 to 25.5 sec., 0.59 to 2.93 sec.

### AM24-SR us, AM24-SRS us, AM24-PWM us

A microprocessor will correct for compression of tight close-off gaskets with age, provided the actuator is not on its mechanical stops. A 2 to 10 VDC feedback signal (U) is provided with a full 8 V 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° operating range without the need of limit switches. SA1 or SA2 auxiliary switches are easily fastened directly onto the actuator body for signaling and switching functions.

\* Based on 4 in-lb/ft<sup>2</sup> damper torque loading. Parallel blade. No edge seals.

### Dimensions (All numbers in brackets are metric.)



## Typical Specification:

### AM24 us and General:

Control damper actuators shall be electronic direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to 1.05" diameter. 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 electronically protected from overload at all angles of rotation. If required, two adjustable SPDT auxiliary switches shall be provided (AM24-S us). Actuators with switches must be constructed to meet the requirements for double insulation so an electrical ground connection is not required to meet agency listings. Proportional actuator run time shall be constant and independent of load, and a 2 to 10 VDC feedback signal shall be provided for position indication or master-slave applications. Actuator shall be as manufactured by Belimo.

### AM24-SR us:

The actuator must provide proportional damper control in response to a 2 to 10 VDC control input from an electronic controller or positioner (4 to 20 mA with the addition of a 500Ω resistor).

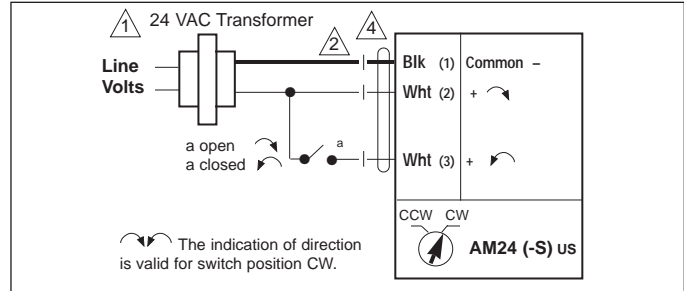
### AM24-SRS us:

Actuators shall be offered with three fixed voltage range options: 4.0 to 7.0 VDC, 6.0 to 9.0 VDC, and 10.5 to 13.5 VDC.

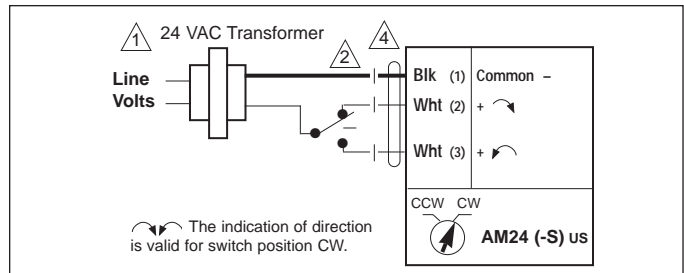
### AM24-PWM us:

Actuators shall be offered with three fixed pulse length options: 0.02 to 5.0 sec., 0.1 to 25.5 sec., and 0.59 to 2.93 sec. The length of the pulse compared with the pulse length range selected shall position the actuator proportionally regardless of the amount of damper rotation.

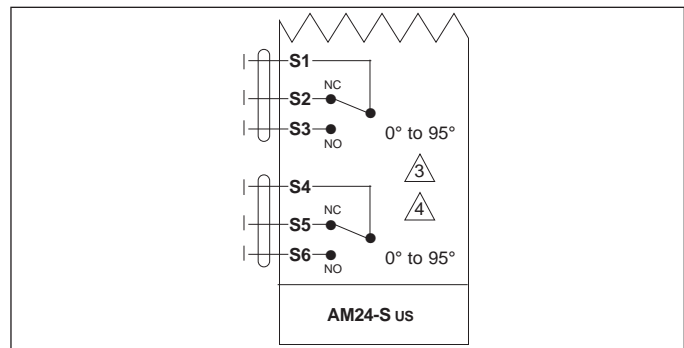
## Wiring diagrams



### On-off control of AM24 us

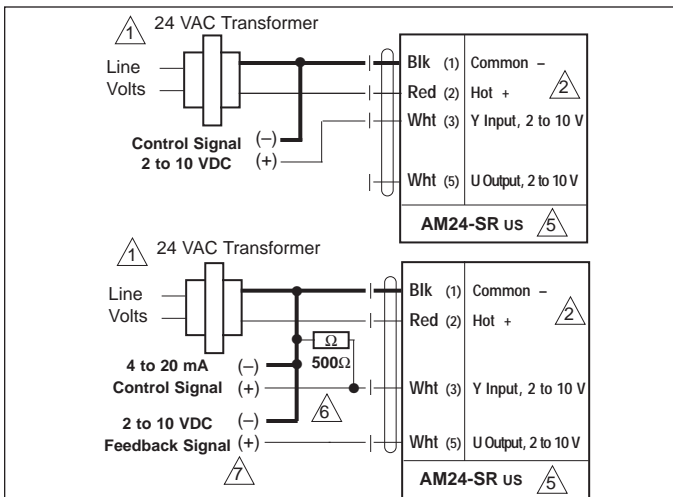


### Floating point control of AM24 us

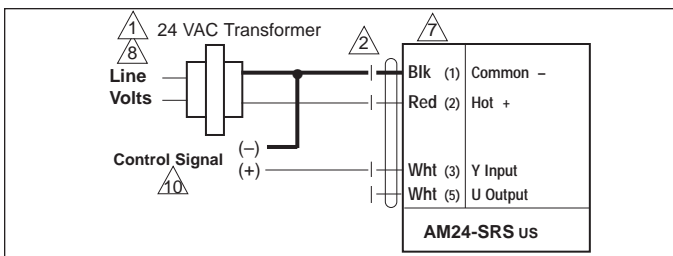


### Auxiliary switch wiring for AM24-S us

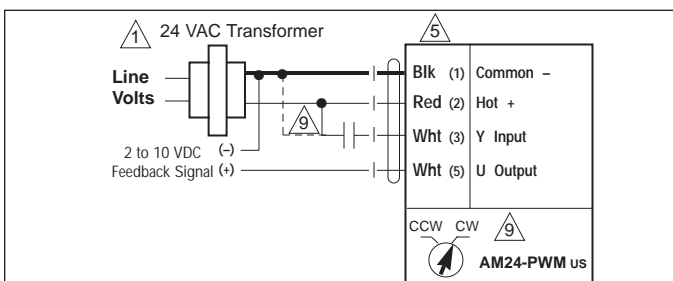
- 1 Provide overload protection and disconnect as required.
- 2 Actuators may also be powered by 24 VDC
- 3 For end position indication, interlock control, fan startup, etc., AM24-S us incorporates two built-in auxiliary switches: 2 x SPDT, 6A (1.5A) @250 VAC, UL listed, adjustable between 0° and 95°.
- 4 Meets UL and CSA requirements without the need of an electrical ground connection.
- 5 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 6 The ZG-R01 500Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC.
- 7 Connect actuator common (Wire 1) to Negative (-) leg of control circuits only.
- 8 Actuator and controller must have separate transformers.
- 9 PWM signal is available in 3 ranges. Control signal may be pulsed from either the Hot or Common 24 VAC line.
- 10 The start point and end point can be adjusted to sequence multiple actuators from one control signal.



### 2 to 10 VDC and 4 to 20 mA control of AM24-SR us



### Voltage control of AM24-SRS us



### Pulse width modulation control of AM24-PWM us