SIEMENS

Technical Instructions
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Powermite 599

MT Series SAS Electronic Valve Actuator, 24 Vac or 24 Vdc, Floating Control (3-Position)


SAS81.03U


SAS81.33U

Description

The Powermite 599 MT Series SAS Electronic Valve Actuator requires a 24 Vac or 24 Vdc supply and receives a floating control signal to provide three-position control. The actuator controls Powermite 599 Series MT Series terminal unit valves with a 7/32-inch (5.5 mm) stroke.

Features

- Position indicator.
- UL listed for plenum installations.
- Floating control signal input.
- Manual positioning knob with stroke indication allows for repositioning.
- Mechanical spring returns the valve to its normal (fail-safe) position in power-off conditions (SAS81.33U only).

Application

For use in small to medium HVAC installations with Powermite 599 Series terminal unit valves with a 7/32-inch (5.5 mm) stroke requiring a minimum of 90 pounds force (400N). They can be used in liquid and low pressure steam service applications.

Product Number

Table 1. Ordering Information.

Product Number	Actuator Type	Actuator Prefix Code
SAS81.03U	Non-Spring Return (Fail-in-place)	363
SAS81.33U	Spring Return (Fail-safe)	366

Ordering Information

To order a complete valve plus actuator assembly from the factory, combine the actuator prefix code with the suffix of the valve product number. See *TB251, Powermite 599 Series MT Series Terminal Unit Valve and Actuator Assembly Selection Technical Bulletin* (155-306P25) for selection procedures.

To order an actuator only, use the product number in Table 1.

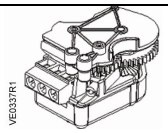
Specifications

Power Requirements	Operating voltage/frequency	24 Vac/Vdc, ±20%
	Frequency	45 to 65 Hz
	Power Supply	Earth ground, isolating Class 2, 24V transformer
		NOTE: Do *not* power more than 10 actuators with one transformer. (Use 0.5 amp fuse on secondary per actuator.)
	Power consumption - running	
	SAS81.03U	2.5 VA
	SAS81.33U	3.4 VA
Control Characteristics	Control signal	Floating (3-position)
	Y1	Positioning signal extends actuator stem.
	Y2	Positioning signal retracts actuator stem.
Functional Operation	Running time	
	at 60 Hz	30-seconds
	Spring return time (SAS81.33U only)	<14-seconds
	Nominal stroke	7/32-inch (5.5 mm)
	Nominal force	90 lbs (400 N)
	Fail-safe (SAS81.33U only)	Mechanical spring
Agency Approvals	UL	UL listed to UL873
	cUL	certified to CSA C22.2 No. 24-93
Environmental Conditions	Ambient temperature	
	Operation	23°F to 131°F (–5°C to 55°C)
	Transport and storage	–13°F to 158°F (–25°C to 70°C)
	Humidity	<95% rh
	Max. permissible media temperature in valve	34°F to 248°F (1°C to 120°C)
Physical Characteristics		
	Conduit opening	Knockouts for standard 1/2-inch (12.7 mm) conduit connector
	Weight	
	SAS81.03U	0.9 lbs. (0.4 kg)
	SAS81.33U	1.5 lbs. (0.68 kg)
	Dimensions	See Figure 6 and Figure 7.

Service Kit

If the actuator is inoperative, replace the unit.

Accessory



Auxiliary Switch ASC10.51 switches on or off when a certain position is reached. The switching point can lie between 0 to 100%.

Operation

- A 24V control signal to Y1 extends the actuator stem proportionately to the length of time the signal is applied.
- A 24V control signal to Y2 retracts the actuator stem proportionately to the length of time the signal is applied.
- In the event of a power failure:
  - SAS81.03U is non-spring return and holds its last position.
  - SAS81.33U returns the valve to its normal spring return position.

Mounting and Installation

Mount the actuator in any position *except* with the actuator lower than the valve. Figure 1 shows acceptable actuator mounting positions for water applications. The recommended mounting position of the actuator for low pressure steam applications is between 45° and horizontal.

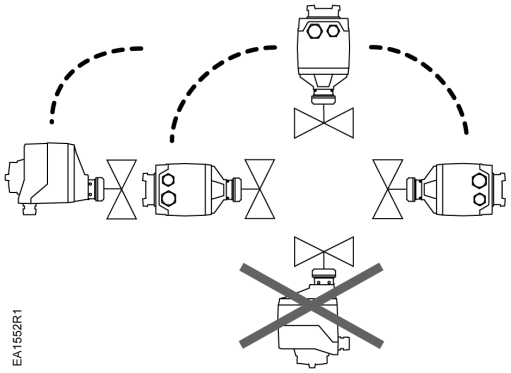


Figure 1. Acceptable Mounting Positions.

Wiring

- Use earth ground isolating, step-down Class 2 power supplies. Do *not* use auto transformers.
- Determine supply transformer minimum rating by summing total equipment on circuit. The maximum rating for Class 2 step-down transformers is 100 VA.
- Do *not* power more than 10 actuators with one transformer. (Use 0.5 amp fuse on secondary per actuator.)

WARNING:

Housing rated for flex conduit only.

Wiring Diagrams

CAUTION:
Terminals G and G0 must be properly wired for correct function and full life of the actuator.

If the actuator makes a buzzing noise upon reaching setpoint, G and G0 are improperly wired and should be reversed.

G	Hot (+)
Y1	Connected to Neutral (-) extends actuator stem
Y2	Connected to Neutral (-) retracts actuator stem

Figure 2. SAS81.03U 24 Vac NSR Floating Control - Neutral Switch.

G	Neutral (-)
Y1	Connected to Hot (+) extends actuator stem
Y2	Connected to Hot (+) retracts actuator stem

Figure 3. SAS81.03U 24 Vac or 24 Vdc NSR Floating Control - Hot Switch.

G	Hot (+)
G0	Neutral (-)
Y1	Connected to Neutral (-) extends actuator stem
Y2	Connected to Neutral (-) retracts actuator stem

Figure 4. SAS81.33U 24 Vac SR Floating Control – Neutral Switch.

G	Hot (+)
G0	Neutral (-)
Y1	Connected to Hot (+) extends actuator stem
Y2	Connected to Hot (+) retracts actuator stem

Figure 5. SAS81.33U 24 Vac or 24 Vdc SR Floating Control – Hot Switch.

Start-Up

The valve body assembly determines the action of the complete valve/actuator assembly as follows:

Normally Closed Valve:

- When the actuator stem extends, the valve opens.
- When the actuator stem retracts, the valve closes.

Normally Open Valve:

- When the actuator stem extends, the valve closes.
- When the actuator stem retracts, the valve opens.

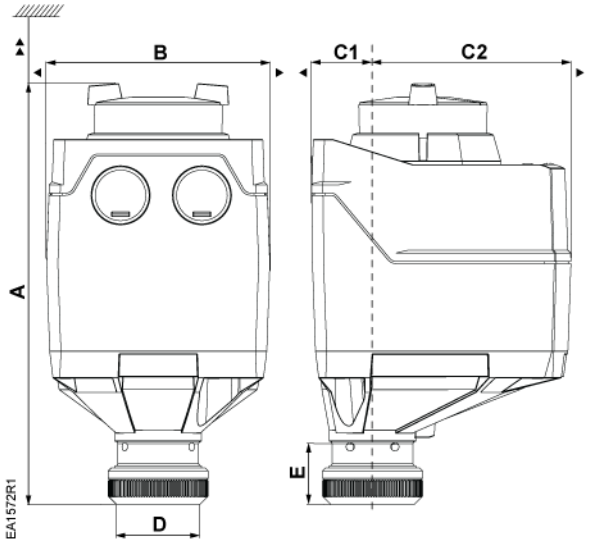
Three-Way Valve:

- When the actuator stem extends, the valve opens between port A and AB.
- When the actuator stem retracts, the valve opens between port B and AB.

Troubleshooting

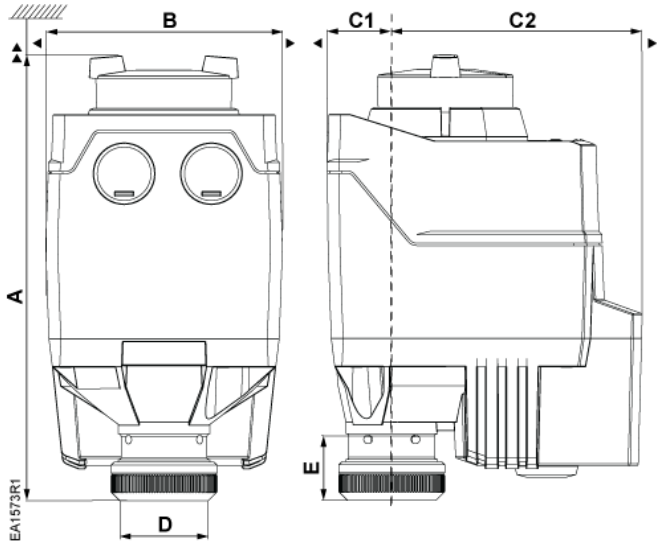
- Check wiring for proper connections and secure attachments.
- Check for adequate power supply.

Dimensions



	A	B	C1	C2	D	E	►	►►
Inches	5.9	3.1	0.9	2.8	1.2	0.9	4	8
mm	151	80	21.9	71.1	29.9	21.8	100	200

Figure 6. SAS81.03U Actuator Dimensions.



	A	B	C1	C2	D	E	►	►►
Inches	5.9	3.1	0.9	3.3	1.2	0.9	4	8
mm	151	80	21.9	84.6	29.9	21.8	100	200

Figure 7. SAS81.33U Actuator Dimensions.