

# Powermite 599

## MT Series SAS Electronic Valve Actuator 24 Vac or 24 Vdc, Proportional Control



SAS61.03U



SAS61.33U

**Description** The Powermite 599 MT Series SAS Electronic Valve Actuator requires a 24 Vac or 24 Vdc supply and receives a 0 to 10 Vdc or a 4 to 20 mA control signal to proportionally control a valve. This actuator is designed to work with Powermite 599 MT Series terminal unit valve with a 7/32-inch (5.5 mm) stroke.

- Features**
- Position indicator.
  - UL listed for plenum installations.
  - 0 to 10V or 4 to 20 mA.
  - LED status indicator.
  - Auto calibration
  - Position output signal 0 to 10 Vdc.
  - Manual positioning knob with stroke indication allows for repositioning.
  - Mechanical spring returns the valve to its normal (fail-safe) position in power-off conditions (SAS61.33U Actuator 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.

**Table 1. Ordering Information.**

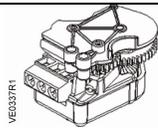
Product Numbers	Product Number	Actuator type	Actuator Prefix Code
	SAS61.03U	Non-Spring Return (Fail-in-place)	364
	SAS61.33U	Spring Return (Fail-safe)	365

**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 TB 251 *Powermite 599 Series MT Series Terminal Unit Valve and Actuator Assembly Selections Technical Bulletin* (155-306P25) for selection procedures.

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

<b>Specifications</b>	Operating voltage	24 Vac $\pm$ 20%, 24 Vdc, + 20%, -15%		
	<b>Power Requirements</b>	Frequency	45 to 65 Hz	
		Power supply	Earth ground isolating, Class 2, 24V transformer, 100 VA max.	
		Power consumption - running		
	SAS61.03U	5.3 VA		
	SAS61.33U	5.9 VA		
<b>Control Characteristics</b>	<b>Terminal Designation</b>	Y	Control Signal	0 to 10 Vdc, 4 to 20 mA
			Current draw	$\leq$ 0.1 mA for 0 to 10 Vdc control 4 to 20 mA $\pm$ 1% for 4 to 20 mA control
			Input impedance	>100K ohms
	U	Position feedback		
		Voltage	0 to 10 Vdc $\pm$ 1%	
		Load impedance	>10K $\Omega$ res.	
		Current load	1 mA max.	
	Z	Forced control		
		Resistance	0 to 1000 $\Omega$ , stroke proportional to R	
		Z connected to G	Max. stroke 100%	
	Z connected to G0	Min. stroke 0%		
	Voltage	Max. 24 Vac to 20%, Max 24 Vdc+20%,-15%		
	Current draw	$\leq$ 0.1 mA		
<b>Functional Operation</b>	Running time			
	at 60 Hz	30 seconds		
	Spring return (SAS61.33U only)	<14 seconds		
	Nominal stroke	7/32-inch (5.5 mm)		
	Nominal Force	90 lbs. (400N)		
Spring return (SAS61.33U only)	Mechanical spring			
<b>Agency Approvals</b>	UL	UL873		
	cUL	Certified to CSA C22.2 No. 24-93		
<b>Environmental Conditions</b>	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)			
<b>Physical Characteristics</b>	Conduit opening	Knockouts for standard 1/2-inch conduit connector		
	Weight			
	SAS61.03U	0.9 lbs. (0.4 kg)		
	SAS61.33U	1.5 lbs. (0.68 kg)		
Dimensions	See Figure 4 and Figure 5.			

**Accessory**



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

**Service Kit**

If the actuator is inoperative, replace the unit.

**Operation**

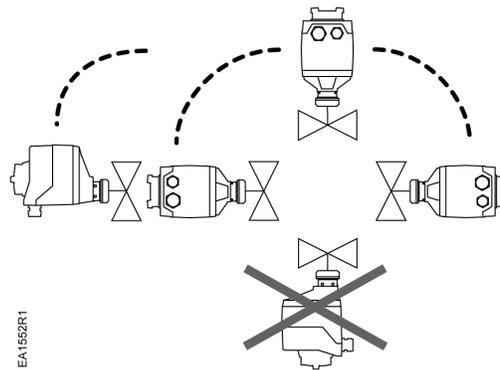
A zero voltage control signal returns the valve to its normal position.

In the event of a power failure:

- SAS61.03U is non-spring return and holds its last position.
- SAS61.33U returns the valve to its normal spring return position.

The position output 0 to 10 Vdc signal “U” produces position feedback to the controller.

**Mounting and Installation**



**Figure 1. Acceptable Mounting Positions.**

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.

**Wiring**

- All units using the same control signal must utilize the same neutral reference (G0).
- Use earth ground isolating, step-down Class 2 transformers. Do *not* use auto transformers.
- Determine supply transformer minimum rating by summing the 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.



**WARNING:**

Housing rated for flex conduit only.

## Wiring Diagrams

<b>G0</b>	Neutral (-)
<b>G</b>	Hot (+)
<b>Y</b>	Positioning signal for 0 to 10 Vdc/4 to 20 mA
<b>M</b>	Measuring neutral
<b>U</b>	Position feedback 0 to 10 Vdc
<b>Z</b>	Positioning signal forced control AC/DC $\leq 24V$ , 0 to 1000 $\Omega$

**Figure 2. Terminal Connections.**



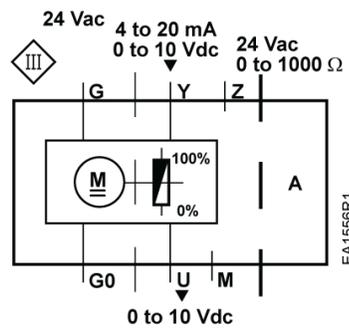
**WARNING:**

Terminal connection G is 24 Vac HOT, not ground.



**CAUTION:**

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



**Figure 3. Wiring Diagram.**

The diagram shows all possible connections. The application determines which connections are used.

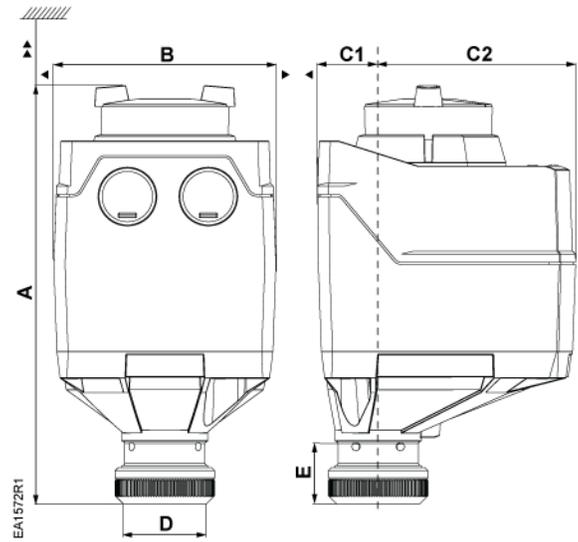
### Start-up

The valve body (normally open or normally closed) determines the action of the complete valve/actuator assembly.

### Troubleshooting

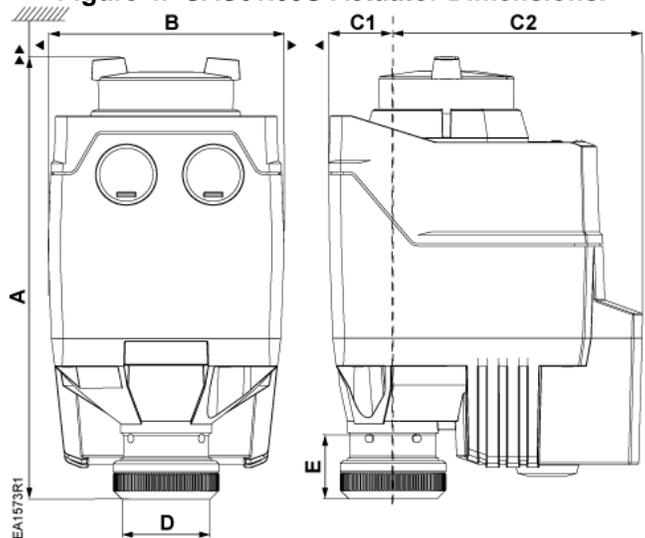
- Check wiring for proper connections and secure attachments.
- Check for adequate power supply.

**Dimensions**



	A	B	C1	C2	D	E	▶	▶▶
<b>Inches</b>	5.9	3.1	0.9	2.8	1.2	0.9	4	8
<b>mm</b>	151	80	21.9	71.1	29.9	21.8	100	200

**Figure 4. SAS61.03U Actuator Dimensions.**



	A	B	C1	C2	D	E	▶	▶▶
<b>Inches</b>	5.9	3.1	0.9	3.3	1.2	0.9	4	8
<b>mm</b>	151	80	21.9	84.6	29.9	21.8	100	200

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**Figure 5. SAS61.33U Actuator Dimensions.**

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