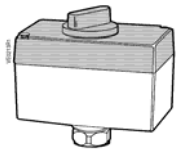
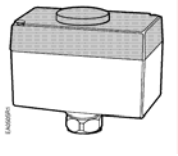
SIEMENS

Technical Instructions
Document No. 155-190P25
EA 599-8
August 20, 2007

Powermite 599

MT Series SQS Electronic Valve Actuator 24 Vac, Proportional Control


SQS65U


SQS65.5U

Description

The Powermite 599 MT Series SQS electronic valve actuator requires a 24 Vac supply and receives a 0 to 10 Vdc or a 0 to 1000 ohm 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

- Maintenance-free with reversible motor.
- UL listed for plenum installations.
- Voltage or resistance signal input.
- Position output signal 0 to 10 Vdc.
- Manual positioning knob with stroke indication allows for repositioning in power-off condition (SQS65U actuator only).
- Mechanical spring returns the valve to its normal (fail-safe) position in power-off conditions (SQS65.5U actuator only).

Application

For use in small to medium HVAC installations with Powermite 599 Series valves and Siemens Building Technologies, Inc. standard valves with a 5.5 mm (7/32-inch) stroke. They can be used in liquid and low pressure steam service applications.

Product Numbers

Table 1. Ordering Information.

Product Number	Actuator type	Actuator Prefix Code
SQS65U	Non-Spring Return (Fail-in-place)	264
SQS65.5U	Spring Return (fail-safe)	265

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* (155-306P25) for selection procedures.

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

Specifications

Power Requirements	Operating voltage/Frequency		60 Hz 24 Vac, + 20%, -15%
	Power supply		Earth ground isolating, Class 2, 24 Vac transformer, 100 VA max
	Power consumption		
	SQS65U		4.5 VA
	SQS65.5U		7 VA
Control Characteristics	Terminal Designation	Control Signal	
	Y	Voltage	0 to 10 Vdc
		Current	0.1 mA
	R	Input impedance	100K ohms
	C	Control signal	
		Resistance	0 to 1000 ohms
	21	Position output	
		Voltage	0 to 10 Vdc
		Current	0.5 mA max running time
Functional Operation	Running time		
	at 60 Hz		30 seconds
	Spring return (SQS65.5U only)		≈8 seconds
	Nominal stroke		7/32-inch (5.5 mm)
	Nominal Force		90 lbs. (400N)
	Spring return (SQS65.5U only)		Mechanical spring
Agency Approvals	UL		UL873
	cUL		Certified to CSA C22.2 No. 24-93
Environmental Conditions	Ambient temperature		
	Operation		23°F to 122°F (–5°C to 50°C)
	Transport and storage		–13°F to 149°F (–25°C to 65°C)
	Ambient humidity		0 to 90% rh (non-condensing)
	Media temperature		41°F to 248°F (5°C to 120°C)
Physical Characteristics	Conduit opening		Knockouts for standard 1/2-inch) 12.7 mm) conduit connector
	Weight		
	SQS65U		1.1 lbs. (0.5 kg)
	SQS65.5U		1.3 lbs. (0.6 kg)
	Dimensions		See Figure 6

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:

- SQS65U is non-spring return and holds its last position.
- SQS65.5U returns the valve to its normal spring return position.

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

An additive control input at R for 0 to 1000 ohm allows control by either a low temperature detector or a remote setting unit.

Mounting and Installation

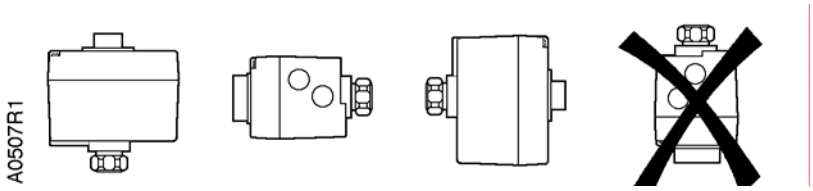


Figure 1. Mounting Position.

Mount the actuator in any position except with the actuator lower than the valve.

Wiring Diagrams

To use a 0 to 1000 ohm input signal on terminal R, the circuit board jumper R—M must be cut. If the circuit board jumper R—M is cut, you cannot wire the R and M terminals on the terminal block to re-establish the connection.

The 0 to 1000 ohm signal is additive to the 0 to 10 Vdc control signal. For example, a controller commanded to 2 Vdc (20%) plus a remote override input to 300 ohms (30%) results in a position of 50% stroke.

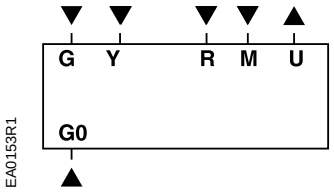


Figure 2. Terminal Connections of the SQS65...

G, G0	24 Vac operating voltage
	G System potential
	G0 System neutral
Y	0 to 10 Vdc control signal
R	Input for 0 to 1000 ohm remote signal
M	Neutral reference for position feedback
U	Output for 0 to 10 Vdc position feedback

WARNINGS:

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.

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.

Start-Up

The SQS Series valve actuator circuit card contains a jumper that allows the selection of either equal percentage or linear signal-to-stroke characteristic. The factory setting is linear.

Table 2. Setting for Recommended Signal-to-Stroke Characteristic.

Valve Action	Recommended Setting for Selector Plug
NC Steam	C–B (Factory Setting)
NC Liquid	C–B (Factory Setting)
NO	C–B (Factory Setting)

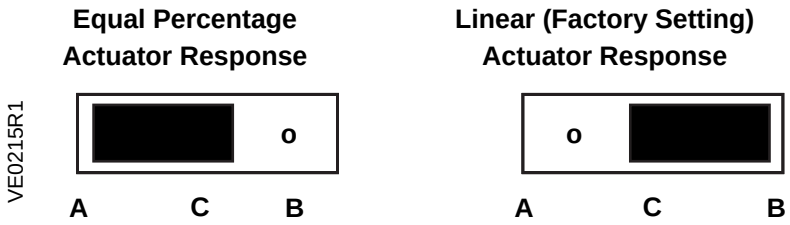


Figure 3. Signal-to-Stroke Characteristic Jumper Settings.

NOTE: To change the jumper setting, remove the actuator cover and move the selector plug.

Troubleshooting

- Check Wiring for appropriate connections and secure attachments.
- Check the jumper for desired location.

Dimensions

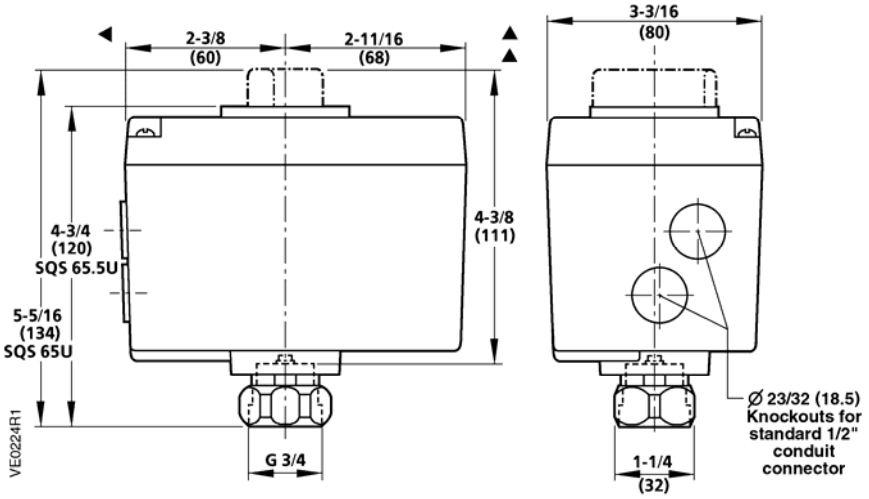
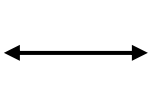


Figure 4. Dimensions of the SQS65U Series Actuator, Shown in Inches (Millimeters).

Service Envelope

Minimum access space recommended



4 inch (100 mm)

8 inch (200 mm)