

# Pressure Independent Control Series

## SQD Series Electromotoric Actuators

Floating or 0 to 10 Vdc Control



### Description

Pressure Independent Control Series SQD Electronic Valve Actuators require a 24 Vac power supply and receive a floating control signal (SQD85.03U) or a proportional 0 to 10 Vdc signal (SQD65U) to control a valve.

These actuators are designed to work with 1-1/2 inch and 2-inch Pressure Independent Control Series Valves with a 1/4-inch (6.5 mm) stroke and a threaded valve bonnet that fits the actuator.

### Features

- Positioning force > 90 lbs (400 N)
- UL listed for plenum installation
- Direct mounting on valves; no adjustments required
- Visual position indication
- Manual override
- Electromotoric actuator, maintenance-free
- Reversible synchronous motor
- Antilocking gear train
- Load-dependent switch-off in stroke limit positions reduces power consumption

### Application



For use in heating and cooling HVAC applications with Pressure Independent Control valves that require up to 90 lbs. (400N) actuator force. They can be used in chilled/hot water applications or in water-glycol solutions up to 50% in closed loop systems.

### Product Numbers

**Table 1.**

Product Number	Description	Actuator Prefix Code
SQD65U	24 Vac, 0 to 10V, 400N, NSR PICV Actuator	235
SQD85.03U	24 Vac, 3-position, 400N, NSR PICV Actuator	234

## Warning/Caution Notations

<b>WARNING:</b>		Personal injury/loss of life may occur if you do not perform a procedure as specified.
<b>CAUTION:</b>		Equipment damage may occur if you do not perform a procedure as specified.

<b>Specifications</b>	Operating voltage	24 Vac $\pm$ 20% SELV/PELV
	<b>Power supply</b>	
	Rated voltage	24 Vac
	Frequency	60 Hz
	Fusing of supply lines	Max. 10A slow
	Power consumption	
	SQD65U	4.5 VA
	SQD85.03U	2 VA
<b>Signal inputs</b>	Terminals Y1, Y2 (SQD85.03U)	3-position (floating)
	Terminal Y (SQD65U)	0-10 Vdc, 0.1 mA maximum
	Terminal R (SQD65U)	0 to 1,000 Ohms
<b>Signal output</b>	Terminal U (SQD65U)	0 to 10 Vdc, 0.5 mA maximum
<b>Operating data</b>	Run time	43 seconds
	Positioning force	> 90 lbs (400 N)
	Nominal stroke	6.5 mm
	Admissible temperature of medium in the valve	34°F to 248°F (1°C to 120°C)
	Parallel operation of actuators	10 maximum
<b>Electrical connections</b>	Cable entries	2 entries for 1/2" conduit connection
<b>Regulatory agencies</b>	UL	Listed to UL873
	cUL	Certified to Canadian Standard C22.2 No. 24-93
<b>Dimensions/Weight</b>	Dimensions	See <i>Dimensions</i> .
	Weight (with packaging)	21 ounces (0.6 kg)
<b>Mounting</b>	Coupling thread to valve	Valve neck nut M30 x 1.5
<b>Environmental conditions</b>	Operation	
	Temperature	23°F to 122°F (-5°C to 50°C)
	Humidity	5 to 95% rh
	Transport	
	Temperature	-13°F to 158°F (-25°C to 70°C)
	Humidity	<95% rh
	Storage	
Temperature	23°F to 122°F (-5°C to 50°C)	
Humidity	5 to 95% rH	

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## Operation

### SQD85.03U 3-position control signal

Voltage at Y1:	Stem extends, valve opens
Voltage at Y2:	Stem retracts, valve closes
No voltage at Y1 or Y2:	Actuator holds the current position

### SQD65U 0 to 10 Vdc or 0 to 1000 $\Omega$ control signal

- The valve opens/closes in proportion to the control signal at Y or R.
- At 0 Vdc or 0  $\Omega$  the valve is closed (A  $\rightarrow$  AB).
- When the power supply is removed, the actuator maintains its current position.

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## Engineering Notes

The actuators must be electrically connected in accordance with local regulations and the connection diagrams.



### CAUTION:

Safety regulations and restrictions designed to ensure the safety of people and property must be observed at all times.

For admissible temperatures, see *Specifications*.

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## Commissioning Notes

When commissioning the system, check wiring and the functions.

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### Manual override

Switch off the positioning signal.  
The valve can be fully closed (= 0% stroke) by turning the manual adjuster counterclockwise. Control is automatically resumed when the positioning signal returns.

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### Three-position control

Every actuator must be driven by a dedicated controller. (See *Wiring Diagrams*.)

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## Troubleshooting

Check *Wiring* for proper connections.

If the actuator does not provide full flow or full close-off, check that the actuator is properly attached to the valve.

If not:

1. Turn the power off.
2. Turn the override knob to manually retract the output shaft to the zero position.
3. Tighten the bonnet ring onto the valve completely.
4. Power up.

The actuator must be correctly installed on the valve before commissioning.

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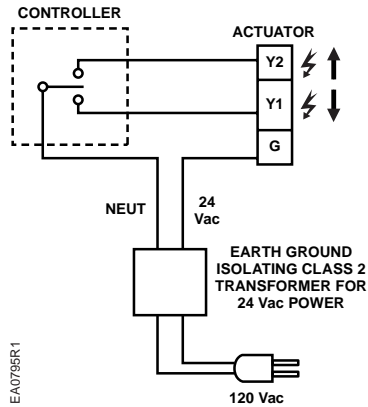
## Repair

The actuator cannot be repaired. It has to be replaced as a complete unit.

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## Wiring Diagrams

### SQD85.03U



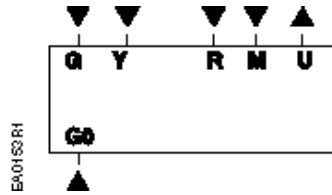
- Y1** Signal input; stem extends, valve opens
- Y2** Signal input; stem retracts, valve closes
- G** System potential (SP), 24 Vac



**WARNING:**

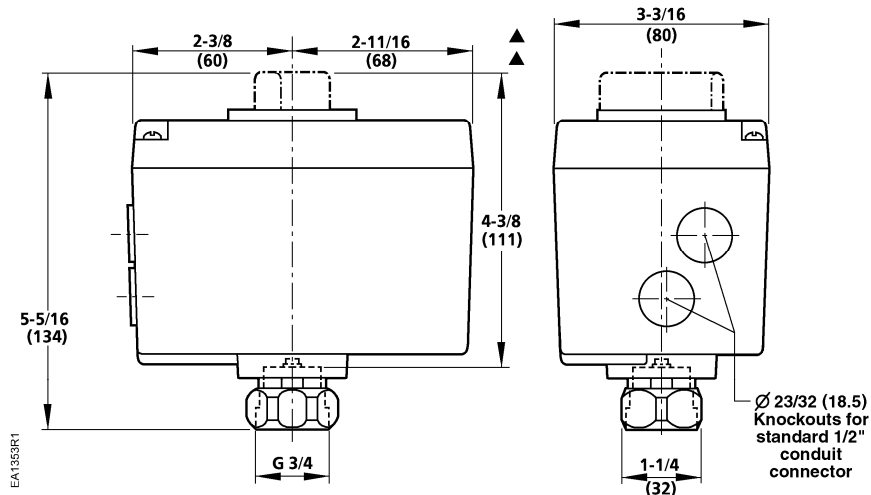
Terminal connection "G" is 24 Vac Hot (system potential) not ground (system neutral).

### SQD65U



- 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

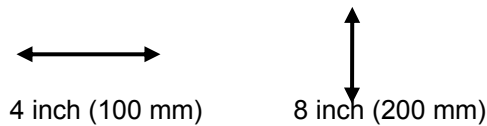
## Dimensions



**Figure 1. Dimensions of the SQD Series Actuator, Shown in Inches (Millimeters).**

## Service Envelope

Minimum access space recommended



**Figure 2. Dimensions in Inches (Millimeters).**

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