

## 599 Series Zone Valve

### 2-Way, 3-Way Zone Valve

### Thermic Actuators



**Description** 24 Vac/Vdc Zone Valve Thermic Actuator with a maximum stroke of 0.18-inch (4.5 mm).

- Features**
- AC/DC two-position control or PWM control
  - 270° visible position indication
  - Robust, no maintenance required
  - Friction-free
  - Two-wire connection
  - 3.3-foot (1 m) connecting cable
  - NEMA 3 (IP54)

**Application** For use with Siemens Industry, Inc.'s 1/10-inch (2.5 mm) stroke Zone valves.

### Product Numbers

Table 1.

Product Numbers	Voltage	Cable Length Feet (Meters)	Action
STA73U	24 Vac/Vdc	3.3 (1.0)	Normally Closed
STP73U			Normally Open

### 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.

### Ordering

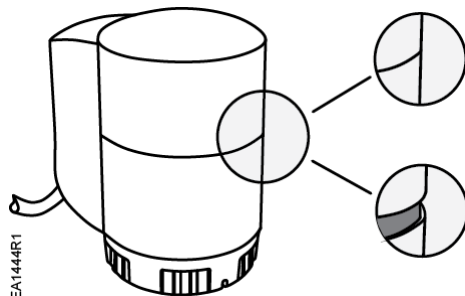
The actuator and valve body can be ordered as separate items or as an assembly. State the quantity, product number, and description.

**Example:** 1 STA73U Thermic actuator with 3.3-foot (1.0 m) cable.

<b>Specifications</b>	Supply voltage	24 Vac, 50 to 60 Hz or 24 Vdc Maximum voltage tolerance $\pm 20\%$
	Power consumption	Normal operation 2.5W On power-up 6 VA
<b>Power Supply</b>	Switch-on current (transient)	250 mA
	Primary fuse	External
<b>Control Signal</b>		On/off pulse width modulation (PWM)
<b>Product Data</b>	Stroke	Maximum 0.18-inch (4.5 mm)
	Positioning time @ 68°F (20°C)	270 seconds
	Manual adjustment	None
	Position when de-energized	
	STA73U	Actuator shaft extended, valve closed
	STP73U	Actuator shaft retracted, valve open
	Nominal force	22.5 lbf (100 N)
	Maintenance	None required
	Dimensions (H x W x D)	2.9 in x 2.6 in x 1.7 in (74 x 65 x 44 mm)
	Weight	0.40 lb (0.18 kg)
<b>Materials</b>	Cover and base	Polycarbonate
<b>Electrical Connection</b>	Connecting cable (fixed)	Stranded conductor 3.3 ft (1.0 m), 2 x 0.02-in <sup>2</sup> (0.50 mm <sup>2</sup> )
<b>Environmental Conditions</b>	Conditions of use	NEMA 3 (IP54)
	Permissible temperature of media in valve	34°F to 230°F (1°C to 110°C)
	Operation	
	Temperature	41°F to 122°F (5°C to 50°C)
	Humidity	< 85% rh
	Storage	
	Temperature	41°F to 122°F (5°C to 50°C)
	Humidity	5% to 100% rh
	Transport	
	Temperature	–4°F to 140°F (–20°C to 60°C)
	Humidity	< 95% rh
<b>Mounting</b>	Method	Bayonet-mount with adapter ring
	Orientation	Any, 360°
<b>Agency Approvals</b>		Conforms to CE requirements
<b>Mechanical Design</b>	The STA73U and STP73U solid expansion medium actuators have no rotating parts, and in the absence of friction, there is no noise and wear is kept to a minimum.	
<b>Operation</b>	The STA73U and STP73U Thermic Actuators are noise-free and maintenance-free. When the control signal is applied to the actuator, the temperature of the heating element rises, which causes the solid expansion medium to expand. It transfers its stroke directly to the installed valve.	
	The valve starts to open after preheating for approximately 1 minute if the heating element is switched on in a cold state (room temperature), and achieves the maximum stroke after another approximately 3-1/2 minutes. At power-off, the expansion element cools down and the spring closes the valve.	

**Mechanical Design,  
Continued**

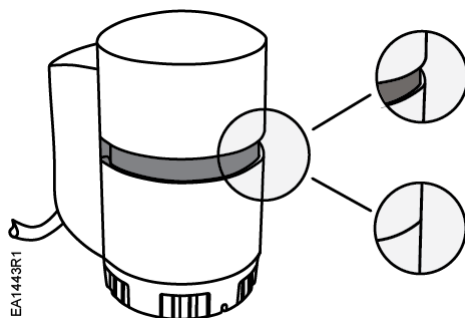
The actuator can be installed in any 24 Vac/Vdc control loop for two-position control or pulse width modulation (PWM) control).

**Two-position Control****Position and Movement  
Indication****STA73U**

In this position the STA73U actuator is de-energized. The actuator shaft is extended and the valve is closed.

In this position the STA73U actuator is connected to the power supply for at least 4-1/2 minutes. The actuator shaft is retracted and the valve is open.

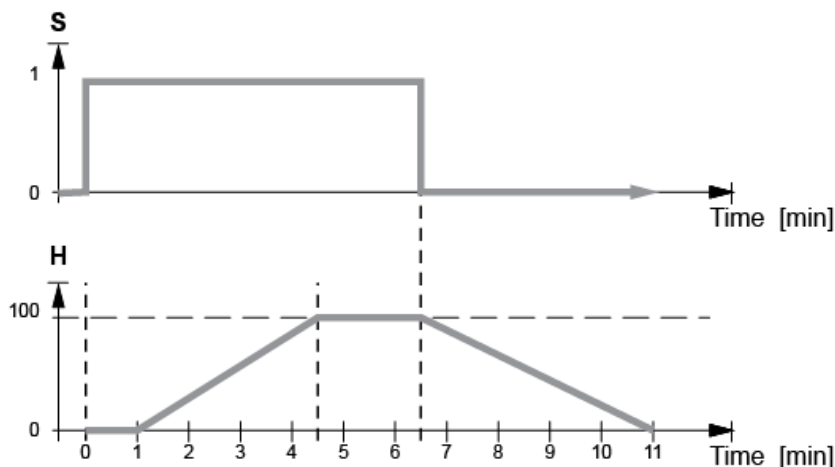
**Figure 1. STA73U  
Position and Movement Indication.**

**STP73U**

In this position the STP73U actuator is de-energized. The shaft is retracted and the valve is open.

In this position the STP73U actuator is connected to the power supply for at least 4-1/2 minutes. The actuator shaft is extended and the valve is closed.

**Figure 2. STP73U  
Position and Movement Indication.**

**Opening and Closing  
Times**

**S = Control Signal**

**H = Stroke in Percent**

Values at 68° F (20° C) Ambient Temperature

Positioning time depends on voltage and ambient temperature

**Figure 3. Opening and Closing Times.**

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## Mounting and Installation Notes

When the STA73U or STP73U Actuators are supplied separately from the valve, they can be assembled with just a few steps:

1. Remove the black actuator support ring (AL50) from the top of the valve. Discard the ring; it is no longer needed.
2. Thread the black bayonet nut on the valve and manually tighten by hand as tightly as possible.



**CAUTION:**

Do not use pipe wrenches, pliers, or other similar tools to tighten the bayonet nut or bayonet ring of the actuator. Hand-tighten only.

3. Place the actuator in position on the valve and bayonet nut, and manually tighten the bayonet ring on the actuator until it clicks twice.
4. Connect to operating voltage only after mounting.

Steps for dismounting:



**WARNING:**

Disconnect the power supply before proceeding.

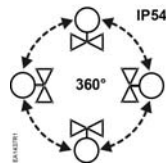
1. Disconnect the connection cable.
2. Wait six minutes until the actuator is cooled down.
3. Turn the actuator bayonet ring counter-clockwise for two clicks, to the end position.
4. Lift the actuator off the valve.

When dismantled, the actuator will be set automatically to the original position (factory setting).

**NOTE:** Occasionally, the actuator may be released from the valve together with the bayonet nut stuck in the actuator. To re-use the actuator, the actuator's stem must be reset to the original position (factory setting). To reset the stem, turn the actuator upside down and push the stem while simultaneously turning the bayonet ring counter-clockwise until it latches.

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## Mounting Positions



Actuators may be installed in any position (360°).

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## Maintenance

The actuator is maintenance-free.



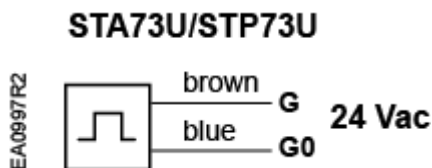
**WARNING:**

Disconnect the connecting cable from the operating voltage prior to replacing. Opening the actuator can cause irreparable damage. It may also result in injury from the strong, installed spring.

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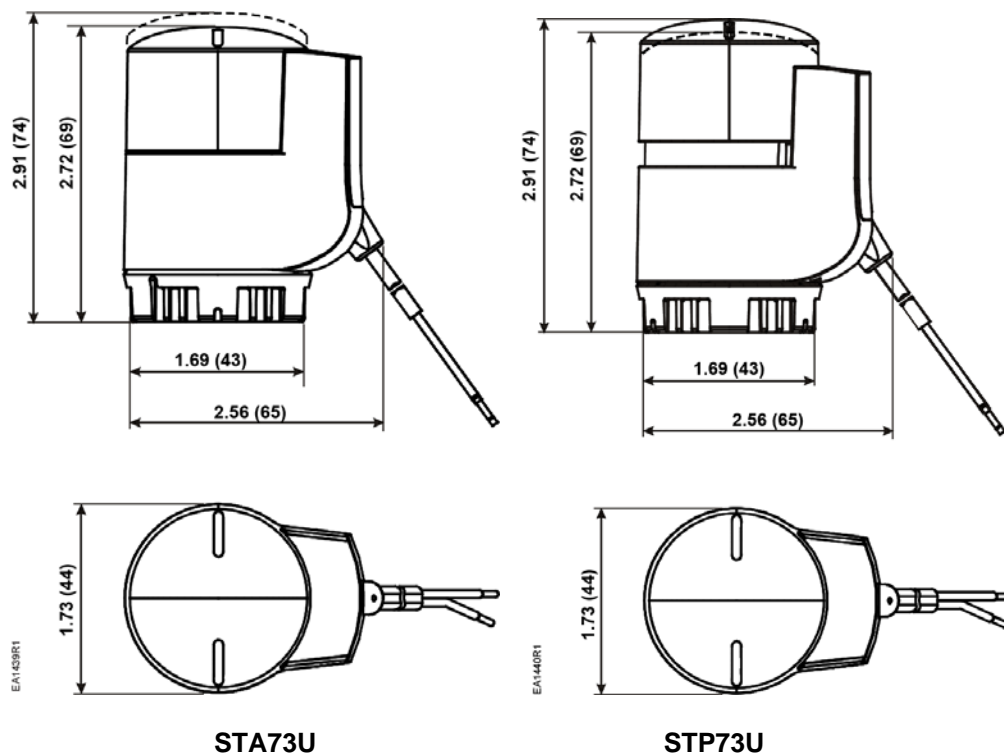
**Electrical  
Installation**

- Observe all local installation regulations.
- Install the connecting cable downwards so that it leads away from the actuator.
- Isolate the power supply. (For example, connect an automatic circuit breaker or switch fuse upstream of the control unit.)

**Wiring Diagram**

**NOTE:** G: positive  
G0: neutral

**Figure 4. Wiring Diagram.**

**Dimensions**

**Figure 5. Dimensions in Inches (Millimeters).**

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