

# TE-63xS Series Strap-Mount Temperature Sensors

## Installation Instructions

TE-631S-1

TE-636S-1

Part No. 24-4034-239, Rev. A

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### Applications

**IMPORTANT:** The TE-63xS Series Strap-Mount Temperature Sensors are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the sensor could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices such as supervisory or alarm systems or safety or limit controls intended to warn of, or protect against, failure or malfunction of the sensor.

### Installation

**IMPORTANT:** Do not install the TE-63xS Series Strap-Mount Temperature Sensor probe in ambient temperatures beyond the specified  $-50$  to  $220^{\circ}\text{F}$  ( $-46$  to  $104^{\circ}\text{C}$ ) temperature range. Installing the temperature sensor in ambient temperatures beyond this range may damage the unit and void the warranty.

### Dimensions

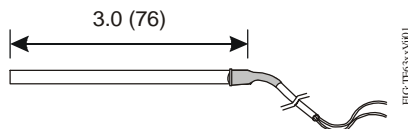


Figure 1: Sensor Dimensions, in. (mm)

### Mounting

#### Location Considerations

Consider the following mounting location guidelines:

- Avoid areas subject to excessive vibration, electrical noise, direct sunlight, or the effects of radiant heat.
- Keep electrical wiring as short as possible to minimize temperature error.

### Mounting the Sensor

See Figure 2 and mount the temperature sensor as follows:

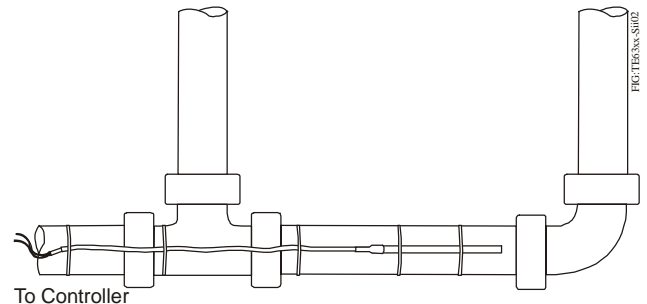


Figure 2: Installing the Strap-Mount Sensor

1. Mount the probe to the pipe using cable ties (three included) or adjustable pipe clamps. Use thermal conductive compound, F-1000-182 (order separately), or equivalent, between the sensor and pipe for best performance.

**Note:** Use Accessory Kit TE-6300-615 for pipe sizes larger than 2 in. (51 mm) and up to 10 in. (250 mm) and  $-40$  to  $220^{\circ}\text{F}$  ( $-40$  to  $104^{\circ}\text{C}$ ) temperature range.

**IMPORTANT:** If using adjustable metal pipe clamps, do not overtighten the clamps. Overtightening the clamps may damage the sensor or cable.


2. Wire the sensor to the controller.

### Wiring

For 1k ohm nickel temperature sensors, wire resistance can cause approximately  $1\text{F}^{\circ}$  ( $0.56\text{C}^{\circ}$ ) of error for every 250 ft (76 m) run of 18 AWG (1.0 mm diameter) wire, or every 100 ft (31 m) run of 22 AWG (0.6 mm diameter) wire. To minimize error due to field wiring, limit total resistance of all nickel temperature sensor wiring to 3 ohms.

The 10k ohm thermistor applications tolerate relatively long wiring before the wire resistance adds significantly to total resistance measured at the controller. As a general rule, a 150 ft (46 m) two-wire 18 AWG (1.0 mm diameter) run contributes 2 ohms of error, or less than 1F° (0.56C°) error over the sensor operating temperature range.

Refer to the appropriate controller documentation for recommended sensor wiring.

	<p><b>CAUTION: Risk of Property Damage.</b> Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.</p>
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**IMPORTANT:** Make all wiring connections in accordance with local, national, and regional regulations.

**Repair Information**

If the TE-63xS Series Strap-Mount Temperature Sensor fails to operate within its specifications, replace the unit. For a replacement sensor, contact the nearest Johnson Controls® representative.

**Technical Specifications**

**TE-63xS Series Strap-Mount Temperature Sensors**

<b>Models</b>	<b>TE-631S-1</b>	1k ohm Thin-Film Nickel Temperature Sensor
	<b>TE-636S-1</b>	10k ohm Thermistor Johnson Controls Type II Temperature Sensor
<b>Sensor Reference Resistance</b>	<b>1k ohm Nickel</b>	1k ohms at 70°F (21°C)
	<b>10k ohm Thermistor</b>	10.0k ohms at 77°F (25°C)
<b>Sensor Accuracy</b>	<b>1k ohm Nickel</b>	±0.34F° at 70°F (±0.19C° at 21°C)
	<b>10k ohm Thermistor</b>	±0.9F° (±0.5C°) in the Range: 32 to 158°F (0 to 70°C)
<b>Sensor Temperature Coefficient</b>	<b>1k ohm Nickel</b>	Approximately 3 ohms/F° (5.4 ohms/C°)
	<b>10k ohm Thermistor</b>	Nonlinear Negative Temperature Coefficient, Johnson Controls Type II
<b>Electrical Connections</b>		22 AWG (0.6 mm Diameter) x 10 ft (3 m) Long Plenum-Rated Cable, White Leads
<b>Probe Materials</b>		1/4 in. (6.4 mm) Outside Diameter x 3 in. (76 mm) Stainless Steel
<b>Operating Temperature Limits</b>	<b>Cable</b>	-50 to 140°F (-46 to 60°C)
	<b>Probe</b>	-50 to 220°F (-46 to 104°C)

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*



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