Johnson Controls

TEP/TEA Series

Platinum Temperature Sensors and TQ-6000 Accessory Transmitter

Description

The TEP and TEA Series Platinum Temperature Sensors come in probe (TEP Series) and averaging (TEA Series) configurations with 100-ohm or 1,000-ohm elements. These sensors have metal electrical boxes and are designed for use with building automation systems and application specific controllers. Use them also whenever platinum is specified for general purpose temperature sensing applications.

Probe Sensors: The TEP Series Probe Sensors have platinum wire elements in bronze sheaths. Easily field-install them with TE-6001 Hardware Assemblies.

Averaging Sensors: The TEA Series Averaging Sensors are complete sensor/hardware assemblies. Each consists of a platinum equivalent averaging-type sensor, either 10 or 20 ft (305 or 610 cm) long, encased in an aluminum sheath attached to a handibox, and shipped with two element holders for easy mounting and wiring.

Transmitter: The TQ-6000 is a 2-wire current loop type transmitter that works with the 100-ohm platinum sensors to send a 4 to 20 mA temperature control signal long distances without the loss of accuracy due to lead wire resistance.

Features

- probe and averaging sensors available to cover a wide variety of applications
- current transmitter option allows longer wire runs
- metal electrical boxes provide an alternative to plastic for meeting code requirements
- sensor element options offer choice of 100 or 1,000 ohms

Applications

The TEP/TEA sensors can be used in a wide variety of general purpose temperature sensing applications or wherever platinum is specified.
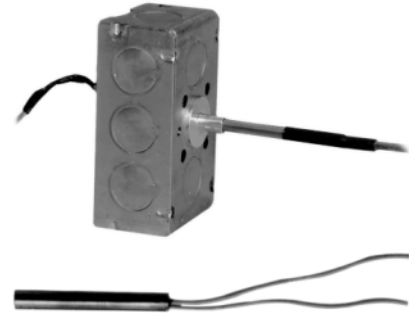
TEP/TEA Series Platinum Temperature Sensors

Repair Information

If the Platinum Temperature Sensors or TQ-6000 Accessory Transmitter fail to operate within its specifications, replace the unit. For a replacement unit, contact the nearest Johnson Controls® representative.

Selection Chart

Code Number	Description
TEP-J000000	Probe sensors, 100 ohms at 32°F (0°C)
TEP-L000000	Probe sensors, 1,000 ohms at 32°F (0°C)
TEA-J000000	Averaging sensors, 10 foot sensor length, 100 ohms at 32°F (0°C)
TEA-K000000	Averaging sensors, 20 foot sensor length, 100 ohms at 32°F (0°C)
TEA-L000000	Averaging sensors, 10 foot sensor length, 1,000 ohms at 32°F (0°C)
TEA-M000000	Averaging sensors, 20 foot sensor length, 1,000 ohm at 32°F (0°C)
TQ-6000-1	Transmitter, 2-wire, 4 to 20 mA

Accessories

Code Number	Description
TE-6001-8	Temperature element holder for use with all averaging sensors (nickel and platinum)

Technical Specifications

TEP/TEA Temperature Sensing Elements		
Elements		Platinum (or equivalent) resistance type
Accuracy		±1F° at 70°F (±0.56C° at 21.1°C)
Reference Resistance at 32°F (0°C)	100 ohms	TEP-J000000, TEA-J000000, TEA-K000000
	1,000 ohms	TEP-L000000, TEA-L000000, TEA-M000000
Temperature Range		-50 to 275°F (-46 to 135°C)
Shipping Weight	TEP-J/L000000	0.2 lb (0.09kg)
	TEA-J/L000000	1.0 lb (0.45kg)
	TEA-K/M000000	1.1 lb (0.5kg)

TQ-6000 Temperature Transmitter	
Output	4 to 20 mA DC scaled over the 0 to 100°F (-18 to 38°C) sensor range
Sensing Element	Requires 100 ohms (TEP/TEA Series Platinum or equivalent)
Calibration Accuracy	±0.1% of span at calibration temperature 32°F (0°C)
Adjustments	Zero and span, ±5% of span
Supply Voltage	8.5 to 35 VDC, voltage effect: ±0.001% of span per volt
Warmup Drift	±0.1% of span max. assuming V_{supply} = 24 VDC and R_{loop} = 250 ohms: stable within 30 minutes
Loop Resistance	The maximum allowable resistance of the signal-carrying loop (with load resistor R_{load} and extension wires) is calculated with the following formula: R_{loop} max = (V_{supply} -8.5) / 0.02 amps
Linearity	Referenced to actual sensor temperature (±0.1% of span)
Ambient Operating Temperature	32 to 122°F (0 to 50°C), calibrated at 75°F (23.9°C); Drift less than 0.007% per 1°F (0.56°C) per 1°C change in ambient temperature over usable range
Storage Temperature	-67 to 212°F (-55 to 100°C)