# TE-6300 Series Temperature Sensors

## Product Bulletin

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Refer to the QuickLIT website for the most up-to-date version of this document.

### Introduction

The TE-6300 Temperature Sensor line provides economical solutions for a wide variety of temperature sensing needs, including wall-mount, outdoor-air, duct, strap-mount, well-insertion, duct-averaging, and VAV Modular Assembly (VMA) flange-mount duct-probe applications. The TE-6300 line offers both a metal and a plastic enclosure for the most popular models.

Sensors are available in the following types:

- 1k ohm thin-film nickel
- 1k ohm nickel averaging
- 1k ohm thin-film platinum
- 100 ohm platinum equivalent averaging
- 1k ohm platinum equivalent averaging
- 2.2k (2,252) ohm thermistor
- 10k ohm thermistor, Johnson Controls® Type II

### Features and Benefits

Each sensor is packaged with the necessary mounting accessories to maximize ordering and installation ease and to reduce both commissioning time and cost.

- **Full Line of Versatile Sensors—**Supports all your temperature sensing needs from a single supplier: wall-mount, outdoor-air, duct, duct-averaging, strap-mount, well-insertion, and flange-mount duct-probe.
- **Single Assembly Ordering—**Simplifies ordering; provides a complete assembly in one box.
- **Models Featuring an Integral National Pipe Thread (NPT) Adaptor—**Increase sensor connection strength, which eliminates the need for a special adaptor.

**Figure 1: TE-6300 Series Temperature Sensors**

- **Models with a Stainless Steel Sensor Probe—**Protect the sensor while increasing corrosion resistance.
- **Metal Enclosure (TE-63xxE, TE-63xxM, and TE-63xxV Models)—**Meets plenum requirements.
- **Models Featuring a Retainer for the Sensor Holder—**Allow you to lock the sensor holder into the conduit box.
- **Brushed Stainless Steel Mounting Plate—**Offers a durable, aesthetically pleasing design.
- **Low Profile Flush Mount Design (TE-63xxF Models)—**Provides a tamper-proof installation ideally suited for schools, sporting complexes, retailers, prisons, and more.

## Product Overview

**IMPORTANT:** The TE-6300 Series Temperature Sensors are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the temperature 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 temperature sensor.

**IMPORTANT :** Le TE-6300 Series Temperature Sensors est destiné à transmettre des données entrantes à un équipement dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du temperature sensor risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du temperature sensor.

All TE-6300 Series Temperature Sensors are two-wire, passive, resistance-output devices.

### *TE-63xxA Models*

The TE-63xxA (adjustable length) models:

- provide a thermoplastic mounting flange and gland nut to adjust the length of the probe
- include two hex-head self-drilling screws for mounting
- come equipped with a 10 ft (3 m) plenum-rated cable with 1/4 in. (6.35 mm) internal thread insulated quick-connect terminations on leads

### *TE-63xxE Models*

The TE-63xxE (economizer mount) models:

- provide a stainless steel mounting flange
- include two hex-head self-drilling screws for mounting
- meet UL 1995 plenum use requirements

### *TE-63xxF Models*

The TE-63xxF (flush mount) models:

- provide a low profile when installed in an electrical box
- thermally isolate sensor from the wall with a foam pad
- offer a rugged stainless steel cover
- provide 22 AWG (0.6 mm diameter) lead wires with low voltage installation

### *TE-63xxM Models*

The TE-63xxM (metal enclosure) models:

- come with a corrosion-protected steel enclosure with a 0.88 in. (22 mm) hole for a 1/2 in. (12.7 mm) conduit fitting
- include two hex-head self-drilling screws for mounting the duct and duct-averaging models
- offer either a direct-mount or 1/2-14 NPT threaded well sensor holder for mounting in TE-6300W Series Thermowells (well models; order the thermowell separately)
- provide optional well sensor holders (order separately) to mount duct models in thermowells
- meet UL 1995 plenum use requirements
- offer an optional accessory kit (order separately) to replace plastic hole plug and wiring bushing to meet International Mechanical Code (IMC) requirements

### *TE-63xxP Models*

The TE-63xxP (plastic enclosure) models:

- provide a thermoplastic conduit box with 1/2-14 internal NPT for connecting to conduit
- provide aluminum mounting plate and 1/2-14 internal NPT hub mounting options for the duct and duct-averaging models
- use the 1/2-14 internal NPT to mount the outdoor air models directly to rigid conduit
- include sensor holders to mount duct models in thermowells (order thermowell separately)
- offer an optional accessory metal cover and gasket kit (order separately) to replace the plastic cover to meet UL 1995 plenum use requirements
- include a replaceable sensing probe on duct-probe, outdoor-air, and well-insertion models

### *TE-63x4P Wall Mount Models*

The TE-63x4P (plastic enclosure) models:

- come with a white thermoplastic ventilated cover with a brushed aluminum face plate and a steel mounting plate for surface mounting
- include faceplates for both horizontal and vertical mounting
- offer an accessory mounting kit for mounting to a standard electrical box
- offer optional covers

### *TE-63xS Models*

The TE-63xS (strap-mount) models:

- provide a 1/4 in. (6.35 mm) diameter stainless steel probe without an enclosure
- include three cable ties for mounting to pipe up to 2-5/8 in. (67 mm) in diameter
- come equipped with a 10 ft (3 m) plenum-rated cable
- meet UL 1995 plenum use requirements
- offer an accessory mounting kit for mounting to a pipe up to 11 in. (280 mm) in diameter

### *TE-63xxV Models*

The TE-63xxV (VAV flange mount) models:

- provide a stainless steel mounting flange with two hex-head self-drilling mounting screws
- come equipped with a 10 ft (3 m) plenum-rated cable with 1/4 in. (6.35 mm) internal thread insulated quick-connect terminations on leads
- meet UL 1995 plenum use requirements

### *Additional Product Information*

See Figure 2 for nickel and platinum sensor Resistance/Temperature (R/T) response characteristics. See Table 1 for all sensor Temperature/Resistance values.

**Note:** Figure 2 shows 1k ohm platinum sensor characteristics. For 100 ohm platinum sensor characteristics, divide the resistance value by 10.

See Figure 3 for 2.2k and 10k ohm thermistor sensor R/T response characteristics.

**Figure 2: Nickel and Platinum Temperature Response**

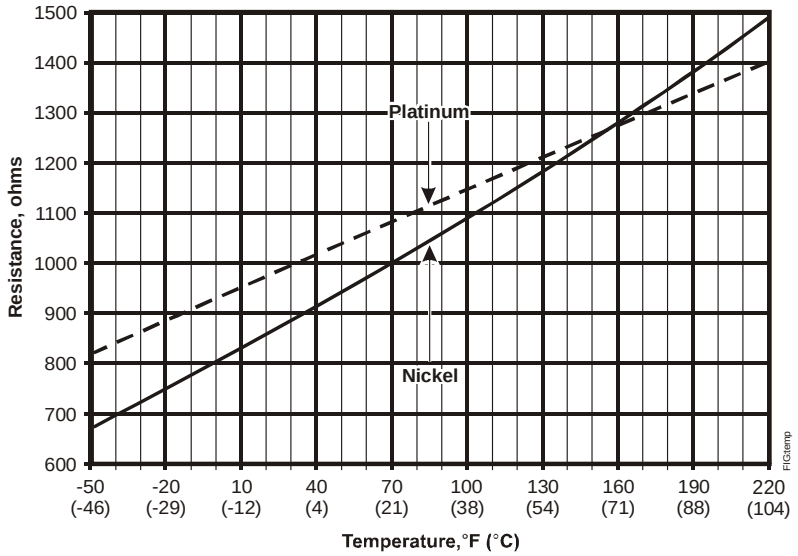



**Figure 3: Thermistor Temperature Response**

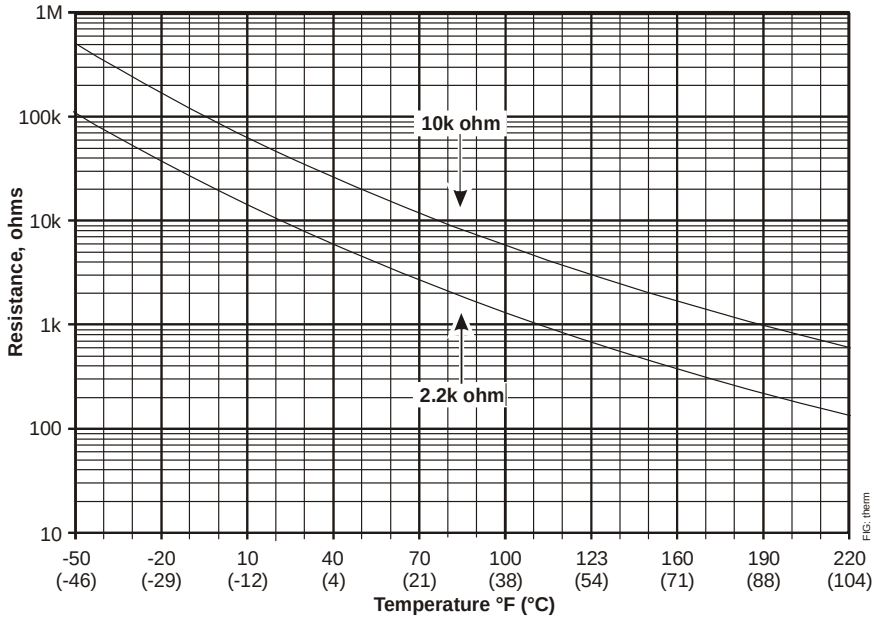


**Table 1: Nominal Values for: Nickel (Ni), Platinum (Pt)[1], and Thermistor Sensors**

| Temperature | | Resistance (ohms) | | | |
|---|---|---|---|---|---|
| °F | °C | 1k Ni | 1k Pt[1] | Thermistor | |
| | | | | 2.2k | 10k |
| -50 | -46 | 674 | 821 | 109,905 | 489,981 |
| -40 | -40 | 699 | 843 | 75,487 | 366,185 |
| -30 | -34 | 725 | 865 | 52,584 | 233,990 |
| -20 | -29 | 751 | 887 | 37,123 | 165,085 |
| -10 | -23 | 777 | 908 | 26,544 | 117,978 |
| 0 | -18 | 803 | 930 | 19,210 | 85,349 |
| 10 | -12 | 830 | 952 | 14,063 | 62,464 |
| 20 | -7 | 858 | 974 | 10,408 | 46,221 |
| 30 | -1 | 885 | 996 | 7,783 | 34,562 |
| 40 | 4 | 914 | 1,017 | 5,879 | 26,103 |
| 50 | 10 | 942 | 1,039 | 4,482 | 19,903 |
| 60 | 16 | 971 | 1,061 | 3,449 | 15,313 |
| 70 | 21 | 1,000 | 1,082 | 2,676 | 11,883 |
| 80 | 27 | 1,030 | 1,104 | 2,094 | 9,298 |
| 90 | 32 | 1,060 | 1,125 | 1,651 | 7,333 |
| 100 | 38 | 1,090 | 1,147 | 1,312 | 5,827 |
| 110 | 43 | 1,121 | 1,168 | 1,050 | 4,663 |
| 120 | 49 | 1,152 | 1,190 | 846 | 3,757 |
| 130 | 54 | 1,184 | 1,211 | 686 | 3,048 |
| 140 | 60 | 1,216 | 1,232 | 560 | 2,488 |
| 150 | 66 | 1,248 | 1,254 | 460 | 2,043 |
| 160 | 71 | 1,281 | 1,275 | 380 | 1,687 |
| 170 | 77 | 1,314 | 1,296 | 315 | 1,401 |
| 180 | 82 | 1,348 | 1,317 | 263 | 1,170 |
| 190 | 88 | 1,382 | 1,339 | 221 | 982 |
| 200 | 93 | 1,417 | 1,360 | 186 | 828 |
| 210 | 99 | 1,452 | 1,381 | 158 | 701 |
| 220 | 104 | 1,487 | 1,402 | 134 | 597 |

1. For 100 ohm platinum sensors, divide resistance values by 10.

## Applications

### *Averaging Sensing*

Series-parallel wiring arrangements of four (2 x 2), nine (3 x 3), sixteen (4 x 4), or more sensors provide an average temperature reading in an area or large duct when one sensor cannot provide a representative reading. (See Figure 4.)

A series-parallel arrangement requires the same number of parallel-connected sensors as there are series-connected sensors. For example:

- with four sensors, connect two parallel legs with two sensors in series in each leg
- with nine sensors, connect three parallel legs with three sensors in series in each leg

All sensors in a series-parallel network must be of the same sensor type and value. For example, use all 100 ohm platinum or all 1k ohm nickel sensors.

**Figure 4: Nine-Sensor Series-Parallel Wiring**

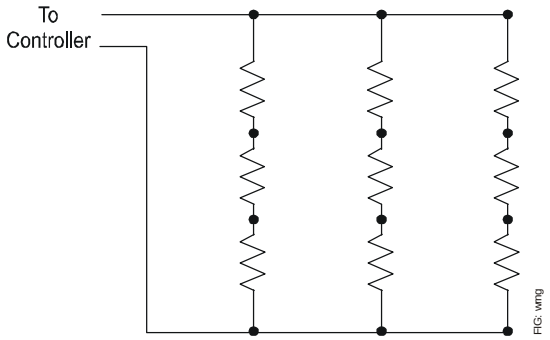
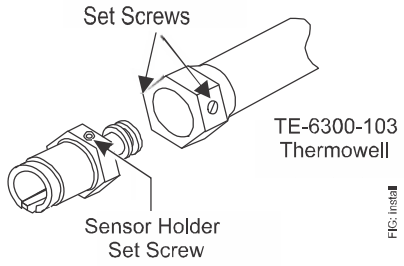


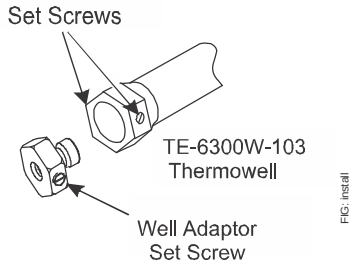
Figure 5 through Figure 8 illustrate installation of sensor holders and well adaptors.

**Figure 5: Installing the TE-63xAP-1 Sensor Holder**



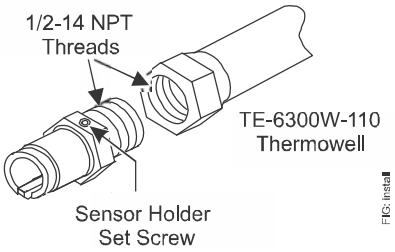

- sensor model TE-63xAP-1
- threadless sensor holder/well adaptor
- 6 in. (150 mm) probe

**Figure 6: Installing the TE-63xAM-1 Well Adaptor**



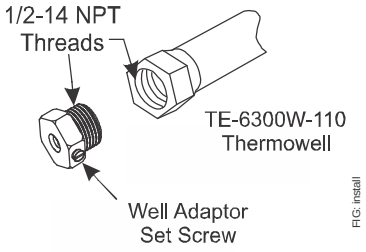

- sensor model TE-63xAM-1
- threadless well adaptor
- 6 in. (150 mm) probe

**Figure 7: Installing the TE-63x2P-1 Sensor Holder**




- sensor model TE-63x2P-1
- 1/2-14 NPT threaded sensor holder/well adaptor
- 8 in. (200 mm) probe

**Figure 8: Installing the TE-63x2M-1 Well Adaptor**




- sensor model TE-63x2M-1
- 1/2-14 NPT threaded well adaptor
- 8 in. (200 mm) probe

**Table 2: TE-6300 Series Temperature Sensor Applications (Part 1 of 2)**

| Application | Nominal Probe Length, in. (mm) | Sensor Type | Application Notes |
|---|---|---|---|
| **Duct Probe** | 2 (51)<br>4 (102)<br>6 (152)<br>8 (203)<br>12 (305)<br>18 (457) | 1k ohm thin-film nickel<br>1k ohm thin-film platinum<br>2.2k ohm thermistor<br>10k ohm thermistor type II | • Ideal in freezer lockers or for mounting outside of the sensed area.<br>• Available with plastic enclosure, metal enclosure, flange mount, or with mounting bracket for adjustable length.<br>• Use TE-63xxE, TE-63xxM, or TE-63xxV models for plenum applications.<br>• Use TE-6300-613 Accessory Kit with TE-63xxM models to meet IMC requirements.<br>• Use TE-6001-13 Metal Cover and Gasket Kit with TE-63xxP models to meet UL 1995 plenum requirements.<br>• Order an optional TE-63xxP model accessory: 12 in. (300 mm) probe. |
| **Duct-Averaging Element** | 8 ft (2.4 m)<br>10 ft (3 m)<br>17 ft (5.2 m)<br>20 ft (6.1 m) | 1k ohm nickel wire<br>100 ohm platinum equivalent wire<br>1k ohm platinum equivalent wire | • Use to sense duct temperature where stratification can occur, such as mixed air ducts.<br>• Duct-averaging models come in three styles: plastic enclosure, metal enclosure, or flange mount.<br>• Use about 1 ft (0.3 m) of sensor per sq ft (0.09 $m^2$) of duct cross section.<br>• Use a series-parallel sensor network to cover larger ducts.<br>• Use a TE-6001-8 Element Holder (recommended) when installing an averaging sensor in a duct.<br>• Use TE-63xxM or TE-63xxV models for plenum-rated applications.<br>• Use TE-6300-613 kit with TE-63xxM models to meet IMC requirements.<br>• Use the TE-6001-13 Metal Cover and Gasket Kit with TE-63xxP models to meet UL 1995 plenum requirements. |
| **Outdoor Air** | 3 (76) | 1k ohm thin-film nickel<br>1k ohm thin-film platinum<br>2.2k ohm thermistor<br>10k ohm thermistor, type II | • Use to sense outside ambient temperature to determine efficient heating and cooling strategies.<br>• Mount the sensor out of direct sunlight and away from exhaust vents or equipment that can cause inaccurate temperature sensing. |
| **Strap-Mount** | 3 (76) | 1k ohm thin-film nickel<br>1k ohm thin-film platinum<br>10k ohm thermistor, type II | • Clamp the probe directly to a pipe or the device to be sensed.<br>• Mount the probe away from fans or radiant heat that can affect measurement of the sensed device.<br>• Use for plenum applications.<br>• Order an accessory mounting kit or use readily available hardware for pipe up to 11 in. (280 mm) in diameter. |
| **Wall Mount** | N/A | 1k ohm thin-film nickel<br>1k ohm thin-film platinum<br>2.2k ohm thermistor | • Use to sense room or space temperature.<br>• Order an accessory cover with a thermometer or to match the style of existing installations.<br>• Mount the sensor on an inside wall, out of direct sunlight and away from radiant heat. |
| **Wall Plate Flush Mount** | N/A | Flush mount 1k ohm nickel sensor<br>Flush mount 1k ohm platinum sensor<br>Flush mount 10k ohm NTC sensor | • Do not install the flush mount sensor in temperatures beyond 0 to 40°C.<br>• Use copper conductors only. Refer to installation diagrams for recommended wiring lengths. |

**Table 2: TE-6300 Series Temperature Sensor Applications (Part 2 of 2)**

| Application | Nominal Probe Length, in. (mm) | Sensor Type | Application Notes |
|---|---|---|---|
| **Well Insertion Probe** | 6 (152)<br>8 (203) | **TE-63xxM**<br>1k ohm thin-film nickel<br>1k ohm thin-film platinum<br>2.2k ohm thermistor<br>10k ohm thermistor type II | • Metal enclosure.<br>• Mount the thermowell at an angle so condensation runs out of the well. If not possible, seal the well adaptor and wiring end of the sensor probe with (room temperature vulcanization) RTV silicone sealant.<br>• Use TE-63xxM models to meet UL 1995 plenum use applications.<br>• No separate well adaptor to order when using recommended thermowell and sensor model combinations.<br>• Threaded sensor holder has 1/2-14 NPT threads; threadless holder accommodates set screw-type wells.<br>• Order TE-63x2M-1, which includes a 1/2-14 NPT adaptor for TE-6300W-110, or retrofit applications of WZ-1000-2 and WZ-1000-4 Thermowells.<br>• Order TE-63xAM-2 for use with direct-mount thermowells TE-6300W-101 and TE-6300W-102.<br>• Order TE-63xAM-1, which includes a threadless adaptor for retrofit applications of TE-6300W-103 and WZ-1000-5 Thermowells.<br>• Order compatible thermowells using Table 4 and Table 5. |
| | | **TE-63xxP**<br>1k ohm thin-film nickel<br>1k ohm thin-film platinum<br>2.2k ohm thermistor | • Plastic enclosure.<br>• Mount the thermowell at an angle so condensation runs out of the well. If not possible, seal the sensor holder and the wiring end of the sensor probe with RTV silicone sealant.<br>• Use TE-6001-13 Metal Cover and Gasket Kit with TE-63xxP models to meet UL 1995 plenum requirements.<br>• Use the accessory 12 in. (305 mm) probe with the TE-63xxP Sensor in longer wells.<br>• No separate well adaptor to order when using recommended thermowell and sensor model combinations.<br>• Threaded sensor holder has 1/2-14 NPT threads; threadless holder accommodates set screw-type wells.<br>• Order TE-63x2P-1, which includes a 1/2-14 NPT adaptor for TE-6300W-110, or retrofit applications of WZ-1000-2 and WZ-1000-4 Thermowells.<br>• Order TE-63xAP-1, which includes a threadless adaptor for TE-6300W-103 or retrofit applications of WZ-1000-5 Thermowells.<br>• Order compatible thermowells using Table 4 and Table 6. |

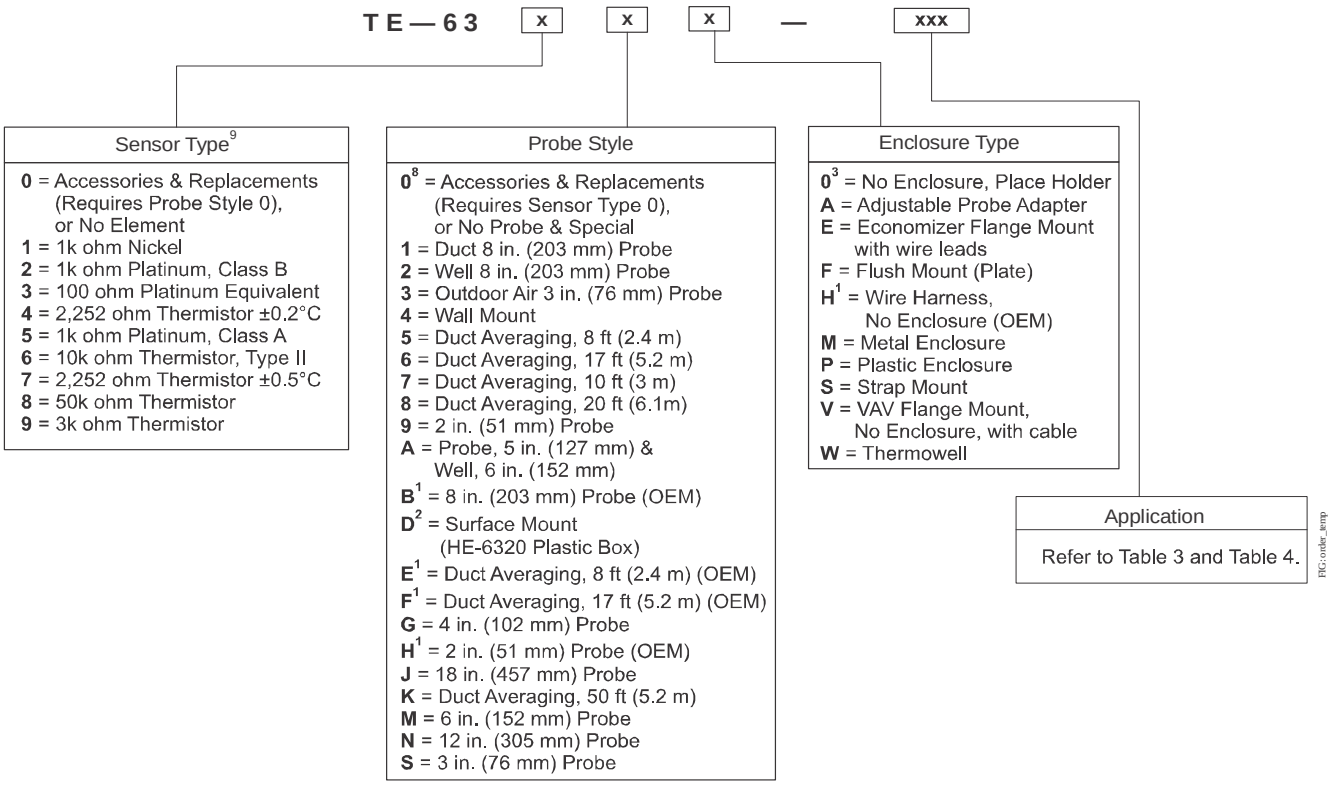
## Ordering Information

To order a TE-6300 Series Temperature Sensor, contact the nearest Johnson Controls representative. Specify the desired sensor product code number from Table 3 and accessories from Table 4, depending on the model.

**Note:** Use the TE-63xxE, TE-63xxM, or TE-63xxV model to meet plenum requirements where UL1995 rating is accepted, or replace the existing plastic cover on the TE-63xxP models with the TE-6001-13 Metal Cover and Gasket Kit.

Use the TE-63xxM model and a TE-6300-613 Accessory Kit to replace the plastic bushing to meet International Mechanical Code (IMC) requirements.

**Figure 9: Ordering Template**




**Note:** Not all possible combinations are available. See Table 3 for available models.

**Table 3: Product Ordering (Part 1 of 2)**

| Sensor | Mounting Style | Probe Length, in. (mm) | Product Code Number |
|---|---|---|---|
| **Nickel (1k ohm)** | Adjustable | 8 (203) | TE-6311A-1 |
| | Averaging[1] | 8 ft (2.4 m) | TE-6315M-1 |
| | | | TE-6315P-1 |
| | | | TE-6315V-2 |
| | | 17 ft (5.2 m) | TE-6316M-1 |
| | | | TE-6316P-1 |
| | | | TE-6316V-2 |
| | Duct | 4 (102) | TE-631GM-1 |
| | | 8 (203) | TE-6311M-1 |
| | | | TE-6311P-1 |
| | | 18 (457) | TE-631JM-1 |
| | Flange (VAV) | 4 (102) | TE-631GV-2 |
| | | 8 (203) | TE-6311V-2 |
| | Flush | N/A | TE-6310F-0 |
| | | | TE-6310F-1 |
| | Outdoor air | 3 (76) | TE-6313P-1 |
| | Strap-mount | 3 (76) | TE-631S-1 |
| | Wall[2] | N/A | TE-6314P-1 |
| | Well | 6 (152) | TE-631AM-1[3] |
| | | | TE-631AM-2 |
| | | | TE-631AP-1 |
| | | 8 (203) | TE-6312M-1 |
| | | | TE-6312P-1 |
| **Platinum (1k ohm)** | Adjustable | 8 (203) | TE-6351A-1 |
| | Duct | 4 (102) | TE-635GM-1 |
| | | 8 (203) | TE-6351M-1 |
| | | | TE-6351P-1 |
| | | 18 (457) | TE-635JM-1 |
| | Flange (VAV) | 4 (102) | TE-635GV-2 |
| | | 8 (203) | TE-6351V-2 |
| | Flush | N/A | TE-6350F-0 |
| | | | TE-6350F-1 |
| | Outdoor air | 3 (76) | TE-6353P-1 |
| | Strap-mount | 3 (76) | TE-635S-1 |
| | Wall[2] | N/A | TE-6324P-1 |
| | Well | 6 (152) | TE-635AM-1[3] |
| | | | TE-635AM-2 |
| | | | TE-635AP-1 |
| | | 8 (203) | TE-6352M-1 |
| | | | TE-6352P-1 |

**Table 3: Product Ordering (Part 2 of 2)**

| Sensor | Mounting Style | Probe Length, in. (mm) | Product Code Number |
|---|---|---|---|
| **Platinum Equivalent** | 1k ohm averaging[1] | 10 ft (3 m) | TE-6327P-1 |
| | | 20 ft (6.1 m) | TE-6328P-1 |
| | 100 ohm averaging[1] | 10 ft (3 m) | TE-6337P-1 |
| | | 20 ft (6.1 m) | TE-6338P-1 |
| **Thermistor (2.2k ohm)** | Adjustable | 8 (203) | TE-6341A-1 |
| | Duct | 8 (203) | TE-6341P-1 |
| | Flange (VAV) | 4 (102) | TE-634GV-2 |
| | | 8 (203) | TE-6341V-2 |
| | Outdoor air | 3 (76) | TE-6343P-1 |
| | Wall[2] | N/A | TE-6344P-1 |
| | Well | 6 (152) | TE-634AM-2 |
| | | 8 (203) | TE-6342M-1 |
| **Thermistor (10k ohm) Type II** | Adjustable | 8 (203) | TE-6361A-1 |
| | Duct | 4 (102) | TE-636GM-1 |
| | | 8 (203) | TE-6361M-1 |
| | | | TE-6361P-1 |
| | | 18 (457) | TE-636JM-1 |
| | Flange (VAV) | 4 (102) | TE-636GV-2 |
| | | 8 (203) | TE-6361V-2 |
| | Flange (economizer) | 2 (51) | TE-6369E-2 |
| | | 6 (152) | TE-636ME-2 |
| | | 8 (203) | TE-6361E-2 |
| | | 12 (305) | TE-636NE-2 |
| | Flush | N/A | TE-6360F-0 |
| | | | TE-6360F-1 |
| | Outdoor air | 3 (76) | TE-6363P-1 |
| | Strap-mount | 3 (76) | TE-636S-1 |
| | Well | 6 (152) | TE-636AM-1[3] |
| | | | TE-636AM-2 |
| | | 8 (203) | TE-6362M-1 |

1. Two TE-6001-8 Element Holders come with the platinum equivalent averaging sensors. Order separately to use with a nickel averaging sensor.
2. Order the TE-1800-9600 Mounting Hardware separately to mount the wall unit to a wallbox.
3. TE-631AM-1, TE-635AM-1, and TE-636AM-1 include TE-6300-612 Threadless Brass Sensor Holder/Well Adaptor for retrofit to TE-6300W-103 or WZ-1000-5 Thermowells.

**Table 4: Optional Accessories and Replacement Parts[1]**

| Product Code Number | Description |
|---|---|
| **F-1000-182** | Thermal conductive grease for element wells (8 oz. [0.23 kg]) |
| **T-4000-119** | Allen head tool for wall mount cover screws (order in multiples of 30) |
| **TE-1800-9600** | Mounting hardware for mounting the wall-mount unit to a wall box |
| **TE-6001-8** | Averaging sensor mounting bracket (order in multiples of ten) |
| **TE-6001-13** | Metal cover and gasket kit (order in multiples of five) |
| **TE-6300-101** | 12 in. (305 mm) 1k ohm nickel probe (cut to an appropriate length)[2] |
| **TE-6300-103** | 1/2-14 NPT plastic sensor holder without retainer (order in multiples of ten) |
| **TE-6300-105** | 12 in. (305 mm) 1k ohm platinum Class A probe (cut to an appropriate length)[2] |
| **TE-6300-601** | 8 in. (203 mm) 1k ohm nickel probe |
| **TE-6300-603** | 3 in. (76 mm) 1k ohm nickel probe |
| **TE-6300-605** | 1/2-14 NPT threaded plastic sensor holder/well adaptor with retainer (order in multiples of ten) |
| **TE-6300-606** | 8 in. (203 mm) 2.2k ohm thermistor probe |
| **TE-6300-607** | 3 in. (76 mm) 2.2k ohm thermistor probe |
| **TE-6300-611** | 1/2-14 NPT threaded brass sensor holder/well adaptor (order in multiples of ten) |
| **TE-6300-612** | Threadless brass sensor holder/well adaptor (order in multiples of ten) |
| **TE-6300-613** | IMC kit with metal plugs and clamp connector (order in multiples of ten) |
| **TE-6300-614** | Cable tie mounting kit, 0.50 to 2.625 in. (12.7 to 66.7 mm) bundle diameter (order in multiples of ten) |
| **TE-6300-615** | Cable tie mounting kit, 11 in. (280 mm) maximum bundle diameter |
| **TE-6300-616** | 8 in. (203 mm) 1k ohm platinum Class A probe |
| **TE-6300-617** | 3 in. (76 mm) 1k ohm platinum Class A probe |
| **TQ-6000-1** | 4 to 20 mA output transmitter for use with the 100 ohm platinum sensor |
| **TE-6300W-101[3]** | Thermowell, brass with copper bulb, 2.38 in. (60.5 mm) immersion depth, with thermal grease, direct mount, no adaptor required, for use with 6 in. (150 mm) probe model TE-63xAM-2 |
| **TE-6300W-102[3]** | Thermowell, stainless steel, 2.38 in. (60.5 mm) immersion depth, without thermal grease, direct mount, no adaptor required, for use with 6 in. (150 mm) probe model TE-63xAM-2 |
| **TE-6300W-103** | Thermowell, brass with copper bulb, 2.38 in. (60.5 mm) immersion depth, with thermal grease, threadless adaptor required, for use with 6 in. (150 mm) probe models TE-63xAM-1 (adaptor included) and TE-63xAP-1 (adaptor included) |
| **TE-6300W-110** | Thermowell, stainless steel, 4.50 in. (114.3 mm) immersion depth, without thermal grease, 1/2-14 NPT adaptor required, for use with 8 in. (200 mm) probe models TE-63x2M-1 (adaptor included) and TE-63x2P-1 (adaptor included) |

1. For accessory usage, see Table 5, Table 6, and Table 7.
2. Cut 12 in. (305 mm) probes to a minimum of 3 in. (76 mm).
3. Direct-mount thermowells TE-6300W-101 and TE-6300W-102 can be used only with the TE-6300M Sensors.

**Table 5: Typical Accessory and Replacement Part Usage for TE-6300M Models**

| Product Code Number | Description | TE-6311M-1 | TE-6312M-1 | TE-6315M-1 | TE-6316M-1 | TE-631AM-1 | TE-631AM-2 | TE-631GM-1 | TE-631JM-1 | TE-6351M-1 | TE-6352M-1 | TE-635AM-2 | TE-635GM-1 | TE-635JM-1 | TE-6361M-1 | TE-6362M-1 | TE-636AM-2 | TE-636GM-1 | TE-636JM-1 | TE-634AM-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TE-6001-8** | Averaging sensor mounting bracket | | | X | X | | | | | | | | | | | | | | | |
| **TE-6300-611** | 1/2-14 NPT threaded brass sensor holder/well adaptor, for use with TE-6300W-110 (replacement part, included with TE-63x2M-1) | | X | | | | | | | | X | | | | | X | | | | |
| **TE-6300-612** | Threadless brass sensor holder/well adaptor, for use with TE-6300W-103 (included with TE-631AM-1) | | | | | X | X | | | | | X | | | | | X | | | X |
| **TE-6300-613** | IMC kit with metal plugs and clamp connector | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| **TE-6300W-101** | Thermowell, brass with copper bulb, 2.38 in. (60.5 mm) immersion depth, with thermal grease, direct mount, no adaptor required, for use with 6 in. (150 mm) probe | | | | | | X | | | | | X | | | | | X | | | X |
| **TE-6300W-102** | Thermowell, stainless steel, 2.38 in. (60.5 mm) immersion depth, without thermal grease, direct mount, no adaptor required, for use with 6 in. (150 mm) probe | | | | | | X | | | | | X | | | | | X | | | X |
| **TE-6300W-103** | Thermowell, brass with copper bulb, 2.38 in. (60.5 mm) immersion depth, with thermal grease, threadless adaptor required, for use with 6 in. (150 mm) probe (TE-631AM-1 includes adaptor) | | | | | X | | | | | | | | | | | | | | |
| **TE-6300W-110** | Thermowell, stainless steel, 4.50 in. (114.3 mm) immersion depth, without thermal grease, 1/2-14 NPT adaptor required, for use with 8 in. (200 mm) probe (TE-63x2M-1 includes adaptor) | | X | | | | | | | | X | | | | | X | | | | |

**Table 6: Typical Accessory and Replacement Part Usage for TE-6300P Models**

| Product Code Number | Description | TE-6311P-1 | TE-6312P-1 | TE-6313P-1 | TE-6314P-1 | TE-6315P-1 | TE-6316P-1 | TE-631AP-1 | TE-6324P-1 | TE-6327P-1 | TE-6328P-1 | TE-6337P-1 | TE-6338P-1 | TE-6341P-1 | TE-6343P-1 | TE-6344P-1 | TE-6351P-1 | TE-6352P-1 | TE-6353P-1 | TE-635AP-1 | TE-6361P-1 | TE-6363P-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **T-4000-119** | Allen head tool | | | | X | | | | X | | | | | | | X | | | | | | |
| **TE-1800-9600** | Mounting hardware | | | | X | | | | X | | | | | | | X | | | | | | |
| **TE-6001-8** | Averaging sensor mounting bracket | | | | | X | X | | | X | X | X | X | | | | | | | | | |
| **TE-6001-13** | Metal cover and gasket kit | X | X | X | | X | X | X | | X | X | X | X | X | X | | X | X | X | X | X | X |
| **TE-6300-101** | 12 in. (305 mm) 1k ohm nickel probe | X | | | | | | | | | | | | | | | | | | | | |
| **TE-6300-105** | 12 in. (305 mm) 1k ohm platinum Class A probe | | | | | | | | | | | | | | | | X | | | | | |
| **TE-6300-601** | 8 in. (203 mm) 1k ohm nickel probe | X | | | | | | | | | | | | | | | | | | | | |
| **TE-6300-603** | 3 in. (76 mm) 1k ohm nickel probe | | | X | | | | | | | | | | | | | | | | | | |
| **TE-6300-605** | 1/2-14 NPT threaded plastic sensor holder/ well adaptor with retainer, for use with TE-6300W-110 (replacement part, included with TE-63xxP-1) | X | X | | | X | X | | | X | X | X | X | X | | | X | X | | | X | |
| **TE-6300-606** | 8 in. (203 mm) 2.2k ohm thermistor probe | | | | | | | | | | | | | X | | | | | | | | |
| **TE-6300-607** | 3 in. (76 mm) 2.2k ohm thermistor probe | | | | | | | | | | | | | | X | | | | | | | |
| **TE-6300-616** | 8 in. (203 mm) 1k ohm platinum Class A probe | | | | | | | | | | | | | | | | X | | | | | |
| **TE-6300-617** | 3 in. (76 mm) 1k ohm platinum Class A probe | | | | | | | | | | | | | | | | | | X | | | |
| **TQ-6000-1** | 4 to 20 mA output transmitter | | | | | | | | | | | X | X | | | | | | | | | |
| **Thermowells** | | | | | | | | | | | | | | | | | | | | | | |
| **F-1000-182** | Thermal conductive grease (8 oz. [0.23 kg]) | | X | | | | | X | | | | | | | | | | X | | X | | |
| **TE-6300W-103** | Thermowell, brass with copper bulb, 2.38 in. (60.5 mm) immersion depth, with thermal grease, threadless adaptor required, for use with 6 in. (150 mm) probe (TE-63xAP-1 includes adaptor) | | | | | | | X | | | | | | | | | | | | X | | |
| **TE-6300W-110** | Thermowell, stainless steel, 4.50 in. (114.3 mm) immersion depth, without thermal grease, 1/2-14 NPT adaptor required, for use with 8 in. (200 mm) probe (TE-63x2P-1 includes adaptor) | | X | | | | | | | | | | | | | | | X | | | | |

**Table 7: Typical Accessory and Replacement Part Usage for TE-63xS Models**

| Product Code Number | Description |
|---|---|
| **F-1000-182** | Thermal conductive grease for element wells (8 oz. [0.23 kg]) |
| **TE-6300-614** | Cable tie mounting kit, 0.50 to 2.625 in. (12.7 to 66.7 mm) bundle diameter (order in multiples of ten) |
| **TE-6300-615** | Cable tie mounting kit, 11 in. (280 mm) maximum bundle diameter |

**Table 8: T-4000 Covers Available for the Wall-Mount TE-63x4P Series**

| Product Code Number | Horizontal Johnson Controls Logo | Vertical Johnson Controls Logo | Thermometer, with °F/°C Scale | Faceplate/Cover Color |
|---|---|---|---|---|
| **T-4000-2138**[1] | | | | Brushed aluminum/beige |
| **T-4000-2139** | X | | | |
| **T-4000-2140** | X | | X | |
| **T-4000-2144** | | X | | |
| **T-4000-2639** | X | | | Brown and gold/beige |
| **T-4000-2640** | X | | X | |
| **T-4000-2644** | | X | | |
| **T-4000-3139** | X | | | Brushed aluminum/white |
| **T-4000-3140** | X | | X | |
| **T-4000-3144** | | X | | |

1. Without Johnson Controls logo

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## Repair Information

If the TE-6300 Series Temperature Sensor fails to operate within its specifications, replace the unit. For a replacement temperature sensor, see Table 3 and contact the nearest Johnson Controls representative. For a replacement sensor probe for TE-63xxP duct, well, and outdoor-air models, see Table 4.

## Technical Specifications

### *TE-6300 Series Temperature Sensors (Part 1 of 3)*

| | | |
|---|---|---|
| **Sensor Reference Resistance** | 1k ohm nickel | 1k ohms at 70°F (21°C) |
| | 1k ohm nickel averaging | |
| | 1k ohm platinum | 1k ohms at 32°F (0°C) |
| | 100 ohm platinum averaging | 100 ohms at 32°F (0°C) |
| | 1k ohm platinum averaging | 1k ohms at 32°F (0°C) |
| | 2.2k ohm thermistor | 2,252 ohms at 77°F (25°C) |
| | 10k ohm thermistor | 10.0k ohms at 77°F (25°C) |
| **Sensor Accuracy** | 1k ohm nickel | ±0.34F° at 70°F (±0.19C° at 21°C) |
| | 1k ohm nickel averaging | ±3.4F° at 70°F (±1.9C° at 21°C) |
| | 1k ohm platinum Class A (TE-635xx) | EN 60751 Class A, ± [0.15 + 0.002 * \| T °C \|], ±0.19C° at 21°C (±0.35F° at 70°F) |
| | 100 ohm platinum Class A | |
| | 1k ohm platinum Class B (TE-632xx) | EN 60751 Class B, ± [0.30 + 0.005 * \| T °C \|], ±0.41C° at 21°C (±0.73F° at 70°F) |
| | 100 ohm platinum averaging | ±1.0F°at 70°F (±0.58C° at 21°C) |
| | 1k ohm platinum averaging | |
| | 2.2k ohm thermistor | ±0.36F° (±0.2C°) in the range: 32 to 158°F (0 to 70°C) |
| | 10k ohm thermistor | ±0.9F° (±0.5C°) in the range: 32 to 158°F (0 to 70°C) |
| **Sensor Temperature Coefficient (see Table 1)** | 1k ohm nickel | Approximately 3 ohms/F° (5.4 ohms/C°) |
| | 1k ohm nickel averaging | |
| | 1k ohm platinum | Approximately 2 ohms/F° (3.9 ohms/C°), 3,850 ppm/K |
| | 100 ohm platinum averaging | Approximately 0.2 ohms/F° (0.39 ohms/C°) |
| | 1k ohm platinum averaging | Approximately 2 ohms/F° (3.9 ohms/C°) |
| | 2.2k ohm thermistor | Nonlinear, negative temperature coefficient (NTC) |
| | 10k ohm thermistor | Nonlinear NTC, Johnson Controls Type II |
| **Electrical Connection** | TE-63xxE | 22 AWG (0.6 mm diameter) x 6 in. (152 mm) long |
| | TE-63xxM | |
| | TE-63xxP | |
| | TE-63xxF | 22 AWG (0.6 mm diameter) x 12 ft (3 m) braided copper wires, low voltage insulation, half-stripped ends |
| | TE-63xxP nickel averaging | 18 AWG (1.0 mm diameter) x 6 in. (152 mm) long |
| | TE-63xS | 22 AWG (0.6 mm diameter) x 10 ft (3 m) long plenum-rated cable |
| | TE-63xxA | 22 AWG (0.6 mm diameter) x 10 ft (3 m) long plenum-rated cable, with 2-position plug terminal block for 1/4 in. (6.35 mm) external tab terminals on 0.197 in. (5 mm) centers |
| | TE-63xxV | |

***TE-6300 Series Temperature Sensors (Part 2 of 3)***

| | | | |
|---|---|---|---|
| **Materials** | Probes | Nickel averaging:<br>Nickel averaging adaptor:<br>Platinum averaging probe:<br>All others: | 0.094 in. (2.4 mm) outside diameter (O.D.) copper tubing<br>0.25 in. (6.35 mm) O.D. brass<br>0.19 in. (4.8 mm) aluminum tubing<br>0.25 in. (6.35 mm) O.D. stainless steel |
| | TE-63xxA | Mounting adaptor plate and gland: | thermoplastic |
| | TE-63xxF | Flush mount: | stainless steel |
| | TE-63xxM | Enclosure:<br>Well sensor holder: | corrosion-protected steel<br>0.875 in. (22.2 mm) hex brass |
| | TE-63xxP | Conduit box and shield:<br>Mounting plate:<br>Sensor holder:<br>Wall mount base plate:<br>Wall mount cover:<br>Wall mount face plate: | rigid thermoplastic<br>aluminum<br>rigid thermoplastic<br>corrosion-protected steel<br>rigid thermoplastic (white)<br>brushed aluminum |
| | TE-63xxE | Mounting flange: | stainless steel |
| | TE-63xxV | | |
| **Operating Conditions** | TE-63xxA | | -50 to 140°F (-46 to 60°C) |
| | TE-63xxF | | 32 to 104°F (0 to 40°C) |
| | TE-63xxE | | -50 to 220°F (-46 to 104°C) |
| | TE-63xxM | | |
| | TE-63xxP | Enclosure:<br>Sensor probe: | -50 to 122°F (-46 to 50°C)<br>-50 to 220°F (-46 to 104°C) |
| | TE-63xS | Sensor probe:<br>Wire harness: | -50 to 220°F (-46 to 104°C)<br>-50 to 122°F (-46 to 50°C) |
| | TE-63xxV | | |
| **Shipping Weight** | TE-63xxA | | 0.2 lb (0.09 kg) |
| | TE-63xxE | | |
| | TE-63xxF | | 0.25 lb (113.4 kg) |
| | TE-63xxM | Duct averaging:<br>Duct mount:<br>Well insertion: | 0.9 lb (0.41 kg)<br>0.4 lb (0.18 kg)<br>0.5 lb (0.23 kg) |
| | TE-63xxP | Duct averaging:<br>Duct mount:<br>Outdoor air:<br>Wall mount:<br>Well insertion: | 0.5 lb (0.23 kg)<br>0.4 lb (0.18 kg)<br>0.5 lb (0.23 kg)<br>0.2 lb (0.09 kg)<br>0.35 lb (0.16 kg) |
| | TE-63xS | Strap mount: | 0.2 lb (0.09 kg) |
| | TE-63xxV | Duct averaging:<br>Duct mount: | 0.7 lb (0.32 kg)<br>0.2 lb (0.09 kg) |

***TE-6300 Series Temperature Sensors (Part 3 of 3)***

| | | | |
|---|---|---|---|
| **Dimensions (H x W x D)** | TE-63xxA | | 2.17 in. (55 mm) diameter plus 4 or 8 in. (102 or 203 mm) element |
| | TE-63xxE | Duct mount: | 2.5 x 1.50 in. (57 x 38 mm) plus 2, 6, 8, or 12 in. (51, 152, 203, or 305 mm) element |
| | TE-63xxF | Flush mount: | 4-1/2 x 2-3/4 in. (114 x 70 mm) |
| | TE-63xxM | Duct averaging: | 1.87 x 1.87 x 1.80 in. (47.5 x 47.5 x 45.8 mm) plus 8 or 17 ft (2.4 or 5.2 m) element |
| | | Duct mount: | 1.87 x 1.87 x 1.80 in. (47.5 x 47.5 x 45.8 mm) plus 4, 8, or 18 in. (102, 203, or 457 mm) element |
| | | Well insertion: | 1.87 x 1.87 x 1.80 in. (47.5 x 47.5 x 45.8 mm) plus 6 or 8 in. (152 or 203 mm) element |
| | TE-63xxP | Duct averaging: | 5.97 x 1.38 x 2.75 in. (152 x 35 x 70 mm) plus 8, 10, 17, or 20 ft (2.4, 3.0, 5.2, or 6.1 m) element |
| | | Duct mount: | 5.97 x 1.38 x 2.75 in. (152 x 35 x 70 mm) plus 6 or 8 in. (152 or 203 mm) probe |
| | | Outdoor air: | 5.97 x 3.47 x 4.46 in. (152 x 88 x 113 mm) |
| | | Wall mount: | 2.09 x 3.12 x 1.80 in. (53 x 79 x 46 mm) |
| | | Well insertion: | 5.97 x 1.38 x 2.75 in. (152 x 35 x 70 mm) plus 6 or 8 in. (152 or 203 mm) probe |
| | TE-63xS | Strap mount: | 0.25 in. (6.4 mm) diameter x 3.00 in. (76 mm) long |
| | TE-63xxV | Duct averaging: | 2.25 x 1.50 in. (57 x 38 mm) plus 8 or 17 ft (2.4 or 5.2 m) element |
| | | Duct mount: | 2.25 x 1.50 in. (57 x 38 mm) plus 4 or 8 in. (102 or 203 mm) element |

*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 shall not be liable for damages resulting from misapplication or misuse of its products.*

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