

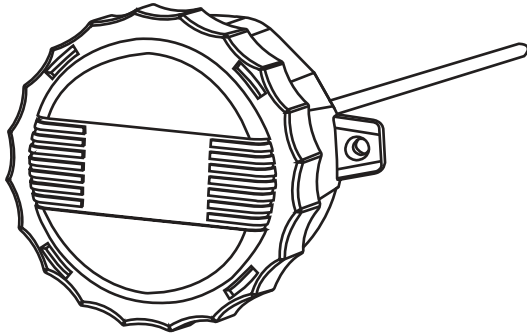
High Accuracy Duct Temperature Sensor HATSBME Installation Instructions

Introduction

The single point, rigid duct temperature sensor utilizes a high accuracy sensor that is encapsulated in 6.35 mm (0.25") OD, 304 series stainless steel probe and is available in various lengths. All probes provide excellent heat transfer, fast response and resistance to moisture penetration. A round ABS enclosure with mounting tabs and a twist off cover is provided for ease of installation.

Before Installation

Read these instructions carefully before installing and commissioning the temperature sensor. Failure to follow these instructions may result in product damage. Do not use in an explosive or hazardous environment, with combustible or flammable gases, as a safety or emergency stop device or in any other application where failure of the product could result in personal injury. **Take electrostatic discharge precautions during installation and do not exceed the device ratings.**



Mounting

The duct temperature sensor installs directly into any air duct with several lengths available for a wide range of duct widths/diameters. Please Select a suitable installation area in the middle of the duct wall. To achieve the best reading, do not place in an area where air stratification may be present. **Mount the sensor at least 1.5 m (5') in either direction from elbows, dampers, filters or other duct restrictions. Avoid areas where the sensor is exposed to vibrations or rapid temperature changes.**

Once a suitable spot is selected, drill a 9.5 - 12 mm (3/8" - 1/2") hole for the probe.

Slide the probe in the drilled hole until the enclosure is flush against the duct. The airflow direction is not important. Secure the enclosure to the duct with (2) #10 x 25 mm (1") self tapping screws (Not provided). Tighten screws until the enclosure is tight against the duct and that there is no movement of the enclosure as shown in Figure 1.

A foam gasket on the back of the enclosure provides a tight seal against any air leaks.

Remove cover by grasping firmly with hand and twisting approximately a quarter turn counter-clockwise. A lanyard is attached between the cover and the box to allow the cover to hang during wiring and set up as shown in Figure 3.

A 21 mm (13/16") hole is provided for connection of either a 12.77mm (0.5") EMT connector or a cable gland style connector as shown in Figure 3. Insert the EMT or cable gland connector through the hole and securely fasten using a locknut. See Figure 4. **Proper EMT/Cable Gland connectors and caulk/teflon tape must be used in order to maintain IP and/or NEMA rating. Drilling of enclosure will violate the IP and/or NEMA rating.**

To make wiring easier, the connector may be removed. To do so, grasp firmly on the side of the connector and pull outward as shown in Figure 3. Make wire connections as per the "Wiring" illustrations on Page 2.

Once wiring is complete, re-install cover and tighten by twisting clockwise.

Figure 1

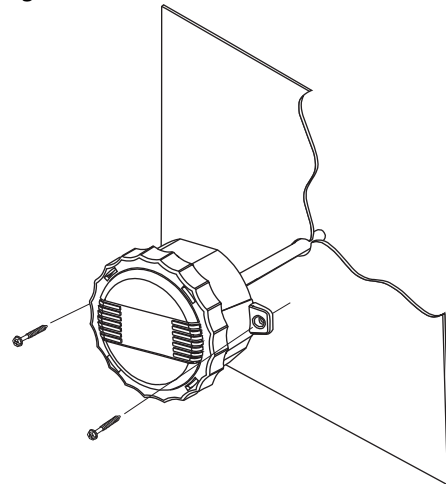


Figure 2

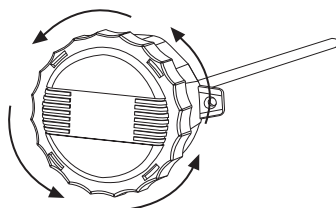


Figure 3

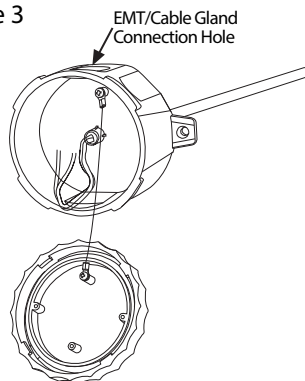
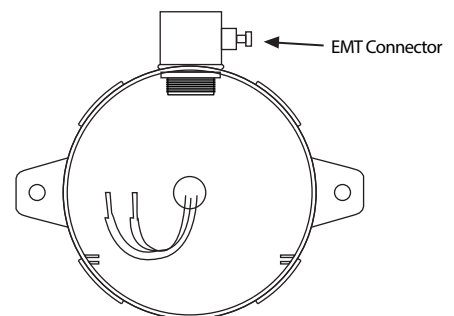
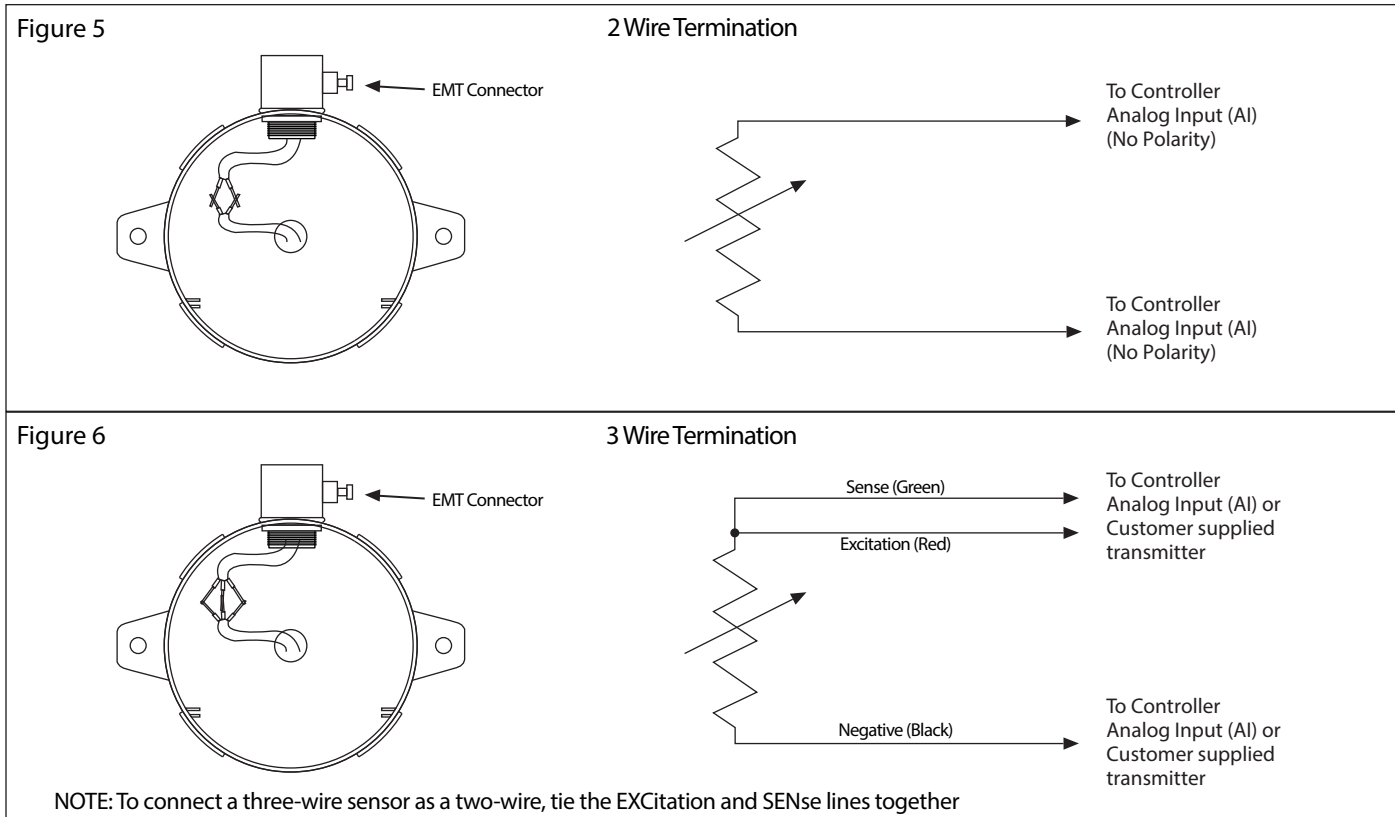


Figure 4



Wiring

- Use 18-24 AWG shielded wiring for all connections. **Do not locate the device wires in the same conduit with wiring used to supply inductive loads such as motors.** Make all connections in accordance with national and local codes.
- Pull at least six inches of wire into the enclosure, then complete the wiring connection according to the wiring diagrams below.
- All thermistors and most RTD's are a 2 wire hook up and are not polarity sensitive. See Figure 5.
- For 3 wire RTD's wire device as shown in Figure 6.
- **All connections should be made using either butt-splices or soldering. The use of wire nuts is not recommended.**



Specification:

Sensor Type:.....Various thermistors or RTD
 Accuracy **RTD Class A:** $\pm 0.15^{\circ}\text{C}$ @ 0°C
 RTD 1/3 DIN: $\pm 0.1^{\circ}\text{C}$ @ 0°C
 RTD 1/10 DIN: $\pm 0.03^{\circ}\text{C}$ @ 0°C
 NTC Thermistor Type 39 : $\pm 0.05^{\circ}\text{C}$, 0-70 $^{\circ}\text{C}$
 NTC Thermistor Type 55: $\pm 0.03^{\circ}\text{C}$, 0-70 $^{\circ}\text{C}$
 NTC Thermistor Type 40/46 : $\pm 0.1^{\circ}\text{C}$, 0-70 $^{\circ}\text{C}$
 Temperature Range:..-20 to 105 $^{\circ}\text{C}$ (-4 to 221 $^{\circ}\text{F}$)
 Wire Material:.....2 wire: PVC insulated, parallel bonded
 3 wire: FT-4
 Probe Material:.....304 Series Stainless Steel
 Probe Dimensions:.....0.25" (6.35 mm) Diameter
 Standard lengths: 50, 100, 150, 200, 300, 450 mm
 (2", 4", 6", 8", 12", 18")
 Enclosure:.....ABS - UL94-V0 - IP65 (NEMA4X)
 Termination:.....2 or 3 wire pigtail.

Typical Wire Resistance Values

When using low resistance sensors, long wire runs can add significant error to the readings. Use the following chart to determine errors due to wire resistance or consider using a transmitter for better accuracy. Locate the type of wire being used. Multiply the total length of the wire (distance from the controller to the sensor and back) by the number found in the chart below for total resistance.

GAUGE WIRE TYPE	18 AWG	22 AWG	24 AWG
STRANDED (OHMS/FOOT)	5.85 m Ω	14.75 m Ω	23.29 m Ω
SOLID (OHMS/FOOT)	6.4 m Ω	15.85 m Ω	25.72 m Ω

Dimensions:

