HIGH TEMPERATURE BULLET PROBE SERIES

Installation & Operation Instructions

Phone: 1-888-967-5224
Website: workaci.com

PRECAUTIONS

• DO NOT RUN THE WIRING IN ANY CONDUIT WITH LINE VOLTAGE (24/120/230 VAC).

GENERAL INFORMATION

The High Temperature Bullet Probe features a one inch stainless steel probe that is designed for use with electronic controllers in commercial heating and cooling building management systems. The bullet style sensor monitors air temperatures and should not be fully submerged in water.

For optimal temperature measurement, follow these tips:

- Do not install on external walls.
- Avoid air registers, diffusers, vents, and windows.
- Eliminate and seal all wall and conduit penetrations. Air migration from wall cavities may alter temperature readings.
- Do not install near heat sources. eg: lamps, radiators, direct sunlight, copiers, chimney walls, walls concealing hot-water pipes.

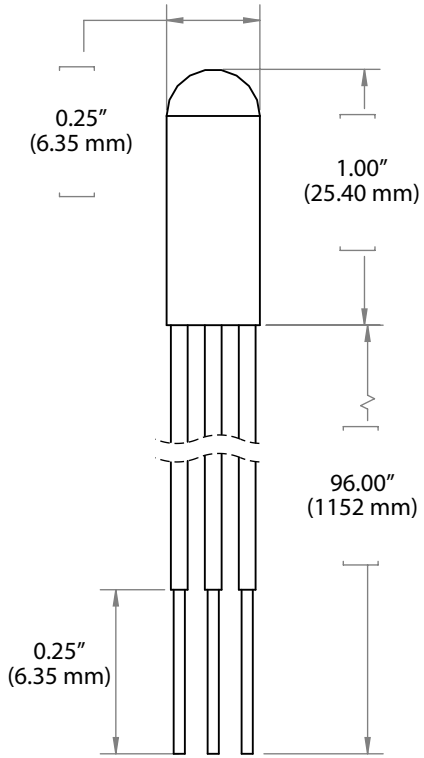
MOUNTING INSTRUCTIONS

High Temperature Bullet Probe sensors may be mounted using a 1/4" mounting clip (ACI Item #108169) on walls or with cable ties along pipes.

WALL MOUNTING

Take care when mounting. Check local code for mounting height requirements. The sensor should be mounted in an area where air circulation is well mixed and not blocked by obstructions. To fix the BP on a wall, ACI recommends a height of 48-60" (1.2-1.5 m) of the ground and at least 1.5' (0.5 m) from the adjacent wall. Slide the sensor probe through the mounting clip - see **FIGURE 2** (p. 2). Drill a 1/4" screw through the socket and tighten to the wall.

FIGURE 1: BULLET PROBE DIMENSIONS



PIPE MOUNTING

For best accuracy and increased thermal conduction between the pipe and the sensor, ACI recommends to clean the pipe with an emery cloth or file, before applying thermal grease. Be sure to insulate the probe (from the effects of the ambient air) after tightly fastening to the pipe. To fix the BP sensor along a pipe, use cable ties to mount the sensor probe and wires on the pipe - see **Figure 3** (p. 2).

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WIRING INSTRUCTIONS

ACI recommends 16 to 26 AWG twisted pair wires or shielded cables for all sensors. Signal wiring must be run separate from low and high voltage wires (24/120/230 VAC). All ACI RTD temperature sensors are non-position sensitive. All RTD's are supplied with (3) flying lead wires – see **FIGURE 4** (below).

Connect RTD wire leads to controller analog input wires using wire nuts, terminal blocks, or crimp style connectors. All wiring must comply with all local and National Electric Codes.

Note: When using a shielded cable, be sure to connect only (1) end of the shield to ground at the controller. Connecting both ends of the shield to ground may cause a ground loop. When removing the shield from the sensor end, make sure to properly trim the shield to prevent any chance of shorting.

Note: If the controller requires a (2) wire input for a RTD, connect the (2) common wires(same color) together. If the controller requires (3) wires, use (3) individual wires.

FIGURE 2: BULLET PROBE

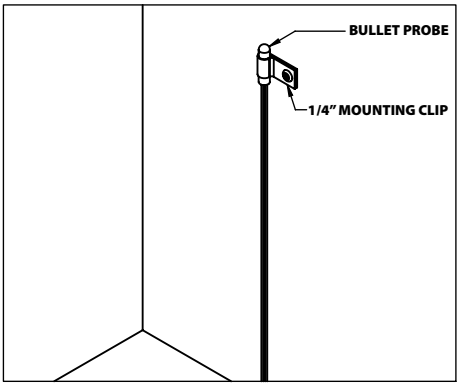


FIGURE 3: BULLET PROBE (-BP) ASSEMBLY

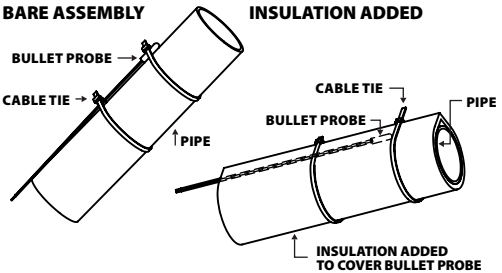
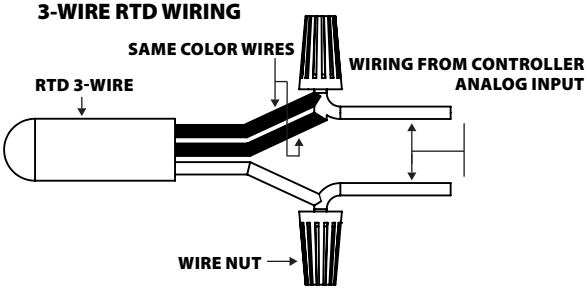


FIGURE 4: TEMPERATURE WIRING



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TROUBLESHOOTING

PROBLEM	SOLUTION(S)
Sensor reading is incorrect	• Verify sensor wiring to controller is not damaged and has continuity. • Verify sensor or wires are not shorted together. • Verify controller is setup for correct sensor curve. • Disconnect sensor wires and take a resistance (ohm) reading with a multimeter. • Compare the resistance reading to the Temperature Vs Resistance Curves online: *http://www.workaci.com/content/thermistor-curves-0* • Verify proper mounting location to confirm no external factors are affecting reading.
Sensor reads infinity/very high resistance	• Sensor or wires are open.
Sensor reads low resistance	• Sensor or wires are shorted together.
Erratic readings	• Bad wire connections.

WARRANTY

The ACI Bullet Probe Series temperature sensors are covered by ACI's Five (5) Year Limited Warranty, which is located in the front of ACI'S SENSORS & TRANSMITTERS CATALOG or can be found on ACI's website: www.workaci.com.

W.E.E.E. DIRECTIVE

At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with household waste. Do not burn.

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PRODUCT SPECIFICATIONS

SENSOR NON-SPECIFIC INFORMATION	
Storage Temperature Range:	-40 to 85°C (-40 to 185°F)
Operating Humidity Range:	10 to 90% RH, non-condensing
Probe Material | Probe Diameter:	316 Stainless Steel | 0.250" (6.35mm)
Lead Lenth | Conductor Size:	8' (2.44 m) | 24 AWG (0.20 mm^2)
Lead Wire Insulation | Conductor Material:	Fiberglass Braided Insulation with Mica Tape | 27% NIckel Plated Copper
SENSOR	
Sensor Type | Sensor Curve | Sensing Points:	Platinum RTD | PTC (Positive Temperature Coefficient) | One
Number Wires:	**A/100-3W-HT-BP-XX"** and **A/1K-3W-HT-BP-xx":** Three (Two White/ Red) Polarity Sensitive
Sensor Output @ 0°C (32°F) Sensor Tolerance Class | Accuracy[2]:	**A/100-3W-HT-BP-xx":** 100 Ω nominal | **A/1K-3W-HT-BP-xx":** 1000 Ω nominal +/- 0.12% Class B | **Class B Tolerance Formula:** +/- °C = (0.30°C + (0.005 * |t|))
Din Standard | Temperature Coefficient:	DIN EN 60751 (IEC 751) | 3850 ppm / °C
Sensor Stability:	< 0.04 % at 1000 hours at 400°C
Respnse Time (63% Step Change):	15 Seconds nominal
Self-Heating | Maximum Operating Current:	**100 Ω RTD:** 7 mW / °C (Still Air) | 5 mA **1K Ω RTD:** 4 mW / °C (Still Air) | 3 mA
Sensor Operating Temperature Range:	-40 to 395°C (-40 to 743°F)

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