



HAZARDOUS ROOM 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 ACI Hazardous Room Sensor is a single point wall mounted temperature sensor that is designed for use with electronic controllers in commercial and industrial heating and cooling building management systems. It is available with multiple thermistor or RTD options. Hazardous Room sensors come standard with a heavy-duty Copper-Free Aluminum Connection Head that meets Class I, Division 1 & 2, Group A, B, C, D; Class II, Division 1, Groups E, F, G; Class II, Division 2, Group F & G; class III standards.

For optimal temperature measurement, follow these tips:

- Do not install on external walls.
- Do not install near heat sources. eg: lamps, radiators, direct sunlight, copiers, chimney walls, walls concealing hot-water pipes.
- Avoid air registers, diffusers, vents and windows

ASSEMBLY INSTRUCTIONS

The enclosure and probe assembly are shipped separately. Insert the lead wires through the threaded hole on the explosion proof enclosure.

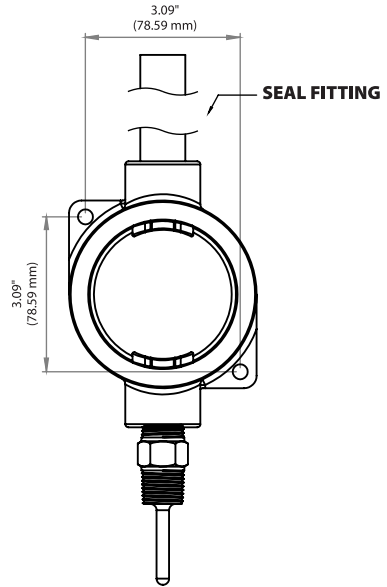
Thread the probe fitting into the hole and fasten tightly with channel lock pliers/wrench.

Note: If a NIST certified sensor is ordered, the sensor probe serial number must be paired with the enclosure serial number.

MOUNTING INSTRUCTIONS

This product must be installed by a trained professional with knowledge of local codes and regulations. Before carrying out any work, ensure local regulations and site procedures are followed to maintain the overall certification of the sensor. The sensor should be mounted in an area where air circulation is well mixed and not blocked by obstructions.

FIGURE 1: ENCLOSURE



For mounting on a wall, ACI recommends a height of 48-60" (1.2-1.5 m) off the ground and at least 1.5' (0.5 m) from the adjacent wall. Remove the cover from the housing by twisting off the cover. Attach the base directly to the wall. Mounting holes are located at the corners of the housing – see **FIGURE 1** (above). Seal fittings, intrinsically safe barriers, and explosion proof flex fittings **are not provided by ACI.**

Drill pilot holes for the mounting screws. Use the enclosure mounting holes as a guide, or use the dimensions listed in **FIGURE 1** (above). A 1/2" NPT tapping is located at the top of the enclosure.

Refer to the wiring instructions (p 2) to make necessary connections. The housing is provided with Green ground screw if the housing requires an earth ground. After wiring, attach the cover to the base.



WIRING INSTRUCTIONS

All thermistor type units are supplied with (2) flying lead wires, and all RTD's are supplied with (2) or (3) flying lead wires – see **FIGURE 3** and **4**. The number of wires needed depends on the application.

Connect thermistor/RTD wire leads to controller analog input wires using wire nuts, terminal blocks, crimp connectors, or soldering. If the controller requires a (2) wire input for a RTD, connect the (2) common wires (same color) together. All wiring must comply with local codes and National Electric Code.

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 3: 2-WIRE THERMISTOR or RTD WIRING

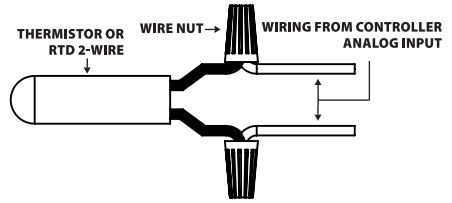
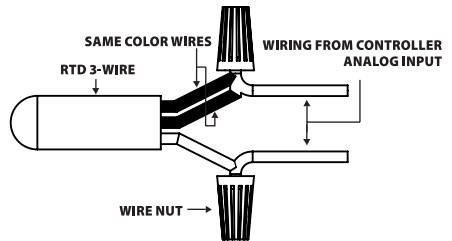


FIGURE 4: 3-WIRE RTD WIRING



TROUBLESHOOTING

PROBLEM	SOLUTION(S)
Sensor reading is incorrect	<ul style="list-style-type: none"> 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 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	<ul style="list-style-type: none"> Sensor or wires are open
Sensor reads low resistance	<ul style="list-style-type: none"> Sensor or wires are shorted together
Erratic readings	<ul style="list-style-type: none"> Bad wire connections

PRODUCT SPECIFICATIONS

SENSOR NON-SPECIFIC

Number Sensing Points:	One
Storage Temperature Range:	-40 to 85 °C (-40 to 185 °F)
Operating Humidity Range:	10 to 95% RH, non-condensing
Enclosure Specifications: (Temperature, NEMA Ratings)	"-R" Enclosure: Copper-Free Aluminum, -50 to 60 °C (-58 to 140 °C), NEMA 3, 4, 7ABCD, 9EFG
Sensor Operating Temperature Range:	Thermistor: -40 to 150°C (-40 to 302°F) A/CP-HT and RTD: -40 to 200°C (-40 to 392°F)
Enclosure Explosion Proof Rating:	CL. I, Div. 1 & 2, Groups A, B, C, D
Enclosure Dust-Ignition Proof Rating:	CL. II, Div. 1, Groups E, F, G
Enclosure Raintight Rating:	CL. II, Div. 2, Groups F, G
Enclosure Wet Locations Rating:	CL. III
Enclosure UL Standards:	UL 1203
Enclosure CSA Standards:	C22.2 No. 30
Enclosure Hubs Hub Size:	Two 1/2" NPT (National Pipe Tapered) Female Hubs
Probe Diameter Sensor Threads:	0.250" (6.35mm) 1/2" NPT Thread
Probe Material:	304 Stainless Steel

THERMISTOR

Sensor Output @ 25°C (77°F): (Lead Wire Colors)	A/AN (Type III): 10 KΩ nominal (White/White)	A/1.8K: 1.8 KΩ nominal (Red/Yellow)
	A/CP (Type II): 10 KΩ nominal (White/Green)	A/3K: 3 KΩ nominal (White/Brown)
	A/CP-HT (Type II): 10 KΩ nominal (White/Green)	A/20K: 20 KΩ nominal (Brown/Blue)
	A/10K-E1: 10 KΩ nominal (Orange/Gray)	A/100KS: 100 KΩ nominal (Black/Yellow)
Accuracy 0-70°C (32-158°F):	A/1.8K Series: +/- 0.5 °C @ 25 °C (77 °F) and (+/-1.0 °C) (+/-1.8 °F)	A/10K-E1 Series: +/- 0.3 °C (+/- 0.54 °F) All Else: +/- 0.2 °C (+/- 0.36 °F)

PLATINUM

Sensor Output @ 0°C (32°F):	A/100: 100 Ω nominal	A/1K: 1 KΩ nominal
Accuracy:	+/- 0.06% Class A (Tolerance Formula: +/- °C = (0.15 °C + (0.002 * t)) where t is the absolute value of Temperature above or below 0 °C in °C)	
	@ -40 °C (-40 °F): +/- 0.23°C (+/- 0.414 °F)	@ 200 °C 392 °F): +/- 0.55 °C (+/- 0.99 °F)
	@ 0 °C (32 °F): +/- 0.15°C (+/- 0.27 °F)	



WARRANTY

The ACI Hazardous Room Series temperature sensors is 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.

