PRE-FILLED GLYCOL BOTTLE TEMPERATURE SENSOR

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 Prefilled Glycol kit comes with a standard 4 inch probe, 10 foot (3.0 m) or 20 foot (6.1 m) long Plenum rated FEP/FEP (Teflon) cable installed in a Nalgene bottle with Food Grade Glycol. The glycol is used as a thermal buffer to prevent false notifications in the cooler when the door is opened. The temperature probe is designed for use with electronic controllers in commercial heating and cooling building management systems. It is available with multiple thermistor or RTD options.

For optimal temperature measurement, follow these tips:

- The sensor should be installed inside the bottle such that the tip of the sensor is suspended approximately ½ inch above the bottom of the bottle. Make sure the tip is fully submerged in solution.

MOUNTING INSTRUCTIONS

Take care when mounting. The sensor should be mounted in an area where air circulation is well mixed and not blocked by obstructions. The Prefilled Glycol kit comes with Velcro cable strap for mounting along a support or pipe/conduit. There is also an optional stainless steel mounting bracket (ACI Item #130126) available for wall mounting.

Note: When using sensor in a tank or glycol application, the sensor ***cannot*** be fully submerged. The end of the probe must be kept above the liquid.

ACI recommends installing the wire through the seal or cooler wall. Drill a hole just larger than the diameter of the wire (0.125" (3.175 mm)) in the seal or wall. From inside the cooler/freezer, push the wire through the hole. Use mounting clips to secure the wire to the interior wall or shelving. Use silicone caulking to seal the hole around the wire.

FIGURE 1: GLYCOL SENSOR MOUNTED ON PIPE/CONDUIT

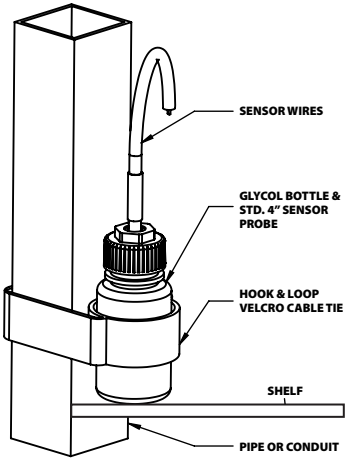
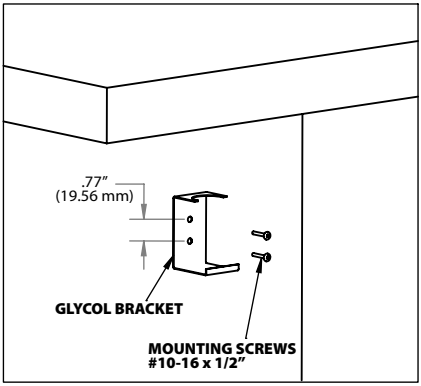


FIGURE 2: STAINLESS STEEL MOUNTING BRACKET *(Optional)*



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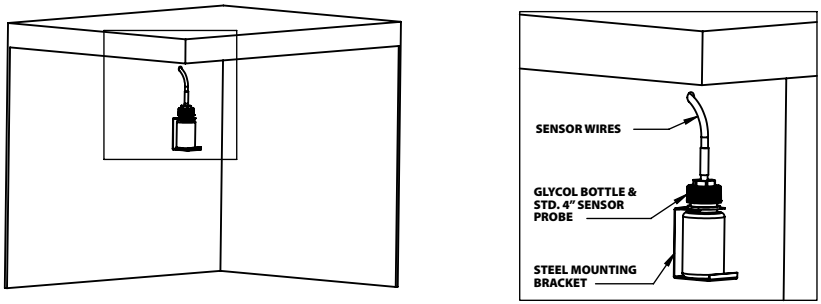
PROBE ASSEMBLY ON PIPE/CONDUIT/SHELF

The velcro strap provided can be used to mount the glycol bottle to pipe or support - see **Figure 1**. First insert the closed loop of strap around the bottle, then loop the loose ends around the support or pipe/conduit. Tighten the Velcro together, and make sure the bottle is tightly fastened. Make sure watertight fitting is securely holding the probe in place.

PROBE ASSEMBLY ON WALL

Drill pilot holes for the provided mounting screws. Use the mounting clip holes as a guide - see **FIGURE 2**. Drill the #10-16 1/2" screws through the bracket holes and fasten it to the wall. Insert the bottle into the bracket, and make sure it is seated securely.

FIGURE 3: GLYCOL SENSOR with STAINLESS STEEL MOUNTING BRACKET



WIRING INSTRUCTIONS

ACI recommends 16 to 26 AWG twisted pair wires or shielded cable for all sensors. Signal wiring must be run separate from low and high voltage wires (24/120/230VAC). All ACI thermistors and RTD temperature sensors are both non-polarity and non-position sensitive. 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 4** and **5**. The number of wires needed depends on the application.

Connect thermistor/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.

FIGURE 4: 2-WIRE THERMISTOR or RTD WIRING

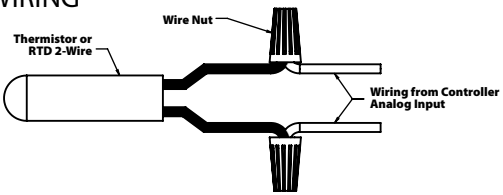
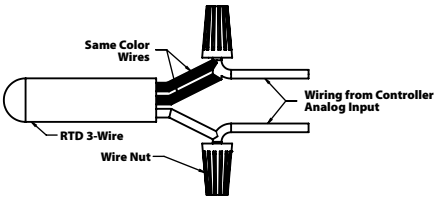


FIGURE 5: 3-WIRE RTD WIRING



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.

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WIRING INSTRUCTIONS *(Continued)*

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.

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 wires from sensor terminal block, tighten terminal block screws down, 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	• Condensation on PCB board • Bad wire connections.

WARRANTY

The ACI Prefilled Glycol 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		
Number Sensing Points:	One	
Operating | Storage Temperature Range:	-40 to 120 °C (-40 to 248 °F) | -40 to 85 °C (-40 to 185 °F)	
Operating Humidity Range:	10 to 95% RH, non-condensing	
Probe Material | Probe Diameter:	304 Stainless Steel | 0.250" (6.35mm)	
Bottle Material | Chemical Resistance:	Nalgene ((HDPE) High Density Polyethylene) | Resistant to most acids, bases, and alcohols	
Bottle Sterility | Fluid Capacity:	Lab Quality, Non-Sterile | 67 ml (2 oz.)	
Nalgene Bottle Operating Temperature:	-100 °C (-73.2 °F) to 120 °C (248 °F)	
Glycol Properties | Glycol Freezing Point: **Wire Size**	Food Grade USP (Propylene Glycol); Non-Toxic | -59 °C (-74.2 °F) 22 AWG (0.65 mm)	
Lead Length | Conductor Size | Material:	10 Feet (3.05m) or 20 Feet (6.10m)** | 22 AWG (0.65mm) | Tin Plated Copper	
Lead Wire Insulation | Wire Rating:	FEP/FEP (Teflon) Cable | CL2P/CMP Plenum Rated Cable (minimum)	
THERMISTOR		
Sensor Output @ 25 °C (77 °F): *Does not include CL2P	**A/1.8K:** 1.8 KΩ nominal **A/3K:** 3 KΩ nominal **A/AN (Type III):** 10 KΩ nominal **A/AN-BC:** 5.238 KΩ nominal **A/CP (Type II):** 10 KΩ nominal	**A/CSI:** 10 KΩ nominal **A/10KS:** 10 KΩ nominal **A/20K:** 20 KΩ nominal **A/100KS:** 100 KΩ nominal
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)	**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°C (32°F):	+/- 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) **@ 0 °C (32 °F):** +/- 0.15°C (+/- 0.27 °F)	**@ 93 °C (200 °F):** +/- 0.34 °C (+/- 0.61 °F)
NICKEL		
Sensor Output @ 21.1°C (70 °F):	1 KΩ nominal	
Accuracy:	**@ -40 °C (-40 °F):** +/- 1.52 °C (+/- 2.73 °F) **@ 0 °C (32 °F):** +/- 0.4 °C (+/- 0.72 °F) **@ 21.1 °C (70 °F):** +/- 0.17 °C (+/- 0.34 °F)	**@ 54.4 °C (130 °F):** +/- 0.56 °C (+/- 1.00 °F) **@121 °C (250 °F):** +/- 1.25 °C (+/- 2.25 °F)

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