Termination

BAPI recommends using twisted pair of at least 22AWG and sealant filled connectors for all wire connections. Larger gauge wire may be required for long runs. All wiring must comply with the National Electric Code (NEC) and local codes.

Do NOT run this device's wiring in the same conduit as AC power wiring of NEC class 1, NEC class 2, NEC class 3 or with wiring used to supply highly inductive loads such as motors, contactors and relays. BAPI's tests show that fluctuating and inaccurate signal levels are possible when AC power wiring is present in the same conduit as the signal lines. If you are experiencing any of these difficulties, please contact your BAPI representative

BAPI does not recommend wiring the sensor with power applied as accidental arcing may damage the product and will void the warranty

Lead Wire Colors			
Thermistor		**RTD**	
3K	Yellow/Black	**100Ω**	Red/Red or Red/Red/Black
10K-2	Yellow/Yellow	**1KΩ**	Orange/Orange or Orange/Orange/Black
10K-3	Yellow/Red		
10K3(11K)	Yellow/Blue		
20K	White/White		
100K	Yellow/White		

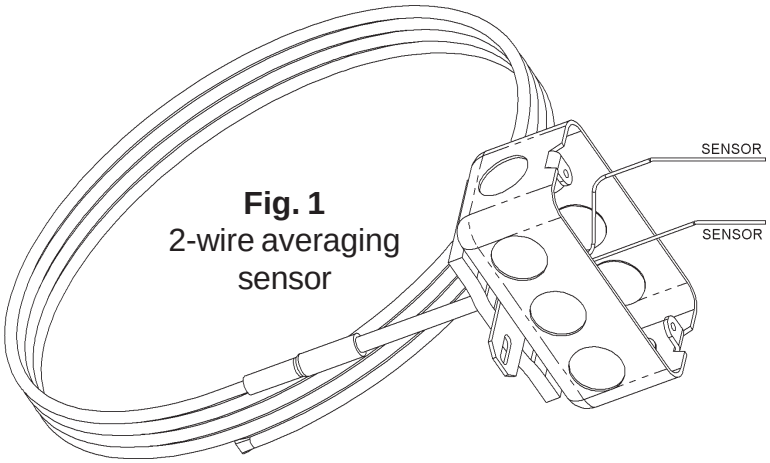

Fig. 1
2-wire averaging sensor

Note: If you are using a 3-wire sensor in a 2-wire application, connect the calibrate wire to the like-colored sense wire.

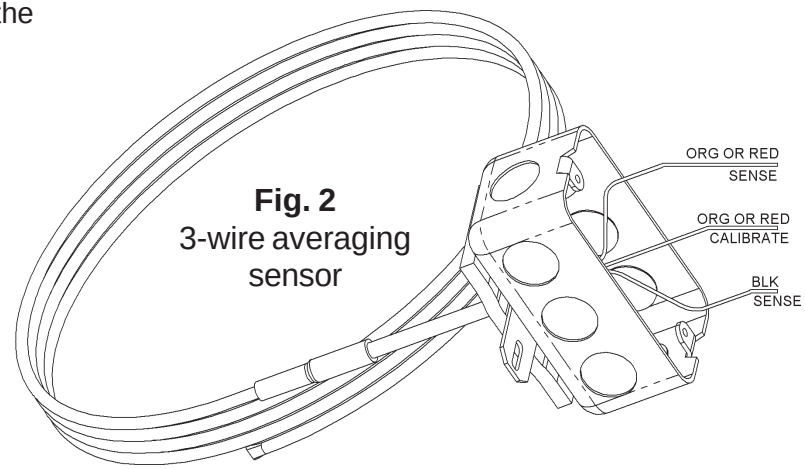

Fig. 2
3-wire averaging sensor

*Some items may not be CE compliant, call BAPI for additional information.

Specifications subject to change without notice.

Mounting

1. Area Averaging thermometers sense temperature along their entire length. They are used where stratified layers of hot and cold air might cause inaccurate temperature readings when using single point sensing elements.

2. Figures 3 and 4 (below) show two acceptable mounting configurations. Other mounting configurations may be used, as long as the averaging element is held securely and is evenly spaced across the air flow. Nylon wire ties are provided to secure the averaging element. When forming the averaging element to a desired shape, **be sure that the bend diameter is greater than 6 inches.**

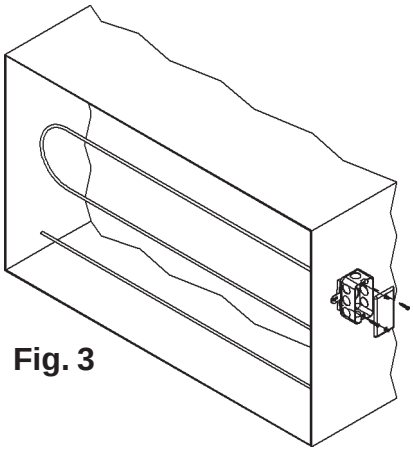

Fig. 3

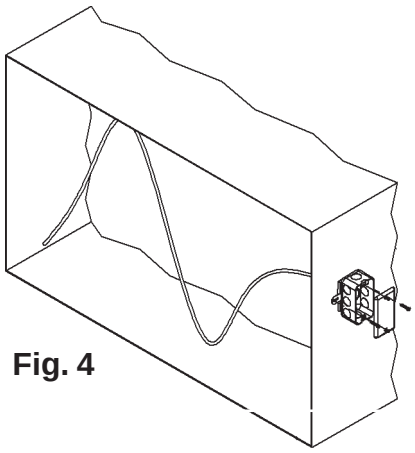

Fig. 4

Caution: When installing duct averaging sensors which include a buffer resistor, do not bend the buffer resistor portion of the averaging element, shown in figure 5 (below).

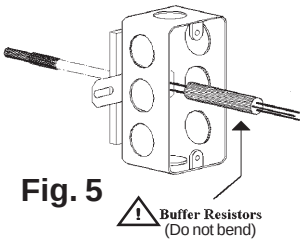

Fig. 5

3. Averaging sensors have four mounting options;
No-box, junction box, weatherproof box and EU enclosure.

No-box

The no-box is intended for indoor mounting in equipment rooms, plenums or occupied spaces. The figures below show a typical no-box mounting in an air duct. BAPI recommends using #8 sheet metal screws that need 1/8-inch pilot holes to attach the sensor to the duct. After tying down the averaging tube, secure the mounting flange to the duct; center the blue plastic fitting holding the probe in the mounting hole. Do not over tighten the screws.

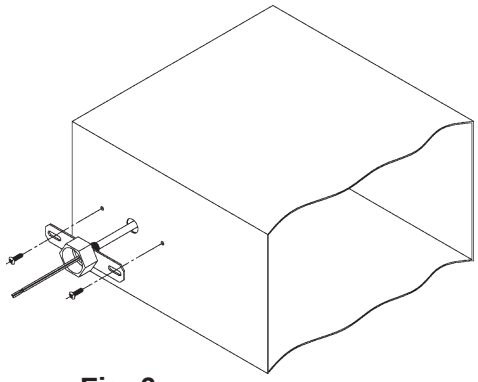

Fig. 6
No-box duct installation

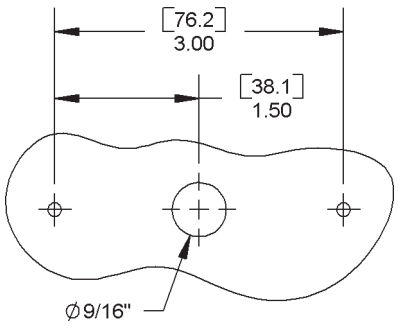

Fig. 7
No-box mounting holes

Mounting continued...

Junction box

The junction box mount is intended for indoor mounting in equipment rooms, plenums or occupied spaces. The figures below show a typical junction box mounting in an air duct. BAPI recommends using #8 sheet metal screws that need 1/8-inch pilot holes to attach the sensor to the duct. After tying down the averaging tube, secure the mounting flange to the duct; center the blue plastic fitting holding the probe in the mounting hole. Make sure that the foam seals the hole; do not over tighten the screws.

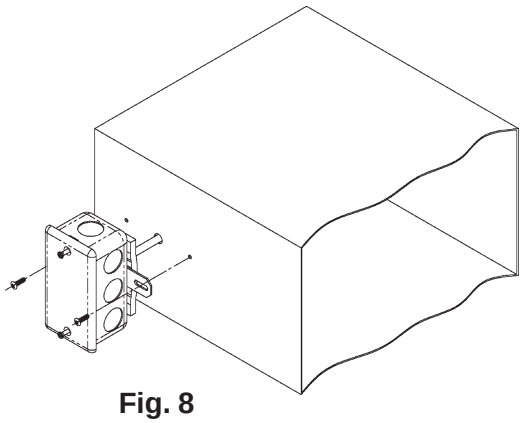

Fig. 8
Junction box duct installation

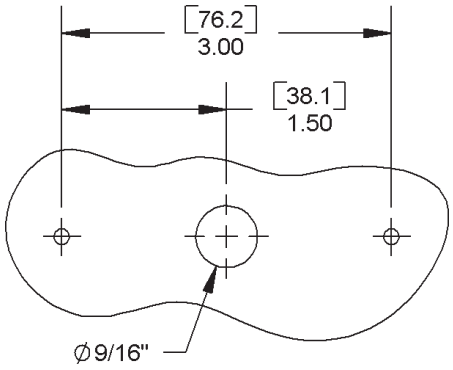

Fig. 9
Junction box mounting holes

Weatherproof box

The weatherproof box is intended for outdoor or equipment room mounting. Use the mounting tabs provided to mount the weatherproof box as shown in the figure below. **DO NOT** drill screw holes through the back wall of the box, this destroys the integrity of the box and may void the warranty. The figures below show a typical weatherproof box mounting in an air duct. BAPI recommends using #8 sheet metal screws that need 1/8-inch pilot holes to attach the sensor to the duct. After tying down the averaging tube, secure the mounting tabs to the duct; center the blue plastic fitting holding the probe in the mounting hole. Be sure that the foam seals the hole; do not over tighten the screws. Place the foam gasket between the cover and the box before securing the cover in place with the screws provided. To keep water out of the box, be sure to coat the threads of the box plugs or conduit connectors with caulk before screwing them into the waterproof box.

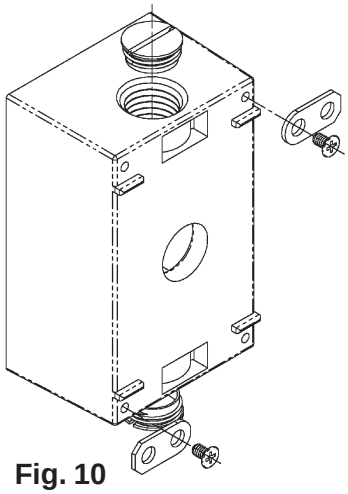

Fig. 10
Weatherproof box mounting tabs

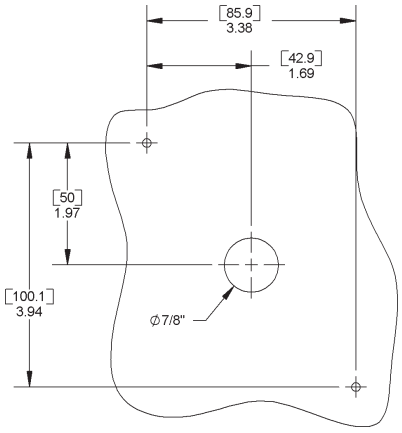

Fig. 11
Weatherproof box mounting holes

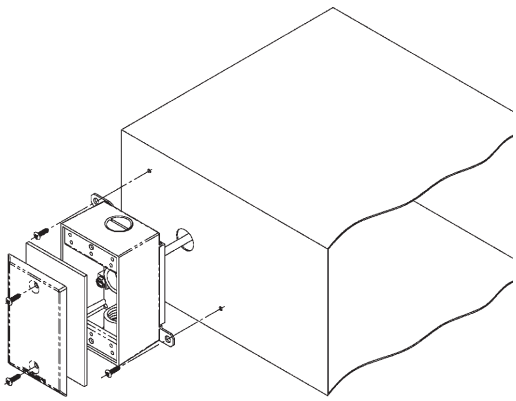

Fig. 12
Weatherproof box duct installation

Building Automation Products, Inc., 750 North Royal Avenue, Gays Mills, WI 54631 USA
Tel:+1-608-735-4800 • Fax+1-608-735-4804 • E-mail:sales@bapihvac.com • Web:www.bapihvac.com

Mounting continued...

EU enclosure mounting

The EU enclosure is made from ABS plastic for indoor applications and a UV light stabilized plastic for outdoor applications or indoor applications exposed to direct sun light. The figures below show a typical EU enclosure mounting in an air duct. BAPI recommends using #8 sheet metal screws that need 1/8-inch pilot holes. After tying down the averaging tube, secure the mounting feet to the duct; center the blue plastic fitting holding the probe in the mounting hole. Do not over tighten the screws but be sure that the foam insulation makes an airtight seal. Tighten the lid to two clicks when you are finished making terminations.

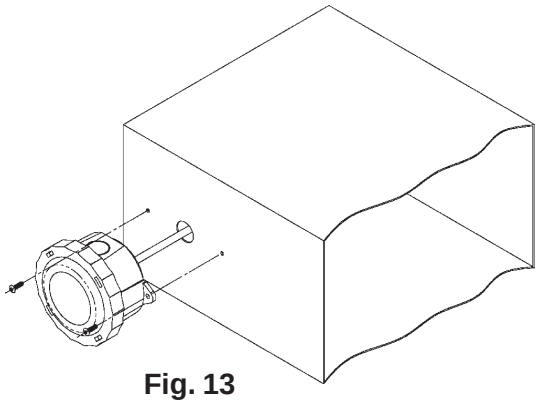

Fig. 13
EU enclosure duct installation

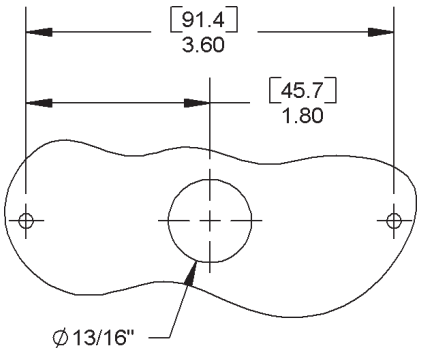

Fig. 14
EU enclosure mounting holes

Troubleshooting

Problem:	**Possible Solutions:**
Temperature reading is incorrect.	- Determine that the input is set up correctly in the controller's software. - Determine that the input is set up correctly in the building automation software. - Determine that the temperature sensors wires are connected to the correct controller input terminals and are not loose. - Check the wires at the sensor for proper connections. - Check for corrosion at either the controller or the sensor. Clean off the corrosion, re-strip the sensor wire and reapply the connection. In extreme cases the controller, interconnecting wire and/or sensor may need to be replaced. - Disconnect the wires from the controller and the sensor. With the wires separated measure the resistance from wire-to-wire with a multimeter. The meter should read greater than 10 Meg-ohms, open or OL depending on the meter you have. Short the two wires together at one end. Go to the other end and measure the resistance from wire-to-wire with a multimeter. The meter should read less than 5 ohms. If either test fails, replace the wire. - Measure the physical temperature at the temperature sensor's location using an accurate temperature standard. Disconnect the temperature sensor wires and measure the temperature sensor's resistance with an ohmmeter. Compare the temperature sensor's resistance to the appropriate temperature sensor table on the BAPI web site. If the measured resistance is different from the temperature table by more than 5% call BAPI technical support. Find BAPI's web site at www.bapihvac.com; click on the button labeled SENSORS on the left of the screen and then click on the type of sensor you have.

Building Automation Products, Inc., 750 North Royal Avenue, Gays Mills, WI 54631 USA
Tel:+1-608-735-4800 • Fax+1-608-735-4804 • E-mail:sales@bapihvac.com • Web:www.bapihvac.com