Overview and Identification

• The Surface Sensor features a 0.75" diameter copper encapsulation shell with a thermally adhesive tape so that they can be mounted to flat surfaces.

• Surface Sensors are commonly used on glass windows and doors, solar panel modules, and other hard-to-access areas where immersion or duct sensors do not fit well.

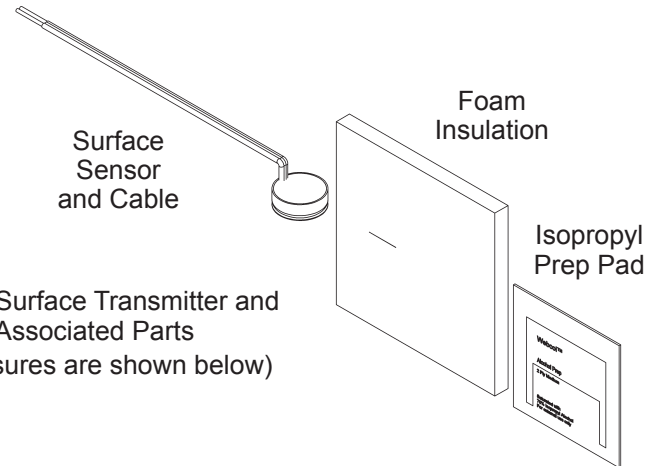• Surface Sensors are available with a BAPI-Box, BAPI-Box 2, BAPI-Box 4 or Weatherproof enclosure.

Surface Sensor and Cable

Foam Insulation

Isopropyl Prep Pad

Fig. 1: Surface Transmitter and Associated Parts (Enclosures are shown below)
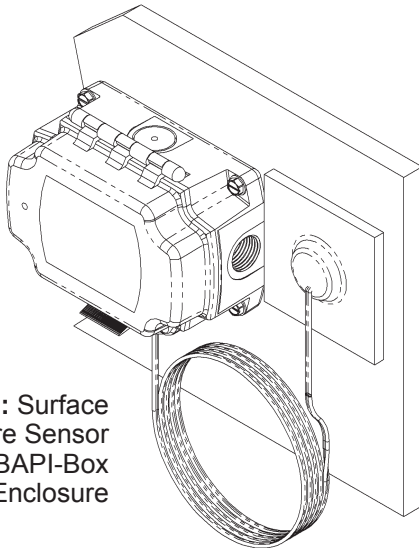

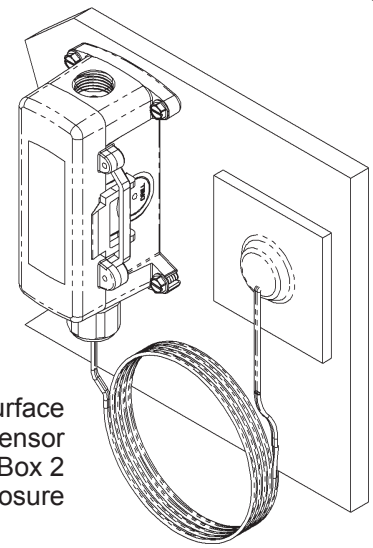**Fig. 2:** Surface Temperature Sensor with a BAPI-Box **(BB)** Enclosure

Fig. 3: Surface Temperature Sensor with a BAPI-Box 2 **(BB2)** Enclosure
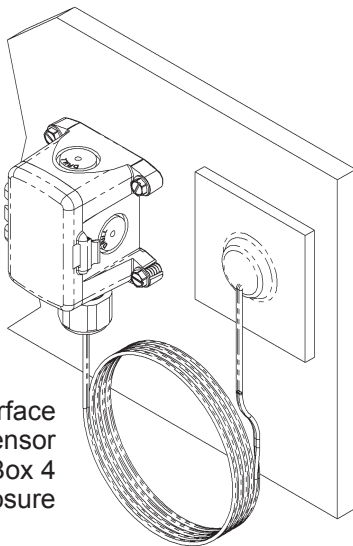

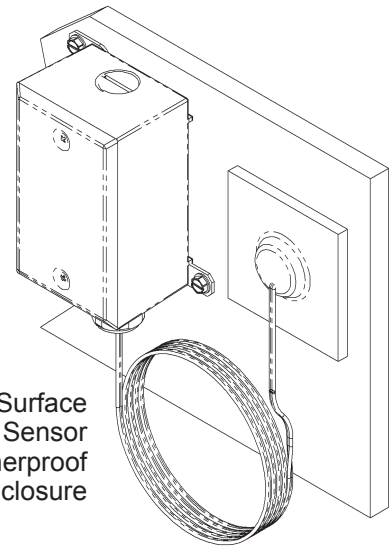**Fig. 4:** Surface Temperature Sensor with a BAPI-Box 4 **(BB4)** Enclosure

Fig. 5: Surface Temperature Sensor with a Weatherproof **(WP)** Enclosure

Specifications subject to change without notice.

Surface Temperature Sensor with BAPI-Box, BAPI-Box 2, BAPI-Box 4 or Weatherproof Enclosures
Installation & Operations

39417_ins_surface_sensor_passive_BB-WP

rev. 05/31/17
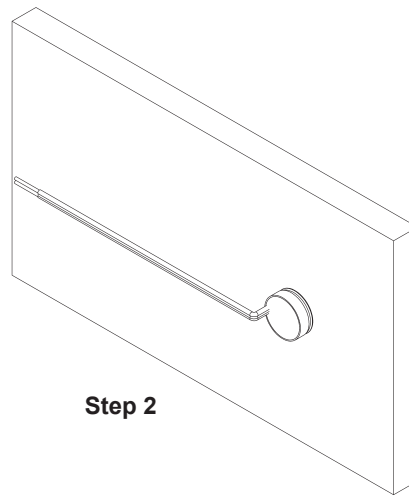
Mounting the Surface Sensor

Step 1:
Clean desired surface using provided isopropyl prep pad and then dry.
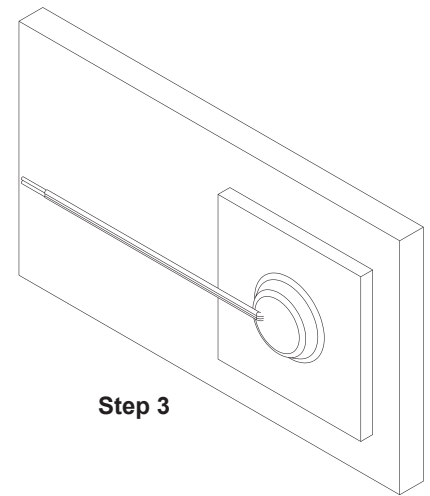
Step 2:
Remove release sheet from adhesive and firmly place sensor on surface.

Step 3:
Slide foam insulation down the wire and place over the sensor. Be sure to prevent large air gaps under the foam.

Step 2

Step 3

Mounting the Enclosure

Mount the enclosure to the surface using BAPI recommended #8 screws through a minimum of two opposing mounting tabs. A 1/8" inch pilot screw hole makes mounting easier through the tabs. Use the enclosure tabs to mark the pilot hole locations.

The BAPI-Box 4 Enclosure is available with a pierceable knockout plug for the open port. Insert the plug into the open port on the enclosure. The plug increases the enclosure rating from IP10 to IP44.

Do not drill into the enclosures, other than in the appropriate drill-out ports, which will violate the IP and NEMA ratings. Use caulk or Teflon tape for the conduit entries to maintain the appropriate IP or NEMA ratings.
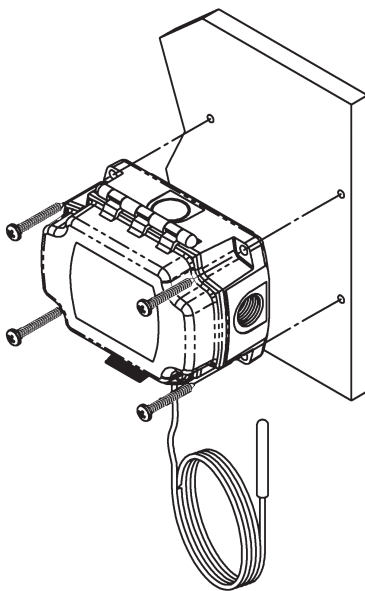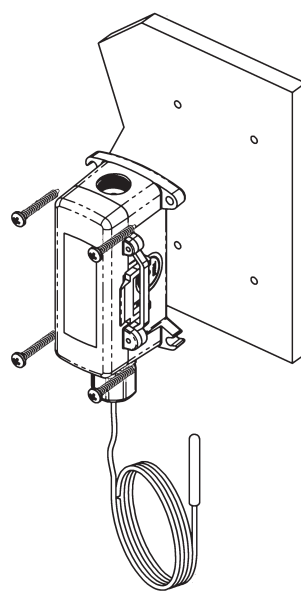
Fig. 6: Mounting the BAPI-Box (BB) Enclosure
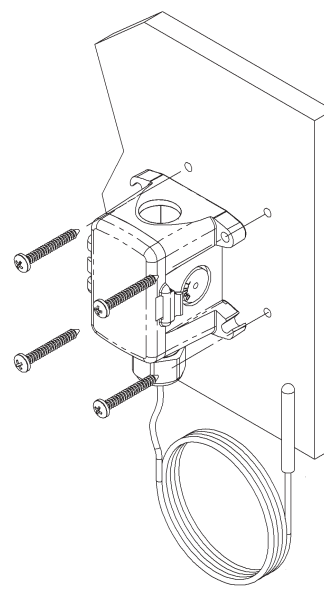
Fig. 7: Mounting the BAPI-Box 2 (BB2) Enclosure

Fig. 8: Mounting the BAPI-Box 4 (BB4) Enclosure
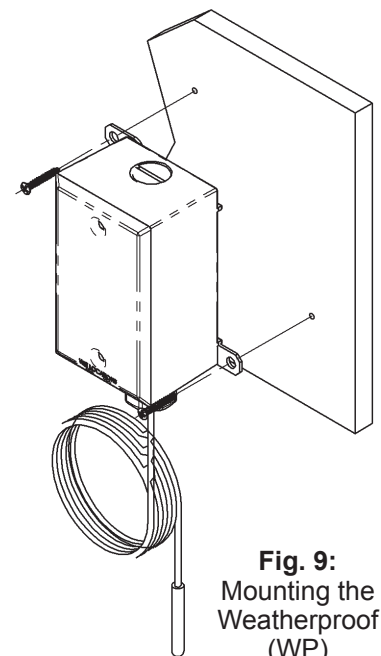
Fig. 9: Mounting the Weatherproof (WP) Enclosure
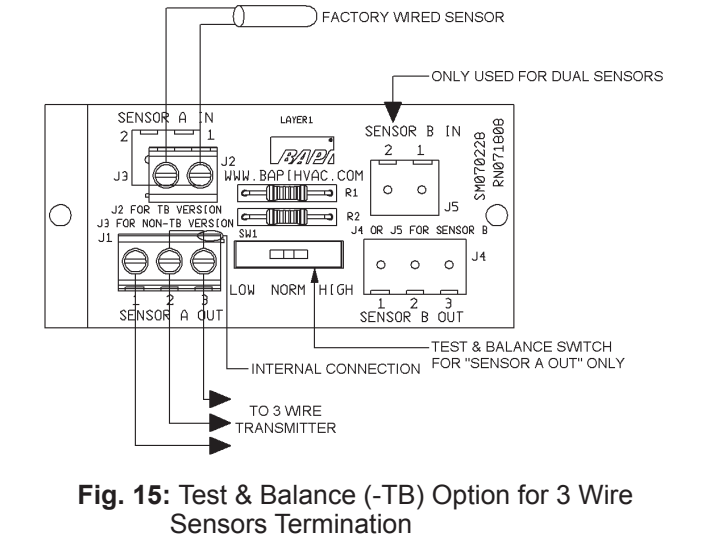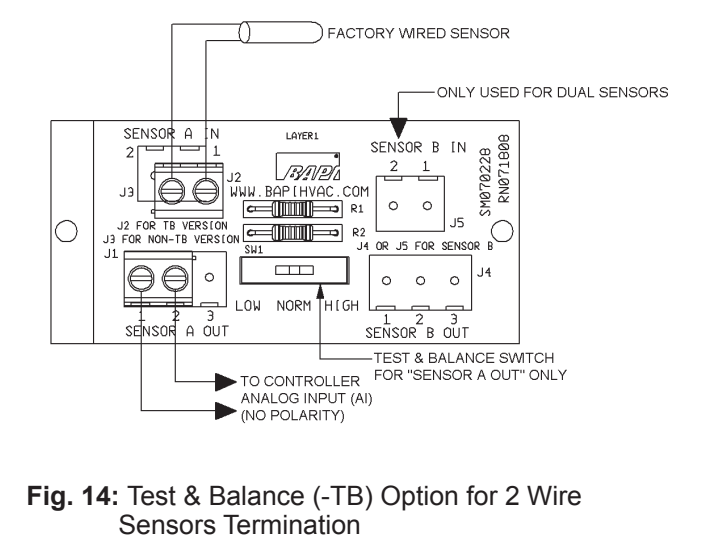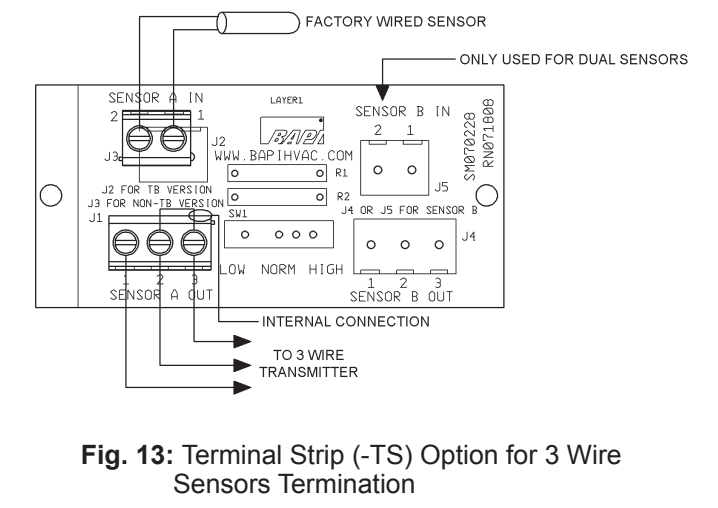
Specifications subject to change without notice.

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Wiring & 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 high or low voltage AC power wiring. BAPI's tests show that inaccurate signal levels are possible when AC power wiring is present in the same conduit as the sensor wires.
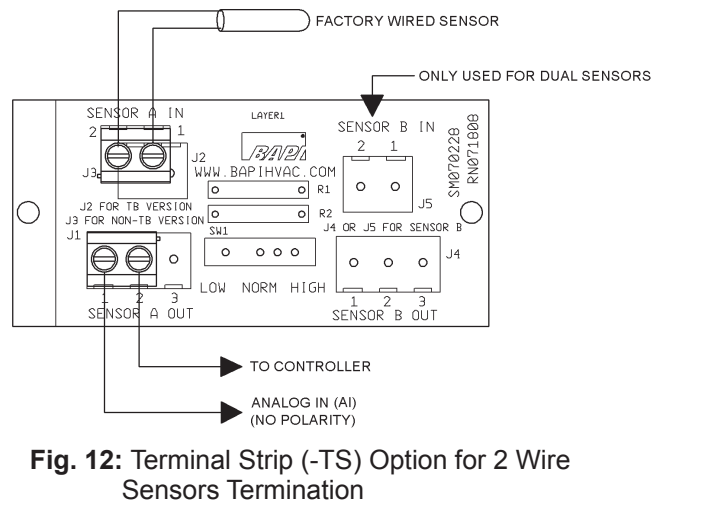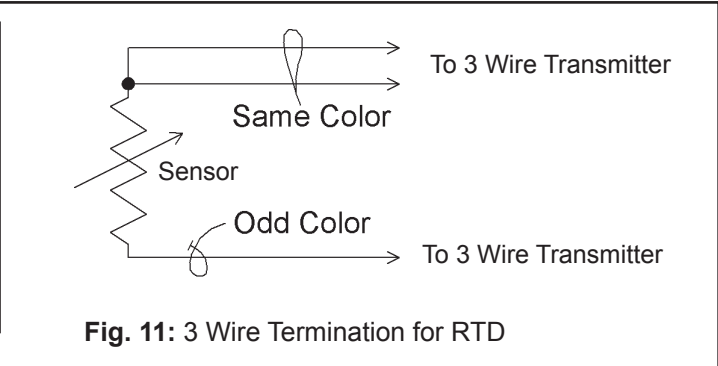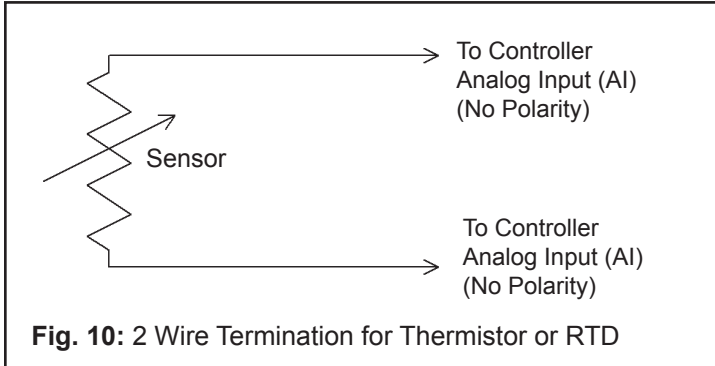
Fig. 10: 2 Wire Termination for Thermistor or RTD

Fig. 11: 3 Wire Termination for RTD

Fig. 12: Terminal Strip (-TS) Option for 2 Wire Sensors Termination

Fig. 13: Terminal Strip (-TS) Option for 3 Wire Sensors Termination

Fig. 14: Test & Balance (-TB) Option for 2 Wire Sensors Termination

Fig. 15: Test & Balance (-TB) Option for 3 Wire Sensors Termination

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Diagnostics

Possible Problems:

Controller reports higher or lower than actual temperature

Possible Solutions:

- Confirm the input is set up correctly in the front end software

- Check wiring for proper termination & continuity. (shorted or open)

- For units with a Test & Balance Switch, verify that it is in the center position.

- 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 across the sensor output pins with an ohmmeter. Compare the temperature sensor's resistance to the appropriate temperature sensor table on the BAPI website. If the measured resistance is different from the temperature table by more than 5% call BAPI technical support. Find BAPI's website at www.bapihvac.com; click on "Resource Library" and "Sensor Specs" then click on the type of sensor you have.

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