

Product Identification

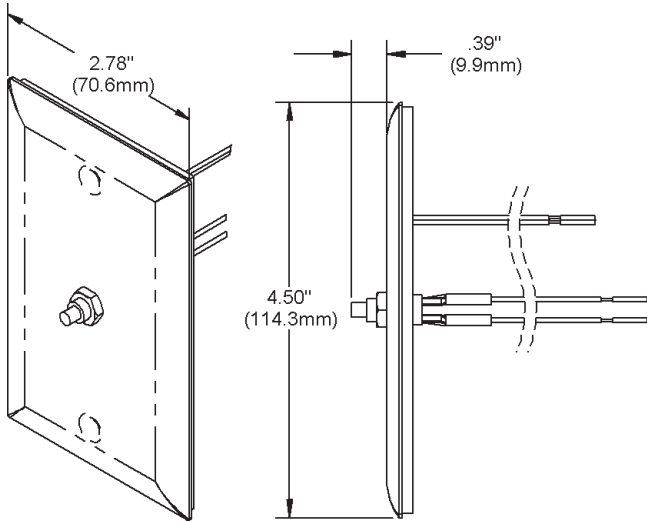


Figure 1
SP/AP-O

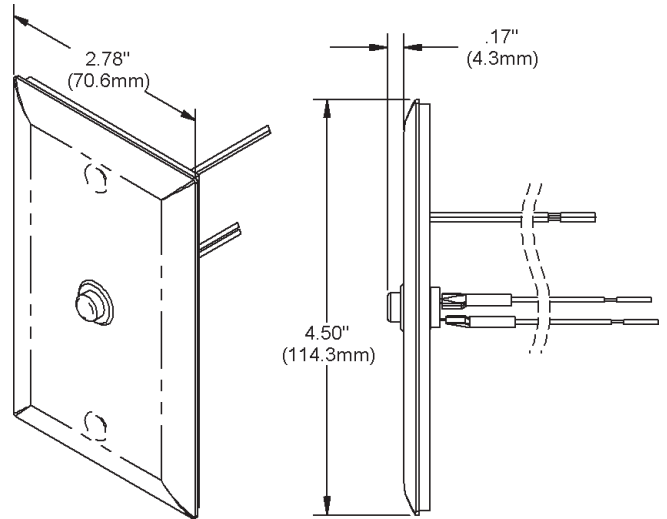


Figure 2:
SP/AP-O1

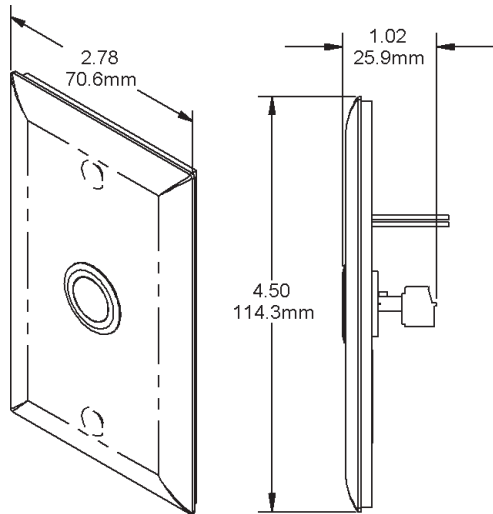


Figure 3:
SP/AP-O2

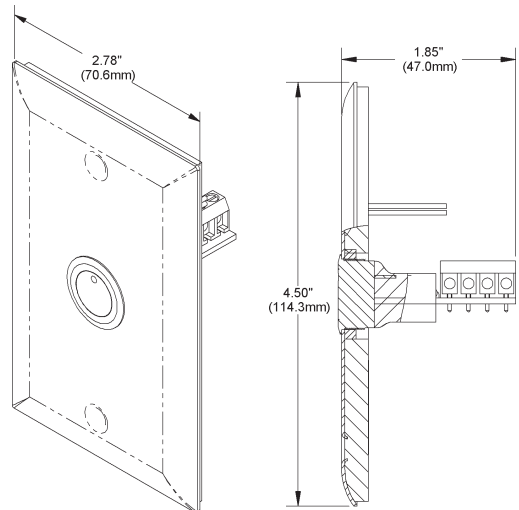


Figure 4:
SP/AP-O2 with LED

*Some items may not be CE compliant, call BAPI for additional information.
Specifications subject to change without notice.

Mounting

Mounting hardware is provided for both junction box and drywall installation.

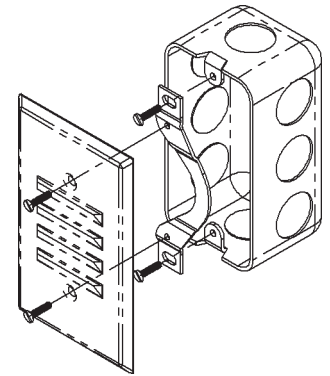
Junction Box

1. Pull the wire through the wall and out of the junction box, leaving about six inches free.
2. Terminate the unit according to the guidelines in **Termination** on page 3.
3. Secure the plate to the box using the #6-32 x 1/2 inch mounting screw provided or with Security screws which are sold separately. (Order **BA/SP632x1** — Spanner Security Screws, 6-32x1" (box 50) and **BA/SPBIT** — Spanner Bit for Spanner Security Screws)

Drywall Mounting

1. Place the plate against the wall where you want to mount the sensor.
2. Using a pencil mark out the two mounting holes.
3. Drill two 3/16" holes in the center of each marked mounting hole. Insert a drywall anchor into each hole.
4. Cut hole between the two mounting holes that clears the apparatus mounted on the plate..
5. Pull the wire through the wall hole cut in step 4, leaving about six inches free.
6. Terminate the unit according to the guidelines in **Termination** on page 3.
7. Secure the plate to the drywall anchors using the #6 x 1 inch mounting screws provided.

Figure 5:
Adapter Bracket Mounting



Note: Some wall plates require a mounting adapter-bracket for J-Box's as shown in the diagram.
BAPI part #:
BA/ADPT-BRKT-PLATE

NOTE

*In a wall-mount application, the wall temperature and the temperature of the air within the wall cavity can cause erroneous readings. The mixing of room air and air from within the wall cavity can lead to condensation, erroneous readings and premature failure of the sensor. To prevent these conditions, seal the conduit leading to the junction box and seal the hole in the drywall by using an adhesive backed, foam insulating pad (order part number **BA/FOAMBACK**).*

J-Loop Termination Technique

Incorporating a "J-Loop" (also known as a drip loop) into all terminations adds an additional layer of protection against moisture and oxidation by directing moisture away from the connection. The idea is to place the wire junction as high as possible and form a "J" with the leadwires. The bottom of this "J" should be below the junction point. Any moisture that collects on the leadwires is pulled downward by gravity to the bottom of this loop and away from the junction.

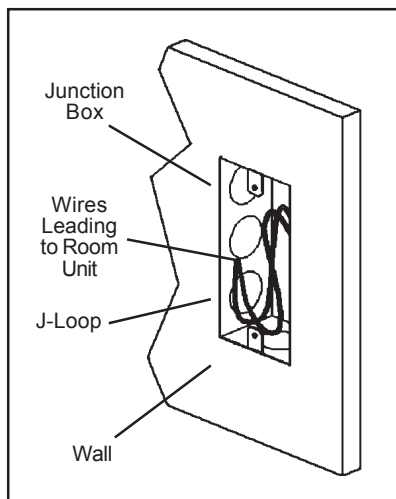


Fig. 6: J-Loop Technique

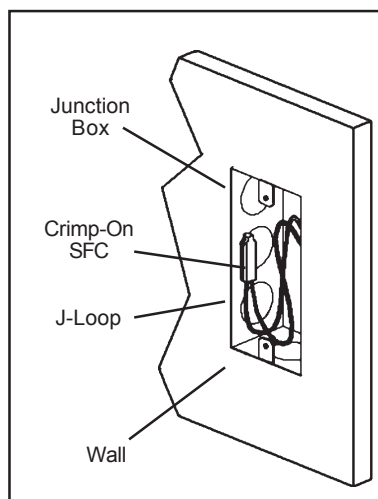


Fig. 7: J-Loop with Crimp-On SFC
(BA/SFC1000)

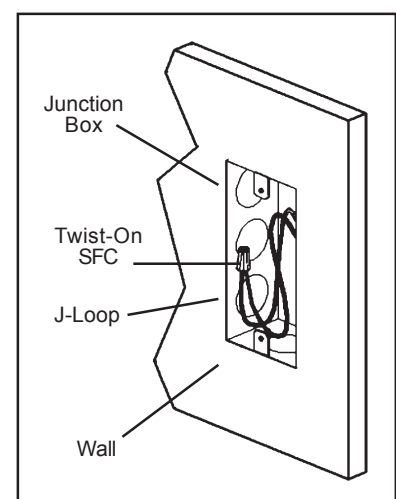


Fig. 8: J-Loop with Twist-On SFC
(BA/SFC2000)

Specifications subject to change without notice.

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

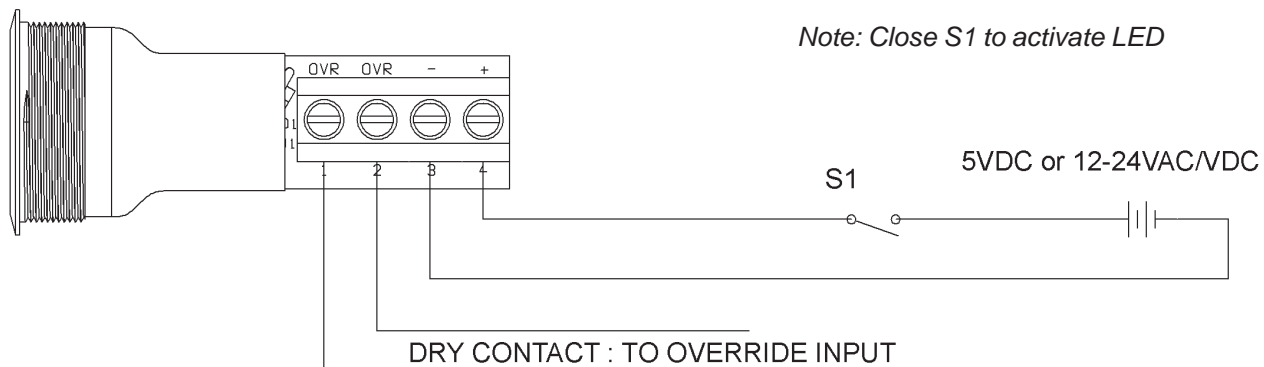


Figure 9:
Wiring Example for SP/AP-O2 with LED

Terminate the sensor wires to your controller wires using BAPI sealant filled connectors. The wallplate's foam back insulates the temperature sensor from the wall temperature and/or conduit drafts.

Table 1: Temperature Sensor Lead Wire Colors				
Thermistor			Platinum RTD	
3K	Yellow/Black		Single Point Two Wire	Single Point Three Wire
10K-2	Yellow/Yellow		Red/Red	Red/Red/Black
10K-3	Yellow/Red		Orange/Orange	Orange/Orange/Black
10K3(11K)	Yellow/Blue			
20K	White/White	100Ω		
100K	Yellow/White	1,000Ω		

The Override switch is a dry contact normally open switch. The contacts close for as long as you hold the switch down. SP/AP-O and SP/AP-O1 have two white wires attached to either side of the switch. SP/AP-O2 has screw terminals that accommodate 16 to 28 gauge wire. All switches are for NEC Class 2 circuits only.

Table 2 Switch Contact Ratings	
Switch -O	1 amp
Switch -O1	250 milli-amps
Switch -O2	125 milli-amps

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Troubleshooting

Possible Problems:

General troubleshooting

Possible Solutions:

- Determine that the input is set up correctly in the controller's and building automation software.
- Check wiring for proper termination
- Check for corrosion at either the controller or the sensor. Clean off the corrosion, re-strip the interconnecting wire and reapply the connection. In extreme cases, replace the controller, interconnecting wire and/or sensor.
- Label the terminals that the interconnecting wires are connected to at the sensor end and the controller end. Disconnect the interconnecting wires from the controller and the sensor. With the interconnecting wires separated at both ends 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 interconnecting 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 10 ohms (22 gauge or larger, 250 feet or less). If either test fails, replace the wire.

Temperature reading is incorrect

- 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.
- 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 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. Don't forget to reconnect the wires.
- Make sure that the sensor leads are not touching

Override is not working correctly

- Check that the resistance across the override output is less than 5 ohms when the override switch is pushed

Compare the readings to the appropriate temperature table on the BAPI website:

<http://www.bapihvac.com>

Click on the sensor bar, then on the table needed.

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