



CO Room Sensor in a BAPI-Stat 4 Enclosure

Installation and Operating Instructions

37237_ins_BS4_CO

rev. 07/22/21

Identification and Overview

The CO Sensor in the BAPI-Stat 4 Enclosure measures the CO in a range of 0 to 40 ppm with a field selectable output of 4 to 20 mA, 0 to 5 or 0 to 10 VDC.

The unit features a relay output which trips at 30 ppm with a 75 db audible alarm and a flashing red LED on the front of the unit. The form "C" relay includes Normally Open and Normally Closed contacts.

A red/green LED on the front of the unit indicates normal, alarm, trouble/service and test status. A recessed Test button on the side of unit can be used to test the alarm buzzer and LEDs.

Note: Sensors must be installed and powered within 4 months of purchase to prevent loss of accuracy.

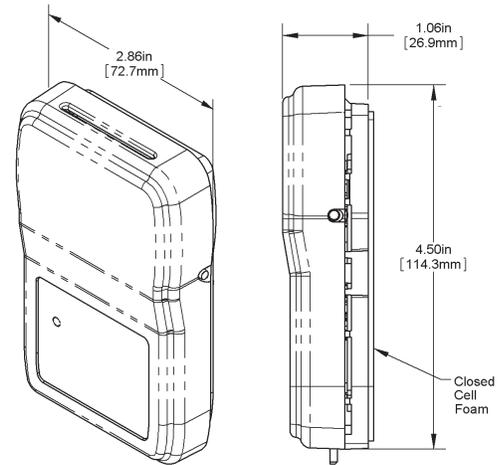
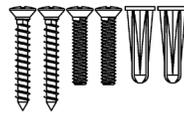


Fig. 1: CO Room Sensor in a BAPI-Stat 4 Enclosure and included screw pack

Specifications

Power:

24 VAC/VDC $\pm 10\%$, 1.0 VA Max

CO Sensor:

Electrochemical Sensor

CO Detection Range:

0 to 40 ppm

CO Accuracy:

$\pm 3\%$ of Full Scale

Jumper Selectable Output:

4 to 20mA, 0 to 5 VDC or 0 to 10 VDC

Relay Trip Point:

30 ppm

Relay Output:

Form "C", 0.1A-30VDC,
Normally Closed (NC) and Normally Open (NO) contacts

Audible Alarm:

75db@10ft

Start-Up Time:

<120 Minutes

Response Time:

Less Than 5 Minutes (after Start-Up Time)

Termination:

6 Terminals, 16 to 22 AWG

Operating Environment:

40 to 100°F (4.4 to 37.8°C)
0 to 95%RH non-condensing

Altimeter: Mechanical

Red/Green LED Operation:

Normal Status:

Green illuminated, Red LED flashes every 30 seconds indicating that the alarm is powered

Alarm Status:

Green light extinguished, Red LED flashes and pulsating horn

LED Trouble/Service Status:

Green illuminated, Red LED flashes twice and alarm buzzer "beeps" once every 30 seconds

LED Test Status:

When the recessed Test button is pressed: The Green LED is illuminated, the alarm buzzer chirps once and the Red LED flashes 4 to 5 times. Then the Green LED goes off, the Red LED flashes and the alarm buzzer sounds twice. (The relay is not activated by pressing the Test button.)

Enclosure Material:

ABS Plastic, Material Rated UL94V-O

Mounting:

2"x4" J-Box or drywall – screws provided

Certifications:

RoHS

Warranty Period:

5 Years

Specifications subject to change without notice.

Mounting

The sensor should be mounted in accordance with local code. If local code does not dictate mounting location, BAPI recommends mounting the CO Room Sensor on a solid, non-vibrating surface at a height of 3 to 5 feet above floor level in a vertical fashion to take advantage of the enclosure venting, similar to Figure 2. Mounting hardware is provided for both junction box and drywall installation (junction box installation shown).

Note: Screw the 1/16" Allen lock-down screw into the base to open the case. Back out the lock-down screw to secure the cover.

Junction Box

1. Pull the wire through the wall and out of the junction box, leaving about six inches free.
2. Pull the wire through the hole in the base plate.
3. Secure the plate to the box using the #6-32 x 5/8 inch mounting screws provided.
4. Terminate the unit according to the guidelines in the Termination section. (page 3)
5. Mold the foam on the unit's base to the wire bundle to prevent drafts. (see note below)
6. Attach Cover by latching it to the top of the base, rotating the cover down and snapping it into place.
7. Secure the cover by backing out the lock-down screw using a 1/16" Allen wrench until it is flush with the bottom of the cover.

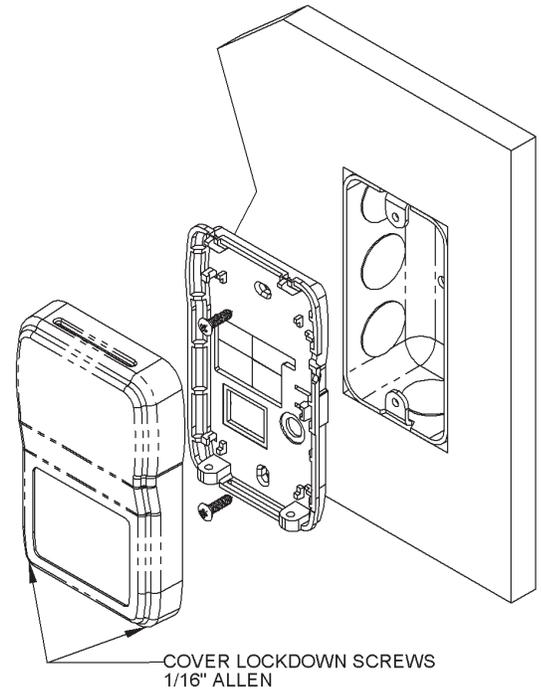


Fig. 2: Mounting to a Junction Box

Drywall Mounting

1. Place the base plate against the wall where you want to mount the sensor.
2. Mark out the two mounting holes and the area where the wires will come through the wall.
3. Drill two 3/16" holes in the center of each marked mounting hole, DO NOT punch the holes or the drywall anchors will not hold. Insert a drywall anchor into each hole.
4. Drill one 1/2" hole in the middle of the marked wiring area.
5. Pull the wire through the wall and out of the 1/2" hole, leaving about six inches free.
6. Pull the wire through the hole in the base plate.
7. Secure the base to the drywall anchors using the #6 x 1 inch mounting screws provided.
8. Terminate the unit according to the guidelines in the Termination section. (page 3)
9. Mold the foam on the unit's base to the wire bundle to prevent drafts. (see note below)
10. Attach cover by latching it to the top of the base, rotating the cover down and snapping it into place.
11. Secure the cover by backing out the lock-down screw using a 1/16" Allen wrench until it is flush with the bottom of the cover.

NOTE: In any 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 sensor failure. To prevent these conditions, BAPI recommends sealing the conduit leading to the junction box, filling the junction box with fiberglass insulation or sealing the wall cavity.

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 recommends wiring the product with power disconnected. Proper supply voltage, polarity, and wiring connections are important to a successful installation. Not observing these recommendations may damage the product and will void the warranty.

Note: Unit is not ready for operation until the ten-minute start-up time has elapsed.

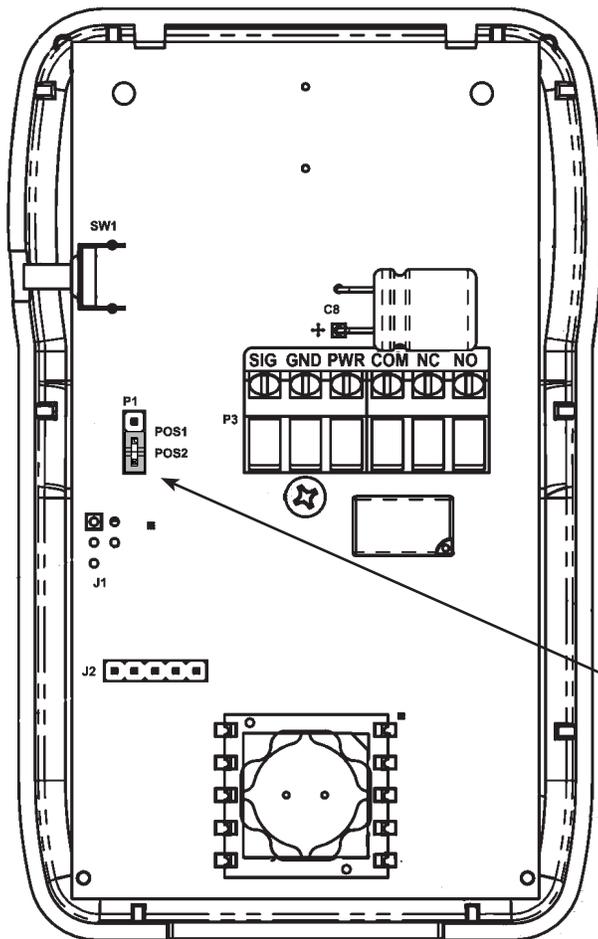
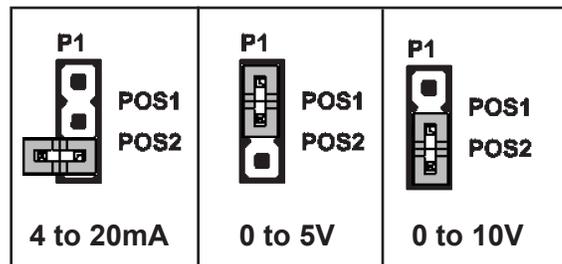


Fig. 3: Circuit Board

Terminal Function

- PWR** 24 VAC/VDC +/- 10%
- GND** To controller Ground [GND or Common]
- SIG** Output, CO Signal
4 to 20 mA, 0 to 5 or 0 to 10 VDC,
Referenced to GND
- COM** Relay Contact Common
- NC** Relay Contact, Normally Closed
Referenced to COM
- NO** Relay Contact, Normally Open
Referenced to COM



Note: The CO Output may be field configured for 4 to 20 mA, 0 to 5 or 0 to 10 VDC outputs at any time. Set the Jumper on P1 as shown above.



CO Room Sensor in a BAPI-Stat 4 Enclosure

Installation and Operating Instructions

37237_ins_BS4_CO

rev. 07/22/21

Recessed Test Button Operation

A recessed Test button on the side of unit can be used to test the alarm buzzer and LEDs. When the recessed Test button is pressed, the Green LED is illuminated, the alarm buzzer chirps once and the Red LED flashes 4-5 times. Then the Green LED goes off, the Red LED flashes and the alarm buzzer sounds twice. The relay is not activated by pressing the Test button.

Diagnostics

Possible Problems:

General troubleshooting

Possible Solutions:

Determine that the input is set up correctly in the controller's and building automation software.

Check wiring at the sensor and controller for proper connections.

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.

Check the wiring between the sensor and controller. Label the terminals at the sensor end and the controller end. Disconnect the interconnecting wires from the controller and the sensor. With the wires disconnected, 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. 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.

Check power supply/controller voltage supply

Disconnect sensor and check power wires for proper voltage (see specifications on page 1)

Incorrect CO

Wait 15 minutes after a power interruption.

Check all BAS controller software parameters.

Determine if the sensor is exposed to an external environment different from the room environment (conduit draft).

Specifications subject to change without notice.