Indoor Air Quality CO_2 Sensor and Duct-Mounted Aspirator Box

Installation Instructions

Part Numbers: 33ZCSPTCO2-01, 33ZCSPTCO2LCD-01, 33ZCASPCO2

IMPORTANT: Read entire instruction before installing the sensor.

SAFETY CONSIDERATIONS

Installing, starting up and servicing HVAC (Heating, Ventilation, and Air Conditioning) equipment can be hazardous due to system pressures, electrical components and equipment locations.

Only trained, qualified installers and service technicians should install, start up and service this equipment.

When working on HVAC equipment, observe precautions in the literature, labels attached to the equipment and any other safety precautions that apply.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care when handling and installing the sensor.

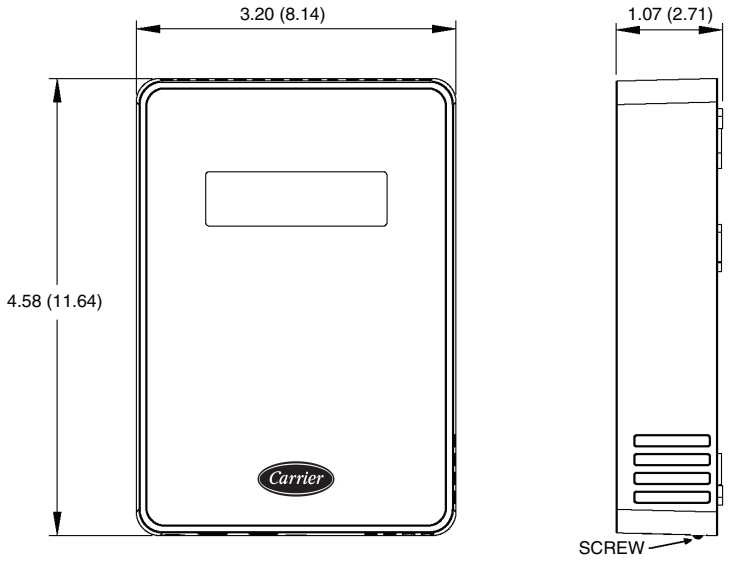
Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety alert symbol (⚠). DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies a hazard which could result in personal injury or death. CAUTION is used to identify unsafe practices which would result in minor personal injury or property damage.

GENERAL

Carrier's 33ZCSPTCO2-01, 33ZCSPTCO2LCD-01 carbon dioxide sensor is designed to monitor carbon dioxide (CO_2) levels in the air and interface with the ventilation damper in an HVAC system using patented ABC (Automatic Background Calibration) Logic™ software. ABC Logic software is a self-calibrated system that measures indoor CO_2 levels.

The CO_2 sensor utilizes single beam absorption infrared sensing technology that produces stable, reliable, and highly accurate carbon dioxide readings. The sensor measures CO_2 levels in the 0 to 9999 parts per million (ppm) range (with a default range of 0 to 2000 ppm) and provides the reading as output in the form of an analog signal (4 to 20 mA or 0 to 5 vdc or 0 to 10 vdc). The CO_2 level output can be used as input to a Carrier controller to control the ventilation damper position and ensure an adequate level of outside air in the building. This is one of several approved methods of controlling the indoor-air quality (IAQ) in a building and meet the requirements of local building codes and ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) standard 62-1999.

The sensor is secured to a mounting plate by a locking screw. See Fig. 1. Power is supplied by running conduit through a knockout and wiring to the terminal blocks located on the sensor mounting bracket.



NOTE: Dimensions are in inches (cm).

Fig. 1 — CO_2 Sensor (Part No. 33ZCSPTCO2LCD-01) and Dimensions

A self-contained aspirator box accessory (part no. 33ZCASPCO2) is available to house the sensor for duct mount installations to measure CO_2 levels in ductwork. See Fig. 2. An internal mounting bracket secures the base of the CO_2 sensor inside the aspirator box.

INSTALLATION

The CO_2 sensor must be placed in an area that is representative of the entire conditioned space. Mount the sensor 4 to 6 ft. for easy access. For installations where it is not necessary to reach the sensor, it may be mounted higher on the wall or on the ceiling, provided the location represents a good sampling of air.

Field-Supplied Hardware — Two 8 x 32 machine screws are needed for junction box installation.

Step 1 — Determine Sensor Location — The sensor should be mounted:

- at least 3 ft from any corner and 4 to 6 ft from the floor
- on an internal wall near a return air grille or duct
- close to or in a frequently used room, preferably on a flat, inside partitioning wall
- where temperature operating limits are within 32 to 122 F (0° to 50 C)

The sensor should **NOT** be mounted:

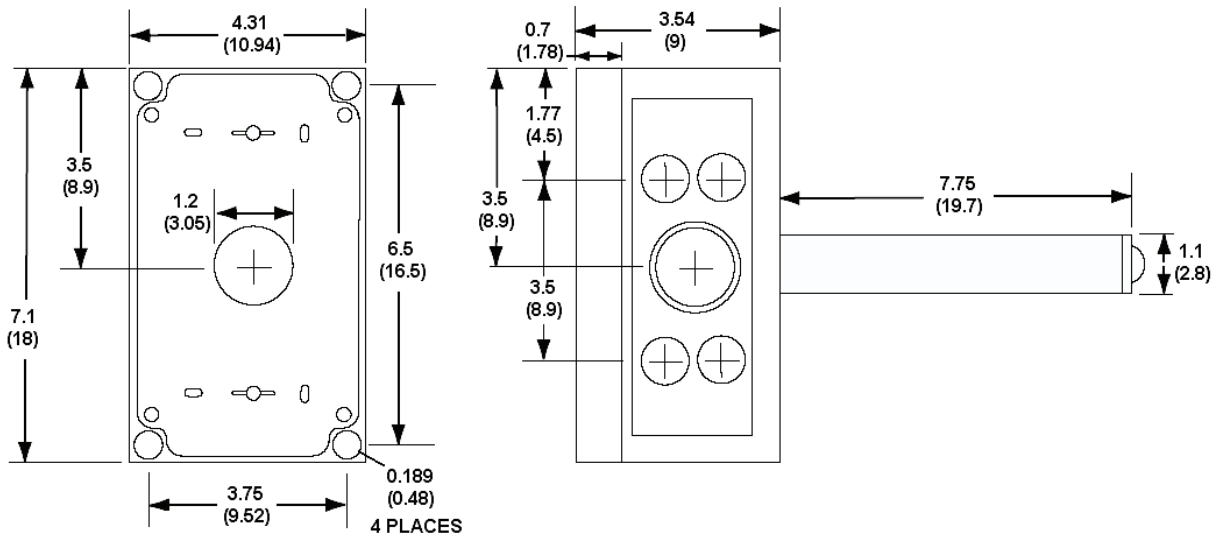
- close to a window, on an outside wall, or next to a door leading to the outside
- where it may be exposed to direct occupant breathing
- close to or in direct airflow of areas such as open windows, drafts or over heat sources
- in areas with poor air circulation, such as behind a door or in an alcove
- in areas where there are dramatic temperature fluctuations or moisture accumulation

Step 2 — Determine Wiring Requirements — The indoor air quality sensor wiring has the following requirements:

1. Power requirements: 18 to 30 vac RMS 50/60 Hz; 18 to 42 vdc polarity protected/dependent; 0.7W average 2W peak at 24 vdc.
2. All system wiring must be in compliance with all applicable local and national codes.
3. A dedicated power supply is required for this sensor.
4. All sensor wiring should be color coded for ease of maintenance and service. Two wires are required.
5. A two-wire cable is required to wire the dedicated power supply for the sensor. The two wires should be connected to the power supply and terminals 1 and 2. See Fig. 3 and Table 1.
6. A second separate pair of wires is required for the sensor output. This pair of wires should be connected to terminals 7 and 8 for a voltage output or to terminals 6 and 7 for mA output

⚠ WARNING

Before performing service or maintenance operations on the system, turn off main power switches to the unit. Electric shock can cause personal injury.



NOTE: Dimensions are in inches (cm).

Fig. 2 — Aspirator Box Accessory (Part No. 33ZCASPCO2) and Dimensions

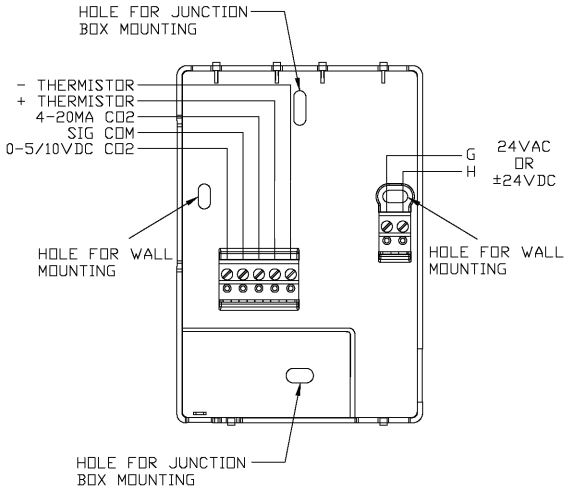
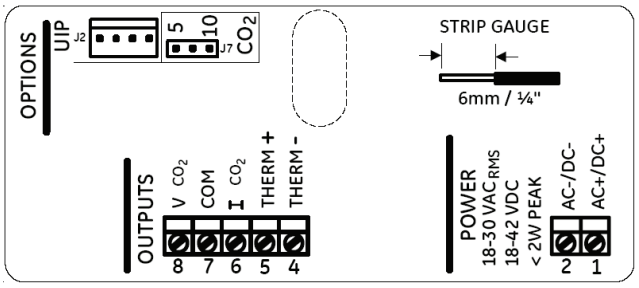


Fig. 3 — CO_2 Sensor 33ZCSPTCO2-01, 33XCSPTCO2LCD-01 — Wiring Diagram

Table 1 — CO_2 Sensor 33ZCSPTCO2-01, 33ZCSPTCO2LCD-01 — Terminal Block Designations (Dedicated Power Supply is Required)

JUMPER	TERMINAL NUMBER	TERMINAL BLOCK DESIGNATIONS
Power Input	AC 2	G (24 VAC — dedicated power supply)
	AC 1	H (24 VAC)
	DC 2	G (24 DC –)
	DC 1	H (24 DC +)
Power Output	8	0 -5 VDC
	7	SIG COM
	6	4 to 20 mA
	5	Thermistor +
	4	Thermistor -



Step 3 — Mount the Sensor — The indoor air quality sensor can be mounted on a surface, wall or in a junction box.

SURFACE OR WALL MOUNTING

1. Run the wall wiring to the sensor. Wiring should enter sensor through hole in wall plate.
2. Place the sensor wall plate on the wall. Mark the mounting screw holes on the wall through the 2 holes in the wall plate.
3. Drill 2 mounting holes in the wall in the location marked in Step 2.
4. Mount the sensor wall plate with the 2 screws provided. Use the wall anchors if necessary.
5. Connect the wall wiring to the sensor wiring terminals as described in Step 2 — Determine Wiring Requirements. See Table 1 for terminal block designations.
6. See Step 4 for sensor installation instructions.

JUNCTION BOX MOUNTING

1. Run wires through knockout in junction box.
2. Secure the sensor mounting plate to the junction box using two 8 x 32 machine screws.
3. Connect the wall wiring to the sensor wiring terminals as described in Step 2 — Detrmine Wiring Requirements. Refer to Table 1 for terminal block designations.
4. See Step 4 for sensor installation instructions.

Step 4 — Install the Sensor — Perform the following procedure to install the sensor:

1. Attach the controller to the base by aligning the top clips and then securing the bottom clips. See Fig. 4. A "snap" sound will indicate that the sensor is secure. Install the locking screw at enclosure bottom using the screw provided.
2. A one-minute warm-up will take place. The sensor will stabilize and display the "Normal Mode" (current CO_2 readings).

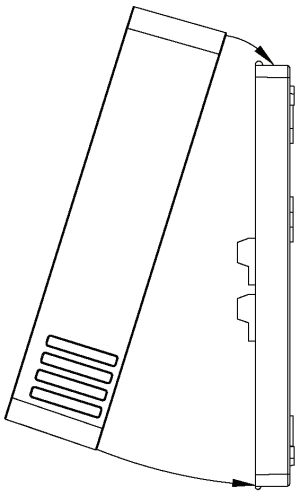


Fig. 4 — Attach CO_2 Sensor to Wall Plate

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