



## WARNING—REFER SERVICING TO QUALIFIED PERSONNEL ONLY!

- Read instructions thoroughly prior to install
- This product is not intended for life or safety applications

Applications shown are suggested means of installing sensors, but it is the responsibility of the installer to ensure that the installation is in compliance with all national and local codes and OSHA requirements. Installation should be attempted only by individuals familiar with proper installation techniques and with codes, standards, and proper safety procedures for control installations.

## INTRODUCTION

**NOTE:** The CDE Series is housed in a 2 piece, NEMA 4 plastic enclosure, which is designed for direct duct mounting. To ensure proper operation and to maintain enclosure integrity always use gasket material between housing and duct, tighten the self-sealing compression fitting around control wiring, and do not punch out any unused conduit knockouts.

The CDE Series is a non-dispersive infrared analyzer designed for measuring environmental CO<sub>2</sub> concentration in ventilation systems and indoor living spaces. Its measurement range of 0-2000 ppm covers the range required to monitor compliance with ASHRAE or other ventilation efficiency standards.

The CD Series provides a user-selectable 4-20mA or 0-10VDC output. Microprocessor-based digital electronics and a unique self-calibration algorithm improves long-term stability and accuracy.

## SPECIFICATIONS

### General

Input Voltage.....	20 to 30 VDC/24VAC
Analog Output.....	0-10VDC or 4-20mA (selectable)
Sensor Current Draw.....	100mA maximum
Operating Temperature Range.....	0° to 50°C (32°F to 122°F)
Material.....	ABS high impact plastic, UL 94 V0

### CO<sub>2</sub> - Carbon Dioxide Sensor

Sensor Type.....	Non-dispersive infrared (NDIR) diffusion sampling
Measurement Range.....	0-2000 ppm
Accuracy.....	±30ppm, ±5% of measured value
Repeatability.....	±20ppm, ±1% of measured value
Response Time.....	<60 seconds for 90% step change

### Duct Pickup Tube

Tube Type.....	Velocity pressure pickup
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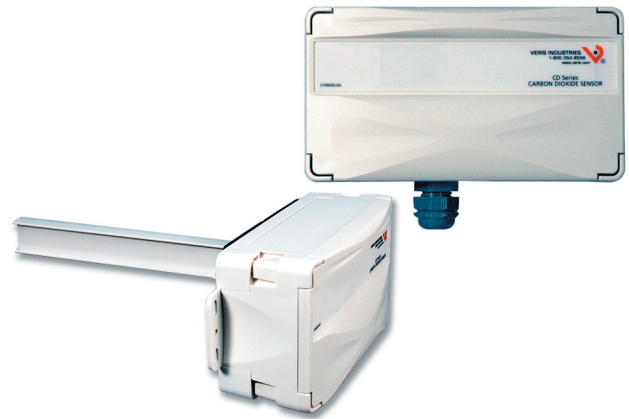
## Installation Instructions

# CDE SERIES Environmental CO<sub>2</sub> Sensors Duct Mounting

## VERIS INDUSTRIES

PORTLAND, OREGON USA  
(503) 598-4564 FAX (503) 598-4664  
1-800-354-8556

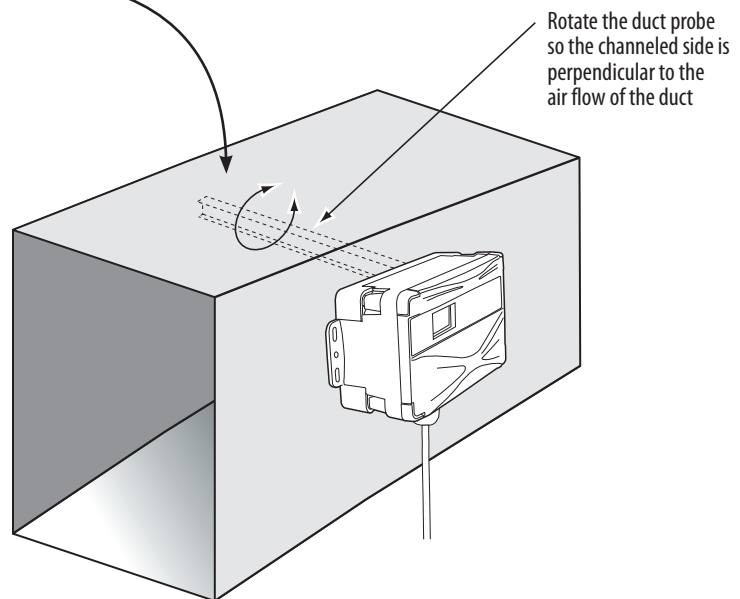
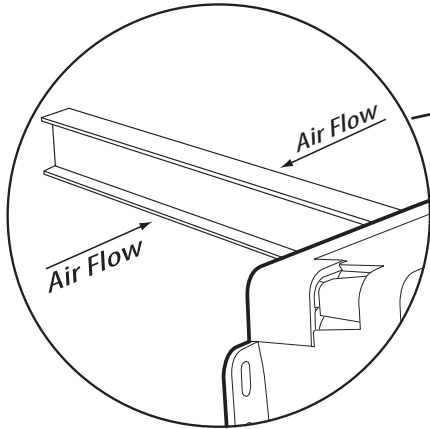
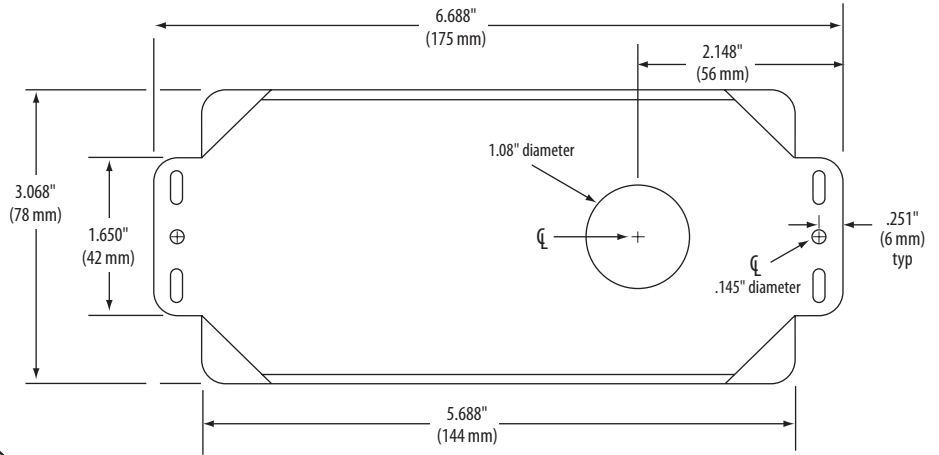
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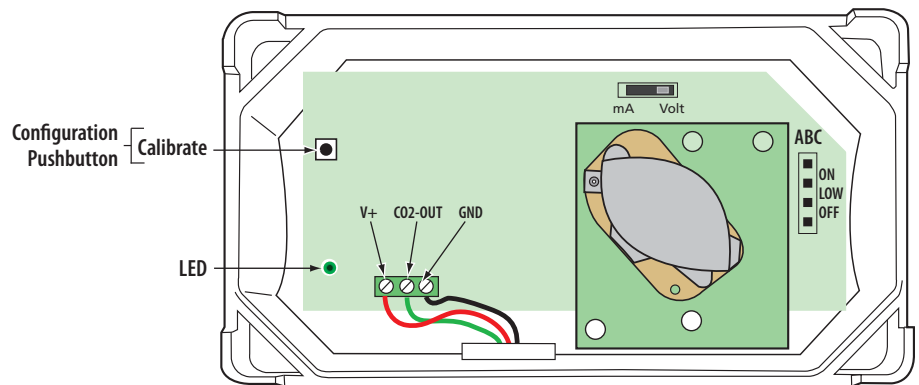
**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, many cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

# INSTALLATION

**STEP 1:** Mark and drill the three holes for the duct probe as shown. The centerline must be parallel to the air flow through the duct. Rotate the duct probe so that its widest surface is perpendicular to the air flow in the duct. Insert the probe and secure the sensor to the duct with sheet metal screws, making sure that the provided gasket material is compressed between the sensor housing and the air duct.



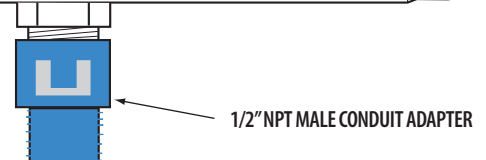
**STEP 2:** Feed control wire through conduit adapter and grommeted compression fitting on the bottom of the housing. Remove terminal blocks by pulling straight up on the green assemblies. Connect wires as shown and push terminal blocks back into black receptacles. Tighten compression fitting around control wire until sealed. Snap conduit adapter onto compression fitting. Refer to specifications for power requirements and relay rating. Select mA or Volt output using selector switch.



**STEP 3:** Attach cover by sliding into back housing until it snaps into place. No screws are required.

**WARNING:** Applying power to output terminal may cause permanent damage!

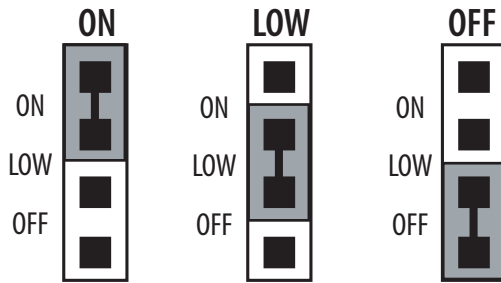
**NOTE:** This box must be sealed to prevent air outside the duct from entering. Use compression fitting provided.



# ABC CALIBRATION ALGORITHM

ABC (Automatic Baseline Calibration) is a patented self-calibration feature, which automatically adjusts the CO2 sensor to compensate for drift. When ABC is enabled, the lowest reading within every 24-hour period is recorded and analyzed over a running 7 day or 28-day period. If a statistically significant amount of drift is detected, an automatic correction factor is applied. This enables the sensor to operate within specifications for the 5-year calibration interval.

## ABC SETTINGS - CDE



**ON POSITION.** Recommended Setting! Use the "ON" Setting for applications where the building is unoccupied within a 24 hr. timeframe.

**LOW POSITION.** Use the "LOW" setting for buildings occupied 24hrs a day.

**OFF POSITION.** Not Recommended!

## OUTPUT SCALING

### CO2 - Carbon Dioxide Sensor

Output scaling: 0-2000ppm

	CO2 PPM	VOLT OUTPUT	mA OUTPUT
Outside	300-500	1.5 to 2.5	6.4 to 8
Over Ventilated	Under 600	Under 3	Under 8.8
Ideal Ventilation	600-900	3 to 4.5	8.8 to 11.2
Under Ventilated	Over 900	Over 4.5	Over 11.2

## CALIBRATION PROCESS

1. Hook up hose to plastic port located on sensing module.
2. Start flowing (Nitrogen) 0 ppm Gas (0 ppm only).
3. Push and hold down calibration button until the LED illuminates.
4. Continue flowing gas through the sensor until the LED is off - estimated Calibration time is 30 seconds to five minutes.

