



## 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 CD 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 of the conduit knockouts.

The CD 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 or 0-5000 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. A 5VDC output is also available. An LCD display is available to provide local indication of CO<sub>2</sub> concentration and facilitate the setup and calibration process. An adjustable setpoint relay is available for direct control and alarm applications. 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.....	0-5VDC, 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 or 0-5000 ppm; user adjustable
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

# CD 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

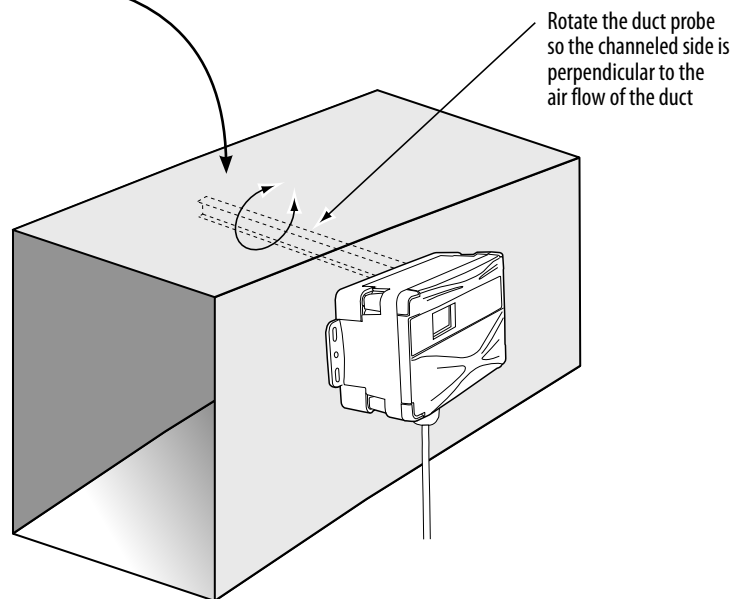
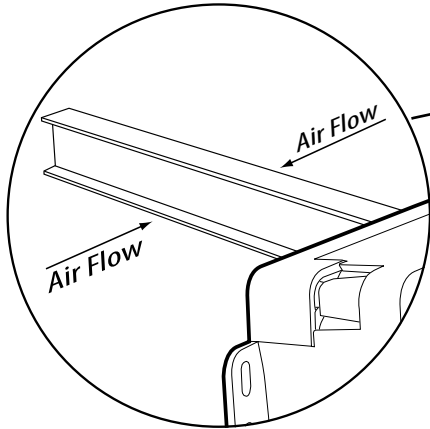
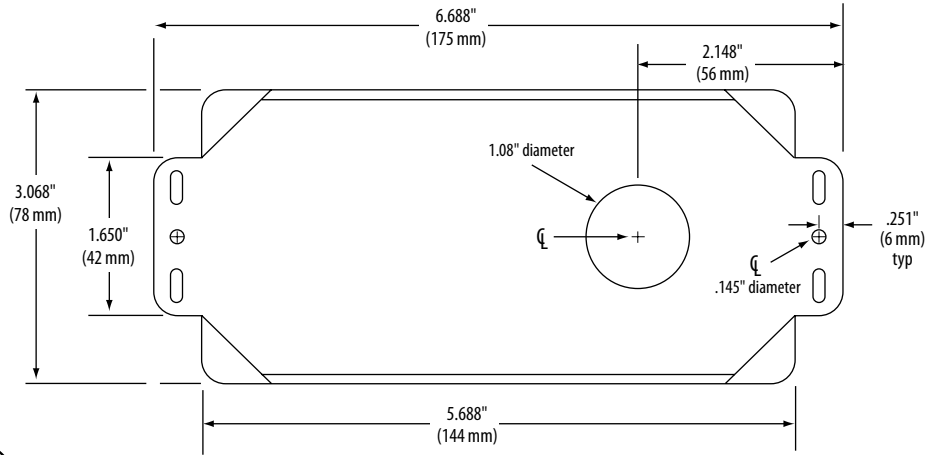
<http://www.veris.com> email:[sales@veris.com](mailto:sales@veris.com)



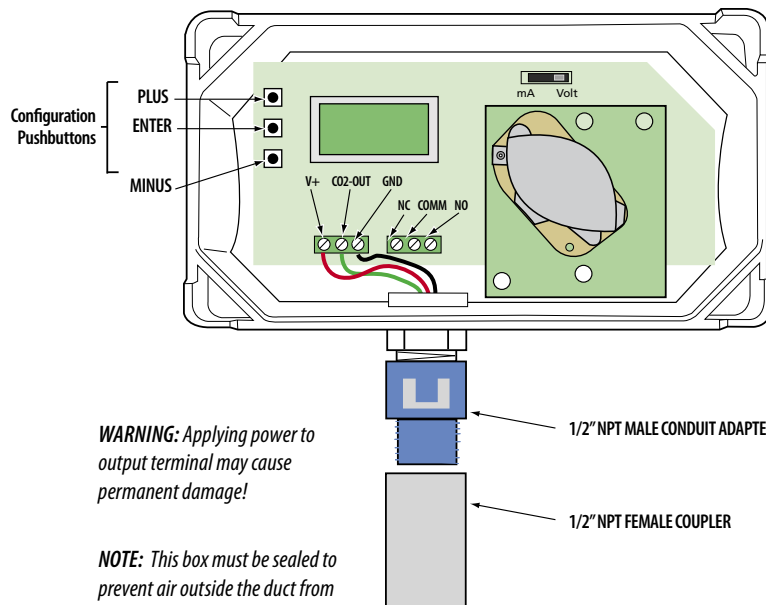
**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment 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.

# CONFIGURATION CDL VERSION

## RUN MODE:

1	0	0	0		P	P	M
					C	0	2

CO2 ONLY MODEL  
\*INDICATES RELAY STATUS

## CONFIGURATION MODE:

PRESS [ENTER] FOR CONFIGURATION MODE.  
PRESS PLUS OR MINUS TO CHANGE SETTING.

S	E	T	P	O	I	N	T
C	0	2			8	0	0

RANGE 500 TO 1500  
50PPM INCREMENT

## CALIBRATION MODE:

PUSH AND HOLD PLUS AND MINUS FOR 5 SECONDS  
TO ENTER MODE. PRESS ARROW TO CHANGE OPTION.  
PUSH ENTER FOR NEXT SELECTION.

	S	E	R	I	A	L	
X	X	X	X	X	X	X	X

DISPLAYS SERIAL NUMBER

D	E	A	D	B	A	N	D
C	0	2			1	0	0

RANGE 10 TO 500  
5 PPM INCREMENT

		X	X	X			
	X	X	X	X	X		

DISPLAYS MODEL NUMBER

R	A	N	G	E			
C	0	2		X	X	X	X

OPTIONS ARE 2000 OR 5000

C	0	2		C	A	L	?
-			X	X	X		+

OPTIONS ARE YES, NO

A	B	C		M	O	D	E
-		X	X	X			+

OPTIONS ARE ON, LOW, OFF  
SEE NEXT PAGE FOR EXPLANATION

C	A	L		G	A	S	?
-			X	X	X	X	+

OPTIONS ARE NONE, 0, 400

	O	U	T	P	U	T	
-	0	-	1	0	V		+

(VOLTAGE MODE ONLY)  
OPTIONS: 0-10V OR 0-5V  
DEFAULT IS 0-10V

W	O	R	K	I	N	G	
	*			5	:	0	0

Unit will automatically return to run mode  
when calibration is complete.

**NOTE:** This product is factory calibrated. The typical CO<sub>2</sub> sensor calibration interval is 5 years, dependent on specific site installation factors. As of the date of this document, compliance with ANSI/ASHRAE 62-2001 requires minimum on-site accuracy verification intervals of 6 months, or per the building operation and maintenance manual. Accuracy verification should be performed using a comparison to a known reference, or the CO<sub>2</sub> gas calibration kit available from Veris Industries as model AA01.

**WARNING:** CO<sub>2</sub> sensor calibration requires gas calibration kit. Performing calibration without gas kit will cause erroneous readings. Consult factory for calibration kit.

# ABC CALIBRATION ALGORITHM

ABC (Automatic Baseline Calibration) is a patented self-calibration feature, which automatically adjusts the CO<sub>2</sub> 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 for the CDL are done in the menu configuration mode, see page 3.

# OUTPUT SCALING

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

Output scaling: 0-2000ppm

	CO <sub>2</sub> PPM	0-10 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. Enter Calibration mode as described on page 3.

