CD SERIES

NOTICE

- This product is not intended for life or safety applications.
- Do not install this product in hazardous or classified locations.
- Read and understand the instructions before installing this product.
- Turn off all power supplying equipment before working on it.
- The installer is responsible for conformance to all applicable codes.

PRODUCT IDENTIFICATION

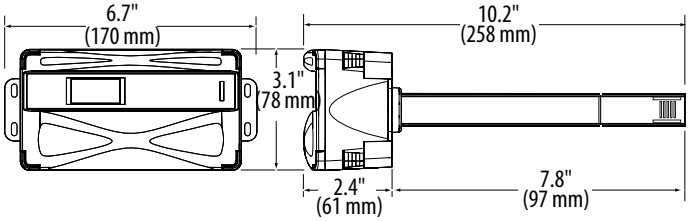
DELUXE MODEL:

		RH Option	Temp	Sensor Type	Optional Cal Cert.
CDL	S	☐	☐	☐	☐
		H = RH2%	T = Temp	A = Transmitter	Blank = None
		X = NO RH	X = No Temp (Stop Here)	B = 100R Platinum, RTD	1 = 1 pt Temp Cert
				C = 1k Platinum, RTD	2 = 2 pt Temp Cert
				D = 10k T2, RTD, Thermistor	
				E = 2.2k, Thermistor	
				F = 3k, Thermistor	
				G = 10k CPC, Thermistor	
				H = 10k T3, Thermistor	
				J = 10k Dale, Thermistor	
				K = 10k w/11k shunt, Thermistor	
				M = 20k NTC, Thermistor	
				N = 1800 ohm, Thermistor	
				R = 10k US, Thermistor	
				S = 10k 3A221, Thermistor	
				T = 100k, Thermistor	
				U = 20k "D", Thermistor	

ECONOMY MODEL:

CDE (no options)

DIMENSIONS



CD SERIES

Duct Mounted Environmental CO_2 Sensors

Installer's Specifications

Input Voltage	20 to 30VDC, 24AC
Analog Output	CDE models: 4-20mA (clipped & capped)/0-10VDC (selectable)
	CDL models: 4-20mA (clipped & capped)/0-5VDC/0-10VDC (selectable)
Sensor Current Draw	100mA Maximum
Operating Temperature Range	0° to 50°C (32° to 122°F)
Operating Humidity Range	0-95% (noncondensing)
Housing Material	High impact ABS plastic
CO_2 Transmitter:	
Sensor Type	Non-dispersive infrared (NDIR), diffusion sampling
Output Range	0-2000 ppm or 0-5000 ppm, user selectable on CDL models, 0-2000 ppm on CDE models
Accuracy	±30 ppm ±2% of measured value*
Repeatability	±20 ppm ±1% of measured value
Response Time	<60 seconds for 90% step change
*RH Transmitter**:*	
HS Sensor	Digitally profiled thin-film capacitive (32-bit mathematics); U.S. Patent 5,844,138
Accuracy	±2% from 10 to 80% RH @ 25°C; Multi-point calibration NIST
Hysteresis	1.5% typical
Linearity	Included in Accuracy spec.
Stability	±1% @ 20°C (68°F) annually, for two years
Output Range	0 to 100% RH
Temperature Coefficient	±0.1% RH/°C above or below 25°C (typical)
*Temperature (Transmitter)**:*	
Sensor Type	Solid-state, integrated circuit
Accuracy	±0.5°C (±1°F) typical
Resolution	0.1°C (0.2°F)
Output Range	10° to 35°C (50° to 95°F)
*Relay Contacts**:*	
1 Form C	1A@30VDC, resistive; 30W max.

Specified accuracy with 24VDC supplied power with rising humidity. RTD/Thermistors in wall packages are not compensated for internal heating of product.
EMC Conformance: EN 61000-6-3:2001 (Amended by A11:2004) Class B, EN 61000-6-1:2001
EMC Test Methods: CISPR 22:2006, IEC 61000-4-2:2001, IEC 61000-4-3:2006, IEC 61000-4-4:2004, IEC 61000-4-6:2006, IEC 61000-4-8:2001, IEC 61000-4-11:2004
EMC Special Note: Connect this product to a DC distribution network or an AC/DC power adaptor with proper Surge protection (EN 61000-6-1:2001 specification requirements).
** Measured at NTP*
*** Not available on CDE*
Note: Rough handling and transportation may cause a temporary reduction of CO_2 sensor accuracy. With time, the ABC function will tune the readings back to the correct accuracy range. The default tuning speed is limited to 30 ppm per week.

QUICK INSTALL

1. Using the mounting diagram on page 2, or using the housing as a template, mark and drill the four mounting holes on the duct. The centerline through the housing must be parallel to the air flow through the duct.
2. Rotate the duct probe so that its widest surface is perpendicular to the air flow in the duct.
3. Insert the probe and secure the sensor to the duct with the sheet metal screws provided, making sure that the provided gasket material is compressed between the sensor housing and the air duct.
4. Wiring. See wiring diagrams on next page.

  USA 800.354.8556 or +1.503.598.4564 / support@veris.com

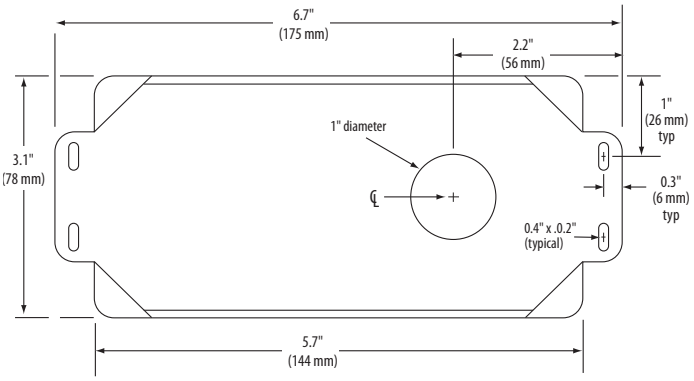
OPERATION

CD series duct mount CO_2 sensors measure the levels of CO_2, RH (if equipped), and temperature (if equipped) of air inside a duct. The CO_2 sensor operates within accuracy specifications for an interval of 5 years and can be field calibrated. The temperature element is warranted to meet accuracy specifications for a period of 5 years. RH equipped models feature a replaceable HS Series humidity element that is warranted to meet accuracy specifications for a period of 1 year. To maintain accuracy, all vents must remain clear and free of dust, debris, etc.

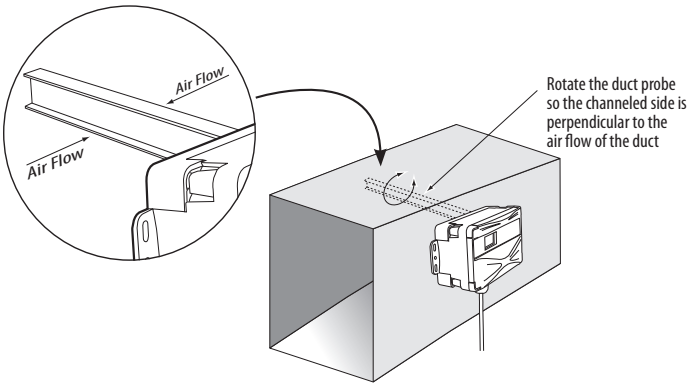
INSTALLATION

Observe handling precautions for static sensitive devices to avoid damage to the circuitry which would not be covered under the factory warranty.

1. Choose a location to mount the sensor. The centerline of the housing must be parallel to the direction of air flow in the duct.
2. Use the mounting diagram to drill the four holes in the duct for securing the sensor.



3. Insert the probe into the hole. Rotate the housing so that the widest surface is perpendicular to the air flow.

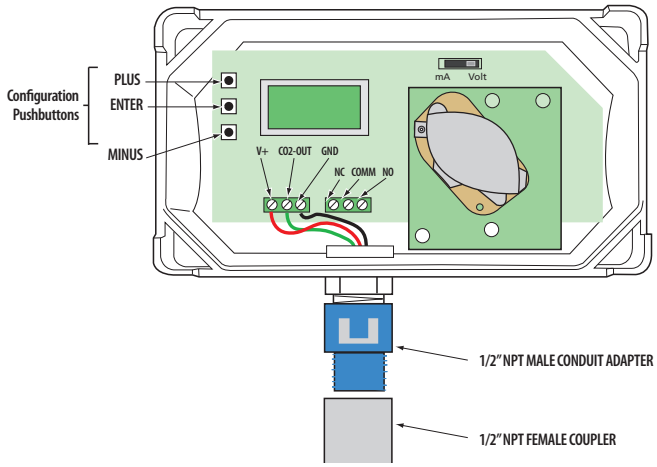


4. Attach the sensor to the duct using the sheet metal screws provided. Make sure that the gasket on the back of the housing is compressed between the housing and the duct for a secure fit.
5. Wire the device. See Wiring section.
6. Configure the system using the menu (CDL only; see Configuration section).
7. Calibrate using 0 ppm CO_2 gas (see Calibration section).

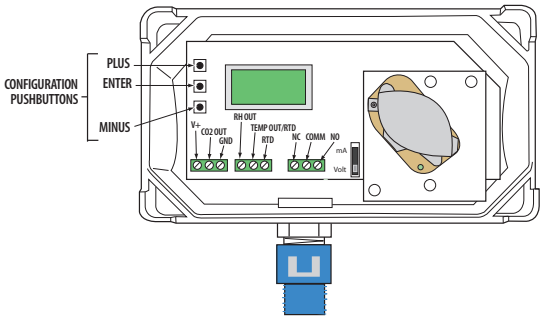
WIRING

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

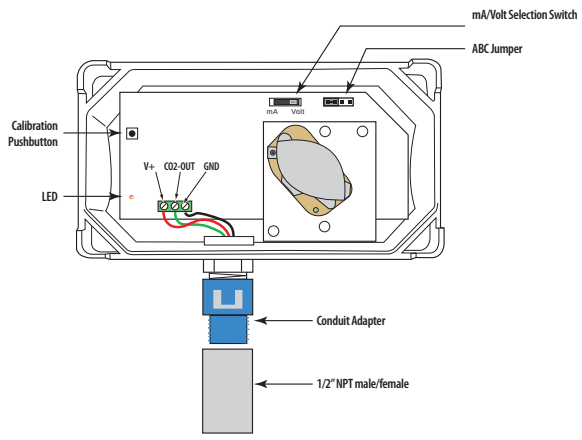
CDL - CO_2 Only



CDL with Temp & RH Options



CDE



CONFIGURATION: CDL MODELS

RUN MODE:

1	0	0	0		P	P	M
		*			C	0	2

CO2 ONLY MODEL
**INDICATES RELAY STATUS*

1	0	0	0		P	P	M
5	0	.	0		%	R	H

CO2/RH COMBO MODEL

1	0	0	0		P	P	M
7	0	.	0			°	F

CO2/T COMBO MODEL

1	0	0	0		P	P	M
X	X	.	X		X	X	X

CO2/RH/T COMBO MODEL
TOGGLE %RH AND DEGREES

CONFIGURATION MODE:

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

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

RANGE 500 TO 1500
50PPM INCREMENT

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

RANGE 10 TO 500
5 PPM INCREMENT

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

OPTIONS ARE 2000 OR 5000

A	B	C		M	O	D	E
–		X	X	X			+

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

U	N	I	T	S			
–			°	X			+

(TEMP MODELS ONLY)
OPTIONS ARE °F or °C

	O	U	T	P	U	T	
–	0	–	1	0	V		+

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

	O	U	T	P	U	T	
	4	–	2	0	m	A	

(mA MODE ONLY)

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

		X	X	X			
	X	X	X	X	X		

DISPLAYS MODEL NUMBER

O	F	F	S	E	T		
°	C				X	.	X

RANGE IS -5 TO 5°C
0.1°C INCREMENT
(CO_2/temp combo models)

O	F	F	S	E	T		
%	R	H		X	X	.	X

RANGE -10 TO 10%
0.1% INCREMENT
(CO_2/RH combo models)

C	O	2		C	A	L	?
–			X	X	X		+

OPTIONS ARE YES, NO

C	A	L		G	A	S	?
–			X	X	X	X	+

OPTIONS ARE NONE, 0, 400

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_2 sensor calibration interval is 5 years, depending 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. Verify accuracy using a comparison to a known reference or the CO_2 gas calibration kit available from Veris Industries as AA01.

WARNING: CO_2 sensor calibration requires gas calibration kit. Performing calibration without gas kit or at an incorrect gas flow rate will cause erroneous readings.

ABC CALIBRATION ALGORITHM

ABC (Automatic Baseline Calibration) is a patented self-calibration feature that automatically adjusts the CO_2 sensor to compensate for drift. When ABC is enabled, the sensor records the lowest reading within every 24-hour interval and compares these values over a running 7-day or 28-day period. If a statistically significant amount of drift is detected, the ABC applies an automatic correction factor. This enables the sensor to operate within specifications for the 5-year calibration interval.

ON POSITION. Recommended Setting. Use the ON setting for applications where the building is unoccupied within a 24-hour timeframe.

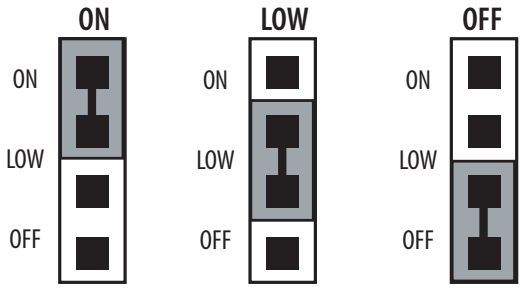
LOW POSITION. Use the LOW setting for buildings occupied 24 hours a day.

OFF POSITION. Not Recommended.

NOTE: After changing the ABC settings, power cycle the unit for changes to take effect.

To set the ABC mode for CDL models, refer to the Configuration section on page 3.

To set the ABC mode for CDE models, position the ABC jumper as shown:



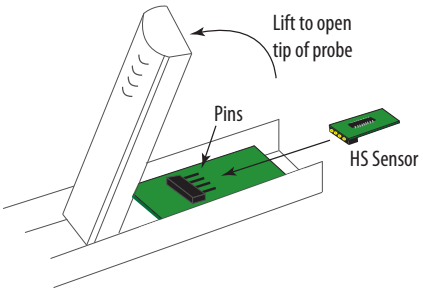
CDL MODELS ONLY

CDL versions have optional RH and temperature sensors.

Observe handling precautions for static sensitive devices to avoid damage to the circuitry which would not be covered under the factory warranty.

To Replace Humidity Sensor:

1. Power down unit
2. Remove CDL from duct to access probe tip.
3. Open tip of duct probe
4. Slide old RH sensor off pins
5. Slide new RH sensor onto pins.
6. Re-install CDL in duct and re-secure with screws provided.
7. Power unit back on



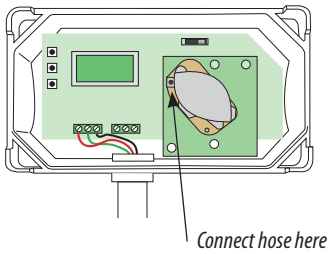
OUTPUT SCALING

Output scaling: 0-2000 ppm

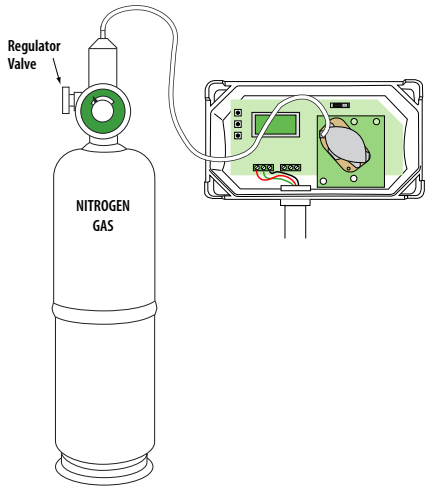
	CO_2 ppm	0-5 Volt Output	0-10 Volt Output	mA Output
Outside	300-500	0.75 to 1.25	1.5 to 2.5	6.4 to 8
Over Ventilated	Under 600	under 1.5	Under 3	Under 8.8
Ideal Ventilation	600-900	1.5 to 2.25	3 to 4.5	8.8 to 11.2
Under Ventilated	Over 900	over 2.25	Over 4.5	Over 11.2

CALIBRATION PROCESS: CDL MODELS

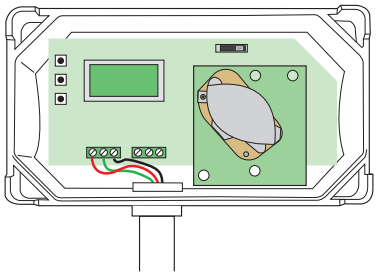
1. Remove cover and connect gas cylinder hose to the plastic port located on sensing module. Note: only connect one sensor to the calibration gas cylinder at a time.



2. Start flowing nitrogen gas (0 ppm CO_2). Use a flow rate of 0.3 to 0.5 liter/minute.



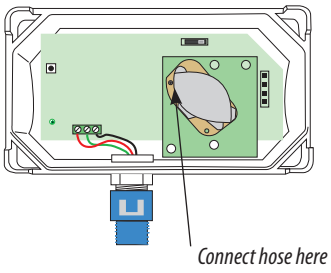
3. Calibrate for 5 min. Unit will return to working display when finished.



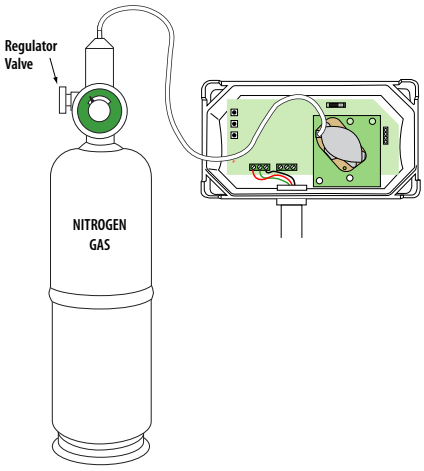
4. When unit returns to working display, remove hose from calibration port and enter Calibration mode as described on page 3.

CALIBRATION PROCESS: CDE MODELS

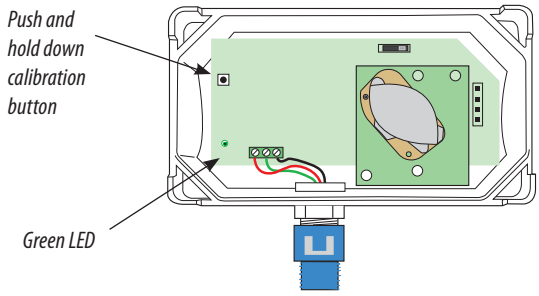
1. Remove cover and connect gas cylinder hose to the plastic port located on sensing module. Note: only connect one sensor to the calibration gas cylinder at a time.



2. Start flowing nitrogen gas (0 ppm CO_2). Use a flow rate of 0.3 to 0.5 liter/minute.



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 5 minutes. Remove hose from calibration port when complete.

For more complete calibration instructions using the AA01 Calibration Kit, see the AA01 Installation Guide.

