GREYSTONE
ENERGY SYSTEMS INC

DUCT CARBON DIOXIDE DETECTOR w/ BACnet® or ModBus Communications

CDD3 Series

The CDD3 series uses a highly accurate and reliable Non-dispersive Infrared (NDIR) sensor combined with state-of-the-art digital linearization and temperature compensated circuitry to monitor duct CO_2, levels. A BACnet or Modbus Communications signal is provided for connection to a building automation system. The duct CO2 principal of operation is based on the Venturi effect of the probe that extends into the HVAC duct. Air flowing through the duct is forced into the vent holes on one side of the probe, into the enclosure, over the CO2 sensor and then the air is drawn back out of the enclosure via the vent holes on the opposite side of the probe. Optional temperature, humidity and adjustable relay are also available.

SPECIFICATION:

Power Supply ..... 20-28 Vac/dc (non-isolated half-wave rectified)
Consumption ..... 80 mA max @ 24Vdc, 140 mA max @ 24Vac with all options
Protection Circuitry ..... Reverse voltage protected, overvoltage protected
Operation Conditions ..... 0˚-50˚C (32˚-122˚F), 0-95% RH non-condensing.
Sensor Coverage Area ..... 100 m^2 (1000 ft^2) typical
Wiring Connections ..... Screw terminal block (14 to 22 AWG)
External Dimensions ..... 145mm W x 100mm H x 63mm D (5.7" x 3.95" x 2.5")
Probe: 177mm (7") long x 25.4mm (1") diameter
Enclosure Ratings ..... IP65 (NEMA 4X)

CO2 Signal:

Measurement Type ..... Non-Dispersive Infrared (NDIR), diffusion sampling
Range ..... 0 - 2000 ppm
Standard Accuracy ..... ±75 PPM @ 1000 ppm @ 22°C (72°F) when compared to certified calibration gas
Temperature Dependence ..... 0.2% FS per °C
Stability ..... < 2 % FS over life of sensor (15 years typical)
Pressure Dependence ..... 0.13% of reading per mm Hg
Altitude Correction ..... Programmable from 0-5000 ft via BACnet® or ModBus
Response Time ..... <2 minutes for 90% step change typical
Warm-up Time ..... <2 minutes

BACnet® Interface:

Hardware 2-wire RS-485
Software ..... Native BACnet® MS/TP protocol
Baud Rate ..... Locally set to 9600, 19200, 38400 or 76800
MAC Address Range ..... Locally set to 0-127 (factory default is 3), (63 devices max on one daisy chain)

ModBus Interface:

Hardware 2-wire RS-485
Software ..... Native ModBus MS/TP protocol (RTU or ASCII)
Baud Rate ..... Locally set to 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 76800 or 115200
Slave Address Range ..... Locally set to 0-64 (factory default is 1), (32 devices max on one daisy chain)

Optional Temperature Signal:

Sensing Element ..... 10K thermistor, ±0.2˚C (±0.4˚F)
Resolution ..... 0.1˚C (0.2˚F)
Range ..... 0˚ to 35˚C (32˚ to 95˚F)

PART NUMBER SELECTED

PRODUCT SELECTION INFORMATION:

MODEL	Product Description
CDD3A20	Duct Carbon Dioxide Sensor w/ BACnet® Communications
CDD3B20	Duct Carbon Dioxide Sensor, w/ Modbus Communications

CODE	Display
0	Concealed
1	Viewable

CODE	Configurations
-	CO_2 Only
RH	CO_2, Humidity & Temperature
T	CO_2 & Temperature

CODE	Options (Leave blank if no options required)
R	Relay Output

Optional RH Signal:

Sensing Element ..... Thermoset polymer based capacitive
Accuracy ..... ± 2% RH
Range ..... 0 - 100% RH, non-condensing
Resolution ..... 1% RH
Hysteresis ..... ± 3% RH
Response Time ..... 15 seconds typical
Stability ..... ± 1.2% RH typical @ 50% RH in 5 years

Optional Relay Output:

Contact Ratings ..... Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc
Relay Trip Point ..... Programmable 500-1500 ppm via BACnet® or ModBus
Relay Hysteresis ..... Programmable 25-200 ppm via BACnet® or ModBus

Optional LCD Display:

Resolution ..... 1 ppm CO2, 1% RH, 1˚C (1˚F)
Size ..... 1.4" w x 0.6" h (35 mm x 15 mm) alpha-numeric 2 line x 8 character
Backlight ..... Enable or disable via keypad

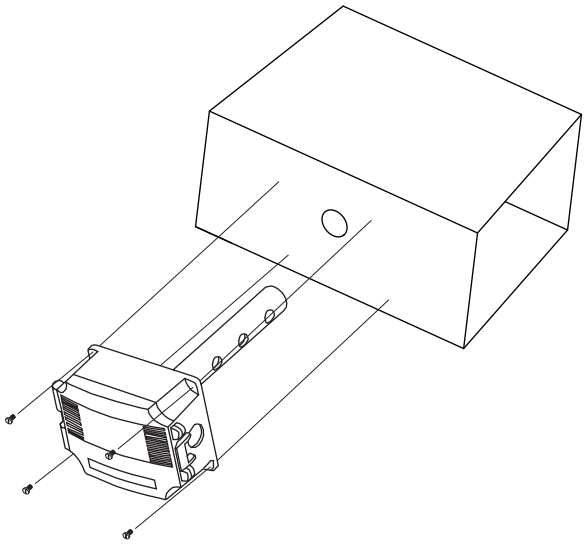
TYPICAL INSTALLATION:

For complete installation and wiring details, please refer to the product installation instructions.

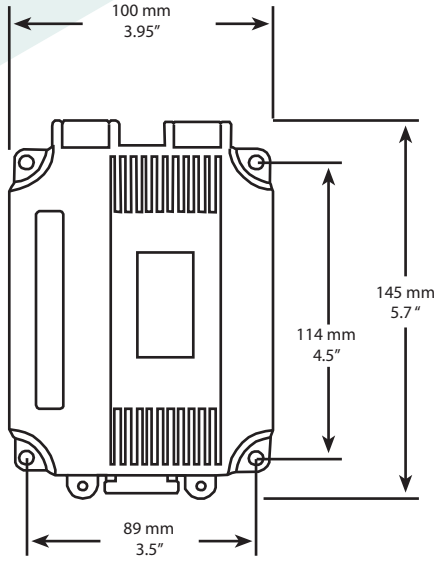
The CDD3 duct type sensor installs on the outside of a return air duct with the sampling tube inserted into the duct.

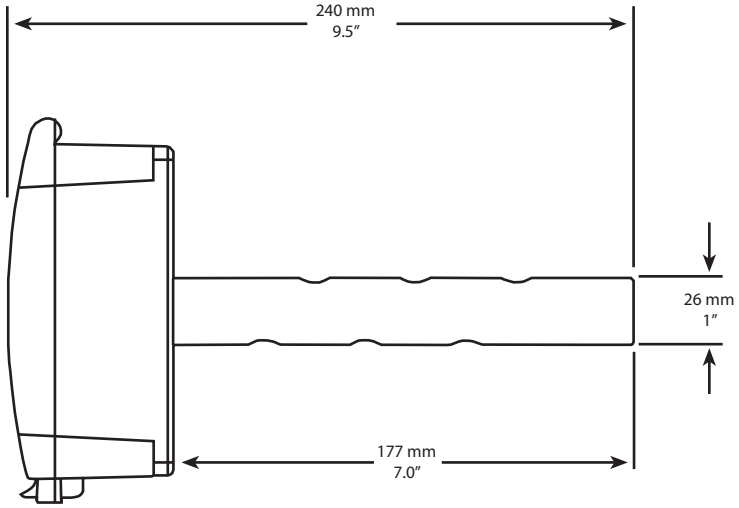
Mount the sensor in an easily accessible location in a straight section of duct at least five feet from corners and other items that may cause disturbances in the air flow. Avoid areas where the detector is exposed to vibrations or rapid temperature changes. Connect conduit, make proper wiring connections

The CDD has a screw block terminal used for connection to the Building Automation System.



DIMENSIONS nts:





5-YEAR CALIBRATION GUARANTEE

Based on the results of years of testing of ACLP software, Greystone now offers a 5-year calibration guarantee on all its CDD series wall and duct mount sensors used for CO_2 based ventilation control when operated in an environment that can utilize ACLP software. If the sensor is found to be out of calibration more than 150 PPM as compared to a calibration gas or recently calibrated reference, Greystone will provide a free factory calibration of the sensor if returned to Greystone. This guarantee only applies if the sensor is operated in an environment where inside levels periodically drop to outside concentrations (i.e. during evenings or weekends when there is no occupancy) as is required by ACLP software. If a space does not experience a periodic drop to outside levels (i.e. where occupancy is 24 hours, 7 days/week), ACLP software should be deactivated. With ACLP deactivated (via menu buttons), calibration may be required every 2 to 3 years.

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RoHS COMPLIANT

Greystone Energy Systems Inc. is one of North America's largest ISO registered manufacturers of HVAC/R sensors and transmitters for Building Automation Management Systems. We have conscientiously established a worldwide reputation as an industry leader by maintaining leading-edge design technology, prompt technical support, and a commitment to on-time deliveries. We take pride in our Quality Management System which is ISO 9001 certified, assuring our customers of consistent product reliability.

GREYSTONE HAS AN **ISO 9001** REGISTERED QUALITY SYSTEM

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