

# GREYSTONE ENERGY SYSTEMS INC

## CARBON DIOXIDE, TEMPERATURE & HUMIDITY DETECTORS CDD5 Series



Space w/Setpoint,  
Override & LCD



Space w/ No Options

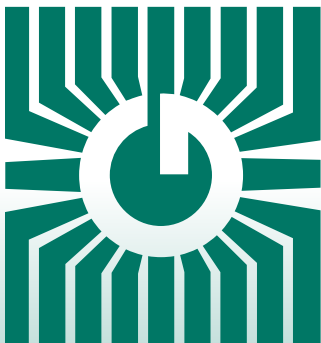


Duct

### Precision carbon dioxide control/sensing

#### FEATURES:

- Space or Duct Models
- 2 Available Ranges
- CO<sub>2</sub>, Temperature & Humidity Outputs
- Optional Slidepot and/or Override
- Optional On-board Relay
- Optional LCD Display
- Custom Logos Available



*Peace of mind  
through reliable  
gas monitoring*

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

# CO<sub>2</sub>, TEMPERATURE & HUMIDITY DETECTOR

## SPECIFICATIONS:

### General Specifications:

Power Supply  
Output Signals

20-28 Vac/dc (non-isolated half-wave rectified)  
**Current** 4-20mA (Model CDD5A & C) or  
**Voltage** 0-5 Vdc or 0-10 Vdc (Model CDD5B & D)  
**Current:** 145 mA max @ 24Vdc, 260 mA max @24 Vac (with all options)  
**Voltage:** 85 mA max @ 24Vdc, 150 mA max @ 24 Vac (with all options)

Consumption

**Current:** 550 ohms max **Voltage:** 10 Kohm min  
10 bit PWM  
Reverse voltage protected and output limited  
0°-50°C (32°-122°F), 0-95% RH non-condensing.

Output Drive Capability  
Output Resolution  
Protection Circuitry  
Operation Conditions  
Sensor Coverage Area  
Wiring Connections  
External Dimensions

100 m<sup>2</sup> (1000 ft<sup>2</sup>) typical  
Screw terminal block (14 to 22 AWG)  
**Space:** 84mm W x 119mm H x 29mm D (3.3" x 4.7" x 1.15")  
**Duct:** 145mm W x 100mm H x 63mm D (5.7" x 3.95" x 2.5")  
**Duct Probe:** 177mm (7") long x 25.4mm (1") diameter  
**Space:** IP30 (NEMA 1)  
**Duct:** IP65 (NEMA 4X)

Enclosure Ratings

### CO<sub>2</sub> Specifications:

Measurement Type

**CDD5A & B:** Non-Dispersive Infrared (NDIR), diffusion sampling  
**CDD5C & D:** Dual Channel Non-Dispersive Infrared (NDIR), diffusion sampling

Measurement Range

**CDD5A & B:** 0 - 2000 ppm  
**CDD5C & D:** 0 - 20,000 ppm, programmable span from 2000 to 20,000 ppm

Standard Accuracy

**CDD5A & B:** ±30 PPM + 3% of reading with Auto Cal on  
**CDD5C & D:** ±75 PPM or 10% of reading (whichever is greater)

Temperature Dependence  
Stability

0.2% FS per °C  
**CDD5A & B:** < 2 % FS over life of sensor (15 years typical)  
**CDD5C & D:** < 5 % FS over life of sensor (15 years typical)

Pressure Dependence  
Altitude Correction  
Response Time  
Warm-up Time

0.13% of reading per mm Hg  
Programmable from 0-5000 ft via keypad  
<2 minutes for 90% step change typical  
<2 minutes

### Temperature Specifications:

Sensing Element  
Range

10K thermistor, ±0.2°C (±0.2 °C)  
0° to 35°C (32° to 95°F) or 0° to 50°C (32° to 122°F) selectable via keypad

### Humidity Specifications:

Sensing Element  
Accuracy  
Range  
Hysteresis  
Response Time  
Stability

Thermoset polymer based capacitive  
± 2% RH  
0 - 100% RH, non-condensing  
± 3% RH  
15 seconds typical  
± 1.2% RH typical @ 50% RH in 5 years

### LCD Display:

Resolution  
Size  
Backlight

1 ppm CO<sub>2</sub>, 1% RH, 1°C (1°F)  
1.4" w x 0.6" h (35 mm x 15 mm) alpha-numeric 2 line x 8 character  
Enable or disable via keypad

### Optional Setpoint Adjustment

Type  
Range  
Custom spans available

Front panel slidepot, 2 wire resistance output  
0K to 10K Ω standard  
1K, 2K, 5K, 10K or 20K Ω

### Optional Manual Override

Type  
Ratings

Front panel, momentary pushbutton  
50 mA @12 Vdc, N.O., SPST

### Optional Relay Output:

Contact Ratings  
Relay Trip Point

Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc

Relay Hysteresis

**CDD5A & B:** Programmable 500-2000 ppm via keypad  
**CDD5C & D:** Programmable 500-15,000 ppm via keypad  
**CDD5A & B:** Programmable 25-200 ppm via keypad  
**CDD5C & D:** Programmable 25-500 ppm via keypad

# CO<sub>2</sub>, TEMPERATURE & HUMIDITY DETECTOR

## FEATURES:

- Menu driven set-up
- 0-2000 or 0-20,000 ppm CO<sub>2</sub> ranges
- Patented self-calibration algorithm
- Guaranteed 5 year calibration interval
- Temperature & Humidity Outputs
- Easily field calibrated
- Accepts AC/DC power

## OPTIONS:

- LCD
- Slidepot
- Override Switch
- Control relay
- Custom Logos

## PRODUCT ORDERING INFORMATION:

MODEL	Description
CDD5A	Carbon Dioxide Detector (CO <sub>2</sub> ), 0-2000 ppm, Temperature & Humidity sensor w/4-20 mA Outputs
CDD5B	Carbon Dioxide Detector (CO <sub>2</sub> ), 0-2000 ppm, Temperature & Humidity sensor w/ 0-10 Vdc or 0-5 Vdc outputs
CDD5C	Carbon Dioxide Detector (CO <sub>2</sub> ), 0-20,000 ppm, Temperature & Humidity sensor w/4-20 mA Outputs
CDD5D	Carbon Dioxide Detector (CO <sub>2</sub> ), 0-20,000 ppm, Temperature & Humidity sensor w/ 0-10 Vdc or 0-5 Vdc outputs

CODE	Enclosure
10	Space
20	Duct

CODE	LCD Display
0	Concealed
1	Viewable

CODE	Setpoint Adjustment (Available on Space only)
-	No Setpoint Adjustment
P	0-10K linear slide pot for set point control (Other ranges available, contact Greystone)

CODE	Momentary Override (Available on Space only)
-	No Override
S	Front panel push button momentary switch (NO)

CODE	Relay Output
-	No Relay
R	Relay

CDD5A	10	1	P	S	-	← Typical Model Number
-------	----	---	---	---	---	------------------------

**Example: Space CO<sub>2</sub>, 0-2000 ppm, Temperature & RH, 4-20 mA, w/ LCD, Setpoint Adjustment, & Override Switch**

Greystone Energy Systems Inc. reserves the right to make design modifications without prior notice.

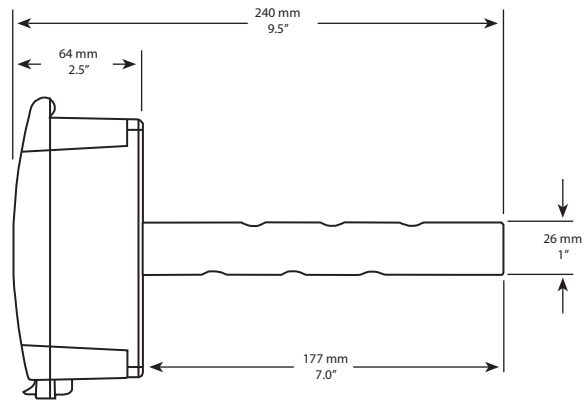
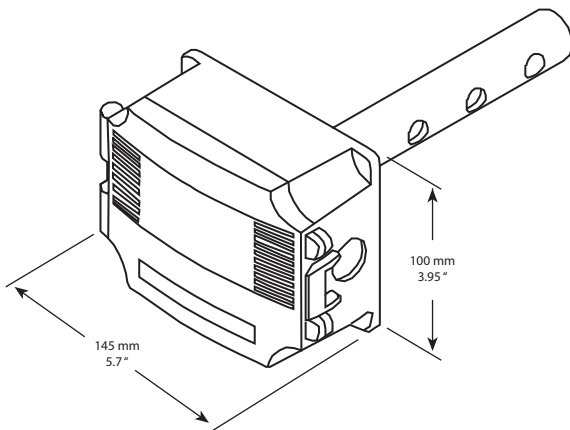
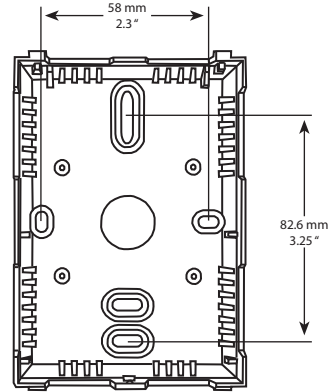
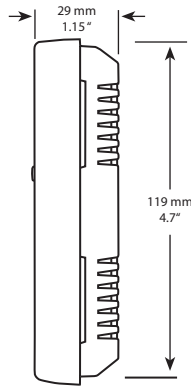
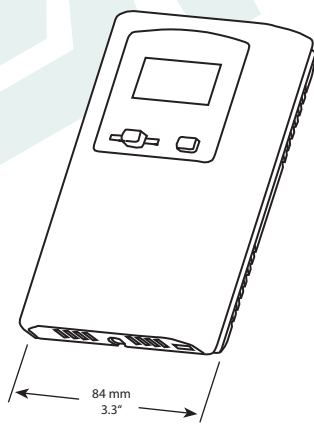
## ACLP SOFTWARE

**ACLP** (Automatic Calibration Logic Program) software utilizes the computing power in the sensor's on-board microprocessor to remember the lowest CO<sub>2</sub> concentration that takes place every 24 hours. The sensor assumes this low point is at outside levels. The sensor is also smart enough to discount periodic elevated readings that might occur if for example a space was used 24 hours per day over a few days. Once the sensor has collected 14 days worth of low concentration points, it performs a statistical analysis to see if there has been any small changes in the sensor reading over background levels that could be attributable to sensor drift. If the analysis concludes there is drift, a small correction factor is made to the sensor calibration to adjust for this change.

# 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<sub>2</sub> 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.

## DIMENSIONS:



**GREYSTONE**  
ENERGY SYSTEMS INC

Greystone Energy Systems Inc.  
150 English Drive, Moncton,  
New Brunswick, Canada E1E 4G7  
(506) 853-3057 Fax: (506) 853-6014  
North America: 1-800-561-5611  
e-mail: mail@greystoneenergy.com  
web site: www.greystoneenergy.com

**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