

# GREYSTONE ENERGY SYSTEMS INC

## CARBON DIOXIDE & TEMPERATURE DETECTORS CDD4 Series



Space w/Setpoint, Override & LCD



Space w/ No Options



Duct

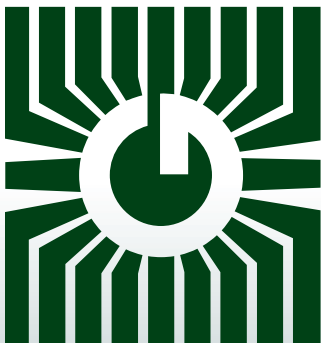


Outside

### Precision carbon dioxide control/sensing

**FEATURES:**

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



*Peace of mind  
through reliable  
gas monitoring*

# CO<sub>2</sub> DETECTOR w/ Optional Temperature Sensor

## SPECIFICATIONS:

### General Specifications:

Power Supply.....	20-28 Vac/dc (non-isolated half-wave rectified)
Output Signals.....	4-20 mA active (sourcing), 0-5 Vdc or 0-10 Vdc (field selectable)
Consumption.....	<b>Space/Duct/Outside:</b> 100 mA max @ 24 Vdc, 185 mA max @ 24 Vac (with all options)
	<b>Outside w/ Heater:</b> 140 mA @ 24V max
Output Drive Capability.....	<b>Current:</b> 550 ohms max <b>Voltage:</b> 10 Kohm min
Output Resolution.....	10 bit PWM
Protection Circuitry.....	Reverse voltage protected, overvoltage protected
Operation Conditions.....	<b>Space (10), Duct (20) and Outside (40):</b> 0° - 50°C (32°-122°F), 0-95% RH non-condensing.
	<b>Outside w/ Heater (30):</b> -40° - 50°C (-40° - 122°F), 0-95% RH non-condensing.
Sensor Coverage Area.....	100 m <sup>2</sup> (1000 ft <sup>2</sup> ) typical
Wiring Connections.....	Screw terminal block (14 to 22 AWG)
External Dimensions.....	<b>Space:</b> 84mm W x 119mm H x 29mm D (3.3" x 4.7" x 1.15") <b>Duct:</b> 145mm W x 100mm H x 63mm D (5.7" x 3.95" x 2.5") <b>Duct Probe:</b> 177mm (7") long x 25.4mm (1") diameter <b>Outside:</b> 110mm W X 180mm H X 89mm D (7.125" X 4.33" X 3.5")
Enclosure Ratings.....	<b>Space:</b> IP30 (NEMA 1) <b>Duct:</b> IP65 (NEMA 4X) <b>Outside:</b> IP65 (NEMA 4X)

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

Measurement Type.....	<b>CDD4A:</b> Non-Dispersive Infrared (NDIR), diffusion sampling <b>CDD4B:</b> Dual Channel Non-Dispersive Infrared (NDIR), diffusion sampling
Measurement Range.....	<b>CDD4A:</b> 0 - 2000 ppm <b>CDD4B:</b> 0 - 20,000 ppm, programmable span from 2000 to 20,000 ppm
Standard Accuracy.....	<b>CDD4A:</b> ±30 PPM + 3% of reading with Auto Cal on. <b>CDD4B:</b> ±75 PPM or 10% of reading (whichever is greater)
Temperature Dependence.....	0.2% FS per °C
Stability.....	<b>CDD4A:</b> < 2 % FS over life of sensor (15 years typical) <b>CDD4B:</b> < 5 % 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 keypad
Response Time.....	<2 minutes for 90% step change typical
Warm-up Time.....	<2 minutes

### LCD Display:

Resolution.....	1 ppm CO <sub>2</sub>
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

### Optional Temperature Signal:

Sensing Element.....	Various RTDs or thermistors as a 2-wire resistance output (See ordering chart)
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### Optional Setpoint Adjustment

Type .....	Front panel slidepot, 2 wire resistance output
Range .....	0K to 10K Ω standard
Custom spans available.....	1K, 2K, 5K, 10K or 20K Ω

### Optional Manual Override

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

### Optional Relay Output:

Contact Ratings.....	Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc
Relay Trip Point.....	<b>CDD4A:</b> Programmable 500-2000 ppm via keypad <b>CDD4B:</b> Programmable 500-15,000 ppm via keypad
Relay Hysteresis.....	<b>CDD4A:</b> Programmable 25-200 ppm via keypad <b>CDD4B:</b> Programmable 25-500 ppm via keypad

### FEATURES:

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

### OPTIONS:

- Temperature sensor output
- LCD
- Slidepot
- Override switch
- Control relay
- Custom logos

### PRODUCT ORDERING INFORMATION:

MODEL	Description
<b>CDD4A</b>	Carbon Dioxide Detector (CO <sub>2</sub> ), 0-2000 ppm, Field Selectable Output w/ Optional Temperature Sensor
<b>CDD4B</b>	Carbon Dioxide Detector (CO <sub>2</sub> ), 0-20,000 ppm, Field Selectable Output w/ Optional Temperature Sensor

CODE	Enclosure
<b>10</b>	Space
<b>20</b>	Duct
<b>30</b>	Outside Air w/ heated enclosure
<b>40</b>	Outside Air

CODE	LCD Display
<b>0</b>	Concealed
<b>1</b>	Viewable (Not available on Outside enclosure)

CODE	Temperature Sensor
<b>T2</b>	100 Ω Platinum, IEC 751, 385 Alpha, thin film
<b>T5</b>	1801 Ω, NTC Thermistor, ±0.2 C
<b>T6</b>	3000 Ω, NTC Thermistor, ±0.2 C
<b>T7</b>	10,000 Ω, type 3, NTC Thermistor, ±0.2 C
<b>T8</b>	2.252K Ω, NTC Thermistor, ±0.2 C
<b>T12</b>	1000 Ω Platinum, IEC 751, 385 Alpha, thin film
<b>T13</b>	1000 Ω Nickel, Class B, DIN 43760
<b>T14</b>	10,000 Ω, type 3, NTC Thermistor, ±0.2 C c/w 11K shunt resistor
<b>T20</b>	20,000 Ω, NTC Thermistor, ±0.2 C
<b>T24</b>	10,000 Ω, type 2, NTC Thermistor, ±0.2 C

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

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

CODE	Relay Output
-	No Relay
<b>R</b>	Relay

<b>CDD4A</b>	<b>10</b>	<b>1</b>	<b>T7</b>	<b>P</b>	<b>S</b>	-	← <b>Typical Model Number</b>
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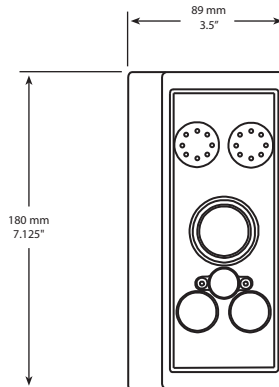
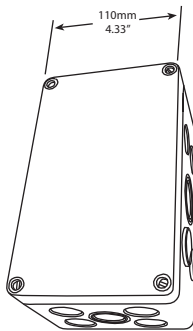
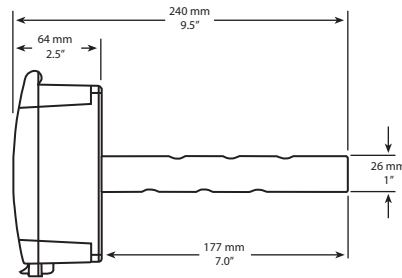
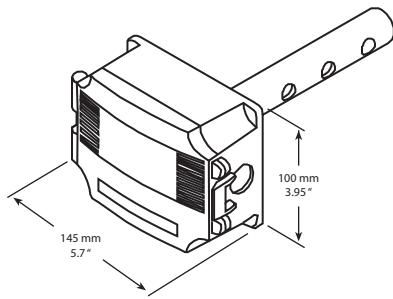
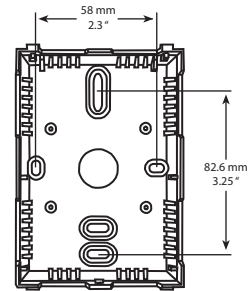
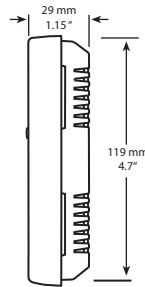
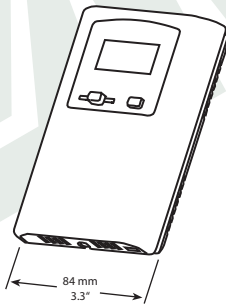
### ACLP SOFTWARE

**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

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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