GREYSTONE

ACCURACY BY DESIGN

# CARBON DIOXIDE & TEMPERATURE DETECTORS

## CDD4 Series

Space


Duct Mount

## Precision carbon dioxide control/sensing

**FEATURES:**

- CO2, Temperature Outputs
- Optional Slidepot and/or Override
- Optional on-board relay
- Optional LCD display
- Custom logos available

***Peace of mind through reliable gas sensors***

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

# $CO_2$ DETECTOR w/ Optional Temperature Sensor

## FEATURES:

- Menu driven set-up
- 0-2000 PPM $CO_2$ range
- 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 |
|---|---|
| **CDD4A** | Carbon Dioxide Detector ($CO_2$), Field Selectable Output w/ Optional Temperature Sensor |

| CODE | Enclosure |
|---|---|
| **10** | Space |
| **20** | Duct |
| **30** | Outside Air |

| CODE | LCD Display |
|---|---|
| **0** | Concealed (Not available with Duct enclosure) |
| **1** | Viewable |

| CODE | Options (Not available on Outside Air enclosure) |
|---|---|
| **T2** | PT100-100 ohm Platinum, IEC 751, 385 Alpha, thin film |
| **T5** | 1801 ohm, NTC Thermistor, ±0.2°C |
| **T6** | 3,000 ohm, NTC Thermistor, ±0.2°C |
| **T7** | 10,000 ohm, type 3, NTC Thermistor, ±0.2°C |
| **T8** | 2.252 K ohm NTC Thermistor, ±0.2°C |
| **T9** | 100,000 ohm, NTC Thermistor, ±0.2°C |
| **T12** | PT1000-1000 ohm Platinum, IEC 751, 0.385 Alpha, thin film |
| **T13** | 1000 ohm nickel |
| **T14** | 10,000 ohm type 3, NTC Thermistor, ±0.2°C c/w 11k shunt resistor |
| **T20** | 20,000 ohm, NTC Thermistor, ±0.2°C |
| **T24** | 10,000 ohm, type 2, NTC Thermistor, ±0.2°C |

| CODE | Setpoint Adjustment |
|---|---|
| - | No Setpoint Adjustment |
| **P** | Setpoint Adjustment |

| CODE | Momentary Override |
|---|---|
| - | No Override |
| **S** | Override Switch |

| CODE | Relay Output |
|---|---|
| - | No Relay |
| **R** | Relay |

| CDD4A | 10 | 1 | T7 | P | S | - | ← Typical Model Number |
|---|---|---|---|---|---|---|---|

**Example: Space CO2 w/ LCD, 10KΩ, type 3 Thermistor, Setpoint Adjustment, & Override Switch**

## 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 | 100 mA max @ 24 Vdc, 185 mA max @ 24 Vac (with all options) |
| Output Drive Capability | **Current:** 550 ohms max **Voltage:** 10 Kohm min |
| Output Resolution | 10 bit PWM |
| 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 | Space: 84mm W x 119mm H x 29mm D (3.3" x 4.7" x 1.15")<br>Duct: 145mm W x 100mm H x 63mm D (5.7" x 3.95" x 2.5")<br>Duct Probe: 177mm (7") long x 25.4mm (1") diameter |

**CO2 Signal:**

| | |
|---|---|
| Measurement Type | Non-Dispersive Infrared (NDIR), diffusion sampling |
| Measurement Range | 0 - 2000 ppm standard, programmable to 7500 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 keypad |
| Response Time | <2 minutes for 90% step change typical |
| Warm-up Time | <2 minutes |

**Optional Temperature Signal:**

| | |
|---|---|
| Sensing Element | Various RTDs or thermistors as a 2-wire resistance output (See ordering chart) |

**Optional Relay Output:**

| | |
|---|---|
| Contact Ratings | Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc |
| Relay Trip Point | Programmable 500-5000 ppm via keypad |
| Relay Hysteresis | Programmable 25-200 ppm via keypad |

**LCD Display:**

| | |
|---|---|
| Resolution | 1 ppm CO2 |
| 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 Override Switch**.....Front panel push-buttom available as two-wire dry-contact output

**Optional Setpoint Control**.....Front panel slidepot available as two-wire resistive output, 0-10 KΩ standard

# ACLP SOFTWARE AND 5-YEAR CALIBRATION GUARANTEE

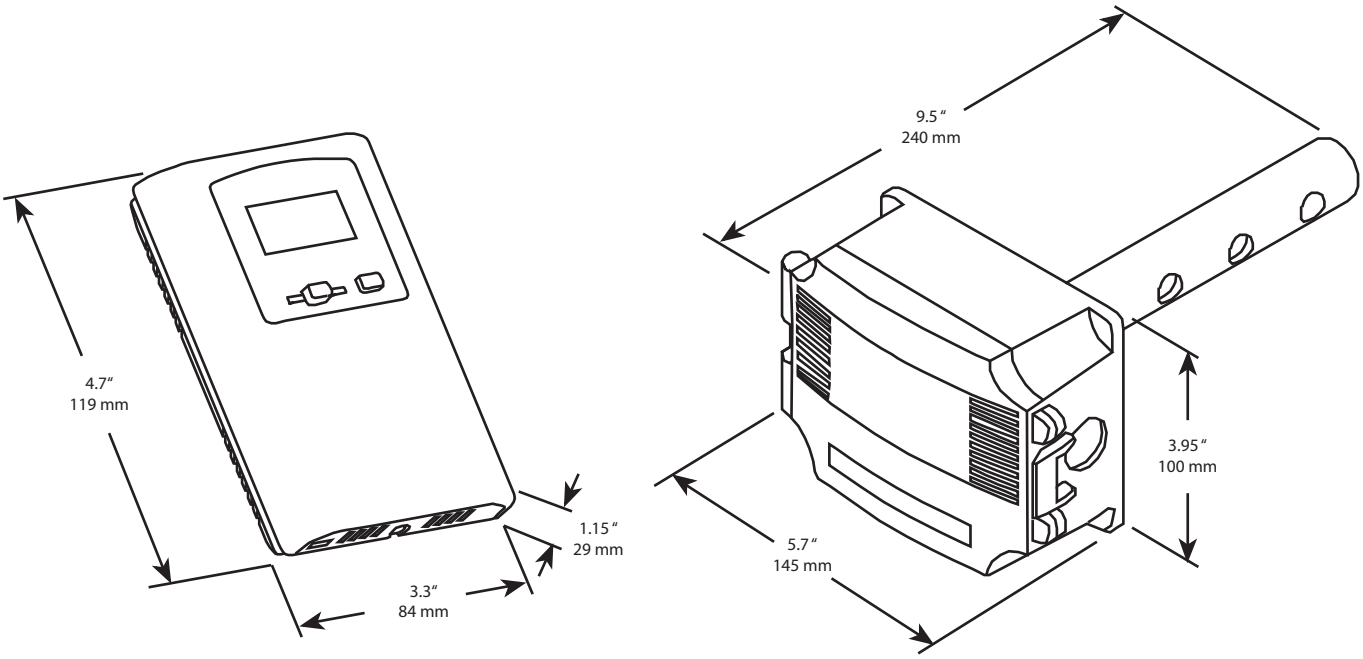
## ACLP SOFTWARE

**ACLP** (Automatic Calibration Logic Program) software utilizes the computing power in the sensor's on-board microprocessor to remember the lowest $CO_2$ 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 $CO_2$ 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.

# DIMENSIONS nts

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RoHS COMPLIANT

*Greystone Energy Systems Inc. is one of North America's largest ISO registered manufacturers of HVAC sensors and transducers 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.*

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