GREYSTONE
ENERGY SYSTEMS INC

CARBON DIOXIDE & TEMPERATURE DETECTORS
CDD4 Series

Room w/Setpoint, Override & LCD

Room w/ No Options

Duct

Outside

Precision carbon dioxide control/sensing

FEATURES:

- Space, Duct & Outside Models
- 2 Available Ranges
- CO2, Temperature 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_2 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	**Space/Duct/Outside:** 100 mA max @ 24 Vdc, 185 mA max @ 24 Vac (with all options) **Outside w/ Heater:** 1A max @ 24Vdc, 1.1A max @ 24 Vac
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	**Space (10), Duct (20) and Outside (40):** 0˚- 50°C (32˚-122°F), 0-95% RH non-condensing. **Outside w/ Heater (30):** -40˚- 50°C (-40˚- 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") **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 **Outside:** 110mm W X 180mm H X 89mm D (7.125" X 4.33" X 3.5")
Enclosure Ratings	**Space:** IP30 (NEMA 1) **Duct:** IP65 (NEMA 4X) **Outside:** IP65 (NEMA 4X)

CO2 Specifications:

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

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

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	**CDD4A:** Programmable 500-2000 ppm via keypad **CDD4B:** Programmable 500-15,000 ppm via keypad
Relay Hysteresis	**CDD4A:** Programmable 25-200 ppm via keypad **CDD4B:** Programmable 25-500 ppm via keypad

FEATURES:

- Menu driven set-up
- 0-2000 or 20,000 PPM CO_2 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
CDD4A	Carbon Dioxide Detector (CO_2), 0-2000 ppm, Field Selectable Output w/ Optional Temperature Sensor
CDD4B	Carbon Dioxide Detector (CO_2), 0-20,000 ppm, Field Selectable Output w/ Optional Temperature Sensor

CODE	Enclosure
10	Room
20	Duct
30	Outside Air w/ heated enclosure
40	Outside Air

CODE	LCD Display
0	Concealed
1	Viewable (Not available on Outside enclosure)

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

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

CDD4A	10	1	T7	P	S	-

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_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.

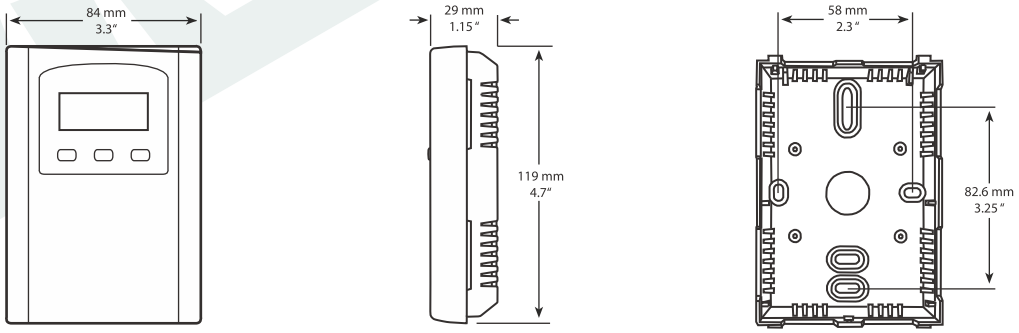
5-YEAR CALIBRATION GUARANTEE

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.

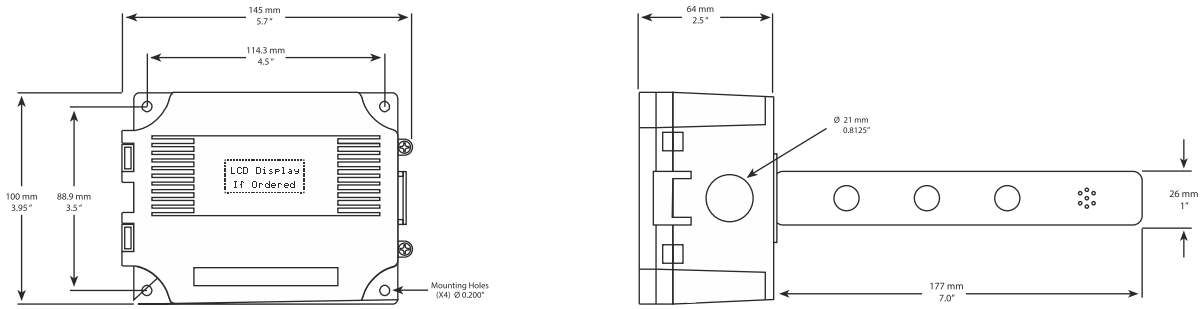
This guarantee only applies if the sensor is operated in an environment where inside levels periodically drop to outside concentrations (i.e. during evenings or weekends when there is no occupancy) as is required by ACLP software. If a space does not experience a periodic drop to outside levels (i.e. 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:

Room



Duct



Outside Air