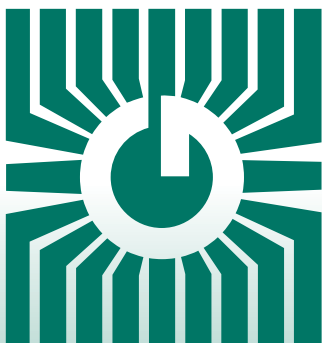


GREYSTONE ENERGY SYSTEMS INC



CO2/HUMIDITY/TEMPERATURE TRANSMITTER CDD3/CDD5/CHT Series



Precision air quality/temperature control/sensing

FEATURES:

- Space or Duct Models
- CO2, Temperature & Humidity Outputs
- Optional On-board Relay
- Optional LCD Display
- BACnet® or Modbus Communication available on some models

*Peace of mind
through reliable
air quality monitoring*

GREYSTONE HAS AN ISO 9001 REGISTERED QUALITY SYSTEM

CDD3 - CARBON DIOXIDE TRANSMITTER

FEATURES:

The CO2 space transmitter series uses a highly accurate and reliable Non-dispersive Infrared (NDIR) sensor combined with state-of-the-art digital linearization and temperature compensated circuitry in an attractive, low profile enclosure for room applications to monitor room CO2 levels. A BACnet or Modbus Communications signal is provided for connection to a building automation system. Optional features such as temperature, humidity, setpoint adjustment, manual override and adjustable relay output are available.



CDD5 - CARBON DIOXIDE TRANSMITTER

FEATURES:

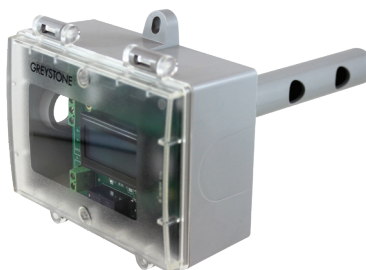
The CO2/Humidity/Temperature space transmitter series uses a highly accurate and reliable Non-dispersive Infrared (NDIR) sensor to monitor CO2, a precision thermistor to monitor temperature and a thermoset polymer based capacitance sensor to measure humidity levels combined with state-of-the-art digital linearization and temperature compensated circuitry in an attractive, low profile enclosure for room applications and provides 3 analog outputs. Optional setpoint slidepot, momentary override and adjustable relay output are also available.



CHTDT - CARBON DIOXIDE TRANSMITTER

FEATURES:

The CO2/RH/T transmitter incorporates three sensors in one duct mount enclosure for the most efficient environmental monitoring and control system. It uses Infrared Technology to monitor CO2 levels within a range of 0 – 2000 ppm, a field-proven RH sensor to monitor relative humidity from 0-100 %RH and a curve-matched thermistor to measure temperature over common field-selectable ranges.



CDD3 SPECIFICATIONS:

Power Supply	20 - 28 Vac/dc (non-isolated half-wave rectified)
Consumptions	80 mA max @ 24 Vdc, 140 mA max @ 24 Vac with all options
Protection Circuitry.....	Reverse voltage protected, overvoltage protected
Operating Conditions	0 to 50°C (32 to 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	84mm W x 119mm H x 29mm D (3.3" x 4.7" x 1.15")
Enclosure Ratings	IP30 (NEMA 1)

CO₂ SIGNAL

Measurement Type	Non-Dispersive Infrared (NDIR), diffusion sampling
Measurement Range.....	0-2000 ppm
Standard Accuracy.....	±30 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

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 (±0.2 °F)
Resolution	0.1°C (0.2°F)
Range	0° to 35°C (32° to 95°F)

OPTIONAL HUMIDITY 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 CO ₂ , 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

Optional Setpoint Adjustment.....	Front panel push-button available as BACnet® object or Modbus register
Optional Manual Override	Front panel push-buttons available as 0 to 100% as BACnet® object or Modbus register
Country of Origin.....	Canada

FEATURES:

- Menu driven set-up
- 0-2000 ppm range
- BACnet® or Modbus Communication
- Patented self-calibration algorithm
- Guaranteed 5 year calibration interval
- Temperature & Humidity Outputs
- Easily field calibrated
- Accepts AC/DC power

OPTIONS:

- LCD
- Humidity and/or Temperature
- Setpoint Adjustment
- Override Switch
- Control Relay

PRODUCT SELECTION INFORMATION (CDD3):

MODEL	Product Description
CDD3	Space Carbon Dioxide Transmitter, Infrared (NDIR) sensor

CODE	Output
A10 B10	BACnet® Modbus

CODE	LCD Display
0 1	Concealed Viewable

CODE	Configurations
- RH T	CO2 Only CO2, Humidity, and Temperature CO2 and Temperature

CODE	Setpoint Adjustment
- P	No Setpoint Adjustment Setpoint Adjustment

CODE	Momentary Override
- S	No Override Override Switch

CODE	Relay Output
- R	No Relay Relay

CDD3	A10	1	T	P	S	R
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Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.

CDD5 SPECIFICATIONS:

Power Supply	20 - 28 Vac/dc (non-isolated half-wave rectified)
Output Signals	Current: 4-20 mA (Model CDD5A & C) Voltage: 0-5 Vdc or 0-10 Vdc (Model CDD5B & D)
Consumption	Current: 145 mA max @ 24 Vdc, 260 mA max @ 24 Vac Voltage: 85 mA max @ 24 Vdc, 150 mA 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
Operating Conditions	0 to 50°C (32 to 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	84mm W x 119mm H x 29mm D (3.3" x 4.7" x 1.15")
Enclosure Ratings	IP30 (NEMA 1)
CO₂ SIGNAL	
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 + 10% of reading (whichever is greater)
Temperature Dependence	0.2 %FS per °C
Stability	CDD5A & B: < 2% FS over life of sensor (15 years typical) CDD5C & D: < 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
TEMPERATURE SIGNAL:	
Sensing Element	10K thermistor, ±0.2°C (±0.2°F)
Range	0 to 35°C (32 to 95°F) or 0 to 50°C (32 to 122°F) selectable via keypad
HUMIDITY SPECIFICATIONS:	
Sensing Element	Thermoset polymer based capacitive
Accuracy	± 2% RH
Range	0 - 100% RH, non-condensing
Hysteresis	± 3% RH
Response Time	15 seconds typical
Stability	± 1.2% RH typical @ 50% RH in 5 years
LCD DISPLAY:	
Resolution	1 ppm CO ₂ , 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
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	CDD5A & B: Programmable 500-5000 ppm via keypad CDD5C & D: Programmable 500-15,000 ppm via keypad
Relay Hysteresis	CDD5A & B: Programmable 25-200 ppm via keypad CDD5C & D: Programmable 25-500 ppm via keypad
Country of Origin	Canada

FEATURES:

- Menu driven set-up
- 0-2000 or 0-20,000 ppm CO2 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

PRODUCT SELECTION INFORMATION (CDD5):

MODEL	Product Description
CDD5	Space Carbon Dioxide, Temperature, and Humidity Transmitter, Infrared (NDIR) sensor

CODE	Range
A10	0-2000 ppm with 4-20 mA outputs
B10	0-2000 ppm with 0-10 Vdc or 0-5 Vdc outputs
C10	0-20,000 ppm with 4-20 mA outputs
D10	0-20,000 ppm with 0-10 Vdc or 0-5 Vdc outputs

CODE	LCD Display
0	Concealed
1	Viewable

CODE	Setpoint Adjustment
-	No Setpoint Adjustment
P	Setpoint Adjustment

CODE	Momentary Override
-	No Override
S	Override Switch

CODE	Relay Output
-	No Relay
R	Relay

CDD5	A10	1	P	S	R
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CHT SPECIFICATIONS:

Power Supply.....	20 - 28 Vac/dc (non-isolated half-wave rectified)
Output Signals.....	Current: 4-20 mA active (sourcing) Voltage: 0-5 Vdc / 0-10 Vdc (field selectable)
Consumptions	Current: 120 mA max @ 24 Vdc, 212 mA max @ 24 Vac Voltage: 79 mA max @ 24 Vdc, 129 mA max @ 24 Vac
Output Drive Capability	550 ohms maximum for current output, 5 Kohm min for voltage output
Output Resolution	10 bit PWM
Input Voltage Effect.....	Negligible over specified operating range
Protection Circuitry.....	Reverse voltage protected, overvoltage protected
Operating Conditions	0-50°C (32-122°F), 0-95 %RH non-condensing
LCD Resolution.....	1 ppm CO2
LCD Size	35 mm W x 15 mm H (1.4" x 0.6") alpha-numeric 2 line x 8 characters
Wiring Connections.....	Screw terminal blocks, 14 to 22 AWG
Enclosure	Polycarbonate, UL94-V0, IP65 (NEMA 4X)
Probe.....	152 mm L x 22.5 mm D (6" x 0.85")
CO2 SIGNAL	
Measurement Type	Non-Dispersive Infrared (NDIR), diffusion sampling
Measurement Range.....	0-2000 ppm (Sensor 1) or 0-20,000 ppm (Sensor 2), programmable span
Standard Accuracy	+30 ppm +3% or reading (Sensor 1 0-2000 ppm range with Auto Cal), +75 ppm or 10% of reading (whichever is greater) (Sensor 2 0-20,000 ppm range with dual channel sensor)
Temperature Dependence.....	0.2 %FS per °C

Stability	2 %FS over life of sensor (15 years typical) Sensor 1 (0-2000 ppm), <5 %FS over life of sensor (15 year typical) Sensor 2 (0-20,000 ppm)
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
TEMPERATURE SIGNAL	
Sensing Element.....	10K thermistor, +0.2°C (+0.4°F)
Range	0 to 35°C (32 to 95°F) or 0 to 50°C (32 to 122°F) selectable via keypad
Resolution.....	0.1°C
RH SIGNAL	
Sensor.....	Thermoset polymer based capacitive
Accuracy.....	+2 %RH
Range	0-100 %RH, non-condensing
Resolution.....	2 %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 via keypad
Relay Hysteresis.....	Programmable via keypad
Country of Origin	Canada

PRODUCT SELECTION INFORMATION (CHT):

MODEL	Product Description					
CHT	Carbon Dioxide (CO2), Humidity & Temperature Transmitter					
	CODE	Probe				
	DT	Duct				
		CODE	Enclosure			
		B	Polycarbonate with hinged and gasketed cover			
		F	Same as B, with thread adapter and cable gland fitting			
			CODE	CO2 Sensor & Range		
			1	Non-Dispersive Infrared, diffusion sampling, 0-2000 ppm		
			2	Dual wavelength Non-Dispersive Infrared, diffusion sampling, 0-20,000 ppm		
				CODE	Output	
				I	Current 4-20 mA	
				V	Voltage 0-5 Vdc, 0-10 Vdc, field selectable	
				B	BACnet® Communications	
				M	Modbus Communications	
					CODE	Relay Output
					X	No relay
					R	Relay
CHTDTB1IX						

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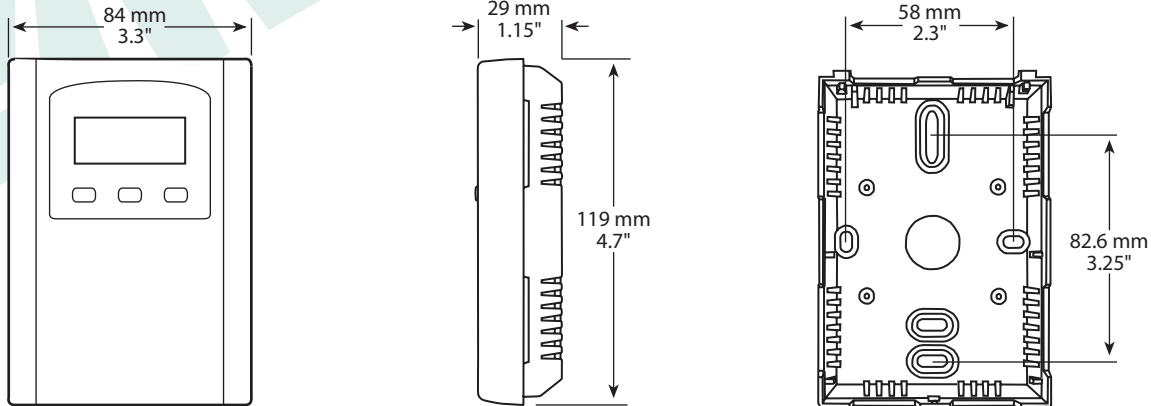
5-YEAR CALIBRATION GUARANTEE

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 CO2 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.

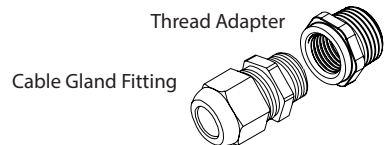
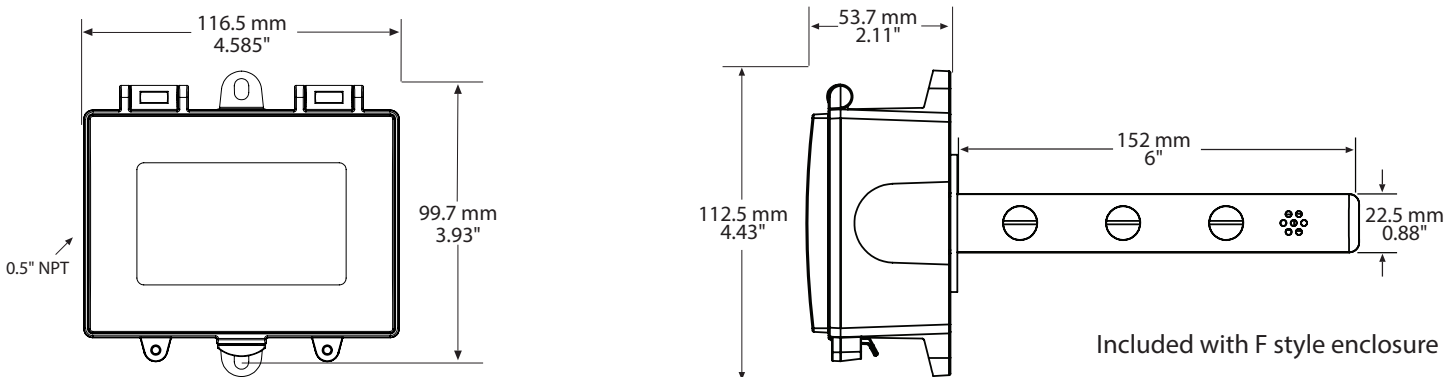
This guarantee only applies if the sensor is operated in an environment where inside levels periodically drop to outside concentrations (i.e. during evenings or weekends when there is no occupancy) as is required by ACLP software. If a space does not experience a periodic drop to outside levels (i.e. where occupancy is 24 hours, 7 days/week).

DIMENSIONS:

CDD3/5 Series



CHTDT Series



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
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