



GREYSTONE

ENERGY SYSTEMS INC

DUCT CO₂, TEMP & HUMIDITY DETECTOR CDD5 Series

The CDD5*20 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 and provides 3 analog outputs. The principal of operation is based on the Venturi effect of the probe that extends into the HVAC duct. Air flowing through the duct is forced into the vent holes on one side of the probe, into the enclosure, over the CO₂ sensor and then the air is drawn back out of the enclosure via the vent holes on the opposite side of the probe. An optional adjustable relay output is also available.

SPECIFICATION:

Power Supply..... 20-28 Vac/dc (non-isolated half-wave rectified)
Output Signals..... **Current** 4-20mA (Model CDD5A & C)
Voltage 0-5 Vdc or 0-10 Vdc (Model CDD5B & D)
Consumption..... **Current:** 145 mA max @ 24Vdc, 260 mA max @ 24 Vac (with all options)
Voltage: 85 mA max @ 24 Vdc, 150 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 and output limited
Operation Conditions 0°-50°C (32°-122°F),
0-95% RH non-condensing.
Sensor Coverage Area ... 100 m² (1000 ft²) typical
Wiring Connections Screw terminal block (14 to 22 AWG)
External Dimensions 145mm W x 100mm H x 63mm D
(5.7" x 3.95" x 2.5")
Probe: 177mm (7") long x 25.4mm
(1") diameter
Enclosure Ratings..... ABS, UL94-5VB, IP65 (NEMA 4X)

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 standard, 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)
Temp. 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 °C)
Range..... 0° to 35°C (32° to 95°F) or 0° to 50°C (32° to 122°F)
selectable via keypad

PART NUMBER SELECTED

PRODUCT SELECTION INFORMATION:

MODEL	Product Description
CDD5A20	Duct Carbon Dioxide Sensor, 0-2000 ppm, 4-20 mA
CDD5B20	Duct Carbon Dioxide Sensor, 0-2000 ppm, 0-5 or 0-10 Vdc
CDD5C20	Duct Carbon Dioxide Sensor, 0-20,000 ppm, 4-20 mA
CDD5D20	Duct Carbon Dioxide Sensor, 0-20,000 ppm, 0-5 or 0-10 Vdc

CODE	Display
0	Concealed
1	Viewable

CODE	Options (Leave blank if no options required)
R	Relay Output

RH Signal:

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

Optional Relay Output:

Contact Ratings..... Form A contact (N.O.), 2 Amps @ 140 Vac, 2 Amps @ 30 Vdc
Relay Trip Point..... **CDD5A & B:** Programmable 500-2000 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

LCD Display:

Resolution 1 ppm CO₂, 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

Override Switch Front panel push-button available as two-wire
dry-contact output

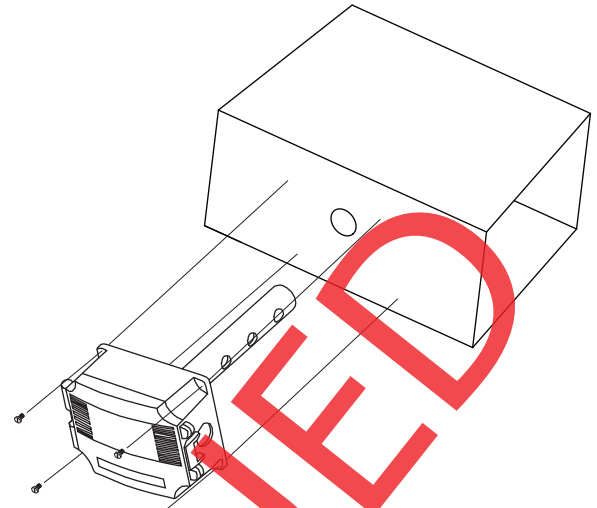
Setpoint Control Front panel slidepot available as two-wire resistive output,
0-10 KΩ standard

TYPICAL INSTALLATION:

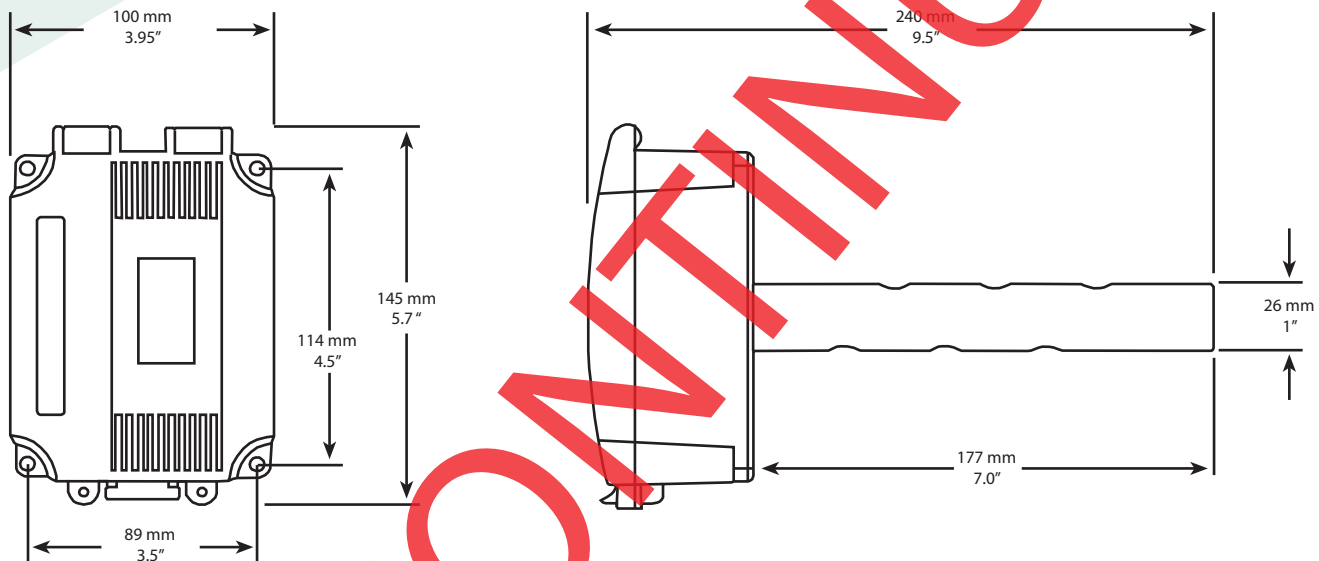
For complete installation and wiring details, please refer to the product installation instructions.

The CDD5 duct type sensor installs on the outside of a return air duct with the sampling tube inserted into the duct.

Mount the sensor in an easily accessible location in a straight section of duct at least five feet from corners and other items that may cause disturbances in the air flow. Avoid areas where the detector is exposed to vibrations or rapid temperature changes. Connect conduit, make proper wiring connections



DIMENSIONS:



5-YEAR CALIBRATION GUARANTEE

Based on the results 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), ACLP software should be deactivated. With ACLP deactivated (via menu buttons), calibration may be required every 2 to 3 years.



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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