

RS-485 BACnet/Modbus Duct Mount CO₂ Sensor with Pitot Tube Pickup and In-line Replaceable Filter



- NDIR CO₂ sensing technology
- 0 to 2,000 ppm range
- ABC logic ensures long-term calibration stability
- Replaceable filter allows prevents sensor fouling in dirty environments
- Non-Isolated RS-485 output circuitry
- Time-tested and reliable BACnet and Modbus firmware
- Field selectable BACnet MS/TP or Modbus RTU protocols
- BACnet master
- DIP switch selectable baud rates
- Attractive wall-mount package
- Compatible with all GreenTrol application specific controllers
- Operates on 24 VAC/DC

- √ Use with GreenTrol outdoor airflow controllers to provide advanced CO₂-DCV or ASHRAE 62.1 compliant population-based DCV
- √ Demonstrate compliance with ASHRAE Standards 62.1, 90.1 and 189.1
- √ Satisfy LEED requirements
- √ Maintain acceptable indoor air quality
- √ Save energy

The GS-N100-D is a high performance CO₂ sensor for today's demanding DCV applications. It uses Telaire's NDIR sensing technology and GreenTrol's high performance signal processing circuitry.

A pitot tube pickup probe is provided that is easily inserted into the side of a duct. The pickup probe is typically installed in the return air duct near the air handler for single zone applications or in the return duct of individual spaces on multi-zone applications.

The GS-N100-D time-tested and reliable BACnet MS/TP and Modbus RTU firmware is superior to competitive CO₂ sensors. Its reliability makes it the only approved network duct mounted CO₂ sensor for GreenTrol outdoor air controllers.

When combined with a GreenTrol outdoor air controller, this CO₂ sensor can be used to improve traditional CO₂ demand control ventilation by using a unique control algorithm that resets the outdoor air setpoint between user defined upper and lower airflow limits (not damper positions) to maintain the space CO₂ level. This control method eliminates the under- and over-ventilation that is prevalent with traditional CO₂-DCV.

An even more advanced control method uses the measured airflow rate and CO₂ level to estimate the population and calculates the required outdoor airflow, thus meeting the actual requirements of ASHRAE Standard 62.1.

Long term stability and high-performance components ensure years of trouble free performance.

GS-N100-D Technical Specifications

Functionality

CO₂ Measurement: Provides the CO₂ level in ppm via the network connection

System Status Alarm: Yes

User Interface

Baud Rate, Protocol and Addressing: DIP switch

End of Line Termination: Jumper

Important: Modification of the factory default settings requires that power is cycled to the device. It is recommended that each device is bench configured prior to installation OR settings are provided at the time of order so that the device can be factory configured prior to shipment.

CO₂ Sensor

Technology: Telaire Non Dispersive Infrared (NDIR)

Range: 400 to 2,000 ppm

Sampling Method: Duct mounted pitot tube provided with two 3 foot tubes and inline filter

Required Duct Velocity: 300 to 1,500 FPM [1.52 to 7.62 m/s]

Accuracy:

400 to 1,250 ppm ±30 ppm or 3% of reading, whichever is greater
1,250 to 2,000 ppm ±5% of reading + 30 ppm

Temperature Dependence: 0.36% FS/°F [0.2% FS/°C]

Pressure Dependence: 0.33% of reading per 0.1 in. [2.54 mm] Hg

Stability: <2% of FS over life of sensor (15 year typical)

Calibration Interval: Not required when ABC logic is enabled

Response Time: <2 minutes for 90% step change typical

Signal Update: Every 4 seconds

Warmup Time: 2 minutes operational, 10 minutes to achieve maximum accuracy

Network Connection

N1

Type: Non-Isolated, field selectable MS/TP BACnet master or Modbus RTU connection (provide separate transformer to each GS-N100-D or an RS-485 network isolator if isolation is required)

B.A.S. Object/Register Read/Write Access: Yes

Device Load: 1/8 load

Supported Baud Rates: 9.6, 19.2, 38.4 and 76.8 kbaud

Environmental Limits, Power Requirements & Dimensions

Environmental Limits

Temperature: 32 to 122 °F [0 to 50 °C]

Humidity: 5 to 95%

Power Requirement: 24 VAC (22.8 to 26.4 under load) @1.5V-A

Dimensions: 6.01H x 3.57W x 1.58D in. [152.6 x 90.7 x 40.1 mm]

Pitot Tube Length: 5.4 in. [137.2 mm]