

**GREYSTONE**  
ACCURACY BY DESIGN



## **HAZARDOUS GAS DETECTORS**



### **Air quality starts with sensing the problem**

Greystone's hazardous gas detectors provide unsurpassed accuracy, reliability, and selection.

- Carbon Dioxide
- Carbon Monoxide
- Refrigerants
- Ammonia
- Combustible Gases
- Air Quality

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

GREYSTONE IS AN **ISO 9000** REGISTERED COMPANY

# CO<sub>2</sub> DETECTOR

Environmental, industrial and commercial indoor Carbon Dioxide (CO<sub>2</sub>) gas detector. Available in both a space and duct mount version.



**Decorative Enclosure for CO<sub>2</sub>**

## APPLICATION:

To sense and transmit to any compatible electronic analog control, DDC/PLC controller or automation system for the control of ventilation equipment. Designed to meet ventilation requirements specified in ASHRAE Standard 62-1989.

## FEATURES:

- Monitors CO<sub>2</sub> over range 0 – 2000 PPM.
- Dual element thermally compensated Lithium Tantalate IR detector.
- 15 year sensing element life.
- Optional on board relay with field adjustable trip point and LED.
- Optional LED for displaying PPM level.
- Powered by either AC or DC source with no charge to circuit required.
- Choice of two field adjustable analog output signals, linearized over full range.
- Microprocessor based (8 bit accuracy).
- Easy to calibrate in the field.

SPECIFICATIONS	CO <sub>2</sub> DETECTOR – Product # CDD
Gas Detected	Carbon Dioxide (CO <sub>2</sub> )
Range	0 – 2000 PPM standard (0 – 5000 and 0 – 20000 PPM optional)
Calibration Accuracy	8 bit accuracy
Sensor Accuracy	±2%
Sensing Element	Non-Dispersive Infrared Detector (NDIR)
Operating Temperature	0°C - 40°C (32°F - 104°F)
Humidity Range	0 – 95%
Repeatability	±20 PPM
Drift	±2%
Manufacturing Process	ISO 9002 certified
Relay (optional)	SPDT N.O. or N.C., contacts rated: 5A @ 125 VAC / 5A @ 30 VDC, field adjustable trip point
Input	10 – 28 VAC / 12 – 38 VDC 600mA
Output Analog Signals	0 – 10 VDC, or 4 – 20mA jumper selectable
LCD Display (optional)	LCD for displaying PPM level
Field Calibration	Calibration, applying calibration gas standards
External Dimensions	Decorative Space – 127 mm x 97 mm x 38 mm (5" x 3.8" x 1.5") Duct ABS, NEMA 1, IP23 rated – 163 mm x 108 mm x 64 mm (6.4" x 4.25" x 2.5")



# CO DETECTOR

Environmental, industrial, and commercial Carbon Monoxide (CO) detector or controller. This detector provides an early warning of hazardous concentrations of Carbon Monoxide.

## APPLICATION:

Intended to be mounted in an enclosed parking garage, where it monitors the CO level and transmits a proportional signal to any compatible electronic analog control, DDC/PLC controller or automation system for the control of ventilation equipment.



## FEATURES:

- Monitors CO over range 0 – 250 PPM (Solid State), 0 – 500 PPM (Electrochemical).
- Field replaceable Sensor Module allows for use of spare modules and/or factory calibration without down time.
- Optional LCD for displaying PPM level.
- Optional Audible Alarm has programmable trip point.
- Microprocessor based (12 bit accuracy).
- System configuration saved in non-volatile memory.
- Optional relays can be configured with normally open or closed contacts.

**ABS, NEMA1, IP23**  
Available for CO, Refrigerant,  
Toxic, and Combustible Gas Detectors

SPECIFICATIONS	CO DETECTOR – Product # CMD
Gas Detected	Carbon Monoxide (CO)
Range	0 – 250 PPM (Solid State) 0 – 500 PPM (Electrochemical)
Area Coverage	700 m <sup>2</sup> (7,500 sq. ft.) or 15 meter radius (50 ft. radius)
Calibration Accuracy	0.5% (12 bit accuracy)
Sensor Accuracy	For sensor specifications see Product Ordering Information
Sensing Element	Solid State or electrochemical
Operating Temperature	0°C – 40°C (32°F – 104°F), (call for other temperature applications)
Humidity Range	0 – 95%
Manufacturing Process	ISO 9002 certified
Relays ( 1 or 2)	DPDT, N.O. or N.C. Contacts rated: 5A @ 24 VDC (2 relays not available with 4 – 20mA output)
Input	24 – 38 VDC / 17 – 27 VAC
Output Analog Signal	4 – 20mA
Audible Alarm (optional)	Panel Mount 65 dB @ 1m (3 ft.)
LCD Display (optional)	LCD for displaying PPM level
LEDs	Green and yellow LEDs for normal and failure indication / 10 step LED display
Field Calibration	Calibration, applying calibration gas standards
External Dimensions	ABS, NEMA1, IP23 rated – 213 mm x 134 mm x 57 mm (8.3" x 5.3" x 2.25") ABS, NEMA4, IP66 rated – 213 mm x 134 mm x 57 mm (8.3" x 5.3" x 2.25")



# TOXIC AND COMBUSTIBLE GASES

Economical, general purpose gas detector or controller. These detectors provide an early warning of hazardous concentrations of Ammonia, Propane, Methane, Nitrogen Dioxide, Hydrogen and other gases.



**ABS, NEMA 1, IP23**  
Available for CO, Refrigerant,  
Toxic, and Combustible Gas Detectors

## APPLICATION:

To sense and transmit gas concentrations to any compatible electronic analog control, DDC/PLC controller, or automation system. Also provides a visible and audible alarm for high concentrations of gas. Some areas in which the unit may be used include: parking and maintenance garages, ventilation systems, hazardous storage areas, factory work areas, repair facilities, mines and tunnels, arenas and swimming pools, chiller rooms.

## FEATURES:

- Monitors Toxic and Combustible Gases.
- Field replaceable Sensor Module allows for use of spare modules and/or factory calibration without down time.
- Optional LCD for displaying level.
- Optional Audible Alarm.
- Microprocessor based (12 bit accuracy)
- System configuration saved in non-volatile memory.
- Optional relays can be configured with normally open and normally closed contacts.

SPECIFICATIONS	TOXIC – Product # AGD	COMBUSTIBLE GASES – Product # CGD
Gas Detected	Ammonia (NH <sub>3</sub> ), Nitrogen Dioxide (NO <sub>2</sub> ), etc.	Propane, Methane, ISO-Butane, Hydrogen, etc.
Range	See Product Ordering Information	See Product Ordering Information
Area Coverage	160 m <sup>2</sup> (1,500 sq. ft.) / NO <sup>2</sup> 700 m <sup>2</sup> (7,500 sq. ft.)	160 m <sup>2</sup> (1,5000 sq. ft.)
Sensing Element	Solid state or electrochemical	Solid state or catalytic
Calibration Accuracy	0.5% (12 bit accuracy)	
Sensor Accuracy	For sensor specifications see Product Ordering Information	
Operating Temperature	0°C – 40°C (32°F – 104°F) (call for other temperature applications)	
Humidity Range	0 – 95%	
Manufacturing Process	ISO 9002 certified	
Relays (1 or 2)	DPDT, N.O., or N.C. Contacts rated 5A @ 24 VDC. (two relays not available with 4 – 20mA output)	
Input	24 – 38 VDC / 17 – 27 VAC	
Output Analog Signals	4 – 20mA	
Audible Alarm (optional)	65 dB @ 1 m (3ft)	
LCD Display (optional)	LCD for displaying level	
LEDs	Green and yellow LEDs for normal and failure indication / 10 step LED display	
Field Calibration	Calibration, applying calibration gas standards	
External Dimensions	ABS, NEMA 1, IP23 rated – 213 mm x 134 mm x 57 mm (8.3" x 5.3" x 2.25") ABS, NEMA 1, IP66 rated – 213 mm x 134 mm x 57 mm (8.3" x 5.3" x 2.25")	

# REFRIGERANT

Economical, general purpose Refrigerant gas detector or controller. These detectors provide an early warning of hazardous concentrations of R-11, R-12, R-22, R-123, R134a, etc.



**ABS, NEMA1, IP23**  
Available for CO, Refrigerant,  
Toxic, and Combustible Gas Detectors

## APPLICATION:

To sense and transmit Refrigerant gas concentrations to any compatible electronic analog control, DDC/PLC controller, or automation system. Also provides a visible and audible alarm for high concentrations of gas. Some areas in which the unit may be used include: cold storage facilities, compressor rooms, arenas, hazardous material storage areas, and ventilation systems.

## FEATURES:

- Optional LCD for displaying PPM level.
- Optional Audible Alarm.
- Microprocessor based (12 bit accuracy).
- System configuration saved in non-volatile memory.
- Relays can be configured with normally open or closed contacts.

SPECIFICATIONS	REFRIGERANT DETECTOR – Product
Gas Detected	R-11, R-12, R-22, R-123, R-134a (R123 only available in NDIR)
Range	See Product Ordering Information
Area Coverage	160 m <sup>2</sup> (1,500 sq. ft.) or 6 meter radius (20 ft. radius)
Calibration Accuracy	0.5% (12 bit accuracy)
Sensor Accuracy	For sensor specifications see Product Ordering Information
Sensing Element	Solid State or NDIR
Operating Temperature	-10°C – 40°C (19°F – 105°F) (call for other temperature applications)
Humidity Range	0 – 95%
Manufacturing Process	ISO 9002 certified
Relay (1 or 2)	DPDT, N.O. or N.C. Contacts rated 5A @ 24 Vdc. (Two relays not available with 4-20mA output)
Input	24 – 38 Vdc / 17 - 27 Vac
Output Analog Signals	4-20mA (Solid State), 4-20mA / 0-10 Vdc (NDIR)
Audible Alarm (optional)	65 dB @ 1 m (3 ft.)
LCD Display (optional)	LCD for displaying PPM level
LEDs	Green and yellow LEDs for normal and failure indication / 10 step LED display (Solid State only)
Field Calibration	Remote calibration, applying calibration gas standards
External Dimensions	ABS, NEMA 1, IP23 rated – 213mm x 134mm x 57mm (8.3" x 5.3" x 2.25") (Solid State only) Metal, NEMA4, IP66 rated – 250mm x 225mm x 63mm (10" x 9" x 2.5") (NDIR only) ABS, NEMA4, IP23 rated – 213mm x 134mm x 57mm (8.3" x 5.3" x 2.25") (Solid State only)



# HAZARDOUS GAS: PRODUCT ORDERING INFORMATION

MODEL	Description						
<b>CDD</b>	Carbon Dioxide Detector (CO <sub>2</sub> )						
<b>CMD</b>	Carbon Monoxide Detector (CO)						
<b>FGD</b>	Refrigerant Gas Detector (R11, R12, R123, R134a, etc.)						
<b>AGD</b>	Toxic Gas Detector						
<b>CGD</b>	Combustible Gas Detector (Propane, Methane, ISO-Butane and Hydrogen)						
CODE	Sensing Element and Accuracy	CO <sub>2</sub>	CO	Refrigerant	Toxic	Combustible	
1	NDIR	2%	N/A	3%	N/A	N/A	
2	Solid state	N/A	5%	10%	10%	5%	
3	Electrochemical	N/A	3%	N/A	5%	N/A	
4	Catalytic	N/A	N/A	N/A	N/A	3%	
CODE	Gas Type	Range – Solid State		Other (see above)			
A	CO <sub>2</sub> – Carbon Dioxide Detector (CDD)	N/A		0 – 2000 PPM			
B	CO – Carbon Monoxide Detector (CMD)	0 – 250 PPM		0 – 500 PPM			
C	R11 – Refrigerant Gas Detector (FGD)	250 – 2000 PPM		0 – 1000 PPM			
D	R12 – Refrigerant Gas Detector (FGD)	250 – 2000 PPM		0 – 1000 PPM			
E	R22 – Refrigerant Gas Detector (FGD)	250 – 2000 PPM		0 – 1000 PPM			
F	R123 – Refrigerant Gas Detector (FGD)	N/A		0 – 1000 PPM			
G	R134a – Refrigerant Gas Detector (FGD)	250 – 2000 PPM		0 – 1000 PPM			
H	Ammonia – Toxic Gas Detector (AGD)	0 – 200 PPM		0 – 100 PPM			
I	Propane – Combustible Gas Detector (CGD)	0 – 100% LEL		0 – 100% LEL			
J	Methane – Combustible Gas Detector (CGD)	0 – 100% LEL		0 – 100% LEL			
K	ISO-Butane-Combustible Gas Detector (CGD)	0 – 100% LEL		0 – 100% LEL			
L	Hydrogen - Combustible Gas Detector (CGD)	0 – 2.5%		0 – 100% LEL			
N	Nitrogen Dioxide – Toxic Gas Detector (AGD)	0 – 10 PPM		0 – 10 PPM			
CODE	Enclosure (see note 1)						
1	Decorative (only available for CDD)						
2	ABS, NEMA1, IP23 rated (available for FGD, AGD, CGD or CMD)						
3	Metal, NEMA4, IP66 Duct MTD (available for CMD, FGD, AGD or CGD)						
4	Future use						
5	Metal, NEMA4, IP66 rated (only available for FGD / NDIR)						
6	Duct ABS, NEMA1, IP23 rated (only available for CDD)						
7	Duct Sampling Enclosure, Metal, NEMA1, IP23 rated						
8	Wallmount Explosion Proof Enclosure (Not available for CDD and solid state units)						
9	Space ABS, NEMA4, IP66 rated (Not available for CDD)						
CODE	Circuit Board Relay						
0	No Relay						
1	One Relay (DPDT, N.O. or N.C., 5A @ 24 VDC)						
CODE	Relay (not available with 4 – 20mA output)						
0	No relay						
1	One relay (DPDT, N.O. or N.C., 5A @ 24 VDC)						
CODE	Options						
0	No options						
1	LCD						
2	PCB Mount Audible Alarm (CMD, FGD, AGD or CGD)						
3	Future use						
CDD	1	A	1	0	0	0	← Typical Model Number

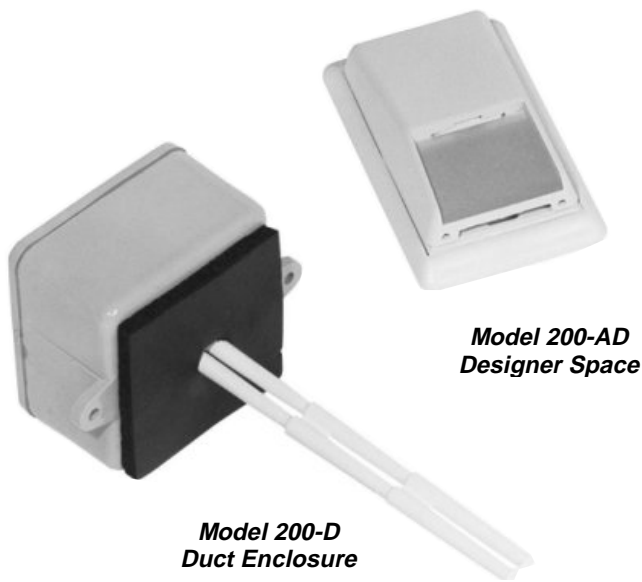
**Example: NDIR CO<sub>2</sub> Decorative No Relay No Relay No Options**

Greystone Energy Systems, Inc. reserves the right to make design modifications without prior notice.



# AIR QUALITY MONITOR

## AIR – 200



**Model 200-AD  
Designer Space**

**Model 200-D  
Duct Enclosure**

The AIR-200 is a microprocessor based air quality monitor/controller utilizing a hot wire element sensor based upon the Taguchi principle. This is a full spectrum sensor sensitive to a wide variety of air pollutants such as *carbon monoxide, cigarette smoke, benzen, alcohols, hydrogen, hydrocarbons, esters, etc.*

This sensor is better suited to measuring air quality than a sensor which measures only Carbon Dioxide. The AIR-200 yields a true indication of the actual air quality, rather than occupancy. For example, if a person were to smoke a cigarette in a room, the carbon dioxide sensor would be inadequate in detecting this, even though the air quality had significantly degraded. This same set of circumstances hold true for many other contaminants such as Solvents, Fuels, and even Carbon Monoxide, all of which are much more harmful than Carbon Dioxide.

When measuring Air Quality, it is not so much the type of contaminant that is of concern, but rather the presence of any contaminants. This sensor does not indicate which contaminant is in the air, but indicates the presence and quantity of any contamination.

The Greystone AIR-200 monitor/controller works by look-

ing at the signal from a full spectrum sensor, automatically compensating for temperature and humidity effects, and judging the degree of pollution. For the unit to perform efficiently it must work as a monitor/controller, i.e. it must be able to act upon level changes. The output is represented as a single 0 – 10 VDC output which has four user adjustable settings, corresponding to clean, low, mid, and high levels. This output can be used to directly control an actuator, or be sent back to a computer.

The AIR-200 monitor can be configured to run in auto or manual mode and has an integral sensitivity adjustment to provide the user with the optimum settings to monitor a specified area. There are internal LED indicators to show microprocessor status and also a manual override feature to assist in installing the unit.

### APPLICATION:

- Schoolrooms
- Office buildings
- Parking garages
- Washroom ventilation fans
- Cigarette smoke detectors

### FEATURES:

- True Air Quality Monitor
- Microprocessor based controller
- Analog Stepped Output (ASO)
- 10 bit resolution
- Able to detect one cigarette in 15m<sup>3</sup> (530 cu. ft.) room
- Integral sensitivity adjustment
- Ability to directly control air handling unit
- Visual indication of air quality (internal)

### SPECIFICATIONS:

Supply Voltage	12 VDC
Supply Current	200mA (max.)
Operating Temperature	0°C – 40°C (32°F – 104°F)
Operating Humidity	35% to 75% RH
Outputs	0 – 10 VDC (ASO)
Output Impedance	> 1K Ω

### PRODUCT ORDERING INFORMATION:

MODEL	Enclosure
AIR – 200 – AD	Designer
AIR – 200 – D	Duct

**Other GREYSTONE**  
***Accuracy by Design***  
**Products for the**  
**HVAC Professional**

- Temperature Sensors and Transducers
- Humidity Transducers
- Pressure Transducers
- Current Switches and Sensors
- KW and KWH Transducers
- Electronic to Pneumatic (IP)
- Transducers
- Power Supplies
- Valves and Actuators



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*Greystone Energy Systems Inc., established in 1983, is Canada's largest manufacturer 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 9002 certified, assuring our customers of consistent product reliability.*

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