Overview

The Infrared (IR) Carbon Dioxide Gas Sensor Module is a smart, network-enabled sensor that provides the interface needed to integrate with a plant-wide control system, whether it requires 4-20 mA, Modbus, HART, relay contacts or SentryBus. This USA-made, stand-alone gas sensor module is loaded with features that will assist in protecting your facility and personnel. As with most gas detectors made by Sierra Monitor, this detector comes with an explosion-proof housing and is ready to manage your gas risk. The 5100-88-IT provides all the built-in features desired by instrumentation and safety professionals, including:

- Modbus RTU RS-485 interface
- 4-20 mA output
- HART Interface
- SMC Sentry digital bus interface
- Optional Integral alarm relays - Alarm, Warning & Trouble
- Aluminum or 316 Stainless Steel enclosure
- Annual calibration frequency
- Interface to multiple protocols
- Integral scrolling LED display

The 5100-88-IT can be used as a 4-20 mA component or as a Modbus RTU node. For higher level system capability the module can interface directly to Sierra Monitor's Sentry Controller. As part of a Sentry system the user gains capability of system Modbus serial communications, extensive diagnostic features, area and zone alarm management, WebServer interface and multiplexing sensor connections.

How It Works

Carbon Dioxide absorbs infrared light energy at defined wavelengths, providing an absorption signature for CO_2. The principle of an infrared detector is based upon the absorption of the infrared light at a specific wavelength as it passes through the gas. The more of the absorbing gas that is present, the more light is absorbed. The detector measures the energy from an infrared light beam at a wavelength that is absorbed by the gas and compares it to the energy emitted by the source. The difference in energy received by the detector indicates the level of gas in the atmosphere.

Features	Benefits
• Non-intrusive calibration	• Able to easily and quickly calibrate module without declassifying the area
• Network-compatible with Modbus, 4-20 mA, Sentry bus, HART and relay interface	• Easy to install in a variety of field applications plus easy to obtain critical safety information wherever needed
• Local scrolling display	• Ease of calibration and easy access to gas concentration, relay status and diagnostics

Sensor

Type: Infrared, Dual Wavelength

Performance

Range: 0-5000 PPM Carbon Dioxide

Repeatability: +/-1%

Accuracy: +/- 2%

Sensor Life: Typically >5 years

Heated Sensor: Heated cell to prevent condensation

Response Time: T60<20sec

Options

Relays: 5 amp Alarm, Warning (0.25 amp Trouble) 5A@ 250 VAC, 5A@ 30VDC (Alarm, Warning) Board includes auxiliary connection for Sentry multiplexing

HART: Termination board includes HART, Modbus RS-485, 4-20mA, Digital Input, 2A Relay output, No Sentry Bus

Power

Power consumption: 3 watts

Input voltage: 24 VDC nominal: 10-30VDC

Output

Display: Fixed and Scrolling LED

Signal Output: Sentry digital bus

Analog 4-20 mA

3-wire Non-Isolated

4-wire Isolated

Serial RS-485 Modbus RTU

Relay: Optional

Operating Range

Ambient Temp Range: -4^0 to 140^0F (-20^0 to 60^0C)

Relative Humidity: 0-99% Non-Condensing

Construction

Dimensions: (HxWxD)

(A1)	7.8 x 5.7 x 3.9 in	
	(19.8 x 14.5 x 9.9 cm)	
(A2)	8.1 x 4.8 x 4.9 in.	
	(21 x 12 x 12 cm)	
(S1 & S2)	7.5 x 4.4 x 4.9 in.	
	(19 x 11 x 12 cm)	

Weight: (A1) = 3.4 lb. (1.5 Kg)

(A2) = 5.4 lb. (2.5 Kg)

(S1 & S2) = 7.2 lb. (3.3 Kg)

Housing: Epoxy coated Aluminum or 316 Stainless Steel

Hazardous Area Classification

Explosion proof, Class I, Div. 1, Groups B, C, D

Class I, Zone 1, Group IIC, IP66, IP65, NEMA 4X, T6

TA = -40^0C to 85^0C II2 GD, Ex d IIC

Warranty: 2 years

*Specifications subject to change without notice

Ordering Information: The following part number is essential in selection of the correct product. Please build up the desired part by inserting the code for each element into the appropriate space (ie. 5100-88-IT-S1-02-00-2-0).

Model	Enclosure	Relay/Connection Output	XX	Sensor Protection	Remote Option
5100-88-IT	↓	↓	↓	↓	↓
	- A1 = AL ¾" NPT	- 01 = No Relays (Std)	- 00 = Std (0-5000PPM)	- 0 = Standard	- 0 = None
	- A2 = AL M20 x 1.5	- 02 = Relays Option	- 81 = 0-5% Vol.		
	- S1 = SS ¾" NPT	- 05 = HART Option	- 82 = 0-20% Vol.		
	- S2 = SS M20 x 1.5				

Accessories:

5311-00 Rainshield

5311-02 Rainshield with calibration port

Calibration Accessories:

5358-01 Calibration Head, Standard

5360-00 Calibration Gas Delivery Fitting

Calibrators High Capacity:

1250-01 Gas Sensor Calibration Kit, Type A

1260-80 2000 PPM CO_2 Gas Cylinder Type A

1260-81 2.5% Volume CO_2 Gas Cylinder in N2

1260-82 10% Volume CO_2 Gas Cylinder in N2

Sierra Monitor Corporation
1991 Tarob Court, Milpitas, California 95035 USA
O. +1 408 262-6611   TF. +1 800 72 SIERRA (74377)   F. +1 408 262-9042   www.sierramonitor.com

9/2015