Sentry IT DS - Combustible Gas Detector, Infrared, Model 5100-28-IT

Overview

An Infrared (IR) Combustible Gas Sensor Module is network-enabled to provide the interface needed to your plant-wide control system, whether it be 4-20 mA, Modbus, HART, relay contacts or SentryBus. This USA-made, stand-alone smart gas sensor module is loaded with features you need. As usual, Sierra Monitor A gas detector with a Sierra Monitor pedigree, Factory Mutual approved and ready to Manage Your Gas Risk. The 5100-28-IT provides all the built-in features desired by instrumentation and safety professionals, including: FM and UL Approval for performance & safety

- SIL-2 certified
- Modbus RTU RS-485 interface
- 4-20 mA output
- HART Interface
- SMC Sentry digital bus interface
- ATEX Certified
- Optional Integral and Trouble alarm relays - Alarm, Warning
- Aluminum or 316 Stainless Steel enclosure
- Non-intrusive calibration
- Integral scrolling LED display
- Optional remote sensor
- Remote alarm reset capable

The 5100-28-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.

Factory Mutual (FM) Approval for performance, electrical safety and environmental parameters including Class 1, Div. 1, Groups B, C, D and Class I, Zone 1, Group IIB+H_2. The 5100-28-IT is also SIL-2 Certified and meets UL2075 requirements for gas detectors.

How It Works

Most combustible gases absorb infrared light energy at defined wavelengths, providing an absorption signature for that gas. 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
Yearly calibration interval	Longest rated and FM-approved calibration cycle for any infrared gas detector - reduced maintenance & cost of ownership
Single man, Non-intrusive calibration	Able to calibrate module without declassifying the area
Network-compatible with Modbus, 4-20 mA, Sentry PSG Bus, 4-20mA with HART, alarm relays	Easily meets users needs for access to critical plant safety information
FM and UL Approved for Performance and Hazardous Areas	Proven and approved for installation in areas where combustible gases are located
SIL-2 Certified	Meets long term reliability design standards
Local scrolling LED display	Ease of calibration and easy access to gas concentration, relay status and diagnostics

Sensor

Type: Infrared, Dual Wavelength

Performance

Dual Range:

Default: 0-100% LEL Methane

User Setting: 0-100% by vol. Methane

Repeatability: +/-1% LEL

Accuracy: +/- 1% for 0-50% LEL range

+/- 2% for 51-100% LEL range

+/- 1% full scale per month

Zero Drift: +/- 1% full scale per month

@ 20°C (68°F) ambient

(max +/- 3% full scale per year)

Sensor Life: Typically >5 years

Heated Sensor: Heated cell to prevent condensation

Response Time: T90<10sec*

Output

Display: Fixed and Scrolling LED

Signal Output: Sentry digital bus

Analog 4-20 mA Linear

3-wire Non-Isolated

4-wire Isolated

Serial RS-485 Modbus RTU

Relay: Optional

Power

Power consumption: 3 watts maximum

Input voltage: 24 VDC nominal: 10-30VDC

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

Remote Sensor: Up to 100 feet (30.4m)

Operating Range

Ambient Temp Range: -40° to 140°F (-40° to 60°C)

Relative Humidity: 0-99% Non-Condensing

Construction

Dimensions: (HxWxD)

(A1 & A2) = 7.8 x 5.7 x 3.9 in

(19.8 x 14.5 x 9.9 cm)

(S1 & S2) = 7.5 x 4.4 x 4.9 in

(19 x 11 x 12 cm)

Weight: (A1 & A2) = 3.4 lb. (1.5 Kg)

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

Enclosure: Epoxy coated Aluminum or
316 Stainless Steel

Housing: AL or SS (same as enclosure)

Hazardous Area Classification:

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

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

TA = -40°C to 60°C II2 GD, Ex d IIC

Warranty: 2 years

Approvals

UL2075

ATEX II 2 G, Ex d IIB+H2 T6 Gb, Ta = -20°C to 60°C

FM Approval 6320: Combustible Gas Detector
Performance

FM Approval 3600: Class I Div. 1, Groups B, C, D
3615, 3810

SIL-2 Certified: IEC 61508

CSA: C22.2

ABS: Certificate of Compliance

CQST: Certificate for China

CCOE/PESO: Certificate for India

IECEX: Certificate of conforming

ANSI/ISA: 12, 13, 01

*Specifications subject to change without notice

* T60<10 sec NRTL Approved option for noise
  suppression

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. 5100-28-IT-S1-02-01-2-0-C).

Model	Enclosure	Relay/Connection Output	Gas Type	Sensor Protection	Remote Option	Approvals
5100-28-IT	_____	_____	_____	_____	_____	_____
	↓	↓	↓	↓	↓	↓
	- A1 = AL ¾" NPT	- 01 = No Relays (Std)	- 01 = Methane (Std)	- 0 = Standard	- 0 = None	- C = ATEX
	- A2 = AL M20 x 1.5	- 02 = Relays Option	- 02 = Ethanol *	- 2 = Conformal Transmitter	- 1 = Remote Sensor	
	- S1 = SS ¾" NPT	- 05 = HART Option	- 03 = Propane *			
	- S2 = SS M20 x 1.5		- 04 = Butane *			
			- 07 = Hexane *			

* Use propane as calibration gas

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

1260-02   Combustible Gas 50% LEL Gas Cylinder Type A

1260-00   Zero air Cylinder

1260-28   Propane 50% LEL Cylinder