

## Overview

The Sentry IT 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:

- 365-day calibration interval
- FM and UL Approval for performance & safety
- SIL-2 certified
- Modbus RTU RS-485 interface
- 4-20 mA output isolated and non-isolated
- HART Interface option
- SMC Sentry digital bus interface
- ATEX Certified
- Optional alarm relays - Alarm, Warning, Trouble
- 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, InSite Application 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<sub>2</sub>. 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. More light is absorbed as the amount of absorbing gas increases. 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

- Yearly calibration interval
- Single man, Non-intrusive calibration
- Network-compatible with Modbus, 4-20 mA, Sentry PSG Bus, 4-20mA with HART, alarm relays
- FM and UL Approved for Performance and Hazardous Areas
- SIL-2 Certified
- Bright scrolling LED display

### Benefits

- Longest rated and FM-approved calibration cycle for any infrared gas detector - reduced maintenance & cost of ownership
- Able to calibrate module without declassifying the area
- Easily meets users’ needs for access to critical plant safety information
- Proven and approved for installation in areas where combustible gases are located
- Meets long term reliability design standards
- Ease of calibration and easy access to gas concentration, relay status and diagnostics

**Specifications \***

**Sensor**

**Type:** Infrared, Dual Wavelength

**Performance**

**Default Range:** 0-100% LEL Methane

**Optional Range:** 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

**HART:** Optional

**Power**

**Power consumption:** 3 watts maximum

**Input voltage:** 24V DC nominal: 10-30V DC

**Options**

**Relays:** 5 amp Alarm, Warning (0.25 amp Trouble)  
 5A@ 250V AC, 5A@ 30V DC (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 75°C)

**Relative Humidity:** 0-95% 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)

**Enclosure Hazardous Area Classification:**

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

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

Ta = -40°C to 85°C IIC GD, Ex d IIC

**2 Year Warranty**

**Approvals**

**UL2075**

**ATEX II 2 G**, Ex db IIB+H2 T5 Gb, Ta = -40°C to 75°C

**FM Approval 6320:** Combustible Gas Detector Performance

**FM Approval:** 3600|3615|3810| Class I Div. 1, Groups B, C, D | Ta = -20°C to 60°C

**SIL-2 Certified:** IEC 61508

**CSA:** C22.2 Approved | Ta = -20°C to 60°C

**ABS:** Certificate of Design Assessment

**CQST:** Compulsory Certification

**CCOE/PESO:** Declaration of Conformity

**IECEX:** Certificate of Conformity

**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 (i.e. 5100-28-IT-S1-02-00-0).

Model	Gas	Series	Enclosure	Relay/Connection Output	Gas Type	Sensor Protection	Remote Option	Approvals
5100	-28	-IT						
			↓ - A1 = AL ¾" NPT - A2 = AL M20x1.5 - S1 = SS ¾" NPT - S2 = SS M20x1.5	↓ - 01 = No Relays (std) - 02 = Relays Option - 05 = HART Option	↓ - 01 = Methane (Std) - 03 = Propane ***	↓ - 0 = Standard - 2 = Conformal Transmitter - 3 = Severe Service Environment	↓ - 0 = None - 1 = Remote Sensor	↓ - C = ATEX - A = CCC

\*\*\* 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