Overview

The 5100-02-IT Combustible Gas Sensor Module is a key member of the powerful Sierra Monitor IT Series family of gas sensor modules. The 5100-02-IT provides the features needed by safety and instrumentation engineers including:

- 180-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

Model 5100-02-IT utilizes the proven, reliable, catalytic bead technology to monitor for combustible gases (methane and others). Output range is 0-100% of Lower Explosive Limit (LEL). This detector has minimal maintenance requirements and is Factory Mutual approved for six-month calibration intervals. Internal, continuous self-diagnostics automatically detect and alarm any fault problems. The 5100-02-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 enabling system level Modbus serial communications, area and zone alarm management, extensive system diagnostic features, InSite Application, and multiplexing sensor connections.

Factory Mutual (FM) and UL 2075 Approval for performance, electrical safety and environmental parameters including Class I, Div. 1, Groups B, C, D and Class I, Zone 1, Group IIB + H_2 – T5. With a NEMA-4X enclosure standard, approved multiplexing, and approved six-month calibration interval, cost of ownership is minimized at the acquisition, installation and operating stages.

How It Works

Catalytic Bead gas sensors detect gas by comparing the resistance of two heated elements. One element is catalytic to enhance the burning of combustible gases; the other element is passive. Electronic circuits are used to compare the change in the catalytic bead resistance relative to the passive bead. The relative change is calibrated to determine the concentration of the gas of interest.

Features	Benefits
Six-month calibration interval	Longest rated and FM-approved calibration cycle for any catalytic-bead gas detector - reduced maintenance
Non-intrusive calibration	Able to calibrate module without declassifying the area
Network-compatible with Modbus, 4-20 mA, Sentry bus, HART and relay interface	Easily meets user's 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 display	Ease of calibration and easy access to gas concentration, relay status and diagnostics

Specifications *

Sensor
Type: Catalytic Bead

Performance
Repeatability: +/-1% LEL
Response Time: T60<10sec
Calibration Frequency: 180 days
Accuracy: +/- 1% for 0-50% LEL range
　　　　　　+/- 2% for 51-100% LEL range

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

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 50 feet (15.2m)

Power
Power consumption: 3 watts maximum
Input voltage: 24V DC nominal: 10-30V DC
RFI/EMI Protection: EN50081-2, EN50082-2

Operating Range
Ambient Temp Range: -40º to 176ºF (-40º to 80ºC)
Relative Humidity: 0-99% Non-Condensing

Construction
Dimensions: (HxWxD)
　　　　　　(A1 & A2) = 6.9 x 5.7 x 3.9 in.
　　　　　　　　　　(17.5 x 14.5 x 9.9 cm)
　　　　　　(S1 & S2) = 7.5 x 5.0 x 4.4 in.
　　　　　　　　　　(19 x 13 x 11 cm)
Weight: (A1 & A2) = 3.4 lb. (1.5 Kg)
　　　　　(S1 & S2) = 7.2 lb. (3.3 Kg)
Housing: Epoxy coated Aluminum or
　　　　　316 Stainless Steel
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
II2 GD, Ex d IIC T6 = -40ºC to 85ºC
Warranty: 2 years

Approvals
UL 2075: Combustible Gas Detector Performance
FM Approval 6320: Combustible Gas Detector
　　　　　　　　Performance
FM Approval 3600: Class I Div. 1, Groups B, C, D
SIL-2 Certified: IEC 61508
ATEX Certified: II 2G, Ex d IIB + H2 T5 Gb
CE Marked: Certificate of Approval
CSA: C22.2 Approved
ABS: Certificate of Design Assessment
CQST: Compulsory Certification
CCOE/PESO: Declaration of Conformity

* Specifications subject to change without notice

Remote Sensor Option

It is often necessary to sample the combustible gas at some distance from the gas sensor module. The IT Series enables the user to mount the sensor remotely from the transmitter without the need for expensive and high-maintenance sample pumps. The Remote Sensor Option provides a separate gas sensor that can be mounted up to 50 feet from the transmitter and connected via a cable included.

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. 5100-12-IT-S1-02-00-0).

Model	Gas	Series	Enclosure	Relay/Connection Output	Gas Type	Sensor Protection	Remote Option	Approvals
5100	-02	-IT			-00			
			↓	↓		↓	↓	↓
			- A1 = AL ¾" NPT	- 01 = No Relays (std)		- 0 = Standard	- 0 = None	- C = ATEX
			- A2 = AL M20x1.5	- 02 = Relays Option		- 3 = Severe Service	- 1 = Remote	- A = CCC
			- S1 = SS ¾" NPT	- 05 = HART Option		Environment	Sensor	
			- S2 = SS M20x1.5					

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
1260-02　　50% LEL Methane Gas Cylinder Type A
1260-30　　25% LEL Methane
1260-42　　Hydrogen, 50% LEL, Gas Cylinder, Type A
1260-00　　Zero (Air), Gas Cylinder, Type A

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4/17