Overview

Information Technology (*IT)* at the component level! A network enabled Gas Sensor Module with the brilliance to provide Sentry, 4-20 mA or Modbus output. This is a stand-alone module with the intelligence to provide integral alarms, loaded with features you need. A gas detector with a Sierra Monitor pedigree, Factory Mutual approved and ready to manage your gas risk. The 5100-XX-IT Series provides all the built-in features desired by instrumentation and safety professionals, 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/IECEX 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

O_2
CO
H_2S
Cl_2
ClO_2
SO_2
NO_2
NH_3
HF
HCl
ETO

The 5100-XX-IT can be used as a 4-20 mA component or as a Modbus RTU node. For higher level system capabilities, 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 Appliance and multiplexing sensor connections.

Factory Mutual (FM) Approved for electrical safety and environmental parameters including Class I, Div. 1, Groups B, C, D and Class I, Zone 1, Group IIB+H2 IP66. The 5100-XX-IT is also SIL Certified and meets NFPA-72 requirements for gas detectors.

How It Works

Electrochemical sensors are fuel cell-like devices consisting of an anode, cathode and electrolyte. The components of the cell are selected so a subject gas, allowed to diffuse into the cell, will cause a chemical reaction and generate a current. The cells are diffusion limited so the rate the gas enters the cell is solely dependent on the gas concentration. The current generated is proportional to the rate of the consumption of the subject gas in the cell.

Features

- Local scrolling display
- Non-intrusive calibration, menu driven system
- FM Approved for performance and hazardous area operation (Class I, Div. 1, Group B, C, D, with NEMA 4X enclosure)
- Flexible Modbus, 4-20mA, Sentry bus, HART and relay interface
- SIL-2 Certified

Benefits

- Easy to install in a variety of field applications plus easy to obtain critical safety information wherever needed
- Able to easily and quickly calibrate module without declassifying the area
- For safe and reliable operation in hazardous areas 5100-05-IT also includes FM Approval for performance
- Easy to install in a variety of field applications plus easy to obtain critical safety information wherever needed
- Meets long term reliability design standards

Gas Type	Model	Std. Range[1]	Opt. Max Range	Resolution	Response Time [2]	Accuracy	Operating Range [1] [3]		
							°F	°C	RH*
Oxygen	5100-03-IT	5-25 %Vol	25 %Vol	0.1%	<10 sec.	+/- 0.2%	- 4 to 122	-20 to 50	15 – 90%
Carbon Monoxide	5100-04-IT	0-500 PPM	1200 PPM	0.5 PPM	<35 sec.	+/- 1 PPM	- 4 to 122	-20 to 50	15 – 90%
Hydrogen Sulfide	5100-05-IT	0-100 PPM	100 PPM	0.1 PPM	<35 sec.	+/- 1 PPM	- 40 to 140	-40 to 60	15 – 90%
Chlorine	5100-06-IT	0-10 PPM	10.0 PPM	0.1 PPM	<60 sec.	+/- 0.5 PPM	- 4 to 122	-20 to 50	15 – 90%
Chlorine Dioxide	5100-08-IT	0-3 PPM	3.0 PPM	0.1 PPM	<60 sec.	+/- 0.5 PPM	- 4 to 122	-20 to 50	15 – 90%
Sulfur Dioxide	5100-10-IT	0-100 PPM	100 PPM	0.5 PPM	<20 sec.	+/- 0.5 PPM	- 4 to 122	-20 to 50	15 – 90%
Nitrogen Dioxide	5100-12-IT	0-20 PPM	20.0 PPM	0.2 PPM	<35 sec.	+/- 0.5 PPM	- 4 to 122	-20 to 50	15 – 90%
Hydrogen Chloride	5100-21-IT	0-20 PPM	20.0 PPM	0.1 PPM	<100 sec.	+/- 0.1 PPM	- 4 to 122	-20 to 45	15 – 90%
Ammonia	5100-25-IT	0-100 PPM	100 PPM	1.0 PPM	<30 sec.	+/- 1 PPM	+ 14 to 113	-10 to 45	20 – 95%
Hydrogen Fluoride	5100-26-IT	0-10 PPM	10 PPM	0.5 PPM	<30 sec.	+/- 1 PPM	+ 14 to 113	-10 to 45	20 – 95%
Ethylene Oxide	5100-27-IT	0-20 PPM	0-20 PPM	0.1 PPM	<90 sec.	+/- 1 PPM	- 4 to 122	-20 to 50	15 – 90%

[1] Optional ranges and temperatures available   [2] Response time to 90% full signal value for applied concentration   * = Non-Condensing

[3] 5100-05-IT FM Approved -40° to 50°C

Specifications common to all *IT* Toxic Gas Sensor Modules **

Sensor
Type: Electrochemical

Performance
Range: Default range as above
User selectable alternative ranges
Sensor Life: Typically >2 years

Output
Display: Fixed and Scrolling LED
Signal Outputs: Sentry digital bus
Analog 4-20 mA
3-wire Non-Isolated
4-wire Isolated
Serial RS-485 Modbus RTU
Relay: Optional

Options
Relays: 5A@ 250VAC, 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: 2 watts maximum
Input voltage: 24VDC nominal: 10-30VDC

Remote Sensor Option
Distance: 5100-03-IT = 10 feet
5100-04-IT = 15 feet
5100-05-IT = 15 feet

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
FM: CSA for enclosure in hazardous locations
(5100-05-IT only) Ta = -40oC to 50oC
FM Performance Approval: 5100-05-IT
SIL-2 Certified: 5100-04-IT, 5100-05-IT, 5100-06-IT
ATEX/IECEX Certified II 2 G Ex d IIB+H2 T6 Gb
(5100-05-IT only) (Temp) Ta = -40oC to 60oC
CE Mark: 5100-05-IT
ABS: 5100-05-IT

**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 (i.e. 5100-12-IT-S1-02-00-0-0).

Model	Gas	Series	Enclosure	Relay/Connection Output	XX	Sensor Protection	Remote Option	Approvals
5100								
	↓	↓	↓	↓	↓	↓	↓	↓
	- 03 = O2 - 10 = SO2 - 04 = CO - 12 = NO2 - 05 = H2S - 21 = HCl - 06 = Cl2 - 25 = NH3 - 08 = ClO2 - 26 = HF - 27 = ETO	-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	-00 = std	- 0 = Standard - 1 = Conformal Sensor - 3 = Severe Service Environment	- 0 = None - 1 = Remote Sensor	- C = ATEX/IECEX (5100-05-IT only)

Accessories
5311-00   Rainshield   5311-02   Rainshield with calibration port

Calibration Accessories
1250-01   Gas Sensor Calibration Kit, Type A (CO, H2S)   1260-10   Gas Cylinder, SO2, 50 PPM, (Type B) 74 Liters
1250-02   Gas Sensor Calibration Kit, Type B (SO2, NO2)   1260-12   Gas Cylinder, NO2, 10 PPM, (Type B) 74 Liters
1250-03   Gas Sensor Calibration Kit, Type C (Cl2, ClO2, HF)   1260-21   Gas Cylinder, HCl, 5 PPM, (Type X) 581 Liters
1260-00   Gas Cylinder, Air, (Type A) 105 Liters   5360-00   Calibration Head, Standard
1260-04   Gas Cylinder, CO, 100 PPM, (Type A) 105 Liters   9210-00   Calibrator, Permeation Type
1260-05   Gas Cylinder, H2S in N2, 25 PPM, (Type A) 57 Liters 9211-09   Permeation Tube, Ammonia, NH3
1260-06   Gas Cylinder, Cl2, 10 PPM, (Type C) 58 Liters

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