

**180 Day Calibration Interval**  
**Network enabled toxic gas detection**

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:

- FM Approval for performance and safety (5100-05-IT for performance)
- 180 day calibration frequency
- SIL-2 Certified
- Modbus RTU RS-485 interface
- 4-20 mA output
- HART Interface
- SMC Sentry digital bus interface
- ATEX Approved (5100-05-IT)
- Optional Integral alarm relays – Alarm, Warning
- Aluminum or 316 Stainless Steel enclosure
- Integral scrolling LED display
- Remote alarm reset
- Optional remote sensor

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, WebServer interface and multiplexing sensor connections.



**180 Day Calibration Interval**

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 hazardous area operation, Class I, Div. 1, Groups B, C, D. NEMA 4X rated for -40° to 176° F areas
- ◆ Flexible Modbus, 4-20mA, Sentry bus, HART and relay interface
- ◆ SIL-2 Certified

**Benefits**

- Ease of calibration and easy access to gas concentration, relay status and diagnostics
- 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

**Specifications:**

Gas Type	Model	Std. Range <sup>(1)</sup>	Opt. Max Range	Resolution	Response Time <sup>(2)</sup>	Accuracy	Operating Range		
							°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 – 99%
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	- 4 to 122	-20 to 50	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%
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%

- (1) Optional ranges available
- (2) Response time to 90% full signal value for applied concentration

**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 (Trouble, 2.5 Ma),  
Calibration (1.5 mA)  
Serial RS-485 Modbus RTU

Relay : 0.25 Amp. Trouble  
Optional Relays – Alarm & Warning (8A)

**Options:**

Relays: 8 amp Alarm, Warning  
8A @ 250 VAC, 5A @ 30VDC  
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

Housing: Epoxy-coated, die-cast, copper-free Aluminum or 316 Stainless Steel

Rating: Explosion proof, Class 1, Div. I, Groups B, C, D  
Group IIB + H2 IP66, IP65, NEMA 4X

Warranty: 2 years

**Remote Sensor Option:** Distance:

5100-03-IT	10 feet	5100-10-IT	15 feet
5100-04-IT	15 feet	5100-12-IT	10 feet
5100-05-IT	15 feet	5100-25-IT	10 feet
5100-06-IT	10 feet	5100-26-IT	10 feet
5100-08-IT	10 feet		

**Modbus:**

Format: RS-485

Baud: 38400 (Adjustable 2400 – 38400)

Parity: None

Stop bit: 1

Data bits: 8

Flow Control: None

Memory map available from Sierra Monitor

**Approvals:** FM, CSA for enclosure in hazardous locations  
FM Performance Approval 5100-05-IT  
SIL-2 Certified (5100-04-IT, 5100-05-IT, 5100-06-IT)  
ATEX Certified II 2 G Ex d IIB+H2 T6 Gb  
Ta = -20°C to +50°C

*Specifications subject to change without notice*



**Electrical Data:**

Power consumption: 2 watts maximum

Connection type: 3 wire

Input voltage: 24 VDC nominal: 10-30VDC

**Construction:**

Dimensions: (HxWxD) (differs for 5100-25-IT & 5100-26-IT)

Aluminum : 8.3 x 4.8 x 4.9 in. (21.0 x 12.2 x 12.4 cm)

316SS : 7.6 x 4.4 x 4.9 in. (19.3 x 11.2 x 12.4 cm)

Weight: Aluminum Enclosure: 2.7 lb. (1.3 Kg)  
316SS Enclosure: 5.4 lb. (2.6 Kg)

**Ordering Information:**

Model	Gas	IT	Enclosure	Relay/Connection Output	Sensor Protection	Remote Option
5100	XX	- IT Series	XX	XX	X	X
5100 Series	- 03 = O <sub>2</sub> - 04 = CO - 05 = H <sub>2</sub> S - 06 = Cl <sub>2</sub> - 08 = ClO <sub>2</sub> - 10 = SO <sub>2</sub> - 12 = NO <sub>2</sub> - 25 = NH <sub>3</sub> - 26 = HF		- A1 = AL ¾" NPT - A2 = AL M20 x 1.5 - S1 = SS ¾" NPT - S2 = SS M20 x 1.5	- 01 = No Relays (std) - 02 = Relays Option - 05 = HART Option	- 0 = Standard - 1 = Marine - 2 = Conformal	- 0 = None - 1 = Remote Sensor

**Accessories:**

5311-00 Rainshield

5311-02 Rainshield with calibration port

**Calibration Accessories:**

1250-01 Gas Sensor Calibration Kit, Type A (CO, H<sub>2</sub>S)

1250-02 Gas Sensor Calibration Kit, Type B (SO<sub>2</sub>, NO<sub>2</sub>)

1250-03 Gas Sensor Calibration Kit, Type C (Cl<sub>2</sub>, ClO<sub>2</sub>)

1260-00 Gas Cylinder, Air, (Type A) 105 Liters

1260-04 Gas Cylinder, CO, 100 PPM, (Type A) 105 Liters

1260-05 Gas Cylinder, H<sub>2</sub>S in N<sub>2</sub>, 25 PPM, (Type A) 57 Liters

1260-06 Gas Cylinder, Cl<sub>2</sub>, 5 PPM, (Type C) 104 Liters

1260-10 Gas Cylinder, SO<sub>2</sub>, 50 PPM, (Type B) 74 Liters

1260-12 Gas Cylinder, NO<sub>2</sub>, 10 PPM, (Type B) 74 Liters

1260-13 Gas Cylinder, CO, 1000 PPM, (Type A) 105 Liters

5360-00 Calibration Head, Standard

9210-00 Calibrator, Permeation Type

9211-09 Permeation Tube, Ammonia, NH<sub>3</sub>