

**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
- 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)
- IECEx Certified (5100-05-IT)
- Optional Integral alarm relays – Alarm, Warning and Trouble
- 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.



O<sub>2</sub>  
CO  
H<sub>2</sub>S  
Cl<sub>2</sub>  
ClO<sub>2</sub>  
SO<sub>2</sub>  
NO<sub>2</sub>  
NH<sub>3</sub>  
HF  
HCl

**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 performance and hazardous area operation, Class I, Div. 1, Group B, C, D, with NEMA 4X enclosure rated for -40° to 122°F areas
- ◆ 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

**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.	+/- 3 PPM	- 40 to 122	-40 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%
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%

(1) Optional ranges available

(2) Response time to 90% full signal value for applied concentration

\* = Non-Condensing

**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  
 Optional  
 Relay :  
**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

**Construction:**

Dimensions: (HxWxD) (differs for 5100-25-IT & 5100-26-IT)  
 (A1 & A2) 7.9 x 5.7 x 3.9 in. (20.1 x 14.5 x 9.9 cm)  
 (S1 & S2) 7.6 x 4.4 x 4.9 in. (19.3 x 11.2 x 12.4 cm)  
 Weight:  
 (A1 & A2) 3.4 lb. (1.5 Kg)  
 (S1 & S2) 7.2 lb. (3.3 Kg)  
 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  
**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 (5100-05-IT)  
 IECEx Certified (5100-05-IT)  
 CE Mark (5100-05-IT)  
 ABS (5100-05-IT)  
 CQST Certified for China (5100 -03, -04, & -05 -IT)  
 CCOE/PESO Certified for India

Specifications subject to change without notice

**Power:**

Power consumption: 2 watts maximum  
 Input voltage: 24 VDC nominal: 10-30VDC

**Remote Sensor Option:** Distance:

5100-03-IT	10 feet
5100-04-IT	15 feet
5100-05-IT	15 feet



**Ordering Information:**

Model	Gas	- IT	Enclosure	Relay/Connection Output	- XX	Sensor Protection	Remote Option	ATEX
5100	- XX	- IT Series	- XX	- XX	- 00 = Std.	- X	- X	- X
	- 03 = O <sub>2</sub>		- A1 = AL ¾" NPT	- 01 = No Relays (std)		- 0 = Standard	- 0 = None	- 0 = Standard
	- 04 = CO		- A2 = AL M20 x 1.5	- 02 = Relays Option		- 1 = Conformal Sensor	- 1 = Remote Sensor	- C = ATEX (5100-05-IT only)
	- 05 = H <sub>2</sub> S		- S1 = SS ¾" NPT	- 05 = HART Option				
	- 06 = Cl <sub>2</sub>		- S2 = SS M20 x 1.5					
	- 08 = ClO <sub>2</sub>							
	- 10 = SO <sub>2</sub>							
	- 12 = NO <sub>2</sub>							
	- 21 = HCl							
	- 25 = NH <sub>3</sub>							
	- 26 = HF							

**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)	1260-10	Gas Cylinder, SO <sub>2</sub> , 50 PPM, (Type B) 74 Liters
1250-02	Gas Sensor Calibration Kit, Type B (SO <sub>2</sub> , NO <sub>2</sub> )	1260-12	Gas Cylinder, NO <sub>2</sub> , 10 PPM, (Type B) 74 Liters
1250-03	Gas Sensor Calibration Kit, Type C (Cl <sub>2</sub> , ClO <sub>2</sub> )	1260-13	Gas Cylinder, CO, 1000 PPM, (Type A) 105 Liters
1260-00	Gas Cylinder, Air, (Type A) 105 Liters	1260-21	Gas Cylinder, HCl, 5 PPM, (Type X) 581 Liters
1260-04	Gas Cylinder, CO, 100 PPM, (Type A) 105 Liters	5360-00	Calibration Head, Standard
1260-05	Gas Cylinder, H <sub>2</sub> S in N <sub>2</sub> , 25 PPM, (Type A) 57 Liters	9210-00	Calibrator, Permeation Type
1260-06	Gas Cylinder, Cl <sub>2</sub> , 5 PPM, (Type C) 104 Liters	9211-09	Permeation Tube, Ammonia, NH <sub>3</sub>