

### 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:

- FM Approval for performance and safety
- 180 day calibration frequency (5100-05-IT)
- SIL-2 Certified
- Modbus RTU RS-485 interface
- 4-20 mA output
- Optional HART Interface
- SMC Sentry digital bus interface
- ATEX Approved (5100-05-IT)
- IECEx Certified (5100-05-IT)
- 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.

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+H<sub>2</sub> 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

# Sentry IT Data Sheet – Toxic Gas Detector, Electrochemical, Model 5100-XX-IT

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%
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%
Carbon Dioxide	5100-88-IT	0-5000 PPM	NA	1 PPM	<60 sec.	+/- 2%	- 4 to 140	-20 to 60	0 – 99%

<sup>(1)</sup> Optional ranges available

<sup>(2)</sup> 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

**Relay:** Optional

### Options

**Relays:** 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

### 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

### Construction

**Dimensions:** (HxWxD)(differs for 5100-25&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)

**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 (ie. 5100-12-IT-S1-02-00-0-C).

Model	Gas	Series	Enclosure	Relay/Connection Output	XX	Sensor Protection	Remote Option	ATEX
5100								
- 03 = O2 - 04 = CO - 05 = H2S - 06 = Cl2 - 08 = ClO2 - 10 = SO2	- 12 = NO2 - 21 = HCl - 25 = NH3 - 26 = HF - 27 = ETO - 88 = CO2	-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	- 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, 5 PPM, (Type C) 58 Liters

Manufactured by  
**smc**  
Sierra monitor

Macurco Gas Detection

3601 North St. Paul Avenue, Sioux Falls, South Dakota 57104 USA

O. 512-524-3414 TF. 877-367-7891 F. 512-524-3415 www.macurco.com