

## SMC 5100-XX-IT Toxic Gas Detector

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

- 180-day calibration interval
- Sentry IT PSG digital bus interface
- Optional alarm relays - Alarm, Warning, Trouble
- Aluminum or 316 Stainless Steel enclosure
- Non-intrusive calibration
- Optional remote sensor

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 suitable for SIL-2 service and meets NFPA-72 requirements for gas detectors ATEX / IECEx certified.



## 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

- Non-intrusive calibration, menu driven system
- Flexible Modbus, 4-20 mA, Sentry IT Bus, HART and relay interface
- FM Approved for performance and hazardous area operation (Class I, Div. 1, Group B, C, D, with NEMA 4X enclosure)
- Suitable for SIL-2 service, IEC 61508 standard
- Bright scrolling LED display

## Benefits

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

Gas Type	Model	Std. Range <sup>(1)</sup>	Opt. Max Range	Resolution	Response Time <sup>(2)</sup>	Accuracy	Operating Range <sup>(1) (3)</sup>		
							°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%

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

<sup>(2)</sup> Response time to 90% full signal value for applied concentration

\* = Non-Condensing

<sup>(3)</sup> 5100-05-IT FM Approved -40° to 50°C

## Specifications

### 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 Output:** Sentry IT digital bus

Analog 4-20 mA Linear

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 IT multiplexing

**HART:** Termination board includes HART,

Modbus RS-485, 4-20mA, Digital Input,

2A Relay output, No Sentry IT Bus

### Power

**Power consumption:** 3 watts maximum

**Input voltage:** 24 VDC nominal: 10-30 VDC

### 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:** AL or SS (same as enclosure)

### 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

IIC GD, Ex d IIC T6 = -40° C to 85° C

### 2 Year Warranty

### Approvals

FM: CSA for enclosure in hazardous locations

(5100-05-IT only) Ta = -40°C to 50°C

FM Performance Approval: 5100-05-IT

Suitable for SIL-2 service: 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 = -40°C to 60°C

CE Mark: 5100-05-IT

ABS: 5100-05-IT



## Accessories

### General 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

9210-00 Calibrator, Permeation Type

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

9211-09 Permeation Tube, Ammonia, NH3

1260-05 Gas Cylinder, H2S in N2, 25 PPM, (Type A) 57 Liters

1260-06 Gas Cylinder, Cl2, 10 PPM, (Type C) 58 Liters

Note: This Bulletin contains only a general description of the products shown. While product uses and performance capabilities are generally described, the products shall not, under any circumstances, be used by untrained or unqualified individuals. The products shall not be used until the product instructions/user manual, which contains detailed information concerning the proper use and care of the products, including any warnings or cautions, have been thoroughly read and understood. Specifications are subject to change without prior notice.

MSA operates in over 40 countries worldwide. To find an MSA office near you, please visit [MSAsafety.com/offices](https://www.MSA.com/offices).