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

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

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

- **Sensor Type**: Electrochemical
- **Performance**: 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 4-20mA, 3-wire non-isolated, 4-wire isolated, Serial RS-485 Modbus RTU
- **Relay**: Optional
- **Relay Options**: 5A, 20mA, Digital Input, 2A Relay output, No Sentry Bus
- **Construction**: Dimensions: (HxWxD) (A1 & A2) = 6.9 x 5.7 x 3.9 in. (17.5 x 14.5 x 9.9 cm)
  - **Power**: Power consumption: 2 watts maximum
  - **Remote Sensor Option**: Default range as above
- **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 =-40°C to 85°C**
- **Warranty**: 2 years

**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-C).

<table>
<thead>
<tr>
<th>Model</th>
<th>Gas</th>
<th>Series</th>
<th>Enclosure</th>
<th>Relay/Connection Output</th>
<th>XX</th>
<th>Sensor Protection</th>
<th>Remote Option</th>
<th>Approvals</th>
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<tbody>
<tr>
<td>5100</td>
<td></td>
<td></td>
<td>IT</td>
<td>-1 = No Relays (std)</td>
<td>00</td>
<td>-0 = std</td>
<td>-0 = None</td>
<td>C = ATEX/IECEX (5100-05-IT only)</td>
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<td></td>
<td>-03</td>
<td>O₂</td>
<td>-IT</td>
<td>A1 = AL / % PPT</td>
<td>02</td>
<td>-1 = Standard</td>
<td>-1 = Remote Sensor</td>
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<td></td>
<td>-04</td>
<td>CO</td>
<td></td>
<td>A2 = AL M20x1.5</td>
<td>05</td>
<td>-3 = Severe Service Environment</td>
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<td></td>
<td>-05</td>
<td>H₂S</td>
<td></td>
<td>S1 = SS / % PPT</td>
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<td></td>
<td>-06</td>
<td>C₁₂H₂₅</td>
<td></td>
<td>S2 = SS M20x1.5</td>
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<td></td>
<td>-08</td>
<td>ClO₂</td>
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<td>-1 = No Relays (std)</td>
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<td>-09</td>
<td>ClO₂</td>
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<td>-0 = std</td>
<td>00</td>
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<td>ETO</td>
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<td>-2 = Relays Option</td>
<td>02</td>
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<td>-28</td>
<td>ClO₂</td>
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<td>-1 = HART Option</td>
<td>05</td>
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<td>-3 = Severe Service Environment</td>
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**Accessories**
- 5311-00 Rainshied
- 5311-02 Rainshied with calibration port

**Calibration Accessories**
- 1250-01 Gas Sensor Calibration Kit: Type A (CO, H₂S)
- 1250-02 Gas Sensor Calibration Kit: Type B (SO₂, NO) 105 Liters
- 1250-03 Gas Sensor Calibration Kit: Type C (Cl₂, ClO₂, HF) 105 Liters
- 1250-04 Gas Cylinder, Air: 105 Liters
- 1250-05 Gas Cylinder, CO: 100 PPM, (Type A) 105 Liters
- 1250-06 Gas Cylinder, H₂S in N₂: 10 PPM, (Type A) 57 Liters
- 1250-07 Gas Cylinder, CO: 10 PPM, (Type C) 58 Liters

**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/IECEX Certified: I 2 G Ex d IIB+H2 T6 Gb (5100-05-IT only)
- CE Mark: 5100-05-IT
- ABS: 5100-05-IT