Overview

The 5100-02-IT Combustible Gas Sensor Module is a key member of the powerful Sierra Monitor IT Series family of gas sensor modules. The 5100-02-IT provides the features needed by safety and instrumentation engineers 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 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

Model 5100-02-IT utilizes the proven, reliable, catalytic bead technology to monitor for combustible gases (methane and others). Output range is 0-100% of Lower Explosive Limit (LEL). This detector has minimal maintenance requirements and is Factory Mutual approved for six-month calibration intervals. Internal, continuous self-diagnostics automatically detect and alarm any fault problems. The 5100-02-IT can be used as a 4-20 mA component or as a Modbus RTU node. For higher level system capability, the module can interface directly to Sierra Monitor’s Sentry Controller enabling system level Modbus serial communications, area and zone alarm management, extensive system diagnostic features, InSite Application, and multiplexing sensor connections.

Factory Mutual (FM) and UL 2075 Approval for performance, electrical safety and environmental parameters including Class I, Div. 1, Groups B, C, D and Class I, Zone 1, Group IIB + H2 – T5. With a NEMA-4X enclosure standard, approved multiplexing, and approved six-month calibration interval, cost of ownership is minimized at the acquisition, installation and operating stages.

How It Works

Catalytic Bead gas sensors detect gas by comparing the resistance of two heated elements. One element is catalytic to enhance the burning of combustible gases; the other element is passive. Electronic circuits are used to compare the change in the catalytic bead resistance relative to the passive bead. The relative change is calibrated to determine the concentration of the gas of interest.

Features

- Six-month calibration interval
- Non-intrusive calibration
- Network-compatible with Modbus, 4-20 mA, Sentry bus, HART and relay interface
- FM and UL Approved for Performance and Hazardous Areas
- SIL-2 Certified
- Local scrolling display

Benefits

- Longest rated and FM-approved calibration cycle for any catalytic-bead gas detector - reduced maintenance
- Able to calibrate module without declassifying the area
- Easily meets user's needs for access to critical plant safety information
- Proven and approved for installation in areas where combustible gases are located
- Meets long term reliability design standards
- Ease of calibration and easy access to gas concentration, relay status and diagnostics
### Specifications

#### Sensor
- **Type:** Catalytic Bead

#### Performance
- **Repeatability:** +/-1% LEL
- **Response Time:** T60<10sec
- **Calibration Frequency:** 180 days
- **Accuracy:** +/- 1% for 0-50% LEL range
  +/-% for 51-100% LEL range

#### Output
- **Display:** Fixed and Scrolling LED
- **Signal Output:** Sentry digital bus
  - Analog 4-20 mA
  - 3-wire Non-Isolated
  - 4-wire Isolated
- **Serial RS-485 Modbus RTU**
- **Relay:** Optional
- **Options**
  - Relays: 5-amp Alarm, Warning (0.25 amp Trouble)
  - 5A@ 250V AC, 5A@ 30V DC (Alarm, Warning)
  - HART: Termination board includes HART, Modbus
  - RS-485, 4-20mA, Digital Input, 2A Relay output, No Sentry Bus
- **Remote Sensor:** Up to 50 feet (15.2m)

#### Power
- **Power consumption:** 3 watts maximum
- **Input voltage:** 24V DC nominal: 10-30V DC

#### Calibrations
- **Calibration Freq:**
  - HART: 1/year
  - RS-485: 2/year
  - Analog: 2/year

#### Accuracy
- **Calibration Freq:**
  - HART: 1/year
  - RS-485: 2/year
  - Analog: 2/year

#### Repeatability
- **Calibration Freq:**
  - HART: 1/year
  - RS-485: 2/year
  - Analog: 2/year

#### Calculations
- **Accuracy:**

#### Remote Sensor Option
- It is often necessary to sample the combustible gas at some distance from the gas sensor module. The IT Series enables the user to mount the sensor remotely from the transmitter without the need for expensive and high-maintenance sample pumps. The Remote Sensor Option provides a separate gas sensor that can be mounted up to 50 feet from the transmitter and connected via a cable included.

### 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-S1-02-00-00).

#### Model | Gas | Series | Enclosure | Relay/Connection | Output | Gas Type | Sensor Protection | Remote Option | Approvals
---|---|---|---|---|---|---|---|---|---
5100 | -02 | -IT | | | | | | | |
  - A1 = AL ¾” NPT
  - A2 = AL M20x1.5
  - S1 = SS ¾” NPT
  - S2 = SS M20x1.5
  - 01 = No Relays (std)
  - 02 = Relays Option
  - 03 = Severe Service Environment
  - 05 = HART Option
  - 0 = Standard
  - = None
  - = Remote Sensor
  - = ATEX
  - = CCC

### Accessories
- 5311-00 Rainshield
- 5311-02 Rainshield with calibration port

### Calibration Accessories
- 5358-01 Calibration Head, Standard
- 5360-00 Calibration Gas Delivery Fitting

### Approvals
- **UL 2075:** Combustible Gas Detector Performance
- **FM Approval 6230:** Combustible Gas Detector Performance
- **FM Approval 3600:** Class I, Div. 1, Groups B, C, D
- **SIL-2 Certified:** IEC 61508
- **ATEX Certified:** II 2G, Ex d IIB + H2 T5 Gb
- **CE Marked:** Certificate of Approval
- **CQC:** Compulsory Certification
- **CCOE/PESO:** Declaration of Conformity

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