

# **SMC** *sierra monitor corporation* Combustible Gas Sensor Module Catalytic Bead

**Only FM Performance Approved Catalytic Bead Combustible Gas Sensor Module with 180 day Calibration Interval, twice as long as the industry standard resulting in half the maintenance costs!**

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
- Integral scrolling LED display
- SIL-1 rated
- Integral alarm relays – High, Low, Trouble
- Aluminum or 316 Stainless Steel enclosure
- Non-intrusive calibration
- 4-20 mA output
- Modbus RTU RS-485 interface
- SMC Sentry digital bus interface
- Remote alarm reset capable
- Optional remote sensor
- Optional control relay pack

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, WebServer interface, and multiplexing sensor connections.



**180 Day Calibration Interval**



Factory Mutual (FM) 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 IP66. 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
- FM Approved, Class I, Div. 1, Group B, C, D. NEMA 4X rated for -40° to 176°F areas
- Local scrolling display
- Flexible Modbus, 4-20mA, Sentry bus, relay interface
- SIL Certified

### Benefits

- Longest rated and approved calibration cycle for any catalytic bead gas detector- reduced maintenance
- Able to calibrate module without declassifying the area
- Approved for installation in most areas where combustible gases are located
- Ease of calibration and easy access to gas concentration, relay status and diagnostics
- 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:**

**Sensor type:** Catalytic Bead  
**Performance:**  
 Range: 0-100% LEL  
 Repeatability: +/-1% LEL  
 Response time: <12 sec to 60% full scale  
 Calibration freq: 180 days  
 Accuracy: +/- 1% for 0-50% LEL range  
 +/- 2% for 51-100% LEL range

**Output:**

**Display:** Fixed and Scrolling LED  
  
**Standard Relay:** SPDT, high, low, trouble (30VDC/2A, 125VAC/0.5A, 250VAC/0.25A)  
**Optional Relay:** 8 amp (high, low), SPDT, 8A@250VAC, 5A@30VDC  
**Signal Output:** Sentry digital bus  
 3-wire sensor powered analog 4-20 mA or optically isolated (Calibration, 4.0 mA default, 1.5 mA, Normal)  
 Serial RS-485 Modbus RTU

Specifications subject to change without notice

**Electrical Data:**

Power consumption: 3 watts max.  
 Connection type: 3 wire  
 Input voltage: 24 VDC nominal: 10-30VDC  
 RF/EMI Protection: EN50081-2, EN50082-2

**Operating Range:**

Ambient Temp Range: -40° to 176°F (-40° to 80°C)  
 Relative Humidity: 0-99%

**Construction:**

**Dimensions:** (Al) 7.2 x 5.0 x 4.8 in. (18 x 13 x 12 cm)  
 (SS) 7.5 x 5.0 x 4.4 in. (19 x 13 x 11 cm)  
**Weight:** (Al) 2.7 lb. (1.3 Kg) -- (SS) 5.2 lb (2.5 Kg)  
**Housing:** Standard: Epoxy coated aluminum  
 Option: 316 Stainless Steel

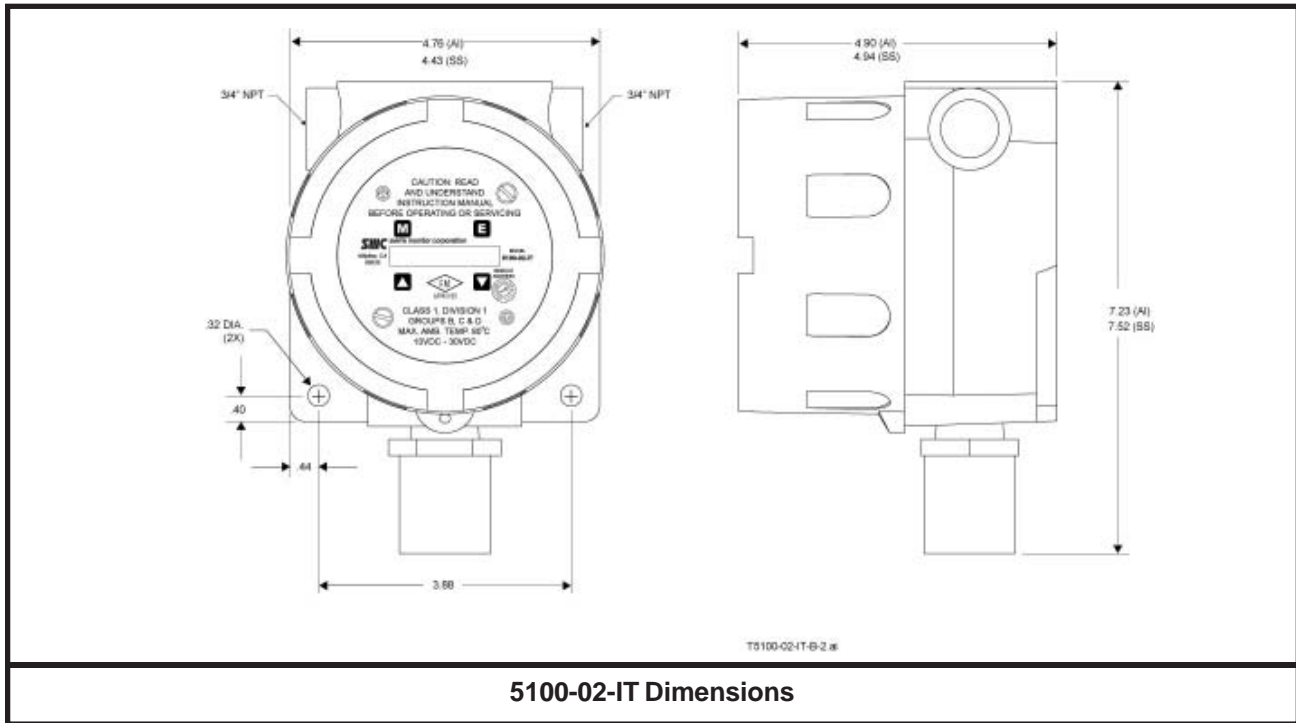
**Hazardous Area Classification:**

Explosion proof, Class I, Div. 1, Groups B, C, D Class I, Zone 1, Group IIB+H2 IP66, IP65, NEMA 4X  
 2 years

**Warranty**

**Approvals:**

FM Standard 6320 Combustible Gas Detector Performance  
 FM Standard 3600 Class I, Div. 1, Groups B, C, D  
 SIL Certified FMEDA data for SIL-1  
 NFPA72 Compliant



**Ordering Information**

5100-02-IT-AA Combustible Gas Sensor Module IT Series - Aluminum  
 5100-02-IT-SS Combustible Gas Sensor Module IT Series - Stainless Steel

**Options**

5394-51 Remote Sensor Option  
 5394-61 Auxiliary Connectors  
 5394-62 Auxiliary Integral 8 amp Relays  
 5394-64 Auxiliary Multidrop Connections

**Calibration Accessories**

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

**Calibrators**

**Low Capacity**

1200-26 Calibration Gas Delivery System  
 1290-02 Combustible Gas Cylinder for 1200-26

**High Capacity**

1250-01 Gas Sensor Calibration Kit, Type A  
 1260-02 Combustible Gas 50% LEL Gas Cylinder Type A  
 1260-42 Hydrogen, 50% LEL, Gas Cylinder, Type A

