



# GENERAL MONITORS

Protection for life.

## MODEL S4000C

### Intelligent Sensor for Combustible Gas Detection



#### Features

- Three (3) Digit Digital Display
- 4-20mA Output
- Dual Redundant MODBUS Communications
- Warning, Alarm & Fault Relays
- Calibration, Calibration Check, Setup Modes
- Remaining Sensor Life Indication
- Sensor can be remote mounted up to 7,600 ft. (2,320m)

#### Benefits

- Displays gas concentrations in %LEL, fault codes for troubleshooting and calibration prompts
- Industry standard output for remote alarm and fault indication
- Provides complete status and control capability in the Control Room
- Provides local alarm capability
- Simplifies operation and maintenance
- Reduces downtime by providing "heads-up" on sensor life
- Increased installation flexibility

#### Description

The Model S4000C Intelligent Sensor is a micro-processor-based transmitter designed for use with General Monitors' catalytic bead sensors. The unit features one person calibration and can virtually self-calibrate by simply activating a magnetic switch and applying gas. It is designed to monitor combustible gases and vapors within the lower explosive limit (LEL) and provide status indication and alarm outputs.

All of the S4000C electronics are contained within an explosion-proof housing so that sensor information can be processed at the sensor site. It provides a 4-20mA signal which is proportional to 0 to 100% LEL gas concentration at the sensor. In addition, the S4000C includes warning, alarm and fault relay contacts that can be used to indicate an alarm or fault condition and dual redundant MODBUS communications. Relays and MODBUS communications are optional offering choices to meet many needs.

The S4000C also includes a three (3) digit digital display. This local digital display continuously indicates gas concentrations during normal operation or in the Calibration Check Mode, calibration prompts during Calibration Mode, display codes during the Setup Mode, and eight fault codes.

The S4000C has four different operating modes. First, the normal operating mode in which alarms are active and the display and 4-20mA readings are proportional to the gas concentration at the sensor. Second, the calibration check mode that allows the user to apply a gas and check the sensor response while alarm outputs are inhibited. Third, a calibration mode in which gas is applied to the sensor to calibrate the unit. Finally, a setup mode which allows the user to review or change setup options such as relay settings, calibration level, and MODBUS parameters.

Selecting Setup Mode on the Model S4000C is accomplished by using the magnetic switch. Options include:

- Calibration level
- Energized/de-energized relays
- Latching/non-latching relays
- Alarm setpoints for relays
- Baud rate, data format, and address for each MODBUS channel



# MODEL S4000C

## System Specifications

<b>Sensor Type:</b>	Continuous diffusion, low temperature catalytic bead
<b>Sensor Life:</b>	3 to 5 years typical
<b>Accuracy:</b>	±3% LEL up to 50% LEL ±5% LEL ≥ 51% LEL
<b>Zero Drift:</b>	Less than 5% of full scale per year
<b>Response Time:</b>	T50<10 sec. T90<30 sec. with 100% LEL methane applied
<b>Measuring Ranges:</b>	0-100% LEL
<b>Modes:</b>	Calibration, gas check, setup
<b>Electrical Classification:</b>	
<b>CSA/FM</b>	Class I, Division 1, Groups B, C & D; Class I, Zone 1, Ex d IIB+H <sub>2</sub> , T6 (Tamb = -40°C to +75°C)
<b>ATEX T5</b>	EEx d IIB: (Tamb = -40°C to +70°C)
<b>Warranty:</b>	Two years
<b>Approvals:</b>	CSA, FM, ATEX approved. Complies with ANSI/ISA-12.13.01-2000 performance requirements.

## Environmental Specifications

<b>Operating Temperature Range:</b>	
<i>Electronics</i>	-40°F to 167°F (-40°C to 75°C)
<i>Standard Sensor</i>	-65°F to 200°F (-55°C to 93°C)
<i>High Temp Sensor</i>	-65°F to 400°F (-55°C to 200°C)
<b>Storage Temperature Range:</b>	-58°F to 185°F (-50°C to 85°C)
<b>Operating Humidity Range:</b>	5% to 100% RH, non-condensing

## Mechanical Specifications

<b>Length:</b>	6.4 inches (161mm)
<b>Height:</b>	3.4 inches (86mm)
<b>Width:</b>	4.1 inches (104mm)
<b>Weight:</b>	5.5 lbs. (2.5 kg)
<b>Mounting Holes:</b>	5.0 inches (127mm) (center to center)

## Electrical Specifications

<b>Input Power:</b>	24 VDC nominal, 20 to 36 VDC 250mA max.
<b>Relay Ratings: (Optional)</b>	8A @ 250 VAC / 8A @ 30 VDC res. max. (3x) SPDT - Warning, Alarm & Fault
<b>Analog Signal:</b>	0-20mA (650 ohms max. load) Malfunction 0mA Gas Check 1.5mA Setup mode 1.5mA Zero reading 4mA±0.2mA 0-100% LEL 4-20mA Over-range 20-22mA
<b>RFI/EMI Protection:</b>	Complies with EN50081-2, EN50082-2
<b>Status Indicators:</b>	Three-digit digital display with gas concentration, Warn and Alarm LED's, calibration prompts, fault codes, and setup options
<b>RS-485 Output: (Optional)</b>	Dual redundant MODBUS RTU, suitable for linking up to 128 units or up to 247 units with repeaters
<b>Baud Rate:</b>	2400, 4800, 9600, or 19200 BPS
<b>Faults Monitored:</b>	Calibration error, open AO, sensor error, low DC supply, EEPROM, EPROM, setup error, gas check time exceeded, switch error
<b>Cable Requirements:</b>	3 wire shielded cable. Max. distance between S4000C and power source on the remote sensor @ 24 VDC nominal (20 ohm loop):  14 AWG - 3000 ft. (910m)  Max. distance for analog output (650 ohms max):  14 AWG - 9000 ft. (2740m)
<b>Standard Configuration:</b>	S4000C-1-0-01

*Specifications subject to change without notice.*

*Represented by:*

## General Monitors Worldwide



[www.generalmonitors.com](http://www.generalmonitors.com)

### Lake Forest, CA

26776 Simpatica Circle  
Lake Forest, California, 92630  
Tel: +1-949-581-4464  
Fax: +1-949-581-1151  
email: [sales@generalmonitors.com](mailto:sales@generalmonitors.com)

### Houston, TX

9776 Whithorn Drive  
Houston, Texas, 77095  
Tel: +1-281-855-6000  
Fax: +1-281-855-3290  
email: [gmhou@generalmonitors.com](mailto:gmhou@generalmonitors.com)

### Ireland

Ballybrit Business Park  
Galway  
Republic of Ireland  
Tel: +353-91-751175  
Fax: +353-91-751317  
email: [postmaster@gmil.ie](mailto:postmaster@gmil.ie)

### Singapore

No. 2 Kallang Pudding Road  
#09-16 Mactech Building  
Singapore 349307  
Tel: +65-6748-3488  
Fax: +65-6748-1911  
email: [genmon@gmpacifica.com.sg](mailto:genmon@gmpacifica.com.sg)

### United Arab Emirates

P.O. Box 61209  
Jebel Ali  
Dubai  
United Arab Emirates  
Tel: +971-4-8815751  
Fax: +971-4-8817927  
email: [gmme@emirates.net.ae](mailto:gmme@emirates.net.ae)

### United Kingdom

Heather Close  
Lyme Green Business Park  
Macclesfield, Cheshire  
United Kingdom, SK11 0LR  
Tel: +44-1625-619583  
Fax: +44-1625-619098  
email: [info@generalmonitors.co.uk](mailto:info@generalmonitors.co.uk)