

*The Model 4501-XX Series Toxic Gas 2-wire gas sensor modules allow easy direct connection to many DCS, PLC and other control devices. The sensor module is best in class for ease of installation, reliable operation, ease of use, and, with 180 day calibration cycle, low cost of operation.*

The 4501-XX Gas Sensor Module utilizes the electrochemical cell to monitor for the specified gas over various gas specific ranges. This compact Module requires minimal maintenance. Internal continuous self-diagnostics will automatically indicate any fault problems. The 4501-XX is best in class providing all the built-in features desired by instrumentation and safety professionals, including:

- Industry's longest calibration interval of 180 days
- 2-wire loop powered for easy installation and direct interface to common PLC and DCS
- Integral scrolling LCD 2-line, 16 character display
- Non-intrusive one-person calibration
- 316 Stainless Steel or aluminum enclosure
- 4-20 mA output
- Long sensor life
- Robust RFI immunity
- Ability to rotate face plate to enable the enclosure to be mounted in any orientation.



**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 consumption of the subject gas in the cell.

Sierra Monitor electrochemical sensors provide improved reliability by allowing the gas to diffuse into the sensor through a capillary port, rather than diffusing through membranes. The result is an extremely stable sensor with very low temperature and pressure coefficients and the capability to monitor gas as ppm (toxics).

4501-03	Oxygen, O <sub>2</sub>
4501-04	Carbon Monoxide, CO
4501-05	Hydrogen Sulfide, H <sub>2</sub> S
4501-06	Chlorine, Cl <sub>2</sub>
4501-08	Chlorine Dioxide, ClO <sub>2</sub>
4501-10	Sulfur Dioxide, SO <sub>2</sub>
4501-12	Nitrogen Dioxide, NO <sub>2</sub>
4501-25	Ammonia, NH <sub>3</sub>

**Model 4501 Series Sensors**



Explosion proof all models  
FM Performance Approval for 4501-05

**Specifications:**

Performance	Max. Gas Range (1)	Resolution	Response Time (2)	Sensor Life
<b>4501-03 O<sub>2</sub></b>	0 - 25% Vol	0.2% Vol.	<10 Seconds	20 Months
<b>4501-04 CO</b>	0 - 1200 PPM	0.5 PPM	<25 Seconds	2 Years
<b>4501-05 H<sub>2</sub>S</b>	0 - 100 PPM	0.1 PPM	<30 Seconds	2 Years
<b>4501-06 Cl<sub>2</sub></b>	0 - 10 PPM	0.1 PPM	<60 Seconds	2 Years
<b>4501-08 ClO<sub>2</sub></b>	0 - 3 PPM	0.1 PPM	<60 Seconds	2 Years
<b>4501-10 SO<sub>2</sub></b>	0 - 100 PPM	0.5 PPM	<20 Seconds	2 Years
<b>4501-12 NO<sub>2</sub></b>	0 - 20 PPM	0.2 PPM	<35 Seconds	2 Years
<b>4501- 25 NH<sub>3</sub></b>	0 - 100 PPM	1.0 PPM	<30 Seconds	(3)

(1) Other ranges available  
 (2) To 90% range  
 (3) Ammonia sensor requires electrolyte recharge up to 1 year

**Output:**

Display: LCD, 2-line, 16-characters  
 Signal Output: 2-wire sensor powered analog 4-20 mA (Trouble: 3.6 mA)  
 Loop Resistance: 800 ohm

**Electrical Data:**

Power consumption: 0.2 watts  
 Connection type: 2-wire, loop-powered  
 Input voltage: 24 VDC nominal: 14-30VDC  
 RFI/EMI Protection: EN50081-2, EN50082-2

**Operating Range:**

Ambient Temp Range:  
 Standard: -4° to 122 °F(-20° to 50 °C)  
 4501-25 NH<sub>3</sub>: -14° to 113 °F(-10° to 45 °C)  
 Extended Temp: Sensor and 4-20 mA will continue to operate to -40°F (-40°C) but the LCD display will decay over time if exposed to temperatures below -4° (-20° C) for significant time (not for 4501-25)  
 Storage Temp: -4° to 122 °F(-20° to 50 °C)  
 Relative Humidity:  
 Standard: 15-90%  
 4501-25 NH<sub>3</sub>: 20-90%

**Construction:**

Dimensions:  
 4501-25: 7.0 x 3.6 x 4.0 in. (H x W x D) (17.8 x 9.1 x 11.2 cm.)  
 4501-25: 8.4 x 4.4 x 3.9 in. (H x W x D) (21.3 x 11.2 x 9.9 cm.)  
 Weight:  
 4501-25: 2.2 lb. (1.0 Kg) Al  
 4.6 lb. (2.1 Kg) SS  
 3.0 lb. (1.3 Kg) Al  
 5.0 lb. (2.3 Kg) SS  
 Enclosure: Aluminum, Stainless Steel

**Approvals and Warranty:**

Hazardous Location: Explosion proof, NEMA 4X  
 FM: Class I, Div. I, Groups B, C, D  
 Class II, Div. I, Groups E, F, G  
 ATEX/IECEx: II 2 GD, Ex d IIC, T6 (85°C)  
 CSA: Class I, Div. I, Groups B, C, D  
 Class II, Div. I, Groups E, F, G  
 4501-05 FM Performance Approval:  
 4501-05 Approval FM ISA-92.0.01, Part I-1998 and FM 3600  
 Limited warranty: 2 years



*Specifications subject to change without notice*

**Ordering Information:**

Model	Gas	Enclosure
4501 Series	- 03 = O <sub>2</sub>	- Al (Aluminum)
	- 04 = CO	- SS (Stainless Steel)
	- 05 = H <sub>2</sub> S	
	- 06 = Cl <sub>2</sub>	
	- 08 = ClO <sub>2</sub>	
	- 10 = SO <sub>2</sub>	
	- 12 = NO <sub>2</sub>	
	- 25 = NH <sub>3</sub>	

**High Capacity Calibration Accessories**

1250-01	Gas Sensor Calibration Kit, Type A (CO, H <sub>2</sub> S)
1250-02	Gas Sensor Calibration Kit, Type B (SO <sub>2</sub> , NO <sub>2</sub> )
1250-03	Gas Sensor Calibration Kit, Type C (Cl <sub>2</sub> , ClO <sub>2</sub> )
1260-00	Gas Cylinder, Air (Type A) 105 liters
1260-04	Gas Cylinder, Carbon Monoxide, 100 ppm, Type A
1260-05	Gas Cylinder, H <sub>2</sub> S in N <sub>2</sub> , 25 ppm Type A
1260-06	Gas Cylinder, Chlorine, 5 ppm, Type C
1260-10	Gas Cylinder, Sulfur Dioxide, 50 ppm, Type B
1260-12	Gas Cylinder, Nitrogen Dioxide, 10 ppm, Type B
1260-13	Gas Cylinder, Carbon Monoxide, 1000 ppm, Type A
1260-45	Gas Cylinder, H <sub>2</sub> S in N <sub>2</sub> , 10 ppm, Type A
9210-00	Calibrator, Permeation tube
9211-09	Permeation Tube, Ammonia, NH <sub>3</sub>
SPX 27057	Kit, Sensor Recharge, for 4501-25

**Accessories**

5311-00	Rainshield
5311-02	Rainshield with calibration port

**Calibration Accessories**

5358-01	Calibration Adapter, Standard
5360-00	Calibration Gas Delivery Fitting
5358-51	Calibration/Configuration Magnetic Tool, 4501-XX