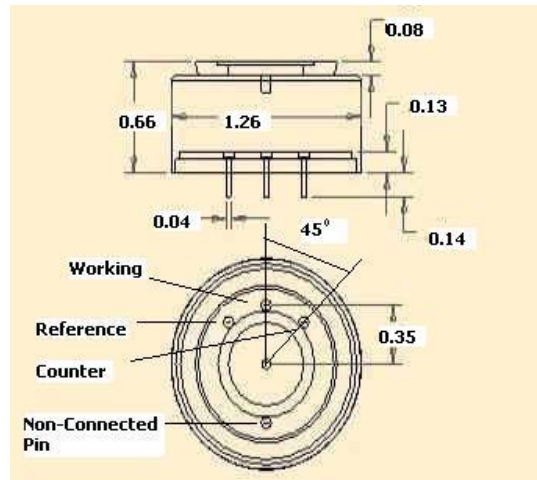
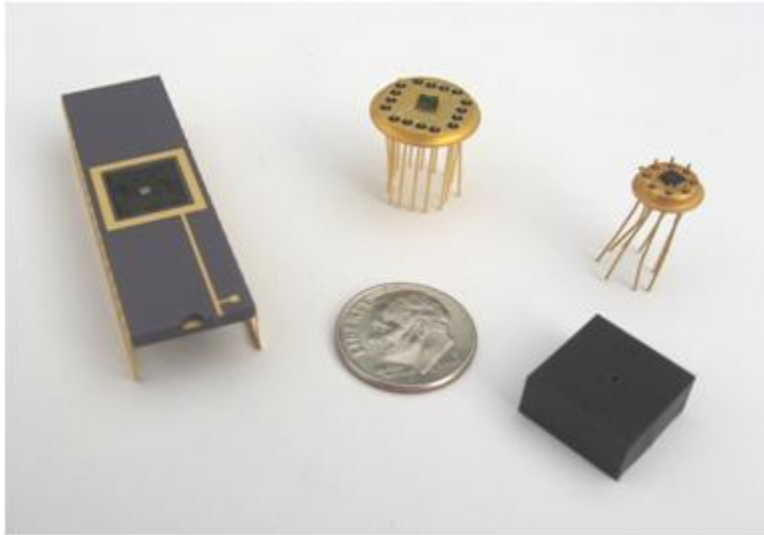




In-Line Sensors



Our in-line sensors are available for Chlorine, Biogas/Greenhouse Gas, Green Fuels, Carbon Dioxide, Carbon Monoxide, Hydrogen Sulfide, Hydrogen, Freon, Methane/Natural Gas/Propane, Nitrogen, Oxygen, Hydrocarbons, Ozone, and Nitrogen Dioxide. The following pages give examples of some configurations and sensor types. Call for more details and a full list of available sensors.



3 Electrode T1 Series Carbon Monoxide Sensor – 3ET1CO1500

	<p>Recommended Pin</p>	Mechanical Specifications	
		Dimensions	0.57" X 0.57" X 0.27"
		Weight	Less than 2 gram
		Material	Polypropylene
		Electrolyte	Etching liquid in matrix
		Connections	Socket
		Gas Supply	Diffusion through porous membrane

	3ET1CO1500
Measuring range	0-500 PPM
Maximum overload	1500 PPM
Measuring Principle	Electrochemical Oxidation of CO
Working Electrode Potential	Not required
Output Signal, Zero, 25 °C	< ± 5 ppm equivalent maximum
Output Signal, Span, 25 °C	70 to ± 15 nA / PPM
Lower Detection Limit	< 0.5 PPM (depends on circuitry)
Resolution	± 0.5 PPM (depends on circuitry)
Zero Reproducibility	± 2% of reading or 2 ppm
Span Reproducibility	± 1% of reading or 1 ppm
Output Linearity	Linear
Response Time (t-90)	< 30s typical at 20° C
Stabilization time	15 minutes (first installed in a circuit) thereafter < 30 sec.
Long Term Drift – Zero	Zero Signal ≤ ± 2 PPM / month
Long Term Drift – Span	Output Signal ≤ ± 2% of reading per month
Maximum Zero Shift	< 8 ppm equivalent (-20°C to +40°C)
Operating Temperature	-20 to 50° C (0 – 35°C recommended)
Operating Pressure Range	± 0.2 atm (recommended)
Operating Humidity Range	15 to 90% RH
Estimated Service Life	> 2 Years
Storage Temperature	22° C Recommended
Storage Pressure	1 ± 0.2 atm Recommended
Storage Humidity Range	50 to 65% RH Recommended
Storage Life	1 year in sealed package
Warranty	One year (extended warranty available)



3 Electrode T1 Series Hydrogen Sulfide Sensor – 3ET1H2S100

	<p>Recommended Pin</p>	Mechanical Specifications	
		Dimensions	0.57" X 0.57" X 0.27".
		Weight	Less than 2 gram
		Material	Polypropylene
		Electrolyte	Etching liquid in matrix
		Connections	Socket
		Gas Supply	Diffusion through porous membrane

	3ET1H2S100
Measuring range	0-100 PPM
Maximum overload	100 PPM
Working Electrode Potential	+300 mv
Output Signal, Zero, 25 °C	< ± 5 ppm equivalent maximum
Output Signal, Span, 25 °C	0.300 ± 0.150 μA / PPM
Lower Detection Limit	< 0.5 PPM (depends on circuitry)
Resolution	± 0.5 PPM (depends on circuitry)
Zero Reproducibility	± 2% of reading or 2 ppm
Span Reproducibility	± 1% of reading or 1 ppm
Output Linearity	Linear
Response Time (t-90)	< 30s typical at 20° C
Stabilization time	15 minutes (first installed in a circuit) thereafter < 30 sec.
Operating Temperature	-20 to 50° C (0 – 35° C recommended)
Operating Pressure Range	± 0.2 atm (recommended)
Operating Humidity Range	15to 90% RH
Estimated Service Life	> 2 Years
Storage Temperature	22° C Recommended
Storage Pressure	1 ± 0.2 atm Recommended
Storage Humidity Range	50 to 65% RH Recommended
Storage Life	1 year in sealed package
Warranty	One year (extended warranty available)



M-SERIES HYDROGEN SULFIDE SENSOR; Rev 01/2008

PRINCIPLE OF OPERATION: Electrochemical Reaction

PERFORMANCE CHARACTERISTICS*:

MODEL	H2S-MNS
Operating Range	0-1,000 PPM
Maximum Concentration	2,000 PPM
Sensitivity ($\mu\text{A}/\text{PPM}$)	$0.5 \pm 0.25 \mu\text{A}/\text{PPM}$
Precision/Repeatability	$\pm 1\%$ of Signal
Linearity	$\pm 2\%$ of Reading or 1% of FS, whichever is greater
Response Time (secs to 90% F.S.)	<60 secs to 90% Full Signal
Resolution	0.5 PPM
Background (nominal after warmup)	$\pm 0.5 \mu\text{A}$
Temperature Range: Continuous Intermittent	-10 to + 40°C -20 to + 55°C
Temperature Coefficient: Span (-10 to + 40°C) Baseline	< 0.1%/°C (-10 to + 20°C); < 0.5%/°C (20 to 40°C) < 0.1 PPM/°C
Recommended Operating Pressure	Ambient ± 2 psi
RH Range: Continuous Intermittent	15-90% non-condensing 0-99% non-condensing
Stability: Span Drift Background Drift	< 2% per month < 2 PPM per day
Position Sensitivity	None
Expected Lifetime	> 2 year
Storage Life	> 6 months in container



*Estimates based on laboratory testing at standard temperature, pressure, and humidity unless otherwise noted. Users must determine actual specifications in their application. Please refer to explanatory notes.

PHYSICAL DATA:

Operating Bias Potential:	+300 mV (working vs. reference)	
Weight:	5g	
Dimensions:	Diameter:	0.625 in.
	Height (no Filter):	1.0 in.
	(with Filter):	1.1 in.



R Series Carbon Monoxide Sensor – RCO1000/RCO1000F

<p>The drawing shows a top view and a side view of the sensor. Dimensions include: overall width 1.26, height 0.66, top thickness 0.08, bottom thickness 0.13, pin diameter 0.04, pin length 0.14, and a 45-degree angle. Labels for the electrodes are Working, Reference, Counter, and Non-Connected Pin. A diameter of 0.335 is also indicated.</p>	Mechanical Specifications	
	Dimensions	All dimensions are in Inches.
	Weight	Approximately 10 gram
	Material	Polypropylene (body)
	Electrolyte	Acid
	Connections	Gold Plated Pin
Gas Supply	Diffusion through porous membrane	
<p>Important Note: Connection should be made via PCB sockets only. Soldering to the pins will render your warranty void.</p>		

Measuring range	0-1000 PPM
Measuring Principle	Electrochemical Oxidation of CO
Onboard Filter (For RCO1000LRHF only)	To remove SOx, NOx & H2S
Working Electrode Potential	Not required
Output Signal, Zero, 25 °C	< ± 5 ppm equivalent maximum
Output Signal, Span, 25 °C	0.10 ± 0.02 µA / PPM
Lower Detection Limit	< 0.5 PPM (depends on circuitry)
Resolution	± 0.5 PPM (depends on circuitry)
Repeatability	1% of Signal
Output Linearity	Linear
Response Time (t-90)	< 30s typical at 20° C
Stabilization time	15 minutes (first installed in a circuit); thereafter < 30 sec.
Long Term Drift – Span	Output Signal ≤ ± 2% of reading per month
Maximum Zero Shift	< 8 ppm equivalent (-20°C to +40°C)
Operating Temperature	-20 to 50° C (0 – 35°C recommended)
Operating Pressure Range	1.0 ± 0.2 atm (recommended)
Operating Humidity Range	15 to 90% RH
Estimated Service Life	> 2 Years
Storage Temperature	22° C Recommended
Storage Pressure	1.0 ± 0.2 atm Recommended
Storage Humidity Range	60 to 80% RH Recommended
Storage Life	1 year in sealed package
Warranty	One year (extended warranty available)