

**PRODUCT DATASHEET**

# SERIES 3000™

## Trace Oxygen Analyzer



Product shown with optional flow meter and coalescing filter



FEATURES	BENEFITS
Long-life Trace Oxygen Sensor	Provides up to three times the functional life of most “fuel cell” type sensors. Reliability is dramatically increased while maintenance costs are reduced
Sealed Sensor	Eliminates handling potassium hydroxide (caustic), a hazardous material or having to frequently “recharge” the electrolyte
CO <sub>2</sub> Resistant Sensor	Optional CO <sub>2</sub> resistant sensor is designed to operate with sample gases containing up to 100% CO <sub>2</sub> . Conventional “fuel cell” type sensors using KOH electrolyte can be poisoned from CO <sub>2</sub> .
Economically priced	Affords savings of up to 50% over other manufacturers trace oxygen analyzers
Wide Measurement Ranges	Measure from under 1 PPM to as high as 10,000 PPM oxygen
Factory Calibration	Factory calibration and certificate included at no additional charge
Visual and Audible Alarms	Ensures the highest level of protection and reliability

## Product Description

The eloquence of the Series 3000™ Trace Oxygen Analyzer is its ease of use. The Series 3000 is a microprocessor-controlled instrument that is available in either a single range or three range configuration. Measurement ranges are from 0-1 PPM to 0-10,000 PPM. For three range analyzers, auto-ranging is included at no additional charge. The analyzer is housed in a general purpose enclosure and is powered from a universal 115-230 VAC, 50-60Hz, or 18-32 VDC. Trace oxygen values are displayed on a 0.4 inch (10.2 mm) high, 4-1/2 digit liquid crystal display (LCD). The long-life trace oxygen sensor is installed in a high integrity-leak tested metal housing that is equipped with 1/4" stainless steel compression fittings on both the sample gas inlet and outlet. Also included are manual isolation valves.

Depending the application, the Series 3000 can be equipped with a number of options including; sample filters, sample pumps, pressure regulators, block & bleed by-pass sampling systems, serial communications, solenoid valves with internal control connections, flow meters, etc.

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### High Performance Trace Oxygen Sensor

The Series 3000 Trace Oxygen Analyzer features our long-life ambient temperature electrochemical sensor that has a functional life of up to three times that of most "fuel cell" type sensors. The enhanced mechanical design of the sensor ensures longer life, and virtually eliminates leakage of caustic electrolyte, a nagging (and expensive) problem associated with sensors that require periodic electrolyte maintenance.

In addition, unlike some electrochemical sensors, our readings from the Series 3000 do not require manual adjustment based on changes in the molecular weights of the sample gas i.e. helium, hydrogen, etc. a major advantage for

continuous measuring applications. The output from the sensor is both linear and temperature compensated to provide optimum performance.

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### Now Featured a CO<sub>2</sub> Resistant Sensor

A nemesis for many conventional "fuel cell" type trace oxygen sensors are their inability to measure oxygen in gases containing carbon dioxide. Carbon dioxide reacts with potassium hydroxide electrolyte to form carbonic acid and in short time destroys the sensor. Not anymore. We offer an optional CO<sub>2</sub> tolerant trace oxygen sensor with proprietary electrolyte. The CO<sub>2</sub> tolerant sensor is capable of providing accurate oxygen readings in gases containing up to 100% CO<sub>2</sub> without shortening the life of the sensor.

The Series 3000 Trace Oxygen Analyzer is equipped with three oxygen alarm relays and one status alarm relay. All four relays are Form C (SPDT) types rated at 10 amps at 115/230 VAC and 30 VDC. The relays are user configurable for fail-safe operation. In addition to the four alarm contacts, the Series 3000 Trace Oxygen Analyzer has a built-in audible alarm and three red LED's for visual indication of an oxygen alarm condition. The audible alarm may be manually canceled at any time. The Series 3000 provides two standard analog outputs, 4-20 mA DC and 0-2 VDC. For enhanced communications, the Series 3000 Percent Oxygen Analyzer can be configured with optional RS-232C or RS-485 serial communications. The RS-485 format is capable of sending digital signals over greater distances, and controlling each monitor using the same communication channel.

# SPECIFICATIONS

## Performance

<b>Measurement Ranges (parts per million):</b>	<b>Single Range</b> 0-10,000 0- 5,000 0-1,000 0-100 0- 50 0-10	<b>Three Range</b> 0-100/1,000/10,000 0- 50/500/5,000 0-10/100/1,000 0- 5/50/500 0-1/10/100
<b>Accuracy<sup>1</sup>:</b>	±1% of full scale (± 5% of full scale on ranges ≤ 5 ppm)	
<b>Linearity:</b>	±1% of full scale	
<b>Response Time:</b>	90% of full scale <10 seconds (typical). The response time for ranges of 0-50 PPM or less depend to a great extent on the design of the sample delivery system including the materials used	
<b>Sensor Type:</b>	Long-life Ambient Temperature Electrochemical Sensor (Optional CO <sub>2</sub> Resistant Sensor Available)	
<b>Temperature Compensation:</b>	Standard	
<b>Operating Temperature:</b>	40° to 104° F (5° to 40°C)	
<b>Warranty:</b>	2 years electronics/1 year sensor	

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## Electrical

<b>Display:</b>	0.4" (10.2 mm) high, 4-1/2 digit LCD
<b>Resolution of Display:</b>	0.1 ppm for ranges <100 ppm, 1.0 ppm for ranges >100 ppm
<b>Input Power:</b>	Universal 115-230 VAC, 50-60Hz or 18-32 VDC
<b>Outputs:</b>	4-20 mA DC and 0-2 VDC standard as is a TTL output for range identification. Optional RS-232C or RS-485 serial communication available.
<b>Oxygen Alarm Relays:</b>	Three (3) SPDT Form C contacts rated 10 A@ 30 VDC/115/230 VAC. User selectable for fail-safe or non fail-safe.
<b>Instrument Status Alarm:</b>	Rated identically to the O <sub>2</sub> relays
<b>Audible Alarm:</b>	Internal buzzer with audible cancel

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## Sample Gas Characteristics

<b>Flow Rate:</b>	1.0 to 2.0 SCFH (0.5 to 1.0 liter/min)
<b>Sample Gas Temperature:</b>	40° to 104°F (5° to 40°C)
<b>Sample Gas Pressure:</b>	0.1 to 1.5 psig (0.007 kg/cm <sup>2</sup> to 0.1 kg/cm <sup>2</sup> )
<b>Entrained Solids:</b>	<3 mg/ft <sup>3</sup> : no in-line filter required, >3 mg/ft <sup>3</sup> : in-line filter is required
<b>Hydrocarbon Mist:</b>	<0.7 mg/ft <sup>3</sup> : no in-line filter required, >0.7 mg/ft <sup>3</sup> : in-line filter is required

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## Construction<sup>2</sup>

<b>Electronics Control Unit:</b>	Polycarbonate with a hinged clear front cover, rated NEMA 1
<b>Control Unit Dimensions*:</b>	9.45 in. (240.5 mm) height, 6.50 in. (165.1 mm) width, 6.20 inches (157.5 mm)
<b>Gas Connections:</b>	1/4" stainless steel compression fittings
<b>Sensor Mounting:</b>	Local
<b>Weight:</b>	11lbs (4.98 kg) (Standard Bench-top Configuration)

<sup>1</sup> Stated at constant temperature and constant pressure. <sup>2</sup> Other mechanical configurations available-consult the factory. <sup>3</sup> We reserve the right to change or modify its product specifications without notice. \* Note: All dimensions are without optional equipment

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