

**PRODUCT DATASHEET**

# SERIES 3500 & 3510™

## Trace Oxygen Transmitter



Product shown with optional flow meter, solenoid valves, pump and particulate 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 potassium hydroxide (KOH) electrolyte can be poisoned from CO <sub>2</sub> .
Economically priced	Affords savings of up to 30% and more over other manufacturers trace oxygen transmitters
Wide Measurement Ranges	Measure from under 1 PPM to as high as 20,000 PPM oxygen
Factory Calibration	Factory calibration and certificate included at no additional charge
NEMA 4 Enclosure	Greater installation flexibility with a dust and waterproof enclosure

## Product Description

The Series 3500™ Trace Oxygen Transmitter is a true loop powered (14-32 VDC) trace oxygen transmitter designed to provide accurate and dependable trace oxygen measurements in a variety of background gases. Measurement ranges available are from 0-10 PPM to 0-20,000 PPM. The Series 3500 enclosure is made from durable polycarbonate, and is rated for NEMA 4 (IP 66) service (may change with the addition of certain optional equipment). A 4-20 mA DC output is provided that can be used with a data logger, recorder, PLC, DCS, etc. Options include pressure regulators, flow meters, sample filters, and explosion proof (NEMA 7) housings.

The Series 3510™ Trace Oxygen Transmitter is the AC powered (115 or 230 VAC, 50-60 Hz) or 24 VDC counterpart to the Series 3500 and is recommended when AC power is available or preferred. In addition to the optional equipment mentioned above, the Series 3510 can be equipped with sample pumps, and solenoid valves.

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### High Performance Trace Oxygen Sensor

The Series 3500 and Series 3510 Trace Oxygen Transmitters feature 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. And, because the sensor is sealed, it is not position sensitive. In addition, unlike some electrochemical sensors, the readings from the Series 3500 and Series 3510 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.

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## SPECIFICATIONS

### Performance

#### Measurement Ranges (parts per million):

0-10, 0-20, 0-50, 0-100, 0-200, 0-500, 0-1,000, 0-5,000, 0-10,000, and 0-20,000

#### Accuracy<sup>1</sup>:

±1% of full scale (± 5% of full scale on ranges ≤ 0-5%)

#### Linearity:

±1% of full scale

<b>Response Time:</b>	90% of full scale response in < 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>Series 3500 Loop Powered Trace Oxygen Transmitter:</b>	Input power 14-32 VDC
<b>Series 3510 Trace Oxygen Transmitter:</b>	Input power 115 or 230 VAC, 50-60 Hz, or 24 VDC
<b>Input Power:</b>	Universal 115-230VAC, 50-60Hz or 18-32 VDC
<b>Analog Output:</b>	4-20mADC with a loop resistance of 600 ohms @ 24VDC (consult factory for other resistance values)

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## Sample Gas Characteristics

<b>Sample 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</b>	Polycarbonate, rated NEMA 4X (IP66) without optional equipment
<b>Dimensions*:</b>	5.5 in (139.9 mm) height 8.8 in (223.5 mm) width 3.4 in (86.4 mm) deep
<b>Gas Connections:</b>	1/4" stainless steel compression fittings

<sup>1</sup> Stated at constant temperature and constant pressure.  
\* Note: All dimensions are without optional equipment

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