

# SPECIFICATIONS

## PERFORMANCE

Measurement Ranges (parts per million)

Single-range	Three-range
0-10,000	0-100/1,000/10,000
0- 5,000	0- 50/500/5,000
0-1,000	0-10/100/1,000
0-100	0- 5/50/500
0- 50	0-1/10/100
0-10	

<b>Accuracy<sup>1</sup></b>	±1% of full scale (±5% fs 0-1ppm range)
<b>Linearity</b>	±1%
<b>Response Time</b>	90% of full scale response in less than 10 seconds (typical). Recovery time for ranges <10 ppm will depend on the prevailing conditions.
<b>Sensor Type</b>	Patented Ambient Temperature Electrochemical Sensor.
<b>Temp. Compensation</b>	Standard.
<b>Operating Temperature</b>	32° to 122° F (0° to 50° C). <32° F use heated sensor enclosure. >122° F cooling of sensor required.
<b>Warranty</b>	3 years electronics, 1 year sensor.
<b>ELECTRICAL Display</b>	0.4" (10.2 mm) high, 4-1/2 digit LCD.
<b>Resolution</b>	0.1 ppm for ranges <100 ppm. 1.0 ppm for ranges >100 ppm.
<b>Input Power</b>	115/230 VAC, 50-60Hz or 18-32 VDC. NICAD battery backup available as an option for some models.

Alpha Omega Instruments reserves the right to change or modify its product specifications without notice.

**Outputs** 4-20 mA DC and 0-2 VDC standard. RS-232C or RS-485 optional. TTL output with 3 range instruments.

**Oxygen Alarm Relays** Three (3) SPDT Form C contacts rated 10 A @ 30 VDC/115/230 VAC. User selectable for fail-safe or non fail-safe.

**Instrument Status Alarm** Rated identically to the O<sub>2</sub> relays.

**Audible Alarm** Internal buzzer with audible cancel.

## SAMPLE GAS CHARACTERISTICS

**Flow Rate** 1.0 to 2.0 SCFH (0.5 to 1.0 liter/min).

**Sample Gas Temp.** 32° to 122° F (0° to 50° C).

**Sample Gas Pressure** 0.1 to 1.0 psig (1.4 to 14.2 kg/cm<sup>2</sup>).

**Entrained Solids** <3 mg/ft<sup>3</sup>: no in-line filter required.  
>3 mg/ft<sup>3</sup>: in-line filter is required.

**Hydrocarbon Mist** <0.7 mg/ft<sup>3</sup>: no in-line filter required.  
>0.7 mg/ft<sup>3</sup>: in-line filter is required.

## CONSTRUCTION<sup>2</sup>

**Electronics Control Unit (Benchtop)** Polycarbonate with a hinged clear front cover, rated NEMA 4X (IP 66).

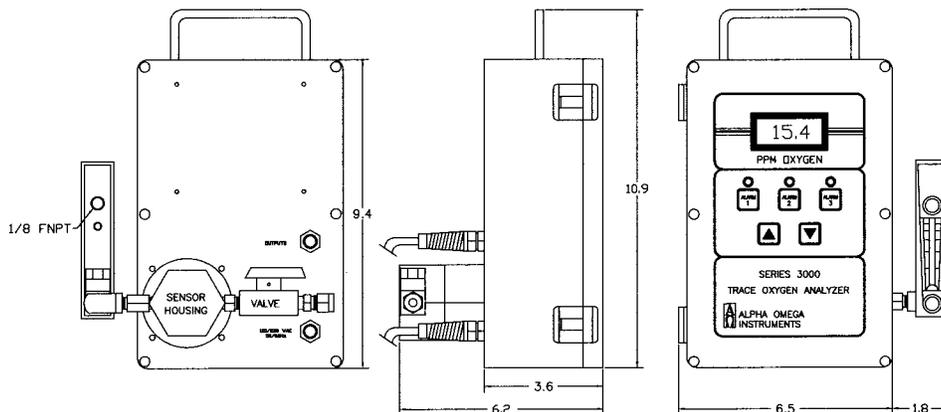
**Control Unit Dimensions** 9.45 in. (240.5 mm) length.  
6.50 in. (165.1 mm) width.  
6.20 in. (157.5 mm) depth.

**Gas Connections** 1/4" compression fittings.

**Sensor Mounting** Local or optional remote mounting.

**Weight** 11lbs (4.98 kg) (Benchtop Config.)

<sup>1</sup> Stated at constant temperature and constant pressure.  
<sup>2</sup> Other mechanical configurations available-consult factory.



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## COMPANY MISSION

The primary mission of Alpha Omega Instruments Corp. is to satisfy its customers. With today's world economy, conducting business on a global basis offers many opportunities, as well as posing numerous challenges. As diversified as the markets are, there is one constant—the customers' desire to find effective and economical solutions to their measurement needs. Alpha Omega Instruments has the product breadth, as well as the depth of application experience, to make the right recommendations the first time around. We are proud of the Company's growth and attribute it to the Christian principles it was founded upon, and that are in evidence within the Company today.

Alpha Omega Instruments Corp. has two primary business groups. Its Electro-optics Group manufactures products used in conjunction with global positioning satellites, high resolution spectrophotometers, laser characterization equipment, inertial guidance systems, and medical diagnostic equipment. The Company's fastest growing business segment is its Process Analyzer Group, which includes a product line of Trace and Percent Oxygen Analyzers and Ambient Air Monitors. Falling within that product group is the Series 3000 Trace Oxygen Analyzer used for measuring oxygen at the parts per million concentration.

## SYSTEM DESCRIPTION

The Series 3000 Trace Oxygen Analyzer is a microprocessor-controlled instrument that can be supplied with oxygen measuring ranges from 0-1 ppm to 0-10,000 ppm. Single and three-range instruments are available. Autoranging is a **standard** feature on all three-range analyzers. The Series 3000 Trace Oxygen Analyzer is powered from 115/230 VAC, 50-60Hz, or 18-32 VDC with optional battery backup available for certain models. Oxygen values are displayed continuously on an easy-to-read, 0.4" (10.2 mm) high, 4-1/2 digit liquid crystal display (LCD). The instrument can be purchased in a variety of mechanical configurations ranging from a general purpose, portable device to a NEMA 7 (explosion proof) system. The electronics enclosure used for the portable and panel mounted versions is made from durable polycarbonate and, together with the gasketed seals, is rated **watertight NEMA 4X** (IP66). The gas inlet and outlet connections on the sensor housing are 1/4" stainless steel compression fittings.

### ADVANCED OXYGEN SENSOR

The Series 3000 Trace Oxygen Analyzer features an advanced electrochemical oxygen sensor that provides exceptional performance, accuracy, and stability. In addition, the enhanced mechanical design of the sensor ensures longer life, and virtu-

ally eliminates leakage of electrolyte, a nagging (and expensive) problem associated with sensors that require periodic electrolyte maintenance.

The eloquence of the Series 3000 Trace Oxygen Analyzer is its ease of use. The front panel contains five switches that provide access to the instrument's settings. The analyzer is equipped with three oxygen alarm relays and one status alarm relay as standard equipment. All four relays are Form C (SPDT) types rated at 10 amps at 115/230 VAC and 30 VDC. Each relay is user configurable for fail-safe operation. In addition to the alarm relays, the analyzer is equipped with a **built-in audible alarm**, as well as **three front panel LEDs** for visual indication of an alarm condition.

The Series 3000 Trace Oxygen Analyzer comes equipped with **two analog outputs**, 4-20 mADC and 0-2 VDC, for use with recorders, data-loggers, etc. For enhanced communications, the Series 3000 Trace Oxygen Analyzer can be configured with optional RS-232C or RS-485 serial communications. For multiple point installations, the RS-485 format provides the capability to send digital signals over greater distances, and to control each monitor using the same communication channel.

## MAXIMUM VERSATILITY

### Analyzer Configurations

- Portable Instruments
- Bench-top Installations
- Panel-mounted Installations
- Watertight (NEMA 4) Systems
- Explosion-proof (NEMA 7) Systems
- Remote Sensors (NEMA 4 and 7)

### Optional Equipment

- Sample Pumps
- Filters
- Pressure Regulators
- Flow Meters
- Mounting Plates
- Enclosure Heaters
- Sampling Systems

## FEATURES

## BENEFITS

### No false O<sub>2</sub> readings

Unlike zirconium oxide sensors, the Series 3000 Trace Oxygen Analyzer **won't produce false low readings** in carbon monoxide, hydrogen, hydrocarbons, and other reducing gases.

### Safe to use

Some oxygen sensors must be initially filled with potassium hydroxide (caustic), a hazardous material. **The Series 3000 Trace Oxygen Sensor is sealed; there is no such safety hazard.**

### Economically priced

**Affords savings up to 50% and more** over other electrochemical oxygen analyzers.

### Minimum maintenance

The Series 3000 Sensor **never requires routine addition of water or potassium hydroxide.** Operating costs are reduced.

### Full sensor warranty

Ensures **cost-effective operation.** Beware of "limited" or "pro-rated" sensor warranties. Warranty replacement of one of our competitor's sensor can exceed \$3,000.

### Visual and audible alarms

Ensures the **highest level of protection.**

### Optional RS-232C or RS-485 communications

**Control several monitors** on one communications channel along with security code protection.

**Over the years, Alpha Omega Instruments Corp. has had the pleasure of serving Fortune 100 Companies, as well as many small, entrepreneurial-based organizations. A partial list of customers includes:**

AT&T	General Electric	Lawrence Livermore Labs	Polaroid
Argonne National Labs	Hewlett Packard	Litton Solid State	Procter & Gamble
Bayer Corp.	Honeywell	Lockheed/Grumman	Raytheon
EG&G	Hughes	McDonnell Douglas	Rockwell
Eastman Kodak	IBM	Motorola	Sony
Exxon	Intel	NASA	Texas Instruments
FMC	Jet Propulsion Lab.	Perkin Elmer	Xerox

## APPLICATIONS FOR THE SERIES 3000 TRACE OXYGEN ANALYZER

- Ammonia Production
- Battery Manufacturing
- Bio-Research
- Blanketing of Semiconductor Wafers
- Bright Annealing
- Ceramic Component Mfg.
- Chemical Manufacturing
- Contact Lens Manufacturing
- Copper Thick Film Furnaces
- Electron Beam Curing
- Glass Manufacturing
- Glove Boxes
- Graphite Production
- High Purity Gas Manufacturing
- Inert Gas Generators
- Light Bulb Manufacturing
- Metal Processing
- Petrochemical Manufacturing
- Pipeline Leak Detection
- Protection of Reactor Catalysts
- Rubber Polymerization
- Semiconductor Manufacturing
- Sintering of Powdered Metals
- Steel Production
- Synthetics Manufacturing
- Tritium Recovery
- Vessel Blanketing
- UV Curing
- Welding of Critical Components