



ALPHA OMEGA
INSTRUMENTS

ZrO₂₀₀₀

FAST RESPONSE **OXYGEN ANALYZER**



FEATURES

- ✓ Advanced Solid State Sensor.
- ✓ Measures < 1 PPM to 100%
- ✓ Instantaneous Response.
- ✓ Non-depleting Sensor
- ✓ User Scalable Analog Outputs
- ✓ Dual User Adjustable Alarms
- ✓ Microprocessor Controlled
- ✓ Non-laser Based Diode Technology

BENEFITS

- Provides High Precision Oxygen Measurements.
- One Instrument Does it All.
- Provides Exceptional Tracking of Process Conditions.
- Designed to Provide Years of Operation.
- Better Defines the Concentration Range of Interest.
- Set Critical Process Limits.
- Helps to Ensure Dependable and Accurate Readings.
- Eliminates Calibrations Shifts due to Temp/Vibration.

System Description

ZrO₂₀₀₀ FAST Response Oxygen Analyzer

The ZrO₂₀₀₀ FAST Response Oxygen Analyzer is designed to provide accurate and repeatable trace and percent oxygen measurements in a variety of gases. The rugged and compact design of the ZrO₂₀₀₀ FAST Response Oxygen Analyzer makes it ideally suited for industrial applications where continuous oxygen measurements are required. The ZrO₂₀₀₀ FAST Response Oxygen Analyzer is capable of measuring from less than 1 ppm to 100% with a response time that significantly exceeds that of other comparable measuring techniques.

The ZrO₂₀₀₀ FAST Response Oxygen Analyzer features a patent pending, non-depleting solid state zirconium oxide sensor. The sensor, coupled with state-of-the-art electronics, provides exceptional measurement accuracy and stability. With no consumable components, the oxygen sensor in the ZrO₂₀₀₀ FAST Response Oxygen Analyzer will obviate the need to replace sensors. Every ZrO₂₀₀₀ FAST Response Oxygen Analyzer receives a full factory calibration at the factory using NIST Traceable Standards.

Principle of Operation

The ZrO₂₀₀₀ FAST Response Oxygen Analyzer features a highly advanced solid state zirconium oxide oxygen sensor that is sensitive to changes in the partial pressure of oxygen. Sample gas entering through the gas inlet port of the ZrO₂₀₀₀ FAST Response Oxygen Analyzer is guided to the inside of the zirconia tube. At its optimal operating temperature of 750°C, the zirconia tube becomes an oxygen ion conducting solid electrolyte. On opposite sides of the zirconia tube are platinum electrodes (anode and cathode). When the sensor is exposed to gases that have different oxygen partial pressures, an electrical signal (emf) is generated proportional to the logarithm of the ratio of the oxygen concentration in the sample gas to that of air (reference gas) that surrounds the outside of the tube. The voltage developed across the electrodes by the differential in partial pressures of oxygen follows the Nernst equation. The log signal generated is then processed with by a high resolution A/D converter and microprocessor and either parts per million or percent concentrations of oxygen are calculated and displayed on the analyzer's front panel meter. Tight temperature control of the zirconium oxide sensor is essential and to that end, the ZrO₂₀₀₀ FAST Response Oxygen Analyzer uses a highly accurate PID temperature control algorithm to accomplish that goal. There are certain categories of gases that are not recommended for use with zirconium oxide sensors such as hydrogen, hydrocarbons, corrosive gases, etc. Contact Alpha Omega Instruments for more information.

SPECIFICATIONS

PERFORMANCE

Measurement Range:	0.1 PPM to 100%.
Measurement Error:	Percent: ± 2.0% of reading or ± 0.05% absolute, whichever is greater. Trace (PPM): ± 2.0% of reading or ± 0.5 PPM absolute, whichever is greater.
Repeatability:	Percent ± 0.4% of reading or 0.02% O ₂ absolute. Trace: ± 0.4% of reading or 0.1 PPM O ₂ absolute.
Response Time	Less than 5 seconds over one decade.
Sensor Type:	Zirconium Oxide.
Sample Flow Rate:	150 SCCM optimum.
Operational Temperature Range:	40° to 104°F (10° to 40° C).
Sample Gas Pressure Limits:	0.1 to 0.5 psig.

ELECTRICAL

Power Source:	90-264 VAC/50-60 Hz.
Dual Analog Outputs:	4-20 mADC & 0-20 mADC (field scalable).
Enclosure:	Powder coated, painted, aluminum.
Display:	6 digit backlit liquid crystal display.
Dimensions (inches):	10.75 W x 6.30 H x 13.10 D.
Weight:	9.5 pounds (10.4 pds. with pump).
Oxygen Alarm Relays:	Two (2) SPDT Form C contacts rated 10A @ 30VDC/115/230 VAC.

Applications

Modified Atmosphere Packages (MAP)

Glove Boxes

Biological Reactors

Air Separation

Critical Welding

Pharmaceutical Processing

Semiconductor Manufacturing

Vessel Blanketing

Heat Treating

Leak Detection

Optional Equipment

Sample Pumps

Pressure Regulators



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Alpha Omega Instruments reserves the right to change specifications at any time (05/08)