

Model 316R Trace Oxygen Analyzer

With increasing demand for greater levels of purity in high grade gases, monitoring trace oxygen (O_2) contamination has become commonplace in every industry that uses or produces pure gases and gas mixtures. Teledyne's Model 316R Trace Oxygen Analyzer provides online monitoring of trace oxygen, from parts-per-billion (ppb) to parts-per-million (ppm) levels.

The high-accuracy, fast-response Model 316R is simple to calibrate, requires no support gases, and is virtually maintenance-free. It features four standard analysis ranges: 0-10, 0-100, 0-1,000 and 0-10,000 ppm, plus a CAL range allowing calibration on ambient air.

Maintenance-Free Sensor

The Model 316R uses the specially-qualified Class B-2 Micro-Fuel Cell to measure trace O_2 in a sample gas. The B-2 sensor sets industry standards for accuracy, sensitivity and ease-of-use. And because every B-2 sensor undergoes stringent glovebox testing and special quality procedures, you're assured of outstanding reliability and optimum performance.

Like all Micro-Fuel Cells, the B-2 is a sealed electrochemical device with no electrolyte to change or electrodes to clean, so it is virtually maintenance-free. This sensor is specific to oxygen and is capable of accurately monitoring gas streams containing up to 100% hydrocarbons. Also, because it has an absolute zero, no zero gases are needed for calibration.

Easy Calibration

The Micro-Fuel Cell produces an output that is linear from 0 to 100%. That means you can use ambient air (209,500 ppm O_2) for calibration. This eliminates the need for special ppm O_2 span gases. Or, if a faster calibration is required, a certified ppm O_2 span gas can be used to calibrate the Model 316R.



Sample Handling System

The Model 316R incorporates a simple gas handling system that includes a shutoff valve and flowmeter. The measurement provided by the Model 316R is not flow sensitive; however, the flowmeter is included to verify that there is sample flow through the analyzer and to provide nominal flow control.

Panel- or Bulkhead-Mounting

Two standard versions of the Model 316R are available: The Model 316RA, which is housed in a panel-mounted enclosure; and the Model 316RB, which mounts on a wall or bulkhead. Both versions share the same outstanding features and exceptional performance.

Teledyne also offers a complete line of portable and continuous-duty trace oxygen analyzers (the Series 310) that include general purpose, explosion-proof, and intrinsically safe configurations.

Special Systems

You can order the Model 316R as a standard unit, or as part of a larger analytical system. Signal conditioning, custom sampling systems, and free-standing enclosures are all available.

Teledyne also provides special sensors, custom-engineered analyzers and complete monitoring systems to satisfy unique application requirements.

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Analytical Instruments

SENSORS • ANALYZERS • SYSTEMS

TOTAL QUALITY COMMITMENT

Applications

Air separation and liquefaction
Pure, gaseous hydrocarbon stream monitoring
Semiconductor manufacturing
Protective atmosphere blanketing of primary liquid feedstocks and flammable liquids
Process monitoring of gaseous monomers — vinyl chloride, propylene, butadiene, isoprene or ethylene
Gas purity certification
Glove box leak detection
Natural gas treatment and transmission
Catalyst protection
Inert gas welding of exotic metals
Heat treating and bright annealing
Nuclear fuel processing and isotope separation
Monitoring chemical reactions
And many other applications

Options

- 100 or 220 VAC operation
- Millivolt output signal
- Current output signal (1-5, 4-20 or 10-50 mADC)
- Isolated output signal
- Alarm setpoints and relay contacts
- Off-range switch contacts
- Digital readout
- Vacuum service tubing and fittings
- RFI shielding
- Stainless steel tubing, fittings and sensor housing
- Front door with viewing window
- Custom-engineered analyzers and complete monitoring systems for special applications

Features

- Four linear ranges: 0-10, 0-100, 0-1,000 and 0-10,000 ppm plus a special air calibration range
- High accuracy and sensitivity, fast response
- Unaffected by hydrocarbons and other oxidizable gases
- Long-life, maintenance-free Micro-Fuel Cell oxygen sensor

- Less than 2% drift over 3-4 week periods without calibration
- Air calibration ... no zero or span gases required
- Unaffected by position, motion or vibration
- Panel- and bulkhead-mounted versions
- Optional alarms and current output

Specifications

Ranges:

Analog Meter: 0-10, 0-100, 0-1000, 0-10,000 ppm and 0-25% cal

Digital Meter: For 316RA and 316RB, 0-10, 0-100, 0-1000 ppm, 0-1% and 0-25% cal

Sensitivity:

0.5% FS

Accuracy:

At constant temperature and pressure:

+/-2% of full scale (except +/- 1 ppm on 0-10 ppm range)

Over operating temperature range:

+/-5% of full scale (once temperature equilibrium is reached)

System Operating Temperature Range:

32°F - 122°F (0°C - 50°C)

Signal Output:

0-1 VDC, 4-20mA, isolated standard

Response Time:

90% in 60 seconds

Sensor Type:

Micro Fuel Cell Class B-2, B-2C, A2, or A2C

System Power Requirements:

115 VAC, 50-60 Hz, 30 W

System Enclosure:

316RA, 316RAD, welded sheet steel enclosure for panel mount installation. 316RB, 316RBD wall or bulkhead mounting

Specifications/Features:

May vary with application; are established and validated during design; should not be construed as test criteria for every product manufactured; and subject to change without notice.

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