

Model 318R Trace Oxygen Analyzer

Teledyne's Model 318R Trace Oxygen Analyzer provides online monitoring of trace oxygen—with features and performance ideally suited for field-mounted applications. The Model 318R combines the sensitivity, accuracy and application versatility required to analyze parts-per-billion (ppb) and parts-per-million (ppm) levels of oxygen contamination in hydrogen, nitrogen, argon, butadiene, ethylene, and a wide variety of other pure gases and gas mixtures. Plus, the Model 318R features an explosion-proof housing and the proven performance you require for rugged, reliable service in hazardous areas.

The high-accuracy, fast-response Model 318R 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 318R 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, 400 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 318R.

Sample Handling System

The Model 318R incorporates a simple system that includes control valves for sample and span (air) gases, stainless steel tubing and fittings, a sensor shutoff valve, and a flowmeter. The measurement provided by the Model 318R is not flow sensitive; however, the flowmeter is included in the system to provide nominal flow control and to verify that there is gas flow through the analyzer.

Explosion-Proof Housing

The Model 318R's NEMA 7 enclosure is rated for use in Class I, Division 1, Groups C & D Hazardous areas (Group B is optional). The Model 318R easily and conveniently bolts to a wall or bulkhead.

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

 **TELEDYNE BROWN ENGINEERING**
Analytical Instruments

SENSORS • ANALYZERS • SYSTEMS

SCIENTIFIC SOLUTIONS

Special Systems

You can order the Model 318R 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.

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, 50/60 Hz electrical requirements
- mVDC, mADC or VDC signal output (0-1 VDC is standard)
- Isolated signal output
- Stainless steel sensor housing
- Adjustable alarm setpoints and relay contacts
- Special ranges
- Enclosure for Group B hazardous areas
- 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
- Enclosure is rated for Class I, Division 1, Groups C & D hazardous areas (Groups B optional)
- Optional alarms and current output

Specifications *

Ranges:

Standard: 0-10, 0-100, 0-1,000, 0-10,000 ppm, CAL

Sensitivity:

0.5% FS

Accuracy:

At constant temperature:

For Model 318R with standard ranges: $\pm 2\%$ FS

Over operating temperature range:

For Model 318R with standard ranges: $\pm 5\%$ FS

Operating Temp. Range:

+32° — + 122°F (0°C - 50°C)

Voltage Signal Output:

0-1 VDC or less (standard)

Current Signal Output:

1-5, 4-20, or 10-50 mADC (optional)

Alarm Output:

(Optional) 1 or 2 DPDT Form C relays (3A resistive)

Alarm Deadband (Hysteresis):

0.1% FS

Response Time**:

0-10 ppm 90% in less than 60 secs
0-100 ppm 90% in less than 30 secs
0-1,000 ppm 90% in less than 10 secs
0-10,000 ppm 90% in less than 10 secs

Detector Cell Warranty:

6 months (Class B-2 cell)

Power Requirement:

115 VAC, 50/60 Hz, 30 W (100/220 VAC optional)

Area Classifications:

Class 1, Div 1, Groups C & D (B optional)

*Specifications/Features: vary with application; are established and validated during design; are not to be construed as test criteria for every product manufactured; and subject to change without notice.

**At 77°F (25°C)

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