

Series

326R

Percent Oxygen Analyzer



The Teledyne Series 326R is a complete line of rugged percent oxygen (O₂) analyzers that provide outstanding performance and reliable on-line monitoring of a wide range of gases and gas mixtures.

The high-accuracy, fast-response Series 326R analyzers are simple to calibrate, require no support gases, and are virtually maintenance-free. Full scale measuring ranges are available from 0-1% to 0-100% O₂ up to 10 atmospheres partial-pressure oxygen. Series 326R analyzers offer optional single or dual alarm capability and current outputs of 1-5, 4-20, or 10-50 mADC for interface compatibility.

Maintenance-Free Sensor

Series 326R analyzers use Teledyne's patented* Micro-Fuel Cell sensor to measure the concentration of oxygen in a sample gas. The Micro-Fuel Cell is a sealed electrochemical device with no electrolyte to change or electrodes to clean, so it is virtually maintenance-free. The 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.

Air Calibration

The Micro-Fuel Cell produces an output that is linear with respect to oxygen concentration. That means you can use ambient air (20.9% O₂) to calibrate Series 326R analyzers. This eliminates the need for special span gases. Also, the potential problem of unknowingly using an air-contaminated span gas is eliminated.

*U.S. Patent numbers 3,429,796 and 3,767,552

Panel- or Bulkhead-Mounting

A variety of standard models are available within the Series 326R line: panel- and bulkhead-mounted general-purpose units; semi-explosion-proof analyzers, consisting of an explosion-proof analysis section and separate general-purpose control unit; and fully explosion-proof configurations.

Sample Handling System

Series 326R analyzers incorporate a simple gas handling system that includes a flowmeter. The measurement provided by Series 326R analyzers 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.

Other components of Series 326R sample handling systems depend on the specific model and application requirements. For example, the Model 327R analysis section includes a solenoid valve for control of sample and span (air) gases. This valve is activated by a switch at the control unit, which allows convenient one-person calibration—even though the analysis section and control unit may be up to one mile apart!

Special Systems

You can order individual models within the Series 326R line as standard units; or, models can be ordered as part of a larger Teledyne-built analytical system. Signal conditioning, custom sampling systems, and special enclosures are all available.

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

 **TELEDYNE BROWN ENGINEERING**
Analytical Instruments

SENSORS • ANALYZERS • SYSTEMS

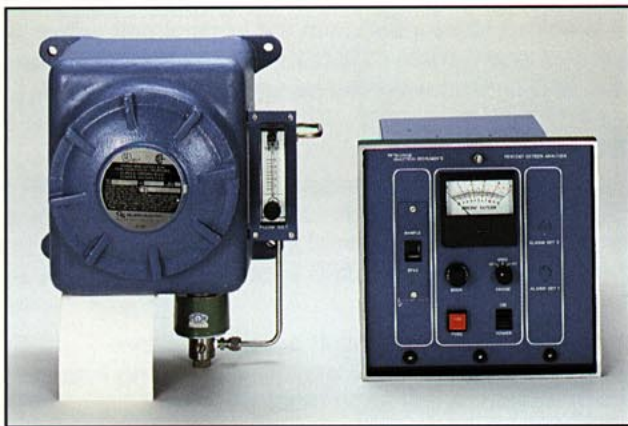
SCIENTIFIC SOLUTIONS

Features

- High sensitivity and accuracy . . . accuracy unaffected by flow variation
- Fast response and recovery
- Unaffected by oxidizable gases (hydrocarbons, CO, etc.)
- Long-life, maintenance-free Micro-Fuel Cell oxygen sensor
- Air calibration... no span or zero gases required
- Rugged construction, proven reliability and durability
- Easy installation
- Local analog meter (digital meter optional)
- Optional alarms and current output

Options

- Ranges from 0-1% O₂ to 0-100% O₂ to 10 atmospheres partial pressure O₂
- 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



Model 327RA — semi explosion-proof instrument composed of two units: a general purpose panel mounted control unit and an explosion-proof analysis unit. The control unit has a meter readout and an analog output for use with recorder or indicator. The analysis unit has an area classification suitable for Class I, Division 1, Group D installation.



Model 326RA — panel-mounted analyzer with general-purpose case, local meter readout, and analog output for use with recorder or indicator.



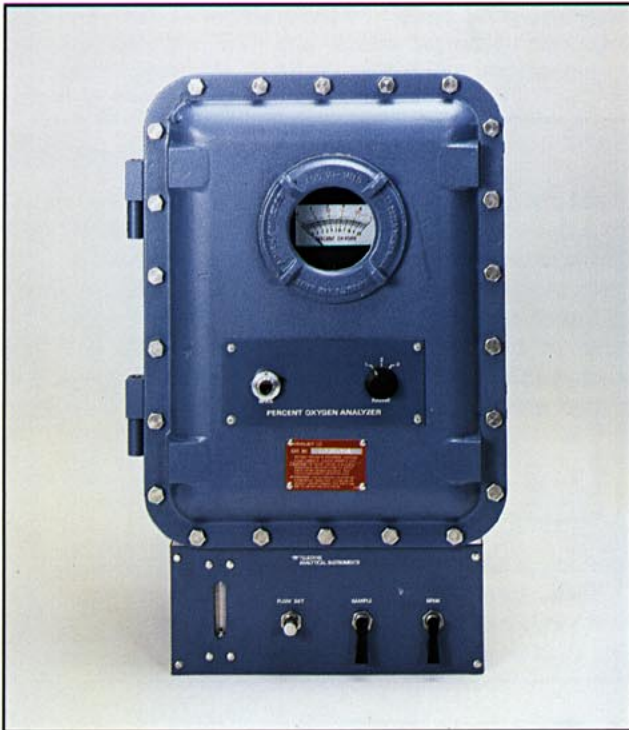
Model 326RB — bulkhead-mounted analyzer includes local meter readout and analog output for use with recorder or indicator. NEMA 4 case also available.



The oxygen content of the breathing mixtures in this large hyperbaric diving chamber is monitored by a percent oxygen analyzer. The chamber, used for diving research and training, can simulate pressures equivalent to depths of 2200 feet.

Applications

Flue gas analysis
 Controlled atmosphere monitoring
 Inert gas blanketing of stored products
 Air liquefaction processes
 Chemical feedstock analysis
 Petrochemical process control
 Personnel monitoring
 Atmosphere monitoring for oxygen deficiency
 Inert gas generator product analysis
 Saturation diving
 Controlled atmosphere food packaging
 Nuclear containment vessel post-LOCA monitoring
 Quality assurance
 And many other applications.



Model 328R — completely explosion-proof analyzer contained in a single bulkhead-mounted enclosure. The instrument has an integral meter and an analog output for use with a remote recorder or indicator.

MODEL DESIGNATION

Design Features	†General Purpose	Semi-Expl. Proof (2 units)	Expl. Proof Enclosure
Meter and standard voltage output	326R	327R	328R
With single alarm	326R-1	327R-1	328R-1
With dual alarms	326R-2	327R-2	328R-2
With current output			
1-5 mADC	326RI-5	327RI-5	328RI-5
4-20 mADC	326RI-20	327RI-20	328RI-20
10-50 mADC	326RI-50	327RI-50	328RI-50

NOTE: Alarm and current outputs can be provided simultaneously; e.g. specify 327R-11-20.

†Mounting configuration (A for panel mounted, B for bulkhead mounted) should be included in the model designation when ordering 326R or 327R analyzers; e.g., 326RA, 326RB-1, etc.

Specifications

Ranges:

0-5%, 0-10%, and 0-25% oxygen
 Optional: Any three ranges from 5% to 0-100% or single 0-100% digital range

Sensitivity:

0.5% FS

Accuracy:

+/-2% of full scale at constant temperature
 +/-5% of full scale over operating temperature range (once temperature equilibrium is reached)

Response Time:

90% in less than 7 secs. at 25°C, Class B-1 sensor (standard)
 90% in less than 13 secs. at 25°C, Class B-3 sensor (optional)
 90% in less than 30 secs. at 25°C, Class C-3 sensor (optional)
 90% in less than 45 secs. at 25°C, Class A-5 sensor (optional)

System Operating Temperature Range:

32°F - 122°F (0°C - 50°C)

Reproducibility:

+/-1% of full scale

Signal Output:

0-1 VDC

Meter Readout:

326RA - Analog Meter, 326RAD - Digital Meter

Sensor Type:

Class B-1 (standard), B-3, C-3, and A-5 (optional)

System Power Requirements:

115 VAC, 50-60 Hz (single phase) or 220 VAC

System Enclosure:

General Purpose Panel Mount

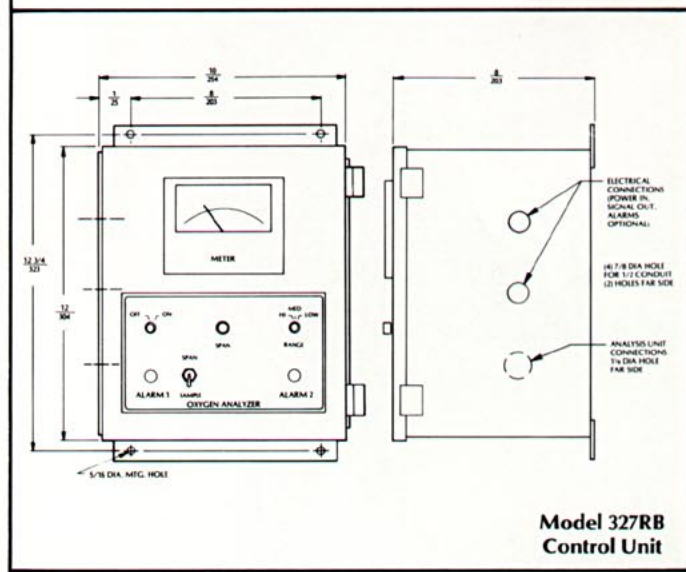
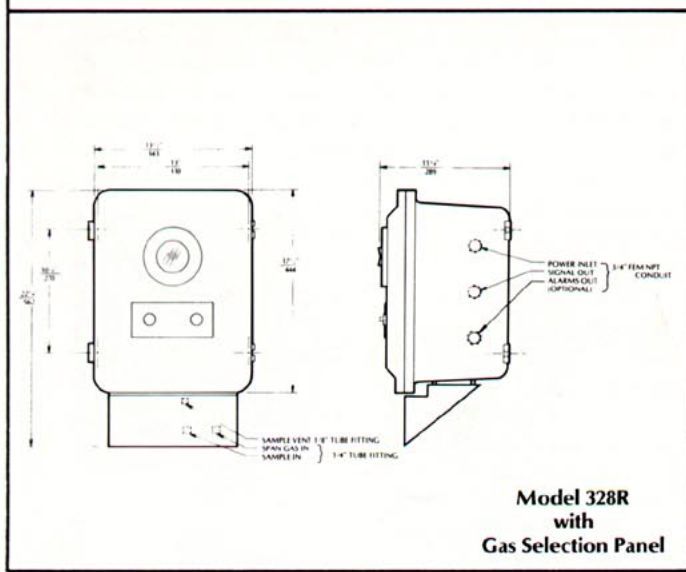
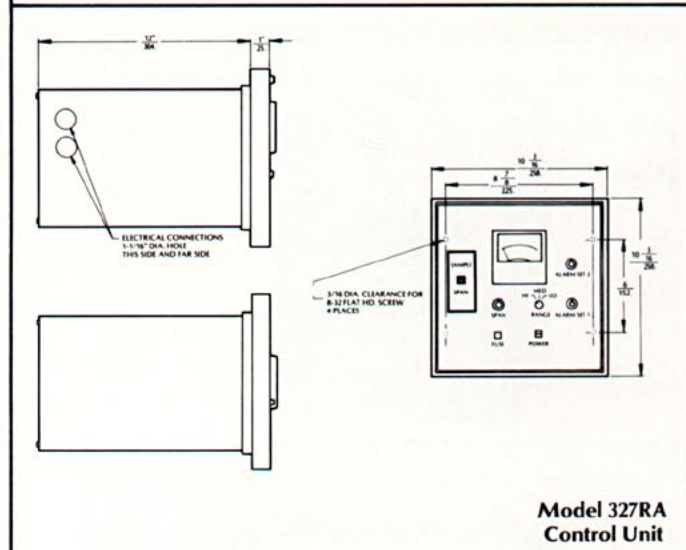
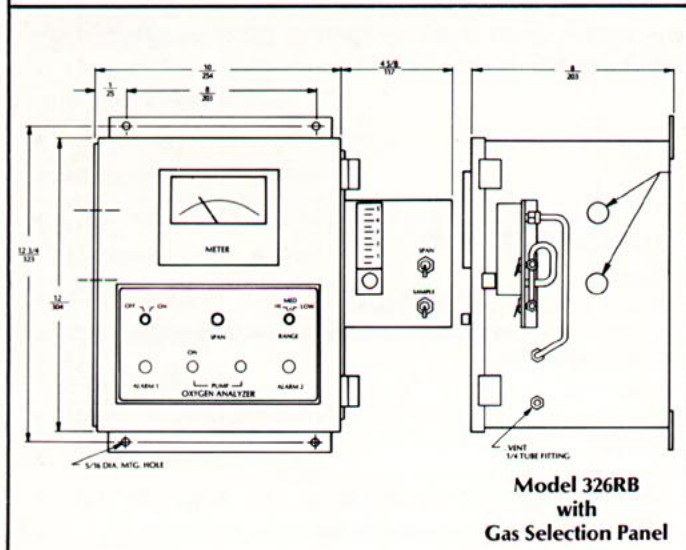
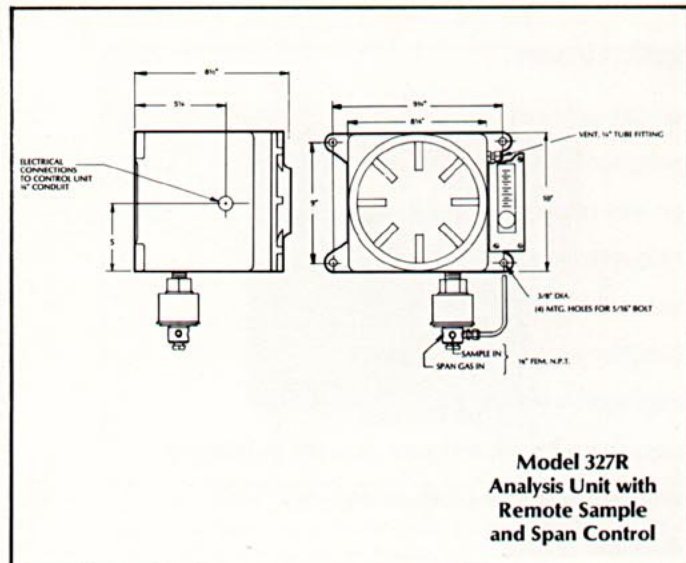
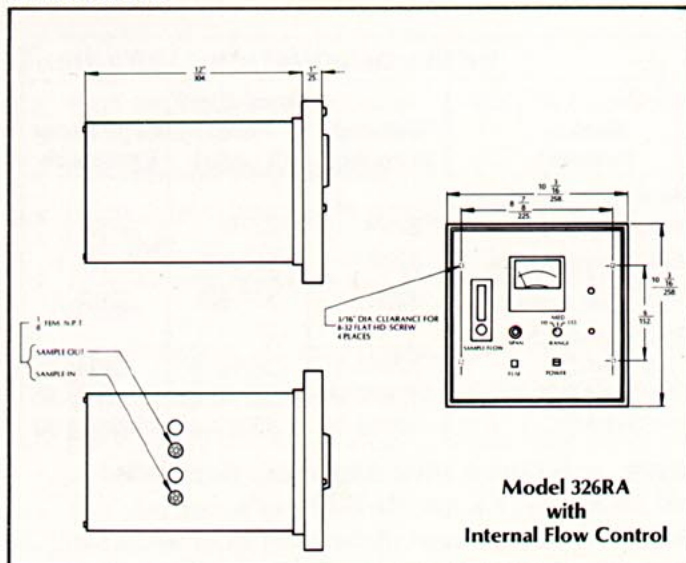
Explosion-Proof Housings (327R and 328R):

Suitable for Class I, Division 1, Group D. Other housing classifications available upon request.

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.

DIMENSIONS



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