

series **900**

# Process Oxygen Analyzers

Advanced Technologies  
in Process Oxygen  
Measurement



**illinois**  
instruments



# Unmatched Versatility in High Performance on-line Oxygen Analyzers

Illinois Instruments has long been recognized worldwide as a leader in oxygen analysis. Our reputation in the industry has excelled our products far beyond the competition.

Utilizing a variety of specially engineered electrochemical fuel cells, the Series 900 Oxygen Analyzers are designed to monitor oxygen within most industrial gases and atmospheres. These highly advanced instruments incorporate user-friendly software and the highest quality sensors to provide accurate, reliable results.

No matter what your measuring range, the Series 900 has an analyzer to suit your needs.

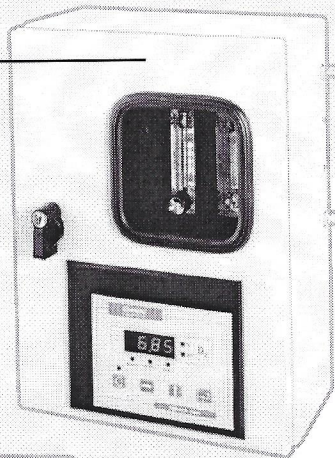
## Cabinetry & Mounting

Three different configurations to match your needs.

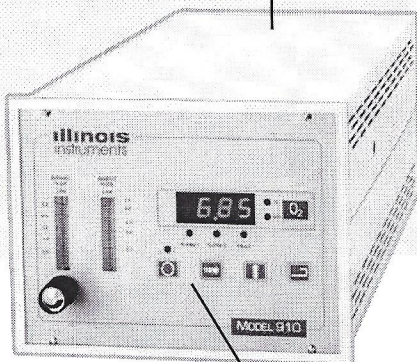
- 19 in. rack mount
- NEMA 4X / IP66 waterproof and weatherproof
- Panel or bench mount



**930 Series**



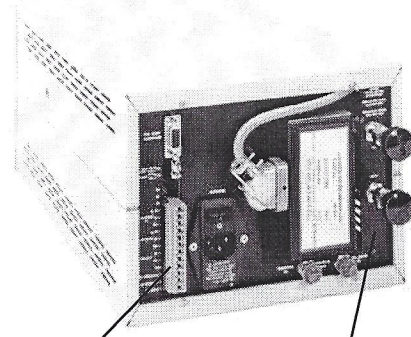
**920 Series**



**910 Series**

## Operator Interface / Diagnostics

- User-friendly menu
- Read-only mode available
- Diagnostic capabilities
- Fault alarms



## Outputs & Alarm Options

For charting, process control, or remote monitoring:

- RS232 / 485
- Analog outputs
- High / low alarms
- Fault alarms

## Sampling Systems

- Bypass flowmeter
- Pressure regulator
- Sample pump
- Flow alarm



## The solution for demanding, on-line applications

The Series 900 Oxygen Analyzers offer unsurpassed accuracy, reliability, and flexibility under the most demanding on-line operating conditions.

Typical applications include:

### Chemical / Petrochemical

- Chemical Production
- High Purity Gas Production
- Hydrocarbon Refining
- Natural Gas Transmission

### Curing

- Electron Beam ■ Ultraviolet

### Electronics

- Reflow / Wave Soldering
- Solder Powder Production
- Semiconductor Furnaces
- Gas Quality

### Metals

- Heat Treating / Annealing
- Steel Production
- Alloys and Powdered Metals

### Pharmaceutical

- Inert Packaging ■ Vessel Blanketing
- Fermentation

### Process

- Ceramics ■ Combustion Analysis
- Contact Lens Manufacturing
- Food Packaging ■ Glass/Fiber Optics
- Inert Gas Welding
- Lamp Manufacturing

### General

- Controlled Environments ■ R & D
- Glove Boxes ■ Oxygen Deficiency

## Advanced Features:

Technical innovation and product versatility combine to provide these useful and advanced features:

- Long life, maintenance free, disposable oxygen sensors
- Ambient air calibration
- Calibrated to NIST standards
- Microprocessor controlled functions
- Large, autoranging LED display
- Fast response
- Sturdy, reliable construction
- Unaffected by vibration or position
- Specific to oxygen
- Insensitive to sample flow rate

## Sensor Selection

No need to compromise! Now you can match sensor to application for the best possible reliability and performance. All sensors are manufactured to rigid tolerances and exacting production specifications.

### Principle of Operation

The Series 900 Oxygen Analyzers use a variety of electrochemical fuel cells for the detection of oxygen. When oxygen diffuses to the cathode of the cell, a current output is produced directly proportional to the concentration of oxygen in the sample gas.

Specializing in trace oxygen measurements, Illinois Instruments' sensors are used in applications from 0.01ppm up to 100% oxygen. In addition, sensors can be used on gas streams such as hydrogen, corrosive and acid gases, combustibles, hydrocarbons, and inert gases.

All Illinois Instruments' sensors are easily calibrated to ambient air. For ISO purposes, NIST traceable calibration gases can be used to meet the most demanding quality assurance programs.

### Trace (part per million) Sensor

The trace sensor is designed for measuring 0 – 10,000ppm oxygen in most industrial gas streams. This sensor, when used in a normal operating range, typically lasts 3 – 5 years.

### Ultra-Low Trace (0–1ppm) Sensor

This high performance sensor was developed for applications where continuous oxygen measurements are maintained between 0 and 1ppm.

### RACE™ Sensor

The RACE™ Sensor (USA and British patents pending) is a breakthrough in electrochemical technology. Our unique design prevents the sensor from being saturated by high levels of oxygen. With TURBOPURGE™, levels as low as 20ppm can be reached from ambient air within 2 minutes. This sensor is unaffected by hydrocarbons or volatile atmospheres making it the ideal choice in applications such as wavesolder and reflow ovens.

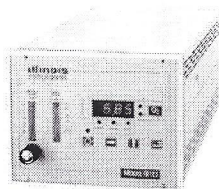
The RACE™ Sensor is maintenance free and only requires infrequent calibration. No caustic electrolyte to monitor or replace. The RACE™ Sensor carries a 3 year warranty.

### Percent Sensor

The Illinois Instruments percent sensor is capable of accurate measurements from 0 – 100% oxygen. Unlike most electrochemical sensors, this sensor is not affected by carbon dioxide.



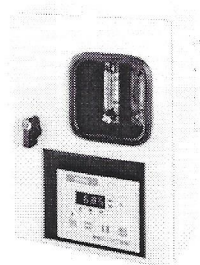
## Series 900 Enclosure Options



### 910 Series

Bench / Panel Mount

7.48"H x 9.33"W x 16.14"D  
190mmH x 237mmW x 410mmD  
17.4lb, 7.9kg



### 920 Series

IP66 / NEMA 4X  
Wall Mount / Weatherproof

15.9"H x 12.91"W x 7.09"D  
404mmH x 328mmW x 180mmD  
28.9lb, 13.1kg



### 930 Series

Rack Mount 4U – 19 inch  
Houses 1 or 2 analyzers

7.00"H x 19.06"W x 16.14"D  
178mmH x 484mmW x 410mmD  
21.4lb, 9.7kg (single unit)

## Technical Specifications

Sensor Type:	Ultra Low Trace	Trace	RACE™	Percent
Measuring Ranges:	0.01ppm - 100ppm	0.1ppm - 10,000ppm	0.1ppm - 30%	0.01% - 100%
Calibration Ranges:	0.01ppm - 30%	0.1ppm - 30%	0.1ppm - 30%	0.01% - 100%
Response Time:	90% within 30 sec.	90% within 30 sec.	Air to 20ppm within 2 min.	90% within 30 sec.
Accuracy:	±2% of reading	±2% of reading	% ±0.1% O <sub>2</sub> ppm ±2% of reading	0 - 20% ±0.05% 0 - 100% ±0.1%

## Operating Conditions

Sample Connections:	1/8 inch OD compression
Ambient Temperature:	23F to 122F (-5C to 50C)
Sample Gas Inlet Pressure:	0.25 BAR – 2 BAR
Sample Gas Flow Rate:	Approximately 140cc / min
Power:	110 / 220 VAC selectable, 40VA
Area Classification:	General Purpose
Communications:	RS232 / 485

## Options

High / Low Alarms:	2 Voltage free with changeover contacts rated 240V 3A
Analog Outputs:	Scalable 0 - 10V, 0 - 100mV and 4 - 20mA or 0 - 20mA all isolated
Autocalibrate:	Programmable timed or manual to any oxygen level
Sample Stream Options:	Bypass Flowmeter, Sample Pump, Flow Alarm, Stainless Steel Sample System in place of brass/copper



Analyzers conform to the following European Directives:  
Electromagnetic Compatibility Directive 89/336/EEC  
Low Voltage Directive 73/23/EEC

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instruments

### Illinois Instruments, Inc.

27840 Concrete Drive – Ingleside, Illinois, U.S.A. 60041  
phone - 815/344-6212 fax - 815/344-6332

REPRESENTED BY: