

# EC900 Process Oxygen Analyzers



The EC900 offers unsurpassed accuracy, reliability and flexibility under the most demanding on-line operating conditions



## Features & Benefits

- Long life, maintenance-free, disposable oxygen sensors.
- Ambient air or traceable gas calibration.
- Microprocessor controlled functions.
- Large, autoranging LED display.
- Fast response.
- Unaffected by vibration or position.
- Sturdy, reliable construction with three sensor options.
- Specific to oxygen.
- Insensitive to sample flow rate - percentage through ppm.
- Nitrosave flushing gas control option.

Conforms to European Directives:

Electromagnetic Compatibility Directive 89/336/EEC Low Voltage Directive 73/23/EEC

# Unmatched in High Performance On-Line Oxygen Analysis

## Applications

### 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 Fibre Optics  
Inert Gas Welding  
Lamp Manufacturing

### General

Controlled Environments  
R & D  
Glove Boxes  
Oxygen Deficiency

## Unmatched Performance

Systech Illinois has long been recognised worldwide as a leader in oxygen analysis.

Utilizing a variety of specially engineered electrochemical fuel cells, the EC900 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.

Whatever your measuring range, the EC900 series has an analyzer to suit your needs.

## Cabinetry & Mounting

Three different configurations to match your needs.

- NEMA 4X / IP66 waterproof and weatherproof
- 19 in. rack mount
- Panel or bench mount
- UL and CUL approved Ex-proof

## Explosion Proof Version

- UL and CSA approved
- Split architecture version for:  
Class I, Groups B, C& D; Class II and Class III
- Nema 4/7 rated

## Operator Interface / Diagnostics

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

## Optional Nitrosave Feature

- Control of Nitrogen or flushing gas
- Reduced gas consumption
- Improved productivity
- Reduced product wastage
- Better quality control
- Integrated electronics with analyzer
- Control hardware available

## Outputs & Alarm Options

For charting, process control, or remote monitoring.

- USB and RS485
- Analog outputs (one or three channels)
- High / low alarms
- Fault alarms

## 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.

### EC920



### EC930



### EC910



### Ex-Proof



## Sampling Systems

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

## Principle of Operation

The EC900 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.

Specialising in trace oxygen measurements, Systech Illinois' sensors are used in applications from ppb up to 100% oxygen. In addition, sensors can be used on gas streams such as hydrogen, combustibles, hydrocarbons and inert gases.

All Systech Illinois' sensors are easily calibrated to ambient air. For ISO purposes and in specific applications, traceable calibration gases can be used to meet the most demanding quality assurance programmes.

## Trace (part per million) Sensor

The trace sensor is designed for measuring 0.1ppm – 1% oxygen in most industrial gas streams. Can be calibrated to air. This sensor when used in a normal operating range typically lasts 3 – 5 years.

## Sensor RACE™

The RACE™ Sensor is a breakthrough in electrochemical technology. Our patented 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, requires only occasional calibration and has no caustic electrolyte to monitor or replace. The RACE™ Sensor carries a 3 year limited warranty.

## Percent Sensor

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

\* USA Patent no. 5929318. UK Patent no. 2324870.

# EC900 Process Oxygen Analyzers



## EC910

Bench/Panel Mount  
7.48H x 9.33W x 16.14D (inches)  
17.41 lbs



## EC920

IP66/NEMA 4X  
Wall Mount / Weatherproof  
18.11H x 14.96W x 6.3D (inches)  
34.17 lbs



## EC930

Rack Mount 4U - 19 inch  
Houses 1 or 2 Analyzers  
7H x 19.05W x 16.14D (inches)  
21.38 lbs (single unit)

## Technical Specifications

| Sensor Type                 | Trace   | Race  | Percent   |
|-----------------------------|---|---|---|
| Ranges                      | 0.1ppm - 1%   | 0.1ppm - 30%  | 0.3% - 100%   |
| Accuracy: >10ppm            | ±2% of reading at 68°F<br>±5% of reading over temperature range   | ±2% of reading at 68°F<br>±5% of reading over temperature range                               | ±0.2% of calibrated value at 68°F<br>±1% of calibrated value over temperature range |
| <10ppm                      | ±2% of reading + 0.4ppm at 68°F<br>±5% of reading + 0.6ppm over temperature range   | ±2% over temperature + 0.4ppm at 68°F<br>±5% over temperature + 0.6ppm over temperature range |   |
| Response Time               | 90% within 30sec  | Air to 20ppm within 2min  | 90% within 30sec  |
| Measuring Cell Type         | Electrochemical, percentage, trace and RACE™ Cell (US & UK) patents   |   |   |
| <b>Operating Conditions</b> |   |   |   |
| Sample Inlet Pressure       | 0.25 - 2 Barg, 3-30psi  |   |   |
| Sample Flow Rate            | Approximately 140 cc/min  |   |   |
| Sample Temperature          | 23 to 122°F (-5 to 50°C)  |   |   |
| Ambient Temperature         | 23 to 122°F (-5 to 50°C), RH 0-99% non-condensing   |   |   |
| Sample Connections          | 1/8" OD compression fittings, as standard   |   |   |
| Communications              | USB and RS485   |   |   |
| Unsuitable Gases            | Acid gases, corrosives and solvents in significant concentration  |   |   |
| <b>Power Requirements</b>   |   |   |   |
| Power Supply                | 115/230VAC selectable   |   |   |
| Display Type                | 4-digit, high-visibility LED  |   |   |
| <b>Options</b>              |   |   |   |
| High/Low Alarms             | 2 Volt-free changeover contacts. Rated 240V 3A  |   |   |
| Analog Outputs              | Analog output channels: scaleable 4-20mA or 0-20mA, 0-10V, 0-100mV, all isolated. Option for one channel or three. Voltage output obtained by connecting resistor across o/p terminals. |   |   |
| Autocalibrate               | Provision for remote cal start and autocal in progress  |   |   |
| Sample Stream Options       | Bypass flowmeter, sample pump, flow alarm, stainless steel sample system in place of brass/copper. Sample conditioning advice available.  |   |   |
| Nitrosave Ex Proof          | O <sub>2</sub> measurement and control system EC9500. Consult factory for various configurations.   |   |   |

Systech Illinois have over 25 years experience providing analysis solutions for a wide range of industries. From our manufacturing plants in the U.S and UK we produce gas analyzers for industrial process industries, headspace analyzers for monitoring gas flushing of food products and our range of permeation analyzers.

### Illinois Instruments, Inc (U.S)

2401 Hiller Ridge Road  
Johnsburg, Illinois 60051  
U.S.A  
Tel: +1 815 344 6212  
Fax: +1 815 344 6332  
E-mail: sales@illinoisinstruments.com  
www.systechillinois.com

### Systech Instruments Ltd (UK)

17 Thame Park Business Centre,  
Wenman Road,  
Thame, Oxfordshire OX9 3XA  
Tel: +44 (0)1844 216838  
Fax: +44 (0)1844 217220  
E-mail: advice@systech.co.uk  
www.systechillinois.com

### Illinois Instruments (Thailand)

6th fl Nopnarong Bldg No7  
Ladprao23, Jatujak, Bangkok 10900  
Thailand  
Tel: +66 (0)2938 0798  
Fax: +66 (0)2938 1058  
E-mail: mai@illinoisinstruments.com  
www.systechillinois.com

### Systech Illinois (China)

Room 519, No.3 FuCheng Building  
No. 900 Quyang Rd, Hongkou district,  
Shanghai, China 200434  
Tel: +86 21 65533022  
Fax: +86 21 65539651  
Email: info@systechillinois.cn  
www.systechillinois.cn