

# PM700 Process Oxygen Analyzers



Paramagnetic analyzers for high purity oxygen with full percent range capability



## Features & Benefits

- Paramagnetic sensor with PID temperature control for best in class performance
- Large autoranging LED display
- Specific to oxygen
- Optional barometric pressure compensation for purity analysis
- Excellent linearity and accuracy
- Auto calibration 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

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  
Air separation

### 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 the well proven magneto-dynamic (dumb-bell) transducer in the PM700, Systech Illinois offers the best in class of high performance oxygen analysis. These highly advanced instruments incorporate user-friendly software to provide accurate, reliable results.

Whatever your measuring range, the PM700 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

## Outputs & Alarm Options

For charting, process control, or remote monitoring

- RS232 / 485
- Analog outputs (three channels)
- High / low alarms
- Fault alarms

## Sampling Systems

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

## Sensor Selection

Now you can match sensor to application for the best possible reliability and performance. All Systech 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.

PM720



PM730



PM710

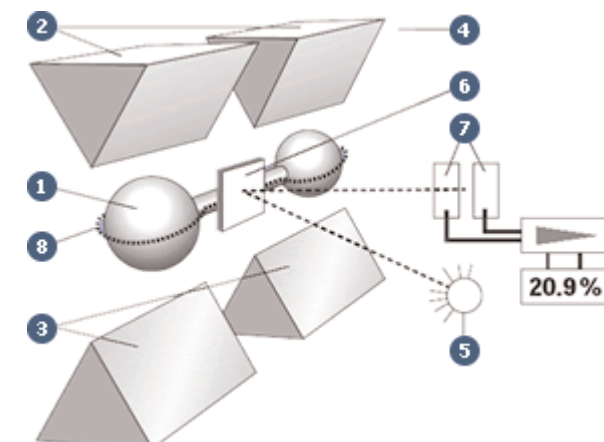


Ex-Proof



## Principle of Operation

The paramagnetic susceptibility of oxygen is significantly greater than that of other common gases, and for this reason the molecules of oxygen are attracted much more strongly by a magnetic field than the molecules of other gases. Most other gases are repelled by the magnetic field.



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|------------------|----------------|
| 1 Glass dumbbell | 5 Light source |
| 2 Pole shoe (N)  | 6 Mirror       |
| 3 Pole shoe (S)  | 7 Photo diodes |
| 4 Measuring cell | 8 Wire loop    |

The principle of measurement (Faraday's method) is based on a sensor in which a dumbbell comprising two nitrogen-filled spheres is arranged in rotational symmetry within a magnetic field. If the sample gas contains oxygen it is drawn into the magnetic field. The nitrogen inside the glass spheres has the opposite magnetic polarization and is forced out of the field, causing the dumb-bell to rotate.

The degree of rotation is directly proportional to the oxygen concentration. A mirror reflects a beam of light onto a pair of photocells. When the dumb-bell starts to rotate, a potential difference is generated at the photocells. The resulting current is amplified and conducted around the dumbbell through windings. The current flow generates an electromagnetic counter moment which causes the dumb-bell to return to its original position.

The current needed to maintain the dumb-bell in its null position is directly proportional to the oxygen concentration.

## PM700 Process Oxygen Analyzers



### PM710

Bench/Panel Mount  
7.48H x 9.33W x 16.14D (inches)  
18.73lbs



### PM720

IP66/NEMA 4X  
Wall Mount/Weatherproof  
18.11H x 14.96W x 6.3D (inches)  
36.37lbs



### PM730

Rack Mount 4U - 19 inch  
Houses 1 or 2 Analyzers  
7H x 19.05W x 16.14D (inches)  
22.26lbs (single unit)

## Technical Specifications

Measurement range	Autoranging from 0.01 to 100% O <sub>2</sub>
Display resolution	2 decimal places (0.01 to 99.99%)
Display type	5 digit High Visibility LED
Response time	90% of reading (T90) less than 2 seconds
Linearity	Better than ±0.1% O <sub>2</sub>
Zero point drift	Better than ±0.05% per week
Repeatability	Better than ±0.02% O <sub>2</sub>
Pressure compensation	Automatic compensation option

### Operating Conditions

Sample Gas Pressure	0.1 to 5 BarG
Ambient Temperature	14 to 113°F (-10 to +45°C)
Sample Connections	1/8" OD Compression fittings
Communications	RS232/485
Unsuitable Gases	Explosive gas mixtures (e.g. H <sub>2</sub> , Butane, CO, H <sub>2</sub> S etc)

### Power Requirements

Power Supply	230/115 Vac, 50/60 Hz at 40VA
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### Options

High/Low Alarms	2 volt free changeover contacts. Rated 240V, 3A
Analog Outputs	Scaleable 4-20mA (0-20mA), 0-10V, 0-100mV all isolated
Pressure Compensation	Integrated absolute pressure compensation, 800-1100 mBar
Sample Stream Options	Internal sample pump, Flow alarm, Pressure regulator

Systech Illinois have over 25 years experience of 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.

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