# PM700 Process Oxygen Analysers

## Paramagnetic analysers for high purity oxygen with full percent range capability


## Features & Benefits

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

**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.

Utilising 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 analyser 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
- Analogue 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 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.

**PM720**

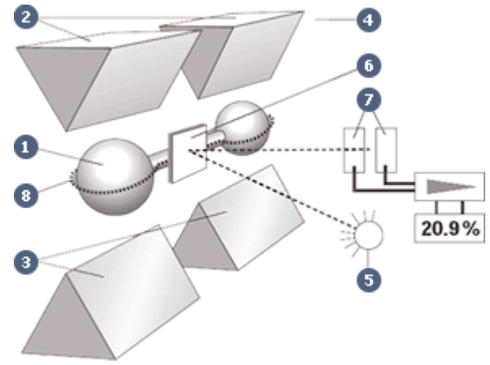
**PM730**

**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.




1. Glass dumbbell
2. Pole shoe (N)
3. Pole shoe (S)
4. Measuring cell
5. Light source
6. Mirror
7. Photo diodes
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 Analysers

**PM710**
Bench/Panel Mount
190H x 237W x 410D (mm)
8.5kg

**PM720**
IP66/NEMA 4X
Wall Mount/Weatherproof
460H x 380W x 160D (mm)
16.5kg

**PM730**
Rack Mount 4U - 19 inch
Houses 1 or 2 Analysers
178H x 484W x 410D (mm)
10.1kg (single unit)

## Technical Specifications

| | |
|---|---|
| Measurement range | Autoranging from 0.01 to 100% $O_2$ |
| 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% $O_2$ |
| Zero point drift | Better than ±0.05% per week |
| Repeatability | Better than ±0.02% $O_2$ |
| Pressure compensation | Automatic compensation option |

### Operating Conditions

| | |
|---|---|
| Sample Gas Pressure | 0.1 to 5 BarG |
| Ambient Temperature | -10 to +45°C |
| Sample Connections | 1/8" OD Compression fittings |
| Communications | RS232/485 |
| Unsuitable Gases | Explosive gas mixtures (e.g. $H_2$,Butane, CO, $H_2S$ etc) |

### Power Requirements

| | |
|---|---|
| Power Supply | 230/115 Vac, 50/60 Hz at 40VA |

### Options

| | |
|---|---|
| High/Low Alarms | 2 volt free changeover contacts. Rated 240V, 3A |
| Analogue 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 UK and U.S we produce gas analysers for industrial process industries, headspace analysers for monitoring gas flushing of food products and our range of permeation analysers.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