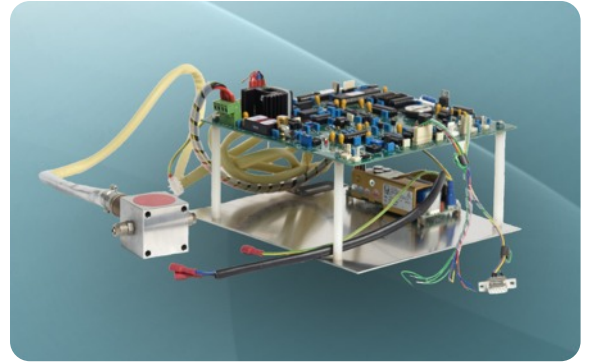


Rapidox 2100 OEM

OEM Zirconia Oxygen Gas Sensor & Circuit



Description

The Rapidox 2100 OEM allows fast and accurate oxygen analysis over the full oxygen range (10^{-20} ppm to 100% O₂) at the fraction of the cost of a normal gas analyser. The analyser provides continuous on-line oxygen analysis, with a typical response time less than 4 seconds for a 90% response to a step change in gas compositions.

The sensor is especially useful for oxygen measurements in vacuum conditions and a range of vacuum fittings are offered. Supplied either as a basic card (as shown) the Rapidox OEM comprises a zirconia sensor with several options for fittings, on a power cable 2m long. This can be extended up to 30m if required.

Standard outputs include fully programmable alarm circuits, programmable analogue outputs (0-5V & 4-20mA), easy calibration (user selectable gases), RS232 / RS485 communications and a full set of communications / data-logging software that is compatible with MS-Excel.

Auxiliary input can be provided for an optional pressure / vacuum / dew-point sensor which can be displayed and data-logged simultaneously.

Features

- **Very fast measurement response (between 1 and 4 seconds for a 90% response)**
- **Full measurement range available (10^{-20} ppm to 100% oxygen)**
- **Accuracy $\pm 1\%$ of the actual measured oxygen with a precision $\pm 0.5\%$**
- **Easy to calibrate by the user using ANY TWO gases**
- **Simple installation, low maintenance, sensor life expectancy typically 17,500 h**
- **LCD Display emulation via PC software if required**
- **RS232 / RS485, 0-5V or 4-20mA current loop outputs (both user programmable)**
- **Windows data logging software with MS-Excel compatible graphing**
- **Programmable alarms (low and high condition) with outputs, audible & visual warning**
- **Unique sensor cleaning facility which can be operated at any time during use**

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Cambridge Sensotec Ltd.

Unit 29 Stephenson Road
St Ives
Cambs
PE27 3WJ
England

Telephone

+44 (0)1480 462142

Facsimile

+44 (0)1480 466032

Mobile

+44 (0)7866 624236

Email

sales@cambridge-sensotec.co.uk

Web

www.cambridge-sensotec.co.uk

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Applications

- Laboratory scale furnace experiments where the control and monitoring of residual oxygen is critical
- Industrial processes using low oxygen environments (wave soldering, welding, semiconductors)
- Reducing fuel costs by optimising the combustion process in boilers, chimneys & flues
- Control of the combustion process in lean-burn applications
- Control of critical oxygen atmospheres where high partial pressures are required
- (e.g. Firing of specialist ceramics)
- Vacuum leak detection applications. The Rapidox is very sensitive in vacuum conditions
- Testing the purity of gases such as nitrogen and argon
- Vacuum welding & vacuum sputter coating control

Technical Data: OEM circuit board

Voltage	90-260Vac, 50/60Hz
Circuit board dimensions	6" X 6"
Weight	< 1kg
Display	Via the PC software only
Warm up time	3-4 minutes at 20°C
Operating temperature	5°C to 35°C
Voltage outputs	0-5V linear, user-programmable
Current outputs	4-20mA linear, user-programmable
Digital outputs	RS232 (RS485 option available): data streamed on demand
Calibration	Requires 2 or 3 user selectable gas mixtures (air is default)
Thermocouple	Type K range 0-1250°C ± 1%

Technical Data: Sensor

Cable	2m high temperature silicone sheathed cable, fully shielded. Quick release plug
Max sustained gas temperature	600°C
Maximum inlet temperature	50°C
Temperature of metal housing	150°C to 200°C
O ₂ sensor life expectancy	>17,500 hours
Range of measurement	10 ⁻²⁰ ppm to 100% O ₂
Response time O ₂ (gas flow rate 1ltr.min ⁻¹)	Approximately 1-4 secs for a 90% step change
Accuracy O ₂	±1% of the actual reading
O ₂ sensor stability	±2% of reading per month
Maximum working pressure ¹	50 bar (200 bar burst pressure)
Minimum working pressure ²	Vacuum tight down 10 ⁻⁴ Torr in helium

1) Note that like ALL zirconia oxygen sensors the Rapidox measures oxygen partial pressure and therefore the oxygen concentration will change with gas pressure. E.g. 5% oxygen gas will read 5% O₂ at atmospheric pressure but at 3 bar the reading will be 15% O₂

2) Leak rate of the sensor has been measured at 1.6 x 10⁻⁷ mbarls-1 (helium) through the sensor when hot

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St Ives
Cams
PE27 3WJ
England

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+44 (0)1480 462142

Facsimile

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