

## **Rapidox 3100 OEM** **3-Channel Zirconia Oxygen Gas Analyser**



### **Description**

The Rapidox 3100 3-Channel OEM allows fast and accurate oxygen analysis over the full oxygen range (10<sup>-20</sup>ppm to 100% O<sub>2</sub>) at the fraction of the cost of a normal gas analyser.

The analyser provides continuous on-line oxygen analysis in THREE separate channels, 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 in a boxed controller as shown, the Rapidox OEM comprises THREE sets of zirconia sensors with several options for fittings, on sensor cables 2m long.

This can be extended up to 30m if required. Control box requires 110/220V power input and has a cooling fan.

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

An optically isolated USB to RS485 interface is included in the package. It is possible to run two complete systems from a single high-spec PC giving the user up to SIX channels.

### **Features**

- Three independent zirconia oxygen sensors per OEM box.
- Up to SIX sensors per PC system.
- Very fast measurement response (between 1 and 4 seconds for a 90% response).
- Full measurement range available (10<sup>-20</sup> ppm to 100% oxygen).
- Accuracy ± 1% of the actual measured oxygen with a precision ±0.5%.
- Easy to calibrate by the user using ANY TWO gases.
- Simple installation, low maintenance, sensor life expectancy typically 17,500 hours.
- LCD Display emulation via PC software.
- RS485, 0-5V or 4-20mA current loop outputs (both user programmable).
- Optically isolated high speed USB - RS485 adapter supplied.
- Windows data logging software with MS-Excel compatible graphing.
- Programmable alarms with relay outputs, audible and visual warning.
- Unique sensor cleaning facility which can be operated at any time during use.
- Pin code protection

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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](mailto:sales@cambridge-sensotec.co.uk)

#### **Web**

[www.cambridge-sensotec.co.uk](http://www.cambridge-sensotec.co.uk)

## Applications

- Laboratory scale furnace experiments where the control and monitoring of residual oxygen are critical.
- Industrial processes using low oxygen environments (e.g. wave soldering under nitrogen, vacuum welding, testing nitrogen generators).
- Tunnel kilns with multi-sampling points
- Control of the combustion process in lean-burn applications.
- Reduction ovens using forming gas.
- Control of critical oxygen atmospheres where high oxygen partial pressures are required.
- Testing the purity of gases such as nitrogen argon and CO<sub>2</sub>.

Technical Data: OEM Control Box	
Voltage	90-260Vac, 50/60Hz
Analyser dimensions	350mm X 235mm X 165mm
Weight	5.0 kg
Display	On-screen PC emulation
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 log or raw, user-programmable
Digital outputs	RS485 data streamed on demand via optically isolated cable
Calibration	Requires 2 user selectable gas mixtures (air is default)

Technical Data: Sensor (Three Included)	
Cable	2 - 30m high temperature silicone sheathed cable, fully shielded. Quick release plug
Max sustained gas temperature	600°C
Temperature of metal housing	150°C to 200°C
O <sub>2</sub> sensor life expectancy	>17,500 hours
Range of measurement	10 <sup>-20</sup> ppm to 100% O <sub>2</sub>
Response time O <sub>2</sub> (gas flow rate 1ltr.min <sup>-1</sup> )	Approximately 1-4 secs for a 90% step change
Accuracy O <sub>2</sub>	±1% of the actual reading
O <sub>2</sub> sensor stability	±2% of reading per month
Maximum working pressure <sup>1</sup>	50 bar (200 bar burst pressure)
Minimum working pressure <sup>2</sup>	Vacuum tight down 10 <sup>-4</sup> 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% O<sub>2</sub> at atmospheric pressure but at 3 bar the reading will be 15% O<sub>2</sub>

2) Leak rate of the sensor has been measured at 1.6<sup>-7</sup> mbar.s<sup>-1</sup> (helium) through the sensor when hot

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 St Ives  
 Cambs  
 PE27 3WJ  
 England

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 +44 (0)1480 462142  
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**Email**  
[sales@cambridge-sensotec.co.uk](mailto:sales@cambridge-sensotec.co.uk)  
**Web**  
[www.cambridge-sensotec.co.uk](http://www.cambridge-sensotec.co.uk)