



## Rapidox 3100 Sampling Gas Analyser



### Description

The Rapidox 3100 oxygen analyser allows fast and accurate oxygen analysis over the full oxygen range ( $10e^{-20}$ ppm to 100%  $O_2$ ). The Rapidox 3100 analyser provides continuous on-line oxygen analysis, with a typical response time less than 5 seconds for a 90% response to a step change in gas compositions.

At the heart of the Rapidox 3100 is a top-of-the-range Medo linear-piston vacuum pump. The pumps are exceptionally quiet (40 dB/m or less). The flow of gas can be adjusted using the flow gauge / needle valve on the front panel of the analyser. Typical flow rate is 1 litre per minute

The sensor head is located inside the analyser and comprises a zirconia ceramic tube that needs to be heated to 650°C before it will conduct oxygen ions. The analyser supplies heat to the sensor, which is controlled very accurately by a regulated power supply incorporated in the instrument. An internal pressure sensor compensates for small changes in gas pressure to keep the readings stable.

The analyser is packed with features including fully programmable alarm circuits, programmable analogue outputs, easy calibration (user selectable gases), RS232 / RS485 communications, independent type K thermocouple and a full set of communications / data-logging software.

New for 2008 - the Rapidox 3100 is now available as a dual-gas analyser with oxygen / carbon dioxide and oxygen / carbon monoxide versions.

### Features

- Continuous gas sampling via powerful internally located linear piston pump
- Flow rate controlled by needle valve / flow gauge on front panel
- Very fast measurement response (around 5 seconds for a 90% response).
- Full measurement range available ( $10e^{-20}$  ppm to 100% oxygen).
- Accuracy  $\pm 1\%$  of the actual measured oxygen with a precision  $\pm 0.5\%$ .
- Independent type K thermocouple fitted as standard. Range 0-1250°C.
- Easy to calibrate by the user using ANY TWO gases.
- 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 and visual warning.
- Unique sensor cleaning facility which can be operated at any time during use.

### Applications

- Laboratory scale furnace experiments where the control and monitoring of residual oxygen is critical.
- Sampling oxygen levels in rooms where asphyxiation may be a hazard. E.g. in rooms containing liquid nitrogen dewars
- Monitoring vehicle emissions and pollution control
- Industrial processes using low oxygen environments. E.g. wave soldering under nitrogen, vacuum welding, testing nitrogen generators
- Monitoring of the combustion process in lean-burn applications
- Control of critical oxygen atmospheres where high partial pressures are required.
- Food production
- Testing the purity of inert gases such as argon and nitrogen

### Technical Data: Analyser

Voltage	110 / 220V ac 50/60 Hz
Analyser dimension	360mm X 410mm X 150mm
Weight	7 kg
Display	16 X 2 character (9mm) back lit
Warm up time	3-4 minutes at 20°C
Sample pump	Mains powered linear piston pump
Normal operating temperature	5-35°C
Outputs	0-5V logarithmic (user programmable)
	4-20mA logarithmic (user programmable)
	RS232 / RS485: data streamed every 0.1 second
Calibration	Requires 2 user-selectable gas compositions (air is default plus another)
Thermocouple	Type K fitted to standard compensated plug Range 0-1250°C accuracy $\pm 1\%$

### Technical Data: Sensor & Pump

Maximum free air displacement	7 litres per minute (0.28 cfm)
Noise Level	40dB (max) at 1 meter
Maximum inlet temperature	55°C
Life expectancy	> 35000 hours
Range of measurement	$10e^{-20}$ ppm to 100% $O_2$
Response time (gas flow rate 1ltr.min <sup>-1</sup> )	approximately 5 secs for a 90% step
Accuracy	$\pm 1\%$ of the actual oxygen concentration
Precision of measurement	$\pm 0.5\%$ of the reading

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