

Rapidox 3100ZA Dual Gas Zirconia O₂ & CO₂ Analyser



Description

The Rapidox 3100ZA Dual Gas analyser allows fast and accurate analysis over the full oxygen range (10⁻²⁰ppm to 100% O₂) and a range of carbon dioxide concentrations from ppm up to 100% (range specified by the customer at the time of ordering).

Continuous on-line analysis is provided, with a typical response time of approximately 5 seconds for a 90% response to a step change oxygen gas compositions and 30 seconds for a 90% change in carbon dioxide concentration.

At the heart of the Rapidox 3100ZA is a zirconia sensor head that requires heating 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.

The carbon dioxide sensor is based on dual-beam infra-red technology with full pressure and temperature correction. The module is exceptionally stable and requires virtually no maintenance or calibration.

A powerful long-life pump draws a gas sample at a rate set by the user between 0-1 litres per minute. The flow of gas can be adjusted with the flow gauge/needle valve on the front panel. Alternatively the pump can be independently switched off and operated under flowing gas conditions.

Standard features include fully programmable alarm circuits (volt free contacts), programmable analogue outputs (0-5V and 4-20mA), easy calibration (user selectable gases), independent Type K thermocouple, RS232 / RS485 communications and complete data-logging software.

Features

- **Measurement response: approximately 5 seconds for a 90% response O₂ and 30 seconds for CO₂**
- **Measurement range: 10⁻²⁰ ppm to 100% O₂ & 0-5,000ppm, 0-1%, 0-3%, 0-5%, 0-10%, 0-30% and 0-100% CO₂**
- **Accuracy ±1% of reading or 0.5ppm, whichever is the greater for O₂ and ± 2% full scale for carbon dioxide**
- **Easy calibration procedure requiring any two or three gas mixtures (ordinary room air is a default)**
- **Low maintenance sensors, life expectancy typically greater than 17,500 hours for O₂ and greater than ten years for CO₂**
- **Long-life variable speed pump fitted for sampling the gas**
- **Independent Type K thermocouple fitted as standard. Range 0-1250°C**
- **Unique oxygen sensor cleaning facility which can be operated at any time during use.**
- **Large back-lit LCD display**
- **Two fully programmable alarm settings: high and low, open or closed relays**
- **0-5V and 4-20mA analogue communications (both fully programmable)**
- **Digital RS232 output (RS485 available upon request)**
- **Software package includes live graphing and MS Excel compatible data-logging**
- **PIN code protection**
- **Operates on any worldwide mains voltage (90-260VAC)**

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Applications

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

Technical Data: Analyser	
Operating temperature	5°C to 35°C
Warm up time	3-4 minutes at 20°C
Voltage	90-260VAC, 50/60Hz
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 1 or 2 user selectable gas mixtures (air is a default)
Sample connections	4mm ID / 6mm OD nipple type
Display	16 x 2 character (9mm) back-lit LCD
Analyser dimensions	350mm x 263mm x 150mm
Weight	7 kg

Technical Data: Sensor & Pump	
O ₂ sensor range	10 ⁻²⁰ ppm to 100%
O ₂ sensor accuracy	±1% of reading or 0.5ppm, whichever is the greater
O ₂ sensor response time (gas flow rate 1lt.min ⁻¹)	Approximately 5 secs for a 90% step change
O ₂ sensor stability	±2% of reading per month
O ₂ sensor life expectancy	> 17,500 hours
CO ₂ sensor range	0-5,000ppm, 0-1%, 0-3%, 0-5%, 0-10%, 0-30% or 0-100%
CO ₂ sensor accuracy	± 2% of full scale
CO ₂ sensor response time (gas flow rate 1lt.min ⁻¹)	Approximately 30 sec for a 90% step change
CO ₂ sensor life expectancy	> 10 years
Thermocouple	Type K, range 0-1250°C, ±1°C
Pump flow rate	0-1 litres per minute, user selectable
Maxi gas inlet temperature	50°C

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