Cambridge Sensotec Ltd

Rapidox 3100D Dual Gas O_2 AND H_2O Analyser

Description

The Rapidox 3100D dual gas O_2 / H_2O (moisture) analyser allows fast and accurate oxygen analysis over the full oxygen range ($10e^{-20}$ppm to 100% O_2) and a range of H_2O concentrations (measured in terms of dew-point) from -65°C to +20°C dp. The analyser provides continuous on-line analysis, with a typical response time less than 5 seconds for a 90% response to a step change oxygen gas compositions and 30 seconds for dew-point. The dew-point sensors are OEM modules provided by either Michell Instruments or Alpha Moisture depending on range requested.

At the heart of the Rapidox 3100D is a top-of-the-range linear-piston vacuum pump manufactured by Nitto; a world leader in pump technology. 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 oxygen sensor head is located inside the analyser and comprises a zirconia ceramic tube that needs to be heated up to 650°C before it will conduct oxygen ions. An internal pressure sensor compensates for small changes in gas pressure to keep the readings stable. The dew-point sensors are high precision transmitters that are fully factory calibrated and is supplied with its own Calibration Certificate, providing direct traceability to both UK (NPL) and US (NIST) Humidity Standards The sensor is certified at thirteen dew-point levels across its operating range against a certified reference hygrometer, using a mass-flow humidity generator system as a source of reference calibration gas.

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. Full data logging of O_2 & H_2O together with temperature and pressure is possible using the MS-Excel compatible logging software

Features

- Continuous dual-gas sampling via powerful internally located linear piston pump
- Flow rate controlled by needle valve / flow gauge on front panel
- Very fast O_2 measurement response (around 5 seconds for a 90% response).
- Full O_2 measurement range available ($10e^{-20}$ ppm to 100% oxygen).
- User-specified H_2O dew-point ranges available (-100°C / +20°C or -65°C / +20°C).
- H_2O dew-point can be displayed in terms of °C dp, °F dp or ppmv.
- 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 and 4-20mA current loop outputs (both user programmable).
- Windows data logging software with MS-Excel compatible graphing.
- Programmable alarms (low and high condition) with reply outputs, audible & visual warning.
- Internal pressure sensor fitted for automatic pressure correction.

Applications

- Laboratory scale furnace experiments where the control and monitoring of residual oxygen and moisture (H_2O) is critical.
- Applications where extremely dry gases must be used.
- Industrial Gas Production .
- Gases used in electronics production and medical applications.
- Catalytic reformer cycle.
- Moisture in natural gas.
- Moisture in high-voltage switchgear quench gases
- Monitoring of desiccant dryers for compressed air or plastic moulding apparatus

Technical Data: Analyser

Voltage	110 / 220V ac 50/60 Hz
Analyser dimension	350mm X 263mm X 150mm
Weight	6 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 linear (user programmable) 4-20mA linear (user programmable) RS232: data every 0.1 second
Calibration (oxygen sensor only)	Requires 2 user-selectable gas compositions (air is default plus another)
Thermocouple	Type K fitted to standard compensated plug Range 0-1250°C accuracy ± 1%

Technical Data: Sensors & Pump

Maximum free air displacement	7 litres per minute (0.28 cfm)
Noise level	40dB (max) at 1 meter
Maximum inlet temperature	60°C
O_2 sensor life expectancy	> 35000 hours
O_2 range of measurement	$10e^{-20}$ ppm to 100% O_2
O_2 Response time (flow rate 1ltr.min^{-1})	approximately 5 secs for a 90% step change (e.g. from 21% to 100% O_2)
Accuracy	± 1% of the actual oxygen concentration
H_2O range of measurement	-100°C to +20°C dp
H_2O sensor accuracy	± 2% or equivalent across the full range
H_2O gas temperature range	-40°C to +60°C
H_2O sensor life expectancy	> 5 years

Cambridge Sensotec Limited
Unit 8 Royce Court
Burrel Road
St Ives CAMBS
PE27 3NE
England

ISO 9001 REGISTERED FIRM

Tel: +44 (0)1480 462142
Fax: +44 (0)1480 466032
Mob: +44 (0)7866 624236
sales@cambridge-sensotec.co.uk
www.cambridge-sensotec.co.uk