

Rapidox 3100ED Dual Gas Electrochemical O₂ / H₂O Version



Description

The Rapidox 3100ED dual gas O₂ / H₂O (moisture) analyser allows fast and accurate oxygen analysis over the oxygen range 0 to 100% O₂ and a range of H₂O concentrations from -100°C to +20°C dp (dew-point)

The analyser provides continuous on-line analysis, with a typical response time less than 20 seconds for a 90% response to a step change oxygen and ten minutes for dew-point gas compositions. The dew-point sensors are OEM modules provided by Michell Instruments.

The analyser contains a powerful Nitto motor-driven diaphragm vacuum pump which draws a gas sample at a rate that can be set by the user. 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. Alternatively the pump can be independently switched off and operated under flowing gas conditions. An internal pressure sensor compensates for small changes in gas pressure to maintain the accuracy of readings.

The oxygen sensor is a Yuasa electrochemical O₂ sensor, which has a five year life expectancy and can be used in a wide range of gases such as nitrogen, argon, helium, carbon dioxide. The sensor is not affected by the presence of hydrocarbons.

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 O₂ & H₂O 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
- Fast O₂ measurement response (around 30 seconds for a 90% response).
- 0-100% O₂ measurement range available in a wide range of gases including flammables.
- -100°C / +20°C H₂O dew-point range.
- H₂O dew-point can be displayed in terms of °C dp, °F dp or ppm(v).
- 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 & live display.
- Fully programmable alarms with reply outputs, audible & visual warning.
- Internal pressure sensor fitted for automatic pressure correction.
- Optional printer, carry handle & transport case available
- Works on any worldwide mains voltage 90-260 Vac

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Applications

- Laboratory scale furnace experiments where the control and monitoring of oxygen 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 or gases where zirconia sensors are not suitable
- Moisture in high-voltage switchgear quench gases
- Monitoring of desiccant dryers for compressed air or plastic moulding apparatus

Technical Data: Analyser	
Voltage	90-260Vac, 50/60Hz
Analyser dimensions	350mm x 263mm x 150mm
Weight	7 kg
Display	16 x 2 character (9mm) back lit LCD
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 1 or 2 user selectable gas mixtures
Sample pump	24Vdc motor-driven diaphragm pump

Technical Data: Sensor & Pump	
Maximum free air Displacement	7 litres per minute (user adjustable)
Noise level	44db (max) at 1 meter
Maximum inlet temperature	50°C
Life expectancy O ₂	3-5 years
O ₂ sensor range	0-100%
Response time O ₂ (gas flow rate 1ltr.min ⁻¹)	Approximately 20 secs for a 90% step change
Accuracy O ₂	±1% of full scale
H ₂ O sensor range of measurement	-100°C TO 20°C dp
H ₂ O sensor accuracy	± 2°C dp
Response time (gas flow rate 1ltr.min ⁻¹)	Approximately 10 minutes for a 90% step change in dew-point
H ₂ O sensor life expectancy	> 5 years
Sample connections	6mm ID / 4mm OD nipple type

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