

Rapidox 3100LD Dual Gas PPM Electrochemical O₂ / H₂O Version



Description

The Rapidox 3100LD dual gas O₂ / H₂O (moisture) analyser allows accurate oxygen analysis over the range 0.1ppm to 1% O₂ using a special German engineered ppm electrochemical oxygen cell, and a range of H₂O concentrations from -100°C to +20°C dp (dew-point). This special low O₂ range analyser is designed for applications where a traditional zirconia sensor is not suitable. This includes applications where the measurement gas contains VOCs, solvents, fuels, helium or hydrogen.

The analyser provides continuous on-line analysis, with a typical O₂ response time of less than three minutes from 1% down to 1000ppm. Below 10ppm response times are considerably longer due to the way electrochemical sensors work. The dew-point sensors are OEM modules provided by Michell Instruments and have a typical response time of ten minutes for dew-point gas compositions.

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 O₂ cell is very sensitive to exposure to high concentrations of oxygen, including air, and to prevent damage the unit is fitted with solenoid valves to keep the cell in the measurement gas at all times; even when switched off. 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 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 motor-driven piston pump
- Flow rate controlled by needle valve / flow gauge on front panel
- Measurement range available 0.1ppm to 10,000ppm (1%) oxygen
- -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
O ₂ sensor life expectancy	Approximately 2 years
O ₂ sensor range	0.1ppm to 10,000ppm
Response time O ₂ (gas flow rate 1ltr.min ⁻¹)	< 180s from 10,000 to 1000ppm < 10 min from 1000 to 10ppm < 5 h from 10ppm to < 1ppm
O ₂ sensor accuracy	±2% of reading
H ₂ O sensor range	-100°C TO 20°C dp
H ₂ O sensor accuracy	± 2°C dp
Response time H ₂ O (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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