

## Rapidox Analysers for Additive Manufacturing

**The Rapidox 2100 OEM-RSB and 1100 OEM-RSB ranges of reliable, miniaturised, and high accuracy oxygen gas analysers are designed for use in today and tomorrow's Additive Manufacturing Industry.**



**PCB only version**  
without sensor block



**Aluminium encased version (INS)**  
with display and sensor block

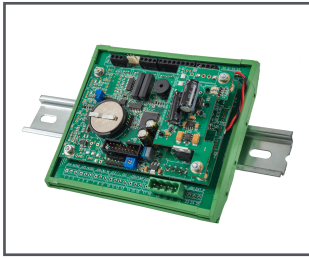
The Rapidox 2100 OEM-RSB and 1100 OEM-RSB ranges of products are actively used as a component in Additive Manufacturing (AM) machinery; 3-channel multiplex versions can be used in large machines, such as those used for Wire Arc Additive Manufacturing (WAAM), where several sampling points are required. The ranges are popular because:

1. the rugged Zirconia sensor, covering the full oxygen range  $10^{-20}$  ppm to 100% O<sub>2</sub> (extended range to  $10^{-26}$  ppm available on request), is supplied at the end of a cable that can be customised to any length up to 25m, whereas
2. the analyser itself can be supplied in various options to meet local design and manufacturing requirements, namely,
  - i. a basic PCB board (with or without DIN rail mount),
  - ii. a full metal DIN rail enclosure (with or without local display and keypad, with or without a sampling pump),
  - iii. multi-channel versions, as either DIN rail (3 points in sequence using 1 sensor and a sampling pump) or boxed (3 sampling points simultaneously using 3 remote sensors).

The compact new design allows integration into the tightest of spaces almost anywhere within the machinery. Pre-calibrated replacement sensors are available to make servicing as easy as possible; these can be exchanged, without the need to take out the board, by swapping the sensor and entering the values noted on the calibration certificate supplied with the replacement (note that the original sensors can be re-calibrated and re-used, if required).

Rapidox 2100 OEM-RSB and 1100 OEM-RSB analysers are supplied with fully programmable analogue outputs (voltage and current) and alarm relays, with RS232 / RS485 digital signalling included as standard as well as the Rapidox digital communications protocol and Modbus-RTU. The analyser is designed specifically for seamless integration into PLC systems and complies with EMC Directive 2004 / 108 / EC. UL/ETL Certification Number: UL-61010-1.

## Scope of supply



**1 Rapidox 2100-OEM-DIN**



**2 Rapidox 2100-OEM-ENC**



**3 Rapidox 2100-OEM-INS**  
(with panel mount option)



**4 Rapidox 1100-OEM-RSB-ENC-ZR3-P**  
(DIN rail mountable, 3-channel version with pump included)



**5 Rapidox 3100-OEM**  
(3-channel, stacked multiplex for 3 sampling points)

- The Zirconia sensor is factory calibrated for oxygen in a nitrogen atmosphere, but can be supplied, on request, for oxygen calibrated in argon, helium or other environments (an Electrochemical oxygen sensor option is available, if required).
- Windows software included for convenient access & programming.
- Optional auxiliary sensors: dewpoint / vacuum / pressure sensor / temperature.
- Optional Accessories: Sensor blocks (Stainless steel/Aluminium) with choice of connectors / clamps / vacuum flanges / filters / panel mounting / development kit (to access & program sensors without integrated display) etc.

## Specification

<b>O2 Sensor Range</b>	10 <sup>-20</sup> ppm to 100% zirconia version. 10 <sup>-26</sup> ppm extended range available on request
<b>O2 Sensor Accuracy</b>	±1% of the actual measured oxygen content OR 0.5ppm (whichever is the greater for measurements >0.5ppm)
<b>O2 Sensor Response</b>	4 seconds for a T90 step change @1L per min flow
<b>O2 Sensor Life Expectancy</b>	>17,000 hours
<b>Calibration</b>	N2/Ar/He/mixtures – pre-calibrated Sensors Available / inhouse calibrations supported
<b>Versions</b>	Board only / +DIN Rail / encased/ encased incl. OLED display / pumped incl. OLED display
<b>Ambient Operating Temperature (electronics)</b>	5-35°C 0-95% RH non-condensing
<b>Ambient Operating Pressure (electronics)</b>	800 to 1200mbar absolute (automatic pressure correction included)
<b>Max Sample Gas Pressure (sensor)</b>	Up to 10 bar gauge (200bar burst pressure)
<b>Max Sample Gas Temperature (sensor)</b>	650°C
<b>Warm-up Time</b>	~45 seconds at 20°C
<b>Sensor Cable:</b>	2m high temp as standard. Any length up to 25m available on request
<b>Sample connections</b>	Nipple / Swagelok (via sample block) / direct (via thread or vacuum flanges)
<b>Outputs:</b>	Analogue: 0-5V (0-10V on request) or 4-20mA / Digital: RS232/RS485 & Modbus RTU
<b>Alarm</b>	2 alarm relay circuits, fully user-configurable
<b>Supply Voltage</b>	24V VDC +/-0.1V
<b>Power</b>	~20W
<b>Circuit Board Dimensions</b>	114mm x 76mm (4.5" x 3")
<b>Weight</b>	OEM board 120g