1100 Oxygen Analyser

The Rapidox 1100 range is a cost effective, versatile instrument for applications requiring oxygen (O2) analysis. The oxygen analysers are fitted with either a zirconia or electrochemical gas sensor depending on requirements.

Zirconia oxygen sensors are common solutions for providing fast and accurate gas analysis over the low ppm oxygen range. They are particularly suitable for monitoring inert atmospheres and aggressive industrial applications within manufacturing processes.

In instances where a zirconia sensor is unsuitable an electrochemical sensor will be used instead. Electrochemical sensors are ideal for monitoring high oxygen applications where VOC's, flammable gases, CO, H_2 or He are present in the gas sample. Users have a choice between a sensor for low ppm measurements of 1ppm to 1%, or for high percent measurements in the 1ppm to 30% oxygen range.

The option of one of these three oxygen sensors, in addition to a special 'oxygen clean' version of the high range analyser, offers a measurement solution for almost any application. Configuration of the analyser allows for the instrument to be panel mounted with the gas fittings at either the front or rear.

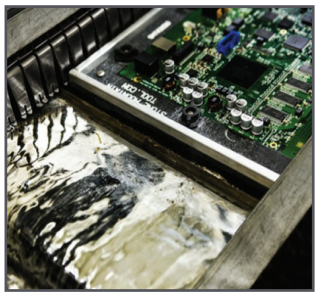
Other variations of the analyser include a three-channel multiplex version, which allows for three gas streams to be sampled from separate points. Gases can be analysed in sequence or at intervals set from the front keypad controls or software.

The Rapidox 1100 range can also be used to control an external proportional flow control valve (PFC) or a single solenoid relay using a remote signal output (RSO). These are exceptionally useful within inert gas blanketing applications, where the analyser can regulate the level of gas based on the measurement of oxygen via the PFC or RSO control function.

Though highly configurable to suit individual customer requirements, the Rapidox 1100 range possesses a number of standard features to enhance functionality.

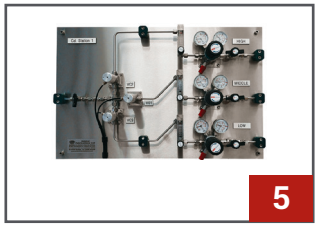
- Choice of O_2 sensor technology
- Fully configurable software
- Fast and accurate response
- Simple calibration procedure
- Fully programmable outputs
- Data logging
- Pump or ejector option
- Two programmable alarms
- Operates on worldwide mains voltage
- Password protection

Applications



- Chemicals
- Combustion
- Emissions
- Food
- Gas
- Glove Boxes
- Inert Gas Blanketing
- Manufacturing
- Medical
- Metal Heat Treatment
- PCB Production
- Research & Development

Accessories



1 Calibration Kit

2 Multiplex Sampling System

3 Gas Recovery Bag

4 Thermal Printer

5 Calibration Service

6 Gas Filters

Specification

O2 Zirconia Sensor	1ppm to 30%
O2 Electrochemical Sensors	0ppm to 10,000ppm (0-1%) or 0 to 100%
Ambient Operating Temperature	5°C to 35°C
Warm-up Time	3-5 minutes as standard
Voltage	90-260 VAC, 50/60Hz
Voltage Outputs	0-10V, user programmable
Current Outputs	4-20mA linear, user programmable
Digital Outputs	RS232 (RS485 option available) Data streamed on demand. Modbus RTU/Ethernet
Sample Connections	4mm ID/6mm OD nipple type. Rectus or Swagelok. Front or rear positioning
Display	16 x 2 character (9mm) back-lit LCD
Analyser Dimensions	Bench: 150mm(H) x 253mm(W) x 272mm(D) Panel: 300 x 4µ (177mm(H) x 300mm(W) Multiplex: 150mm(H) x 263mm(W) x 250mm(D)
Weight	3.5kg (4kg with bezel)
Pump Option	Main type diaphragm pump. Variable speed 0-1.2 litres per minute
Ejector Option	Vacuum ejector fitted, running off inlet pressure
Alarms	Relay circuits, user programmable

Cambridge Sensotec Limited. Unit 29 Stephenson Road,
St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec

2100 Oxygen Analyser

The Rapidox 2100 is a high-performance oxygen (O_2) analyser fitted with a rugged long-life zirconia sensor on a remote cable, together with a type K thermocouple sensor; allowing direct in-process measurement of oxygen and temperature in the sample gas. The sensors provide fast and accurate analysis over the low ppm oxygen range in harsh environments up to 650°C.

Zirconia oxygen sensors are particularly suitable for monitoring inert atmospheres in aggressive industrial applications within manufacturing processes; this includes high temperature locations and vacuum atmospheres.

In rare instances where a zirconia sensors are unsuitable, an electrochemical sensor will be used instead. Electrochemical oxygen sensors are ideal for monitoring high oxygen applications, or where VOC's, flammable gases, CO, H_2 or He are present in the gas sample. Users have a choice between a sensor for low ppm measurements of 1ppm to 1%, or for high percent measurements in the 1ppm to 30% oxygen range.

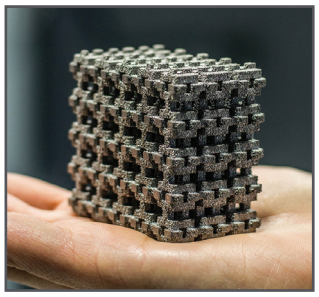
Depending on the specification of the analyser, the sensor is normally housed in a remote metal manifold that allows gas to flow through and over the sensor surface, or provide a vacuum tight coupling to the sample point in a vacuum application. The exact design of the manifold housing depends on the application and can be situated up to 25 meters from the analyser using optional sensor extension cables. As well as a type K thermocouple sensor which is fitted as standard, a range of optional auxiliary pressure, vacuum and dewpoint sensors are available allowing multiple measurements in one instrument.

Configuration of the analyser allows for the instrument to be panel mounted or supplied within a wall mountable, IP65 weatherproof housing. The oxygen sensor can then be positioned remotely, up to 25 metres away in either a separate cabinet or as a standalone sensor. A printer can be attached to the instrument using the serial port for permanent record keeping of results. All Rapidox analysers come with full Windows software that allows for remote configuration and monitoring of readings, as well as a full data-logging package that includes live-time graphing of each sensor channel.

For customers requiring seamless integration into their product or process, the Rapidox 2100 can be supplied as an OEM solution. Please contact Cambridge Sensotec for further information.

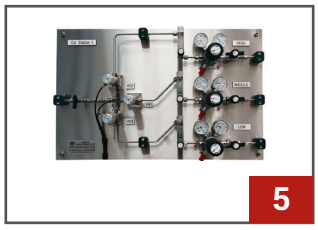
- Choice of O_2 sensor technology
- Fully configurable software
- Fast and accurate response
- Simple calibration procedure
- Fully programmable outputs
- Data logging
- Type K Thermocouple
- Two programmable alarms
- Operates on worldwide mains voltage
- Password protection

Applications



- Additive Manufacturing
- Chemicals
- Combustion
- Gas
- Glove Boxes
- Manufacturing
- Metal Heat Treatment
- Research & Development

Accessories



1 Calibration Kit

2 Multiplex Sampling System

3 Gas Recovery Bag

4 Wall Mount Cabinet

5 Calibration Service

6 Fittings and Filters

Sensor Specification

O2 Sensor Range	10E-^{20}ppm to 30% (zirconia) or 0-100% (electrochemical)
Oxygen Sensor Cable	2m high temperature sheathed cable as standard. Fully shielded with a quick release plug. Extension cables available up to 25m total length
Sample Gas Flow Rate	0.1 to 4 Litres per min (1 Litre per min recommended) Static gas and vacuum conditions also allowed
Thermocouple (Included)	Type K, range 0-1250°C, ±1°C
Optional Pressure Sensor	-1 to 0 bar vacuum, 0-5 and 0-10 bar gauge pressure as standard. Supplied on 2m cable with sample chamber. High precision versions available.
Optional H2O Sensor	-100°C to +20°Cdp. Supplied on 2m cable with sample chamber

Analyser Specification

Supply Voltage	90-260VAC, 50/60Hz
Power Consumption	30W (max)
Analyser Dimensions	250mm X 263mm X 150mm (without optional handle kit fitted) Panel Mount 300mm wide X 4U high
Weight	3.5kg (Including sensor)
Display	20 x 4 character OLED
Warm-up Time	60 seconds at 20°C
Operating Temperature & Operating Pressure	5°C to 35°C, 900–1100 mbar absolute
Voltage Outputs	0–5V (user-configurable) into minimum 5kΩ
Current Outputs	4–20mA current loop (user-configurable) into maximum 500Ω
Digital Outputs	RS232 (RS485 option available): data streamed on demand/Modbus RTU / Ethernet
Alarms High and Low	Relay circuits. Fully user programmable
Sample Connections	4mm ID / 6mm OD nipple type connected to metal manifold. Rectus or Swagelok options. Front or rear positioning
Calibration	Up to five user-selectable gas compositions (air is default)
Fuse	T2A H250V 5 x 20mm glass

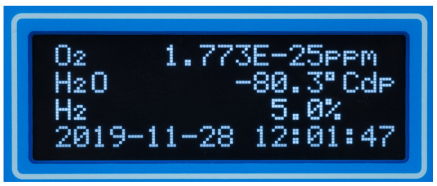
Cambridge Sensotec Limited. Unit 29 Stephenson Road,
St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec

2100-FGA Forming Gas Analyser

The Rapidox 2100-FGA Forming Gas Analyser is a special variant of an existing zirconia oxygen analyser which allows fast and accurate oxygen analysis over the full oxygen range to extremely low levels commonly found in hydrogen forming gas.



The sensor measurement range is extended down to 10E-^{30}ppm O_2 to cover the ultra-low oxygen partial pressures in forming gas mixtures. The sensor is designed for high temperature operation which can be extended up to 1000°C when using one of the available insertion sample tubes.

The Rapidox provides continuous on-line oxygen analysis, with a typical response time of less than 4 seconds for a 90% response to a step change in gas compositions. In addition to this the analyser performs complex thermodynamic equations to calculate the H_2O dewpoint of the forming gas. These calculations have been verified by a resident thermodynamics expert at Cambridge University. The operator simply dials in the hydrogen content of the forming gas and the analyser does the rest. The dewpoint is then displayed simultaneously on-screen in either °Cdp or ppmV.

The temperature is determined either from the sensor head (up to 660°C) or above this, the temperature is recorded using the type K thermocouple which is fitted as standard.

The analyser is packed with features including programmable alarm circuits, programmable analogue outputs, easy calibration (user selectable gases), RS232 & Modbus communications and complete communications / data-logging software. Additional sensors may be attached via the auxiliary socket which will read most standard 4-20mA transmitters. Currently the Rapidox 2100-FGA can be configured to read pressure or vacuum. A vast array of special fittings, filters and manifolds are available for both oxygen and auxiliary sensors, to make this a completely versatile instrument that can be installed almost anywhere. Depending on the application, the sensors can be located up to 25 meters from the analyser using optional sensor extension cables.

The instrument can be panel mounted (19") or supplied within a wall mountable, IP65 weatherproof housing. The oxygen sensor can then be positioned remotely, in either a separate cabinet or as a standalone sensor. A printer option is also available. All Rapidox analysers come with full Windows software that allows for remote configuration and monitoring of readings, as well as a full data-logging package that includes live-time graphing of each sensor channel.

For customers requiring seamless integration into their oven or process, the Rapidox 2100-FGA can be supplied as an OEM solution. Please contact Cambridge Sensotec for further information.

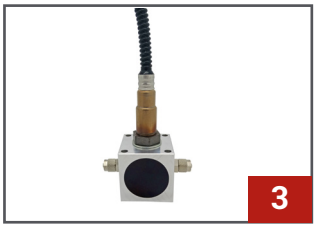
- Designed for forming gas applications
- Ultra O_2 measurement down to 10E-^{30}ppm
- Thermodynamic H_2O dewpoint
- Alarm relay circuits
- OLED display (20 x 4 characters)
- Verified at Cambridge University

- Easy to calibrate
- Pure hydrogen mode
- Type K thermocouple (0-1250°C)
- 0-5V and 4-20mA
- Modbus RTU language protocol
- Pin code protection

Applications

- Metal Heat Treatment
- Manufacturing
- Research & Development
- Forming Gas

Accessories



1. Calibration Kit
2. Multiplex Sampling System
3. Oxygen Sensor
4. Wall Mount Cabinet
5. Auxiliary Pressure
6. Vacuum CF50 & ISOKF25

Sensor Specification

O2 Sensor Range & Accuracy	10E-^{30}ppm to 30% (special extended range) ±1% of the actual oxygen concentration or 0.5ppm whichever is greater
O2 Sensor Response & Life Expectancy	Approximately 4 sec for a 90% response > 17,500 hours operation
Oxygen Sensor Cable	2m high temperature sheathed cable as standard. Fully shielded with a quick release plug. Extension cables available up to 25m total length
Max Gas Temperature	650°C (up to 1000°C is posisble with the use of special insertion probes)
Sample Gas Flow Rate	0.1 to 4 Litres per min (1 Litre per min recommended) Static gas and vacuum conditions also allowed
Max Working Pressure & Min Working Pressure	10 bar, 200 bar burst pressure, Vacuum tight down to below 10E-4 Torr (0.0013 mbar gauge)
H2O Reading	H_2O Dewpoint is calculated using thermodynamics
Optional Pressure Sensor	-1 to 0 bar vacuum, 0-5 and 0-10 bar gauge pressure as standard. Supplied on 2m cable. High precision versions available
Thermocouple (included)	Type K, range 0-1250°C, ±1°C

Analyser Specification

Supply Voltage	90-260VAC, 50/60Hz
Power Consumption	30W (max)
Analyser Dimensions	250mm X 263mm X 150mm (without optional handle kit fitted) Panel Mount: 300mm wide X 4U high
Weight	3.5kg (Including sensor)
Display	20 x 4 character OLED
Warm-up Time	60 seconds at 20°C
Normal Operating Conditions	5°C to 35°C, 900–1100 mbar absolute, 10-90% RH
Voltage Outputs	0–5V (user-configurable) into minimum 5kΩ
Current Outputs	4–20mA current loop (user-configurable) into maximum 500Ω
Digital Outputs	RS232 (RS485 option available): data streamed on demand / Modbus RTU / Ethernet
Alarms High and Low	Relay circuits. Fully user programmable
Sample Connections	4mm ID / 6mm OD nipple type connected to metal manifold. Rectus or Swagelok options. Front or rear positioning
Calibration	Up to five user-selectable gas compositions (air is default)
Fuse	T2A H250V 5 x 20mm glass

Cambridge Sensotec Limited. **Unit 29 Stephenson Road, St Ives, Cambs, PE27 3WJ, United Kingdom**

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec

3100 Multigas Analyser

The Rapidox 3100 range includes precision single, dual and triple gas analysis instruments providing powerful functionality and extensive features. Designed for process, research and development applications, this gas analyser has proven very popular with universities and research institutes worldwide.

Typical gas analysis configurations include a combination of oxygen and another gas. However, other compatible gas sensors arrangements can be specified. Measurable gases include oxygen (O_2), carbon dioxide (CO_2), carbon monoxide (CO), hydrogen (H_2), moisture (H_2O), ethylene (C_2H_4), chlorine (Cl_2), methane (CH_4), nitrous oxide (N_2O), nitric oxide (NO) and ozone (O_3) to suit the application.

An internal pressure sensor compensates for small changes in gas pressure to ensure the readings remain stable. The flow of gas can be adjusted with the flow gauge/needle valve on the front panel. An optional powerful long-life pump draws a gas sample at a flow rate set by the user between 0-1 litres per minute. Alternatively, the pump can be independently switched off and the unit operated under flowing gas conditions.

Standard features on all models include two fully programmable alarm circuits (volt free contacts), programmable analogue outputs (0-10V and 4-20mA), easy calibration (user selectable gases), RS232 communications and complete data-logging software. Type K thermocouple input is included for independent temperature measurements up to 1250°C, with readings displayed and data logged simultaneously with the gas analysis.

Please contact Cambridge Sensotec for further information or to discuss your requirements.

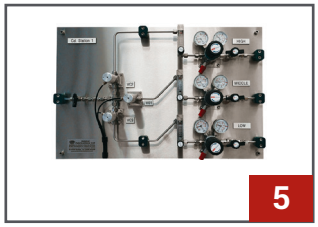
Though highly configurable to suit individual customer requirements, the Rapidox 3100 range possesses a number of standard features to enhance functionality.

- Bespoke sensor combination
- Fully configurable software
- Fast and accurate response
- Simple calibration procedure
- Fully programmable outputs
- Optional variable speed pump
- Data logging
- Type K thermocouple
- Two programmable alarms
- Operates on worldwide mains voltage
- Password protection

Applications

- Biogas
- Chemicals
- Combustion
- Food
- Gas
- Glove Boxes
- Inert Gas Blanketing
- Manufacturing
- Medical
- Metal Heat Treatment
- Research & Development
- Syngas

Accessories



1. Calibration Kit
2. Multiplex Sampling System
3. Gas Recovery Bag
4. Optional Swing Handle
5. Calibration Service
6. Peli Case

Specification

Ambient Operating Temperature	5°C to 35°C
Warm-up Time	2-5 minutes at 20°C as standard
Temperature Sensor	0-1250°C range Type K thermocouple. ±1°C accuracy
Voltage	90-260 VAC, 50/60Hz
Voltage Outputs	0-5V, user programmable
Current Outputs	4-20mA linear, user programmable
Digital Outputs	RS232 (RS485 option available). Data streamed on demand
Sample Connections	4mm ID/6mm OD nipple type. Rectus or Swagelok. Front or rear positioning
Display	Singla and Dual analysers: 16 x 2 character (9mm) back-lit LCD Triple analysers: 20 x 4 character (9mm) back-lit LCD
Analyser Dimensions	150mm(H) x 350mm(W) x 263mm(D)
Weight	4.6kg as standard
Pump Option	0-1 litres per minute, user-selectable

Cambridge Sensotec Limited. Unit 29 Stephenson Road,
St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec

5100 Multigas Analyser

The Rapidox 5100 Multigas Analyser is a high specification portable instrument designed for the analysis, control and monitoring of gas in a wide range of applications including; biogas, syngas, anaerobic digestion and fermentation processes.

Up to six gases are simultaneously measured using a range of high precision gas sensors; each sensor is specially designed and calibrated to avoid cross interference effects with background process gas, Safety is ensured by the inclusion of flashback arrestors in the gas measuring circuit where required.

Measurable gases include oxygen (O_2), carbon monoxide (CO), carbon dioxide (CO_2), ozone (O_3), moisture (H_2O), hydrogen (H_2), hydrogen sulphide (H_2S), nitric oxide (NO), nitrogen dioxide (NO_2), nitrous oxide (N_2O), sulphur dioxide (SO_2), chlorine (Cl_2), methane (CH_4) and ethylene (C_2H_4).

When configured for applications where the gases contain energy (e.g. Biogas, Syngas) the calorific value of the gas sample is determined using thermodynamic calculations and simultaneously logged and displayed on-screen.

An optional pump enables two modes of operation. For samples that are taken from a gas source at atmospheric pressure or below, the pump is activated to draw a sample through the analyser. Alternatively, the pump can be deactivated when sampling from a source at a greater atmospheric pressure, allowing the gas to flow through the analyser. Gas flow is regulated manually via a rotary knob on the fascia and displayed electronically on the screen.

Please contact Cambridge Sensotec for further information or to discuss your requirements.

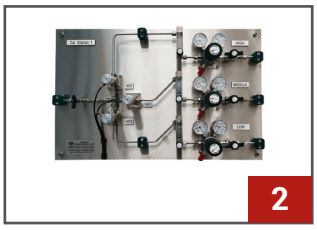
Though highly configurable to suit individual customer requirements, the Rapidox 5100 range possesses a number of standard features to enhance functionality.

- Bespoke sensor combination
- 7" full-colour touchscreen
- Lithium battery provides 8 hours of operation
- Heavy duty IP66 case
- Password protection
- Continuous data logging downloaded via USB
- Multi-language
- Charges on worldwide mains voltage
- Integrated thermal printer

Applications

- Biogas
- Emissions
- Research & Development
- Combustion
- Gas
- Syngas

Accessories



1. Calibration Kit
2. Calibration Service
3. Gas Recovery Bag
4. Sample Probe
5. Sample Probe Filters
6. Collapsible Sample Probe

Specification

Ambient Operating Temperature	-10°C to 40°C
Warm-up Time	3-4 minutes at 20°C
Measurement Time	Approximately 2-4 minutes (dependant on sensor configuration)
Battery Life	In excess of 8 hours (up to 500 cycles). 4-6 hour charge
Voltage (Charging)	90-260VAC, 50/60Hz
Sample Connections	4mm ID/6mm OD Rectus style, closed coupled fittings
Data Output	Excel compatible data via USB memory stick
Data Storage	4GB internal data storage allowing for approximately 1 year of continuous monitoring
Optional Pump	0-1 litres per minute
Calibration	Zero and span calibration with two user selectable gas compositions
Display	7" (180mm) full-colour LCD with touchscreen operation
Printer	Thermal printer allows output of results on demand
Analyser Dimensions	180mm(H) x 480mm(W) x 360mm(D)
Weight	7kg

Cambridge Sensotec Limited. Unit 29 Stephenson Road,
St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec

SF6 6100 Portable Gas Analyser

The Rapidox SF6 6100 Portable is designed for controlling and monitoring the quality of SF6 in medium and high voltage gas insulated electrical equipment.

Exceptional accuracy and stability are provided when measuring the purity of SF_6 gas, through specially selected sensors. The modular configuration allows for up to eight compatible gases to be analysed, simultaneously, with one analyser.

A gas output nozzle allows for the analyser to be attached to the Rapidox Gas Recovery Bag, ensuring that all sampled SF_6 gas is recovered.

Internal SF_6 gas pressure is recorded and logged by the analyser. All measured gases are analysed and data logged simultaneously with only a few minutes required to achieve a stable reading.

In order to accelerate the time taken in-between dew-point readings, a unique Rapidri system is fitted to analysers measuring H_2O. When not in use the sensor can be isolated via the 'Open-Close' valve.

The analyser is pre-programmed with all current IEC and CIGRE test configurations, with the ability to create customised test parameters. Modular design allows for bespoke sensor combinations upon request.

Please contact Cambridge Sensotec for further information or to discuss your requirements.

Though highly configurable to suit individual customer requirements, the Rapidox SF_6 6100 Portable possesses a number of standard features to enhance functionality.

- Bespoke sensor combination
- 7" full-colour touch screen
- Lithium battery provides 8 hours of operation
- Heavy duty IP66 case
- Total weight 8.5kg
- Continuous data logging downloaded via USB
- Multi-language
- Charges on worldwide mains voltage
- Integrated thermal printer

SF_6 Gas

SF_6 is an extremely stable, non-flammable and highly electronegative gas with excellent dielectric properties. It is commonly used in medium and high-voltage electrical equipment as an electrical insulator, arc-quenching and cooling medium.

However, SF_6 is classified as a greenhouse gas and must be kept within a closed circuit to avoid any deliberate release into the atmosphere. The international Kyoto agreement protocol has mandated reductions to harmful emissions amongst its member states.

For the power transmission and distribution network, SF_6 technology remains essential. To protect personnel, equipment and the environment regular SF_6 analysis should be adopted within the maintenance schedule. The early identification of any decomposition products and moisture within the SF_6 gas will help avoid unnecessary shutdowns, outages and failures, in addition to reducing maintenance expenditures.

Accessories

1 Calibration Kit and Service

2 Gas Recovery Bag

3 Tongue and Groove Self Sealing Couplings

Specification

Ambient Operating Conditions	-10°C to +40°C, 10-90% RH, 800-1100mbara
Warm-up Time	3-4 minutes at 20°C
Voltage (Charging)	90-260 VAC, 50/60Hz
Battery Life	In excess of 8 hours. 4-6 hour charge
Sample Connections	Special tongue and groove self sealing couplings (compatible with famous brands)
Data Outputs	Excel compatible data via USB memory stick
Data Storage	4GB internal data storage allowing for approximately 1 year of continuous monitoring
Gas Flow Range	100-1,000ml $.min^{-1}$
Max Inlet Pressure	10 Bar gauge
Optional Pump	0-1 litres per minute
Display	7" (180mm) full-colour LCD touch screen interface with soft menu keys
Printer	Integrated thermal printer allows output of results on demand
Analyser Dimensions	180mm(H) x 480mm(W) x 360mm(D)
Weight	8.5kg (Total instrument and case)

Cambridge Sensotec Limited. Unit 29 Stephenson Road, St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.sf6.co.uk
info@sf6.co.uk

cambridge sensotec

Rapidox SF6 6100 Portable Sensor Specification

The modular configuration allows for up to eight compatible gases to be analysed simultaneously with one analyser.

SENSOR	SPECIFICATION	ACCURACY	CALIBRATION	LIFE SPAN	SENSOR TYPE
SF_6 Sulphur Hexafluoride	0-100%	±0.5% accuracy	Every 12 months	> 5 years	Infrared (IR)
H_2O Dew Point	-60°C to ±20°Cdp (10 - 24,000ppmV) Reading is corrected to either RT or 20°C	±2°Cdp of reading	Every 12 months by Sensor Exchange	2-3 years	Polymer
SO_2 Sulphur Dioxide	0-100ppm OR 0-500ppm	±2% full-scale	Every 12 months	2-3 years	Electrochemical
HF Hydrogen Fluoride	0-10ppm OR 0-30ppm	±2% full-scale	Every 12 months (Using HCl gas)	2-3 years	Electrochemical
CF_4* Tetrafluoromethane	0-80%	±1% of full reading	N/A	N/A	(measured by balance of SF_6 + Air reading)
H_2S Hydrogen Sulphide	0-100ppm	±2% full-scale	Every 12 months	2-3 years	Electrochemical
CO Carbon Monoxide	0-1,000ppm	±2% full-scale	Every 12 months	2-3 years	Electrochemical
Air / N_2 Nitrogen	0-100%	full-scale based on oxygen component	Every 12 months	2-3 years	Electrochemical O_2 scaled to read as Air or Nitrogen

*** For analysers containing a CF_4 sensor, the measurement of Air is also a requirement.**

All sensor replacements to be carried out by Cambridge Sensotec or approved repair agents.

Cambridge Sensotec Limited. Unit 29 Stephenson Road, St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.sf6.co.uk
info@sf6.co.uk

7100 Multigas Analyser

The Rapidox 7100 Multigas Analyser is a high specification instrument designed for the analysis, control and monitoring of process gas in a wide range of industries.

Up to six gases are simultaneously measured using a range of high precision gas sensors; each sensor is specifically designed and calibrated to avoid any cross-interference effects with the background process gas. Measurable gases include oxygen (O_2), carbon monoxide (CO), carbon dioxide (CO_2), ozone (O_3), moisture (H_2O), hydrogen (H_2), hydrogen sulphide (H_2S), nitric oxide (NO), nitrogen dioxide (NO_2), nitrous oxide (N_2O), sulphur dioxide (SO_2), chlorine (Cl_2), methane (CH_4), ethylene (C_2H_4) and many more. View the sensor matrix for more information.

When configured for applications where the gases contain energy (e.g. Biogas, Syngas) the calorific value of the gas sample is determined using thermodynamic calculations and simultaneously logged and displayed on-screen. Data is downloadable via USB memory stick, and 4GB of internal data storage allowance allows for approximately one year of continuous monitoring.

An optional pump enables two modes of operation. For samples that are taken from a gas source at atmospheric pressure or below, the pump is activated to draw a sample through the analyser. Alternatively, the pump can be deactivated when sampling from a source at a greater atmospheric pressure, allowing the gas to flow through the analyser. Gas flow is regulated manually via a rotary knob on the fascia and displayed electronically on the screen.

Available in both a 19" rack mountable case or a benchtop version.

Please contact Cambridge Sensotec for further information or to discuss your requirements.

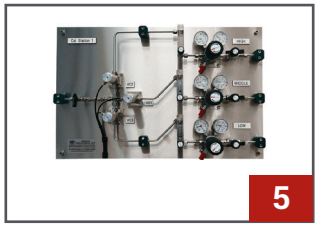
Though highly configurable to suit individual customer requirements, the Rapidox 7100 range possesses a number of standard features to enhance functionality.

- Bespoke sensor combination
- 7" full-colour touchscreen
- 19" rack mountable enclosure or benchtop
- Continuous data logging
- Multi-language
- Six programmable alarms
- Operates on worldwide mains voltage
- Password protection

Applications

- Biogas
- Chemicals
- Combustion
- Food
- Gas
- Glove Boxes
- Inert Gas Blanketing
- Manufacturing
- Medical
- Metal Heat Treatment
- Research & Development
- Syngas

Accessories



1. Calibration Kit
2. Multiplex Sampling System
3. Gas Recovery Bag
4. Thermal Printer
5. Calibration Service
6. Gas Filters

Specification

Ambient Operating Pressure	900mbar to 1100mbar absolute
Ambient Operating Temperature	0°C to 40°C
Warm-up Time	3-4 minutes at 20°C
Voltage	90-260 VAC, 50/60Hz
Voltage Outputs	0-10V, user programmable
Current Outputs	4-20mA linear, user programmable
Digital Outputs	RS232 (RS485 option available) Data streamed on demand. Modbus RTU/Ethernet
Data Output	Excel compatible data via USB memory stick
Sample Connections	6mm OD or 1/4" Swagelok fittings. Rear positioning
Display	7" (180mm) full-colour LCD with touchscreen operation
Analyser Dimensions	Rack Mount: 132mm(H) x 482mm(W) x 365mm(D) Benchtop: 180mm (H) x 570mm (W) x 345mm (D)
Weight	Rack Mount: 6.5kg Benchtop: 6.5kg
Alarms	Relay circuits, user programmable

Cambridge Sensotec Limited. Unit 29 Stephenson Road, St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec

Rapidox 7100 Sensor Matrix

Gas	O_2	O_2	O_2	CO_2	CH_4	H_2O	CO	CO	Cl_2	NO	NO_2	C_2H_4	N_2O	O_3	H_2S	H_2	He	NH_3	SO_2	SO_2	TC
Sensor Type	Zr	EC-E	EC-L	IR	IR	CAP	IR	EC	EC	EC	EC	IR	IR	EC	EC	TCD	TCD	EC	EC	IR	Type K
Life Span (mth)	24	60	12	>60	>60	>36	>60	24	12	12	12	>60	>60	12	24	>60	>60	24	24	>60	>36
Accuracy	+/- 1% LOG	+/- 1% FS	+/- 2% FS	+/- 1% FS	+/- 1% FS	+/- 2°Cdp	+/- 1% FS	+/- 2% FS	+/- 2% FS	+/- 2% FS	+/- 2% FS	+/- 1% FS	+/- 1% FS	+/- 2% FS	+/- 2% FS	+/- 1% FS	+/- 1% FS	+/- 2% FS	+/- 2% FS	+/- 1% FS	+/- 1°C
Cal. (mth)	12	12	6	12	12	12	12	12	6	6	6	12	12	6	12	12	12	12	12	12	N/A
0 -100%		■		■	■		■						■			■	■				
0 - 80%																■	■				
0 - 60%																■	■				
0 - 30%	■	■		■	■		■														
0 - 10%				■	■		■									■	■				
0-5%				■	■											■	■				
0 - 3%				■			■														
0 - 1%			■	■									■		■						
0 - 5,000ppm				■	■			■		■								■			
0 - 3,000ppm													■								
0 - 2,000ppm				■			■	■				■	■		■				■	■	
0 - 1,000ppm				■				■							■			■			
0 - 500ppm				■				■										■	■		
0 - 250ppm										■	■				■						
0 - 100ppm																		■	■		
0 - 60ppm									■												
0 - 20ppm											■			■							
0 - 10ppm														■							
-65°C to +20°C						■															
-100°C to +20°C						■															
0 - 1250°C																					■

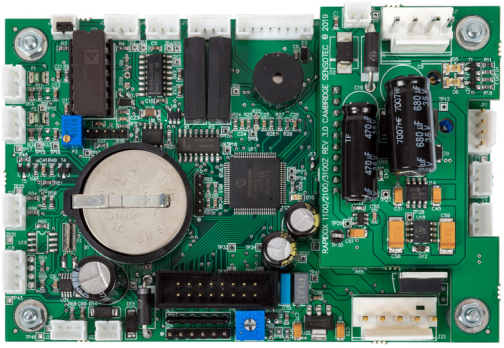
Note: Not all sensor combinations are possible due to interference and cross-sensitivity effects. Please contact Cambridge Sensotec for advice

Key: Zr = Zirconia Oxygen Sensor EC-E = Electrochemical Oxygen Sensor % EC-L = Electrochemical Oxygen Sensor ppm IR = Infra-Red Sensor CAP = Capacitance dewpoint Sensor TCD = Type K Thermocouple

Rapidox 2100-OEM-RSB

O_2 Gas Analyser

The Rapidox 2100-OEM-RSB range are special miniaturised 24V OEM versions of our existing high-performance zirconia oxygen (O_2) analyser.



The compact new design allows integration into the tightest of spaces with the exact same performance specs and features of our exisiting OEM analyser. The board is fitted with a robust cabled zirconia sensor, which is ideal for providing fast and accurate remote in-situ gas analysis over the full oxygen range 10^{-20}ppm to 100% O_2.

Zirconia oxygen sensors are extremely rugged and particularly suitable for monitoring inert atmospheres and aggressive industrial applications directly within manufacturing processes such as metal 3D printers, soldering ovens and furnaces. High temperature (650°C) and vacuum applications are particularly suited to this model. The OEM has auxiliary sensor and temperature (type K) inputs for connecting additional sensors such as pressure, vacuum and dewpoint and can also monitor local ambient temperature and humidity conditions for improved stability.

The analyser is supplied in four packages to meet the demands of any customer: a basic circuit board, a custom DIN rail version and a full metal DIN rail enclosure, with or without local display and keypad. The sensor cable can be made to any length up to 25m and there are a choice of sensor mounting options including aluminium and stainless manifolds as well as vacuum fittings (ISO-KF and CF).

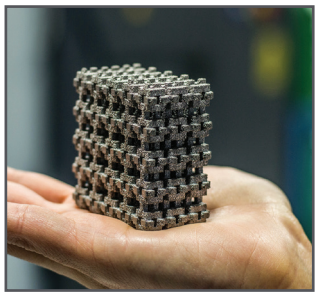
Fully programmable analogue (voltage and current) outputs and alarm relays as well as RS232 / RS485 digital signalling are standard. Rapidox digital communications protocol and Modbus-RTU is included as standard. The analyser is designed specifically for seamless integration into PLC systems.

The Rapidox 2100-OEM-RSB has a compact design which allows integration into the tightest of spaces with high performance specifications; and a wide choice of options.

- Zirconia sensor supplied with bespoke cable
- Miniature circuit board with DIN rail mount enclosure options
- Fast and accurate measurement of oxygen
- Pre-calibrated sensors for uninterrupted service

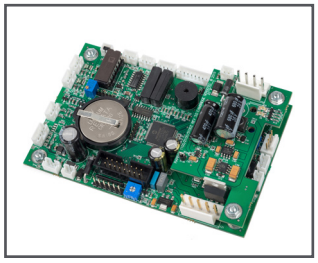
- Analogue and Digital outputs
- Data logging software
- Two programmable alarms
- Type K thermocouple option
- 24Vdc 20W power

Applications

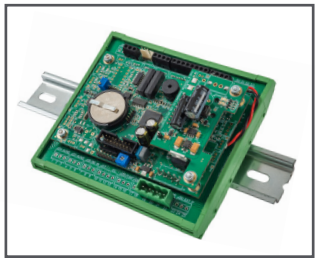


- Additive Manufacturing
- Glove Boxes
- Research and Development
- Metal Powder Processing
- Inert Gas Blanketing
- Manufacturing
- Combustion Ovens
- Solder Reflow Ovens
- Forming Gas
- Metal Heat Treatment

Scope of supply



1 Rapidox 2100-OEM-RSB



2 Rapidox 2100-OEM-DIN

3 Rapidox 2100-OEM-ENC

4 Rapidox 2100-OEM-INS

All versions are supplied with a zirconia sensor on a 2m cable as standard.

Specification

Voltage	24V VDC +/0.1V
Power	30W
Enclosure Dimensions	132 x 80 x 70 mm
Circuit Board Dimensions	4.5" x 3" (114mm x 76mm)
Weight	<0.5kg in enclosure, OEM board 120g
Din Rail Option	Board & 2 enclosed options
Ambient Operating Temperature	5-35°C 0-95% RH non condensing
Ambient Operating Pressure	800 to 1200mbar absolute
Warm-up Time	1-2 minutes at 20°C
Sensor Cable	2m high temp as standard. Any length up to 25m available on request
Display	OLED display & keypad on enclosure version
Sample connections	Nipple or swagelok
O_2 Sensor Range	10^{-20}ppm to 100% zirconia version. 10^{-26} extended range available on request
O_2 Sensor Accuracy	±1% of the actual measured oxygen content OR 0.5ppm (whichever is the greater)
O_2 Sensor Response	4 seconds for a T90 step change @1L per min flow
O_2 Sensor Life Expectancy	>17,000 hours
Calibration	Any two or three gases - Pre calibrated Sensors Available
Voltage Outputs	0-5V (0-10V on request)
Current Outputs	4-20mA
Digital Outputs	RS232 / RS485 & Modbus RTU
Max Sample Gas Pressure	Up to 10 bar gauge (200bar burst pressure)
Max Sample Gas Temperature	650°C
Alarm	2 alarm relay circuits, fully user-configurable

Cambridge Sensotec Limited. Unit 29 Stephenson Road,
St Ives, Cambs, PE27 3WJ, United Kingdom

+44 (0)1480 462142
www.cambridge-sensotec.co.uk
info@cambridge-sensotec.co.uk

cambridge sensotec