



# 1100ZR3 Oxygen Analyser

Includes 1100ZR3-OL, 1100ZR3-PFC & 1100ZR3-RSO Variations

The Rapidox 1100ZR3 is a cost-effective multiplex oxygen ( $O_2$ ) analyser. Specifically designed to measure a sequence of oxygen measurements in three separate locations in the 1ppm-30% oxygen range.



Zirconia oxygen sensors offer 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.

The Rapidox 1100ZR3 design is optimised for use on large solder reflow ovens using inert gas blanketing, where multiple sample points are required from a single gas analyser.

The use of a multiplex controller provides sequential oxygen analysis over three separate gas inputs on the rear panel. Gases can be analysed in sequence or at programmed intervals set from the front keypad controls or software.



The Rapidox 1100ZR3 range includes versions to control the inert gas flow 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.

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

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

- Low maintenance zirconia sensor
- Multiple, sequential analysis
- Fully configurable software
- Simple calibration procedure
- Fully programmable outputs
- Data logging
- Pump or ejector option
- Two programmable alarms
- Operates on worldwide mains voltage
- Password protection

## Applications



Solder Reflow



Chemicals



Combustion



Manufacturing



Emissions



Food



Gas



Glove Boxes



Inert Gas Blanketing



Medical



Metal Heat Treatment



Research & Development

## Accessories



1



2



3



4



5



6

- 1 Calibration Kit
- 2 Solder Flux Filtration Set
- 3 Gas Recovery Bag
- 4 Thermal Printer
- 5 Calibration Service
- 6 Gas Filters

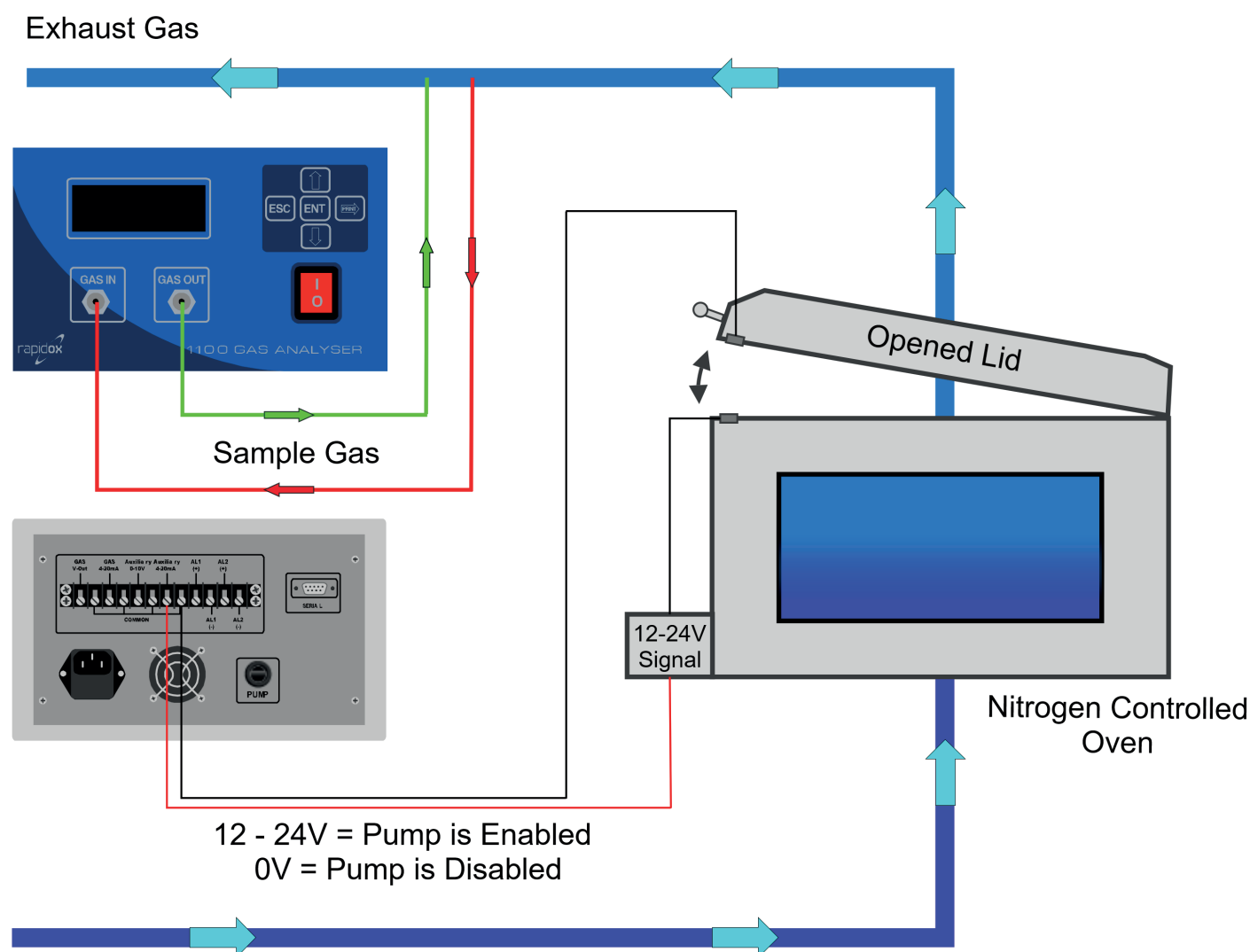
## Specification

O <sub>2</sub> Sensor Range	1ppm-30%
O <sub>2</sub> Sensor Accuracy & Response	±1% of the actual oxygen concentration. Approximately 4 sec for a 90% response
O <sub>2</sub> Sensor Life Expectancy	>17,500 hours
Ambient Operating Pressure	900-1100mbar absolute
Ambient Operating Temperature	5°C to 35°C
Max. Sample Gas Pressure	±1000mbar
Max. Sample Gas Temperature	60°C
Warm-up Time	3-4 minutes
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
Calibration	Requires 2 or 3 user selectable gas compositions
Sample Connections	4mm ID/6mm OD nipple type. Rear positioning
Display	16 x 2 character (9mm) back-lit LCD
Analyser Dimensions	150mm(H) x 263mm(W) x 350mm(D)
Weight	4kg
Alarms	Relay circuits, user programmable



# 1100ZR3-OL Oxygen Analyser

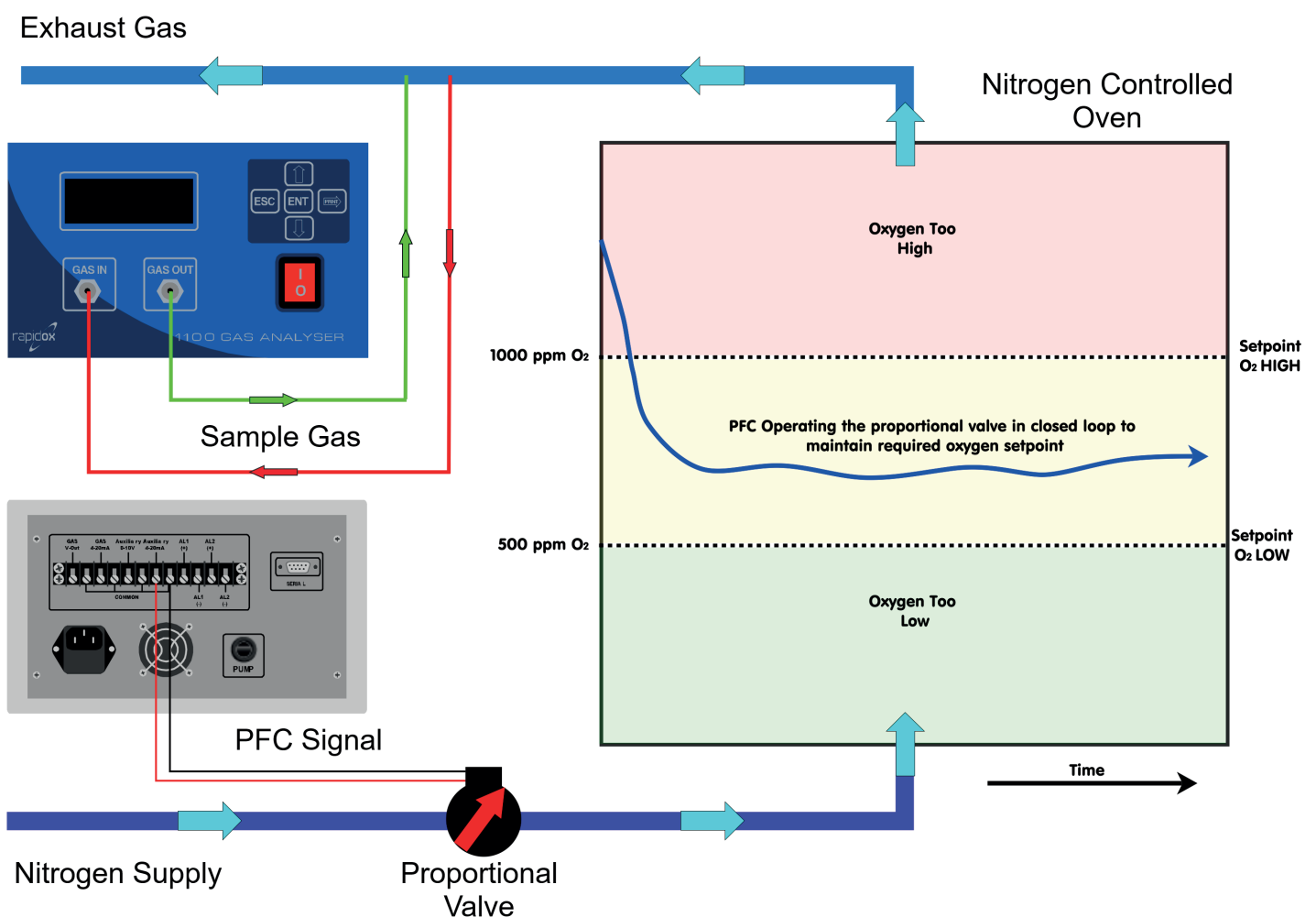
The Rapidox Analyser with optional supply signal to enable / disable sampling when the oven lid is opened.



The Rapidox 1100ZR3 units coded with "OL" (Open Loop) have an additional feature designed specifically for operating with solder reflow ovens. A 12-24V signal voltage is supplied to the Rapidox terminals via an interlock fitted to the lid or door of the oven. When the lid is opened the voltage becomes zero and this automatically stops the Rapidox sample pump from operating. Once the lid is closed the signal voltage is restored and sampling resumes. This feature prevents unwanted fresh air from entering the Rapidox sample lines during a maintenance break and helps to improve recovery time and measurement response of the Rapidox. This feature can be temporarily disabled by fitting a link wire from the spare 4-20mA output terminal on the rear panel of the Rapidox.

# 1100ZR3-PFC Oxygen Analyser

The Rapidox 1100ZR3 Analyser with optional Proportional Flow Control (PFC) output for sophisticated controlling of inert gas flow in Solder Reflow Ovens.

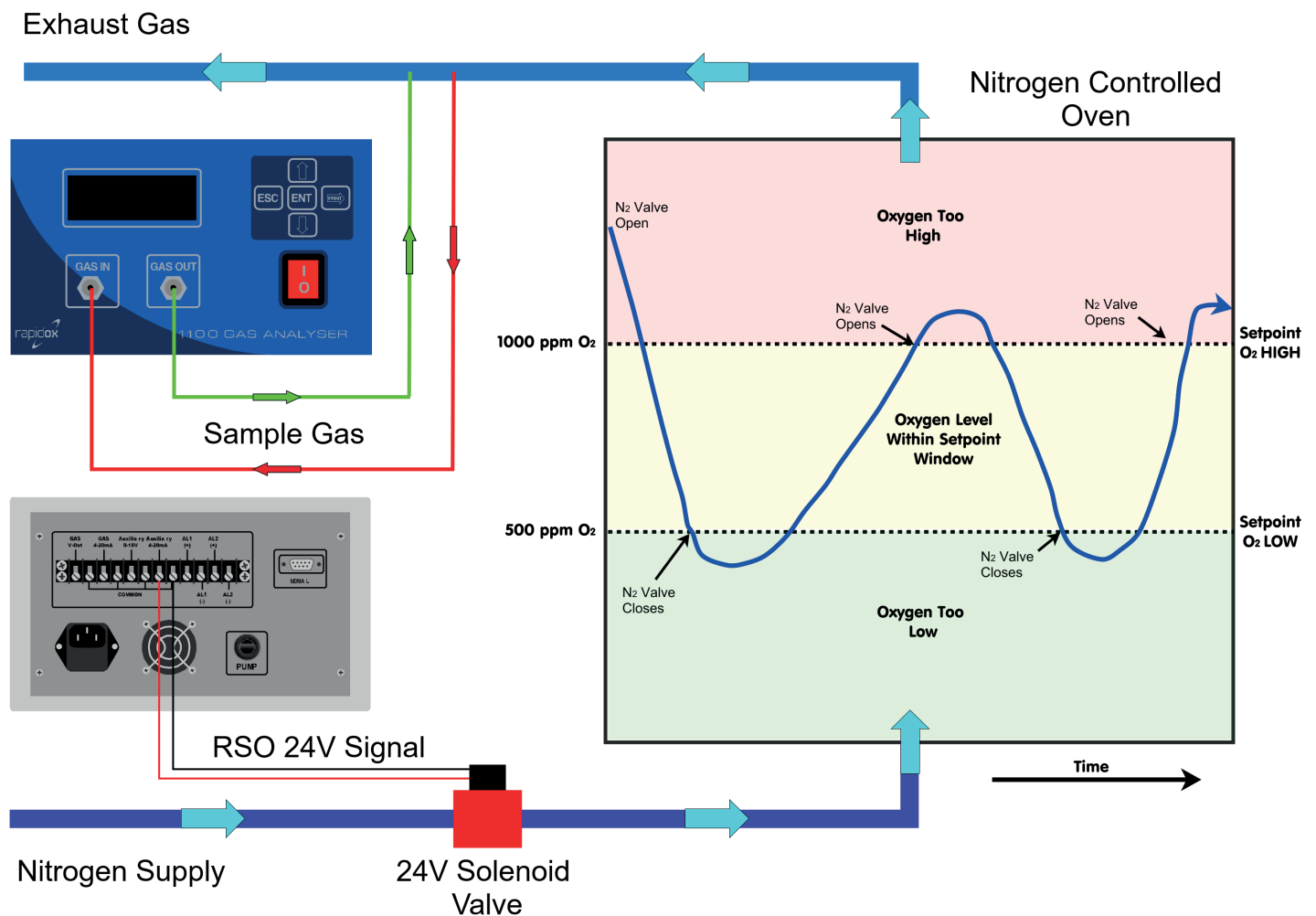


Rapidox 1100ZR3 units coded with "PFC" (Proportional flow Control) have an additional feature designed specifically for controlling the oxygen gas levels inside an oven or similar structure by operating a proportional flow valve. A 4-20mA control signal is generated by the Rapidox and output on the auxiliary terminals on the rear panel. This 4-20mA signal is used to control the proportional gas valve on the oven. The software uses established PID control theory to enable stable control of the oxygen value, no matter how convoluted the path of the gas through to the analyser is. The PID function requires a degree of tuning and learning once the system is up and running to make sure the oxygen set point is stable. The PFC variants also have the "OL" pump control signal feature fitted as standard.



# 1100ZR3-RSO Oxygen Analyser

The Rapidox 1100ZR3 Analyser with optional Remote Solenoid Control (RSO) output for more basic controlling of inert gas flow in Solder Reflow Ovens using a solenoid valve.



The Rapidox 1100-ZR-RSO has a special 24Vdc output on the rear terminal that can be programmed to power and control a solenoid gas valve thus giving a basic control of the oxygen level in the oven. The valve must be 24Vdc and 10Watts maximum power rating. The valve operation is programmed by entering a High and Low setpoint as shown above. These values give a 'setpoint window' where above the upper threshold the gas valve will be powered and below the lower threshold the gas valve will be off. By increasing or decreasing the size of the 'window' you are effectively changing the hysteresis of the system to prevent valve chatter. There is also a delay that can be programmed when each channel becomes active to allow some time for the previous gas to flush out of the pipework.