AlphaSense O2-A2 Oxygen Sensor

This oxygen sensor is designed to provide students or scientists with proven electrochemical technology. OEMs will appreciate the low power, dependable technology for use in high volume applications.

FEATURES

- Low power
- Low cost
- Serial interface
- Replaceable electrochemical cell

AVAILABLE MODELS

CM-32911 Development Kit – Our easiest to use version, it is ready to plug into your PC via USB. Use our free GasLab® software to read and data log oxygen, barometric pressure, temperature, and % relative humidity.

CM-32910 – This PCB offers the same functionality as the development kit, but is designed to be integrated into your product.

AP-0001 – Raw sensor only

ELECTRICAL SPECIFICATIONS	
Supply Voltage	3.3 to 5.5 VDC
Peak Supply Current	10ma
Average Power	< 3mW (1 second streaming 1 min logging)
UART Tx	3V 9600 Baud N 8 1
UART Rx Voltage	3V – 5V
Operating Temp	-30C – 60C
Humidity	0 – 99% RH (non-condensing)
Barometric Pressure	50 – 115 kpa

CONNECTOR PINOUT*	
GND	SELECT
3.3 – 5.5 Volt DC	GND
Rx	GND
Tx	RS485 B
Analog Out	RS485 A

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SENSOR SPECIALISTS

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MECHANICAL SPECIFICATIONS	
Dimensions	25mm x 40mm x 29mm
Dimensions (w/sensor)	25mm x 40mm x 13mm
Weight	16g sensor, 5.8g board
Connector	10 pin Header

ABSOLUTE MAXIMUM RATINGS (EC3 Controller Only)	
Supply Voltage	6 Volts DC
Rx Input	5.5 V
Operating Temp	-30°C – 60°C
Humidity	0 – 99% RH (non-condensing)
Pressure	500 kpa

COMMON PERFORMANCE SPECIFICATIONS	
Temperature Accuracy at 20-40°C	±0.3°C
Temperature Accuracy 0 – 50°C	±2%
Relative Humidity Accuracy 20% – 80%	±2% RH
Sensor Voltage Resolution	16 bits

SIGNAL DEFNITIONS	
GND	Power Supply and RS485 return.
+SUPPLY	+3.2 – 5.5 Volts DC
Rx	CMOS Level Input to Controller
Tx	CMOS Level (0-3V) Output from controller.
AOUT	Analog Output from controller (when enabled). Voltage is proportional to gas concentration.
SELECT	Open selects the CMOS Tx/Rx Interface. Connect to GND to select the RS485 Interface.
RS485 B	RS485 B Signal. High in Marking State
RS485 A	RS485 A Signal. Low in Marking State.

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OXYGEN SENSOR PERFORMANCE DATA

Figure 2 Output Temperature Dependence

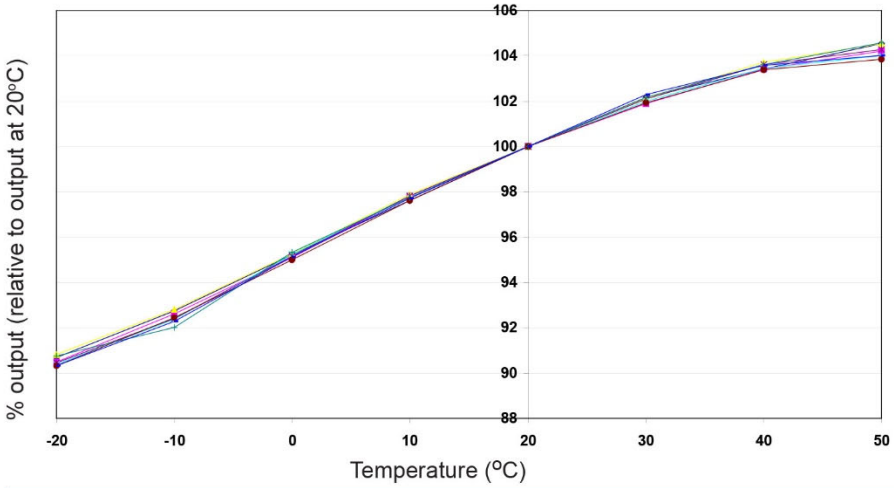
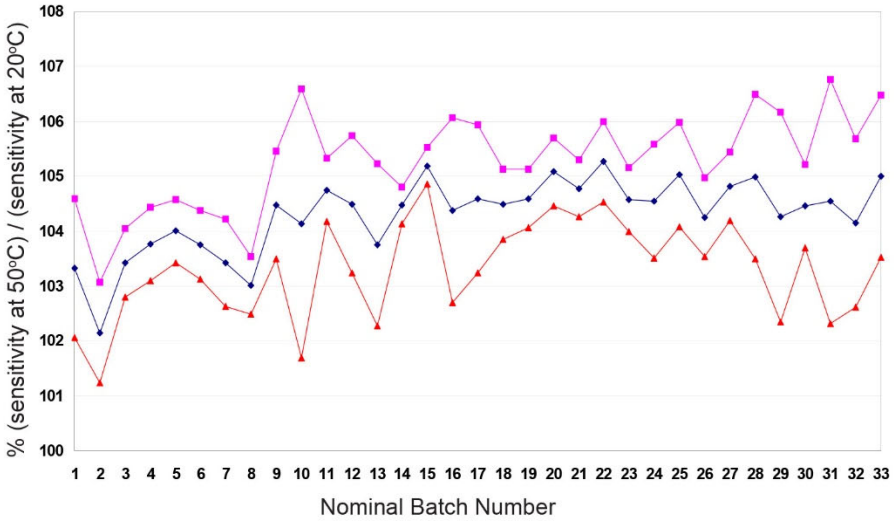


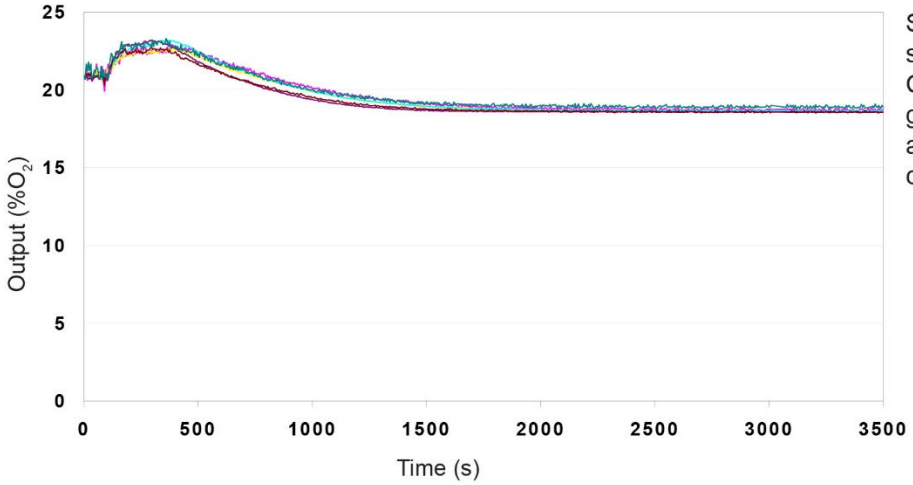
Figure 2 shows the variation in sensitivity caused by changes in temperature. Temperature dependence is very repeatable.

Figure 3 Sensitivity at 50°C



This plot of the mean and ±95% confidence intervals for 34 batches shows superior repeatability of the sensitivity dependence from batch to batch, giving confidence when setting temperature compensation in your gas detector.

Figure 4 Thermal Transient Performance



Sensors were thermally shocked from 20°C to -30°C. Consistent manufacture and good design ensure that there are no thermal spikes which can cause an alarm.

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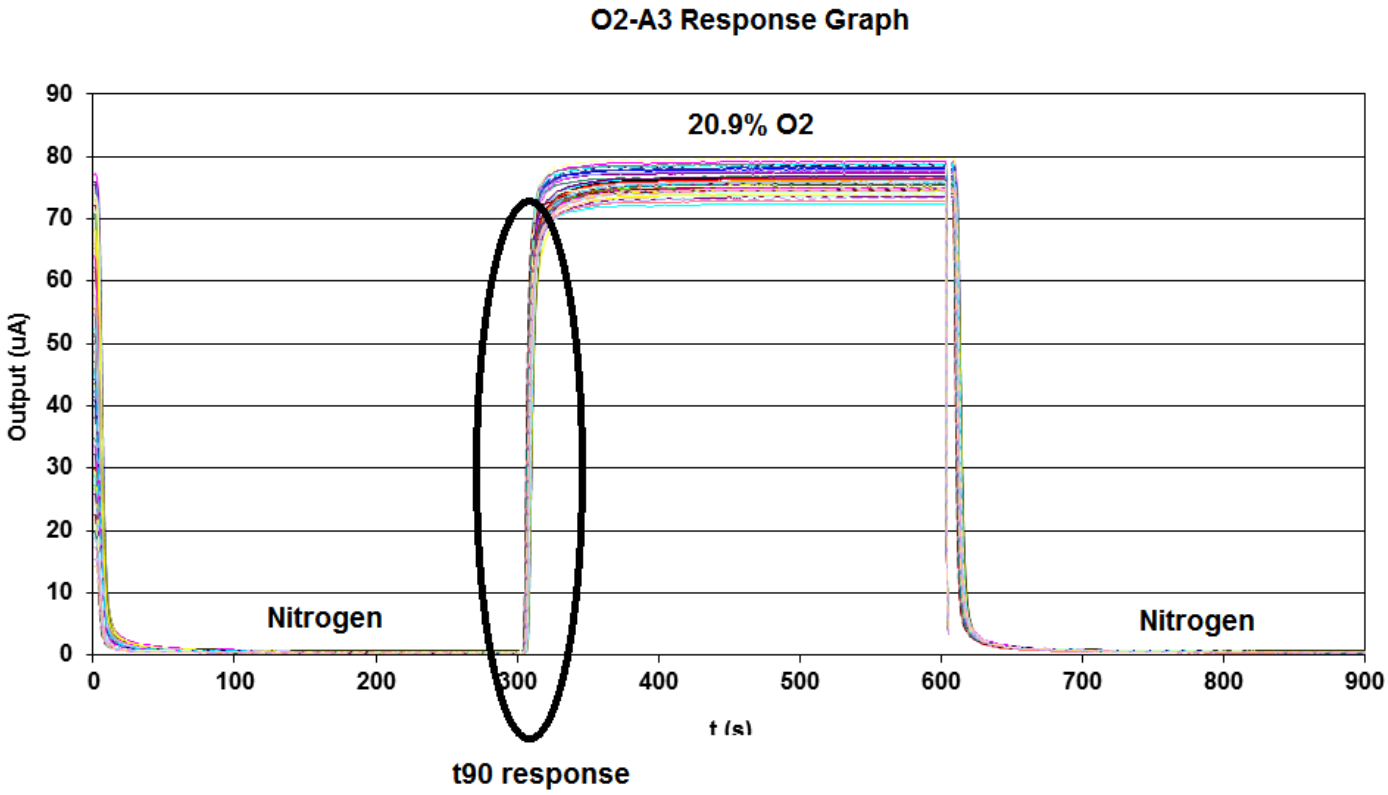

1. First sensors is being exposed to Nitrogen and we are measuring Zero Current

2. At 300s we would change the phase and supply 20.9% O2

3. Between 300 and 600s we are measuring signal at 20.9% O2 and calculate 90% of it.
   Based on that and our spec (we know t90 should be <15s) we either fail or pass the sensors.

4. Last phase of test is Nitrogen again.

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