

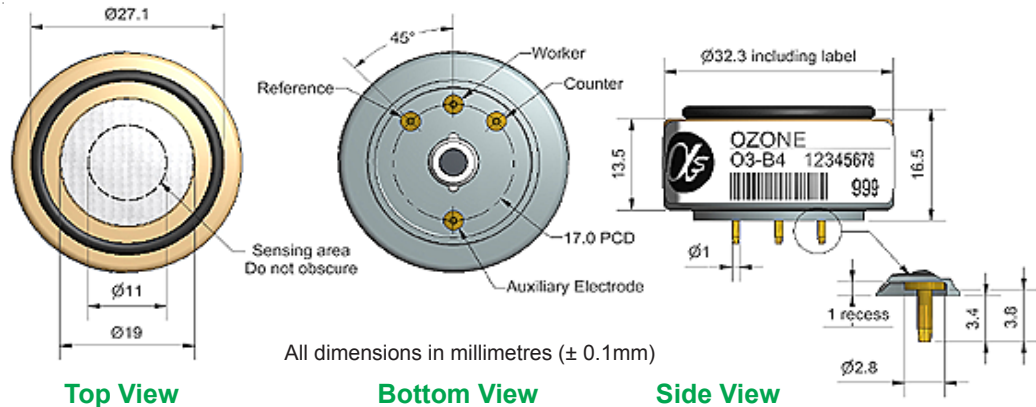


O3-B4 Ozone Sensor 4-Electrode



PATENTED

Figure 1 O3-B4 Schematic Diagram



Top View

Bottom View

Side View

All dimensions in millimetres ($\pm 0.1\text{mm}$)

PERFORMANCE

Sensitivity	nA/ppm at 100ppb O ₃	-250 to -550
Response time	t ₉₀ (s) from zero to 100ppb	< 15
Zero current	nA in zero air at 20°C	0 to 120
Noise*	± 2 standard deviations (ppb equivalent)	4
Range	ppm O ₃ limit of performance warranty	5
Linearity	ppb error at full scale, linear at zero and 2ppm O ₃	0 to 200
Overgas limit	maximum ppm for stable response to gas pulse	10

* Tested with Alphasense ISB low noise circuit

LIFETIME

Zero drift	ppb equivalent change/year in lab air	0 to 50
Sensitivity drift	% change/year in lab air, monthly test	-20 to -35
Operating life	months until 50% original signal (12 month warranted)	> 18

ENVIRONMENTAL

Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 500ppb O ₃	
Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 500ppb O ₃	
Zero @ -20°C	nA change from 20°C	-120 to -30
Zero @ 50°C	nA change from 20°C	800 to 1500

CROSS SENSITIVITY

H ₂ S sensitivity	% measured gas @ 5ppm	H ₂ S	< 90
NO ₂ sensitivity	% measured gas @ 5ppm	NO ₂	60 to 120
Cl ₂ sensitivity	% measured gas @ 10ppm	Cl ₂	< 50
NO sensitivity	% measured gas @ 1ppm	NO	< 4
SO ₂ sensitivity	% measured gas @ 5ppm	SO ₂	< -5
CO sensitivity	% measured gas @ 10ppm	CO	< 0.1
H ₂ sensitivity	% measured gas @ 100ppm	H ₂	< 1
C ₂ H ₄ sensitivity	% measured gas @ 400ppm	C ₂ H ₄	< 0.1
NH ₃ sensitivity	% measured gas @ 20ppm	NH ₃	< 1
CO ₂ sensitivity	% measured gas @ 5%	CO ₂	< 0.1

KEY SPECIFICATIONS

Temperature range	°C	-20 to +50
Pressure range	kPa	80 to 120
Humidity range	% rh non-condensing	15 to 85
Flow rate	minimum sccm during calibration	500 (0.5L/m)
Bias voltage	V	0
Storage period	months @ 3 to 20°C (stored in sealed pot)	6
Load resistor	Ω (ISB circuit is recommended)	33 to 100
Weight	g	< 13

NOTE: all sensors are tested at ambient environmental conditions, with 10 ohm load resistor, unless otherwise stated. As applications of use are outside our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors are suitable for their own requirements.



O3-B4 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

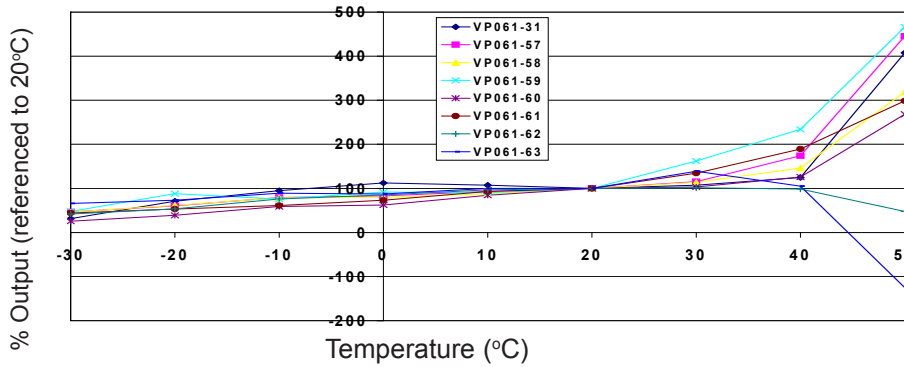


Figure 2 shows the temperature dependence of sensitivity at 100ppb O₃.

This data is taken from a typical batch of sensors.

Figure 3 Zero Temperature Dependence (corrected)

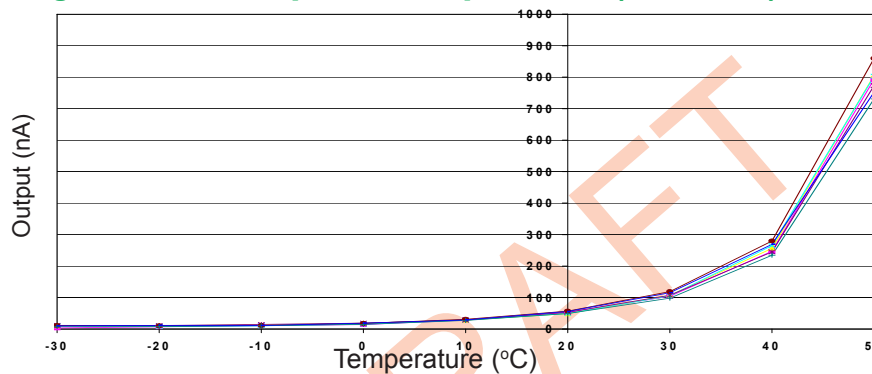


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for further information on zero current correction.

Figure 4 Linearity to 200ppb O₃

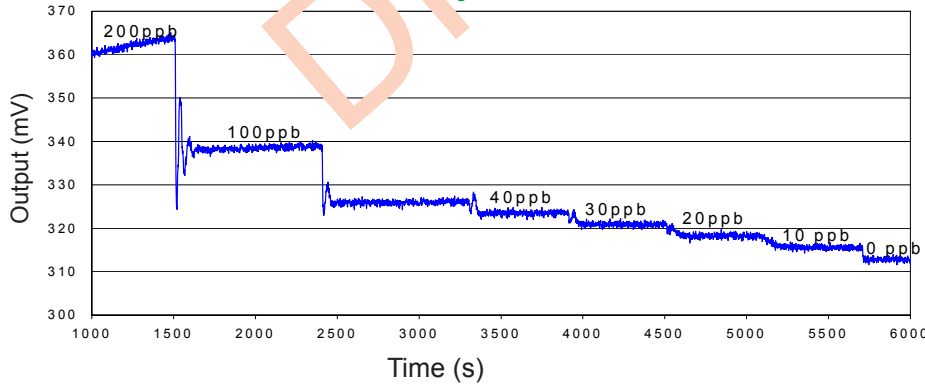
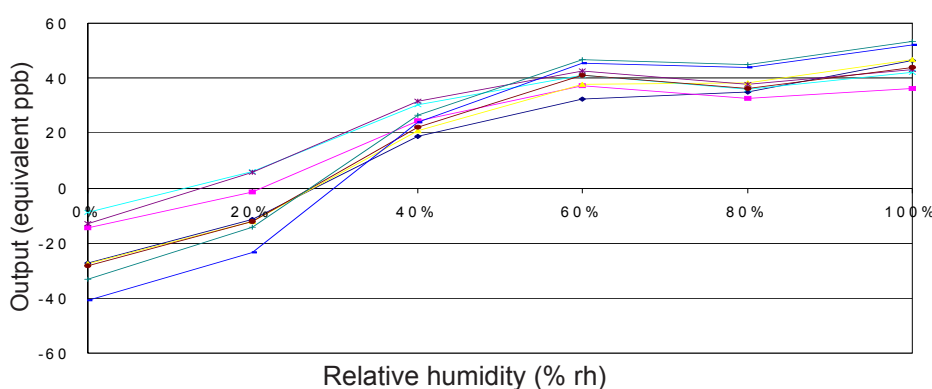


Figure 4 shows response to 200ppb O₃.

Use of Alphasense ISB circuit reduces noise to 4ppb, with the opportunity of digital smoothing to reduce noise even further

Figure 5 Effect of Humidity on Sensor Output (1 mV = 0.8 ppb)



Humidity shifts the baseline but does not change the sensitivity.

The repeatability of the zero shift means that humidity correction can be achieved in software.



At the end of the product's life, do not dispose of any electronic sensor, component or instrument in the domestic waste, but contact the instrument manufacturer, Alphasense or its distributor for disposal instructions.

For further information on the performance of this sensor, on other sensors in the range or any other subject, please contact Alphasense Ltd. For Application Notes visit "www.alphasense.com".

In the interest of continued product improvement, we reserve the right to change design features and specifications without prior notification. The data contained in this document is for guidance only. Alphasense Ltd accepts no liability for any consequential losses, injury or damage resulting from the use of this document or the information contained within. (©ALPHASENSE LTD) Doc. Ref. O3B4/NOV13