

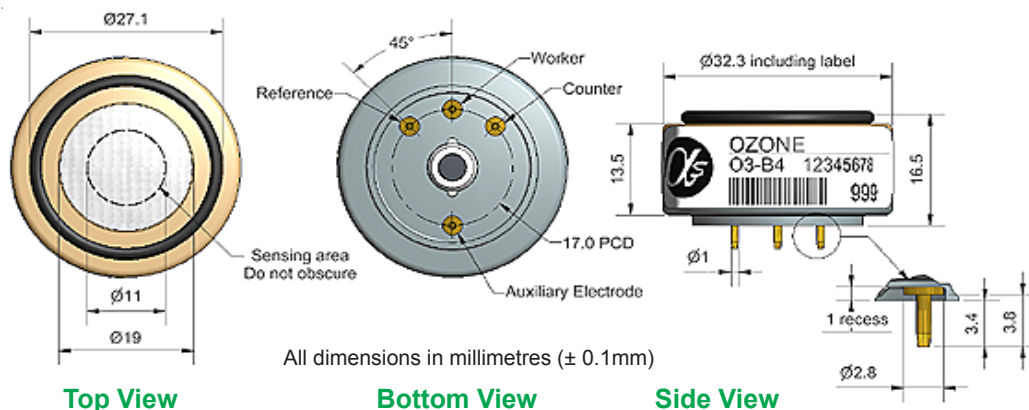


## O3-B4 Ozone Sensor 4-Electrode



PATENTED

Figure 1 O3-B4 Schematic Diagram



Technical Specification

### PERFORMANCE

Sensitivity	nA/ppm at 100ppb O <sub>3</sub>	-250 to -550
Response time	t <sub>90</sub> (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 <sub>3</sub> limit of performance warranty	5
Linearity	ppb error at full scale, linear at zero and 2ppm O <sub>3</sub>	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 <sub>3</sub>	
Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 500ppb O <sub>3</sub>	
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 <sub>2</sub> S sensitivity	% measured gas @ 5ppm	H <sub>2</sub> S	< 90
NO <sub>2</sub> sensitivity	% measured gas @ 5ppm	NO <sub>2</sub>	60 to 120
Cl <sub>2</sub> sensitivity	% measured gas @ 10ppm	Cl <sub>2</sub>	< 50
NO sensitivity	% measured gas @ 1ppm	NO	< 4
SO <sub>2</sub> sensitivity	% measured gas @ 5ppm	SO <sub>2</sub>	< -5
CO sensitivity	% measured gas @ 10ppm	CO	< 0.1
H <sub>2</sub> sensitivity	% measured gas @ 100ppm	H <sub>2</sub>	< 1
C <sub>2</sub> H <sub>4</sub> sensitivity	% measured gas @ 400ppm	C <sub>2</sub> H <sub>4</sub>	< 0.1
NH <sub>3</sub> sensitivity	% measured gas @ 20ppm	NH <sub>3</sub>	< 1
CO <sub>2</sub> sensitivity	% measured gas @ 5%	CO <sub>2</sub>	< 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

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## O3-B4 Performance Data

Technical Specification

**Figure 2 Sensitivity Temperature Dependence**

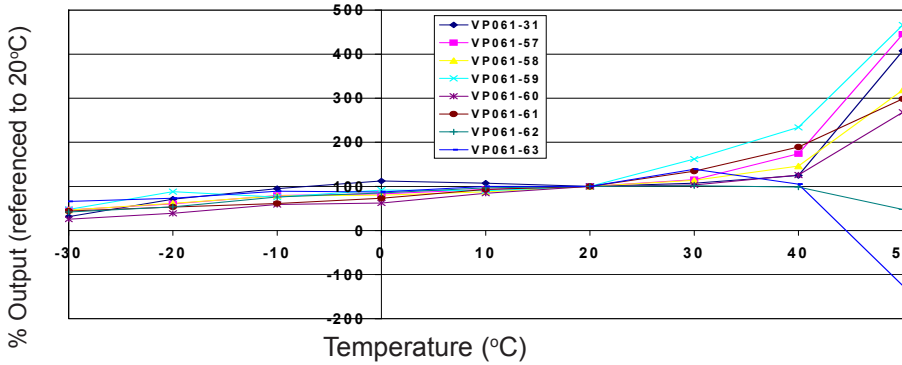


Figure 2 shows the temperature dependence of sensitivity at 100ppb O<sub>3</sub>.

This data is taken from a typical batch of sensors.

**Figure 3 Zero Temperature Dependence (corrected)**

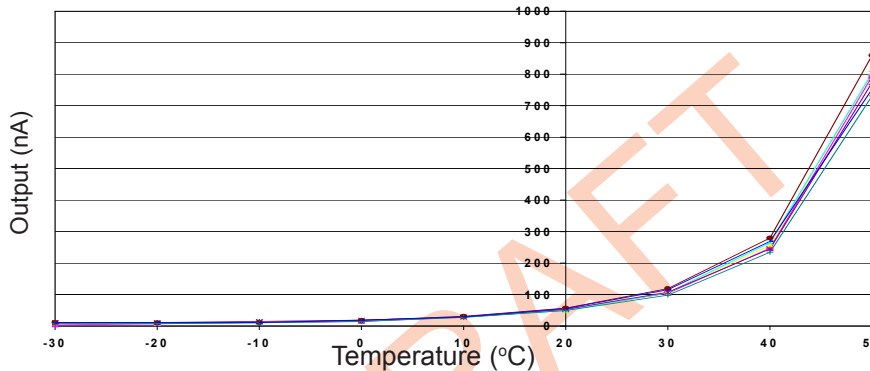


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for further information on zero current correction.

**Figure 4 Linearity to 200ppb O<sub>3</sub>**

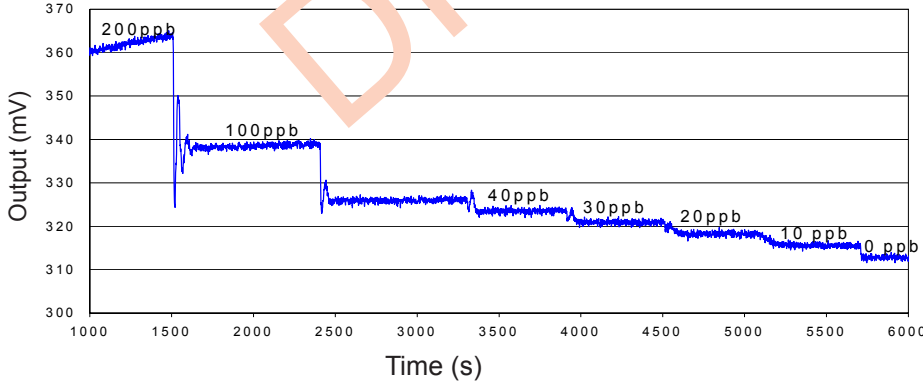
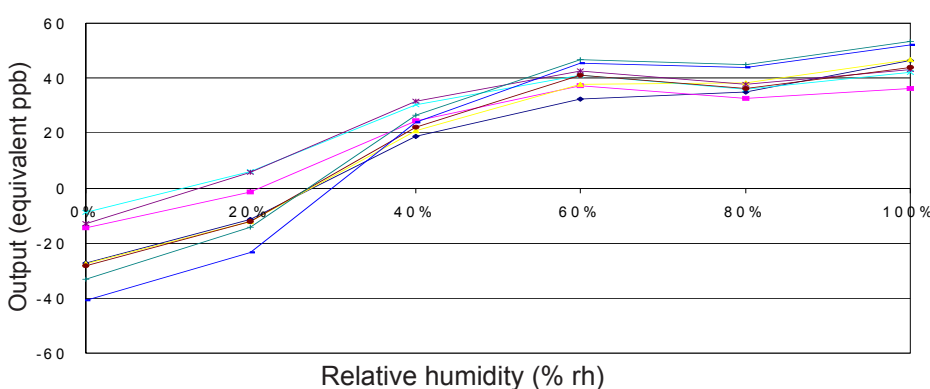


Figure 4 shows response to 200ppb O<sub>3</sub>.

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.

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