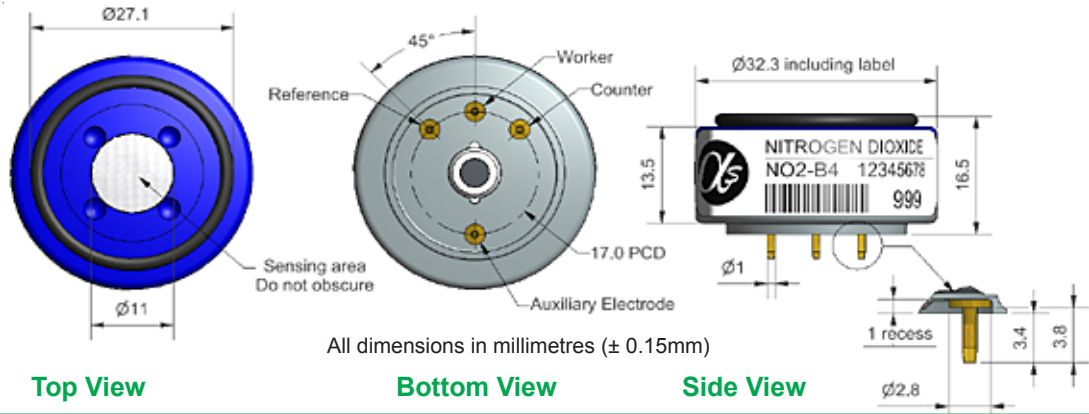




# NO2-B4 Nitrogen Dioxide Sensor 4-Electrode



**Figure 1 NO2-B4 Schematic Diagram**



All dimensions in millimetres ( $\pm 0.15$ mm)

Top View

Bottom View

Side View

## PERFORMANCE

Sensitivity	nA/ppm at 2ppm NO <sub>2</sub>	-250 to -600
Response time	t <sub>90</sub> (s) from zero to 2ppm NO <sub>2</sub>	< 25
Zero current	nA in zero air at 20°C	-15 to 20
Noise*	$\pm 2$ standard deviations (ppb equivalent)	12
Range	ppm NO <sub>2</sub> limit of performance warranty	20
Linearity	ppb error at full scale, linear at zero and 5ppm NO <sub>2</sub>	< $\pm 1$
Overgas limit	maximum ppm for stable response to gas pulse	50

\* Tested with Alphasense ISB low noise circuit

## LIFETIME

Zero drift	ppb equivalent change/year in lab air	0 to 20
Sensitivity drift	% change/year in lab air, monthly test	-20 to -40
Operating life	months until 50% original signal (12 month warranted)	> 18

## ENVIRONMENTAL

Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 2ppm NO <sub>2</sub>	40 to 70
Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 2ppm NO <sub>2</sub>	120 to 135
Zero @ -20°C	nA change from 20°C	$\pm 10$
Zero @ 50°C	nA change from 20°C	60 to 380

## CROSS SENSITIVITY

H <sub>2</sub> S	sensitivity % measured gas @ 5ppm	H <sub>2</sub> S	< -130
NO	sensitivity % measured gas @ 5ppm	NO	< 4
Cl <sub>2</sub>	sensitivity % measured gas @ 5ppm	Cl <sub>2</sub>	< 100
SO <sub>2</sub>	sensitivity % measured gas @ 5ppm	SO <sub>2</sub>	< -20
CO	sensitivity % measured gas @ 5ppm	CO	< 0.1
H <sub>2</sub>	sensitivity % measured gas @ 100ppm	H <sub>2</sub>	< 0.1
C <sub>2</sub> H <sub>4</sub>	sensitivity % measured gas @ 100ppm	C <sub>2</sub> H <sub>4</sub>	< 0.1
NH <sub>3</sub>	sensitivity % measured gas @ 20ppm	NH <sub>3</sub>	< 0.1
CO <sub>2</sub>	sensitivity % measured gas @ 5% Vol	CO <sub>2</sub>	< 0.1
O <sub>3</sub>	sensitivity % measured gas @ 100ppb	O <sub>3</sub>	30 to 65
Halothane	sensitivity % measured gas @ 100ppm	Halothane	< 0.1

## KEY SPECIFICATIONS

Temperature range	°C	-30 to 50
Pressure range	kPa	80 to 120
Humidity range	% rh continuous	15 to 85
Storage period	months @ 3 to 20°C (stored in sealed pot)	6
Load resistor	$\Omega$ (ISB circuit is recommended)	33 to 100
Weight	g	< 13



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.

**NOTE:** all sensors are tested at ambient environmental conditions, with 47 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.



# NO2-B4 Performance Data

# Technical Specification

**Figure 2 Sensitivity Temperature Dependence**

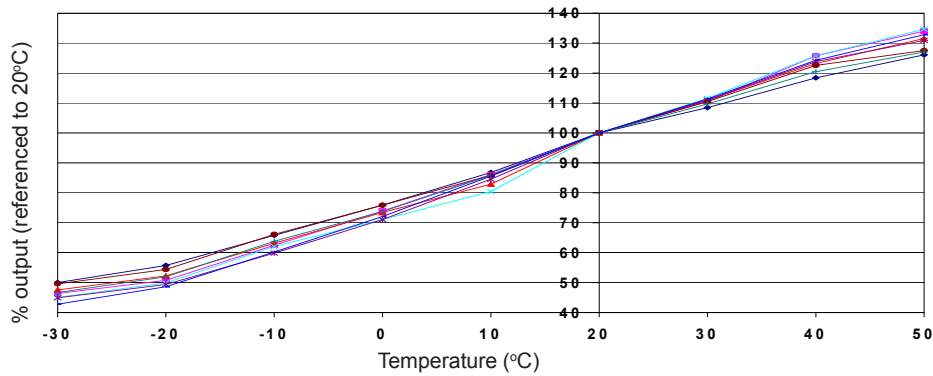


Figure 2 shows the temperature dependence of sensitivity at 2ppm NO<sub>2</sub>. This data is taken from a typical batch of sensors.

**Figure 3 Zero Temperature Dependence**

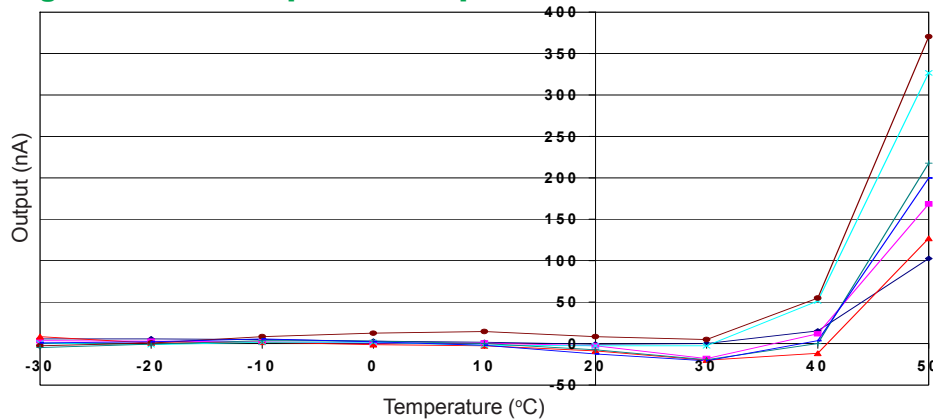


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for further information on zero current correction.

**Figure 4 Response to 20 ppb NO<sub>2</sub> using ISB circuit**

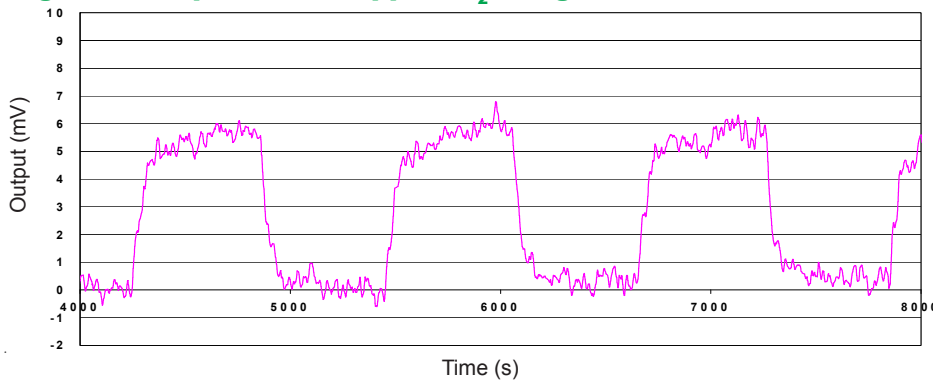
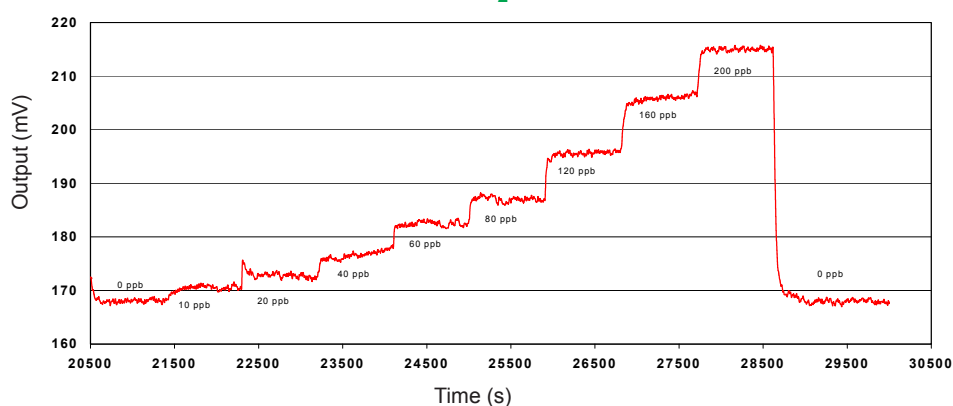


Figure 4 shows response to 20ppb NO<sub>2</sub>.

Use of Alphasense ISB circuit reduces noise to 12ppb, with the opportunity of digital smoothing to reduce noise even further

**Figure 5 Response to 200 ppb NO<sub>2</sub>**



With a 33 Ω load resistor, the NO<sub>2</sub>-B4 shows excellent resolution, even at the ppb level: ideal for outdoor air environmental testing.

This raw data can be digitally smoothed.

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](http://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. NO2-B4/NOV13*