

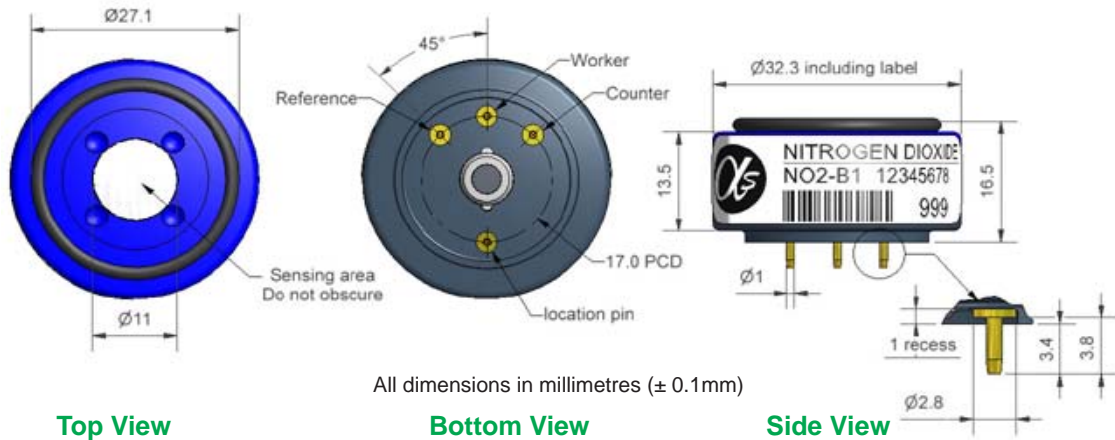


# NO2-B1 Nitrogen Dioxide Sensor



PATENTED

Figure 1 NO2-B1 Schematic Diagram



# Technical Specification

PERFORMANCE	Parameter	Specification	Range
	Sensitivity	nA/ppm in 10ppm NO <sub>2</sub>	-600 to -1100
	Response time	t <sub>90</sub> (s) from zero to 10ppm NO <sub>2</sub> (33Ω load resistor)	< 40
	Zero current	ppm equivalent in zero air	< ± 0.2
	Resolution	RMS noise (ppm equivalent) (33Ω Load Resistor)	< 0.02
	Range	ppm NO <sub>2</sub> limit of performance warranty	20
	Linearity	ppm error at full scale, linear at zero and 10ppm NO <sub>2</sub>	< ± 0.2
	Overgas limit	maximum ppm for stable response to gas pulse	100

LIFETIME	Parameter	Specification	Range
	Zero drift	ppm equivalent change/year in lab air	< 0.03
	Sensitivity drift	% change/year in lab air, monthly test	< 6
	Operating life	months until 80% original signal (24 month warranted)	> 24

ENVIRONMENTAL	Parameter	Specification	Range
	Sensitivity @ -20°C	% (output @ -20°C/output @ 20°C) @ 5ppm NO <sub>2</sub>	80 to 95
	Sensitivity @ 50°C	% (output @ 50°C/output @ 20°C) @ 5ppm NO <sub>2</sub>	100 to 105
	Zero @ -20°C	ppm equivalent change from 20°C	0 to +0.3
	Zero @ 50°C	ppm equivalent change from 20°C	<± 0.2
	Zero slope	equivalent ppm/K	-0.003

CROSS SENSITIVITY	Gas	Sensitivity	Specification	Range
	H <sub>2</sub> S	sensitivity	% measured gas @ 20ppm	-100
	NO	sensitivity	% measured gas @ 50ppm	< 0.5
	Cl <sub>2</sub>	sensitivity	% measured gas @ 10ppm	100
	SO <sub>2</sub>	sensitivity	% measured gas @ 20ppm	< -2
	CO	sensitivity	% measured gas @ 400ppm	< 0.1
	H <sub>2</sub>	sensitivity	% measured gas @ 400ppm	< 0.1
	C <sub>2</sub> H <sub>4</sub>	sensitivity	% measured gas @ 400ppm	< 0.1
	NH <sub>3</sub>	sensitivity	% measured gas @ 20ppm	< 0.1
	CO <sub>2</sub>	sensitivity	% measured gas @ 5% (Vol)	0

KEY SPECIFICATIONS	Parameter	Specification	Range
	Temperature range	°C	-20 to 50
	Pressure range	kPa	80 to 120
	Humidity range	% rh continuous (see note below)	15 to 90
	Storage period	months @ 3 to 20°C (stored in sealed pot)	6
	Load resistor	Ω (for optimum performance)	33
	Weight	g	< 13

Note: Above 85% rh and 40°C a maximum continuous exposure period of 10 days is warranted. Where such exposure occurs the sensor will recover normal electrolyte volumes when allowed to rest at lower % rh and temperature levels for several days.



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 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.



# NO2-B1 Performance Data

# Technical Specification

Figure 2 Sensitivity Temperature Dependence

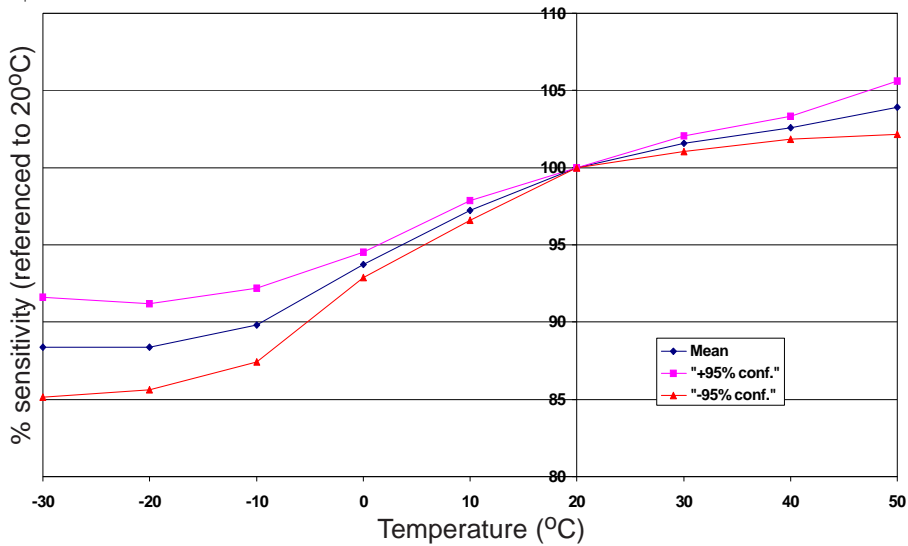


Figure 2 shows the variation in sensitivity caused by changes in temperature.

This data is taken from a typical batch of sensors. The mean and  $\pm 95\%$  confidence intervals are shown.

Figure 3 Effect of Load Resistor Value on Noise

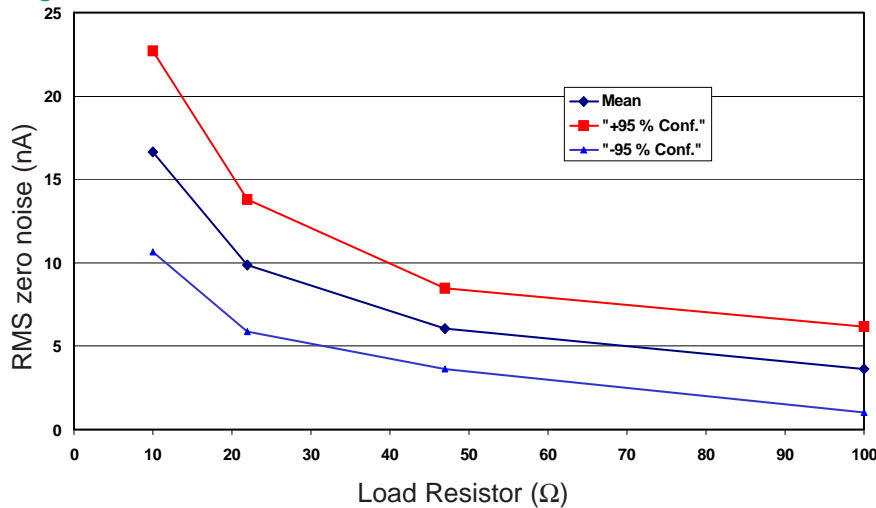
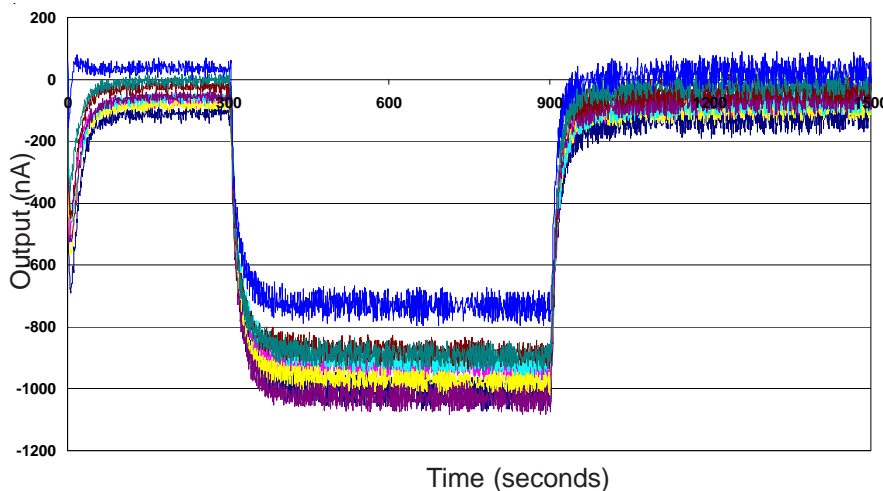


Figure 3 shows the effect of the load resistor on the RMS zero noise for the NO2-B1 sensor. The mean and  $\pm 95\%$  confidence intervals are shown.

The  $t_{90}$  response time increases linearly with increasing load resistor value. If a fast response is required then a 10  $\Omega$  load resistor should be employed; this will give a fast response.

Figure 4 NO2-B1 Response to 1ppm NO<sub>2</sub>



With a 33  $\Omega$  load resistor, the NO2-B1 shows excellent resolution, even at the ppb level: ideal for outdoor air environmental testing.

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)".

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