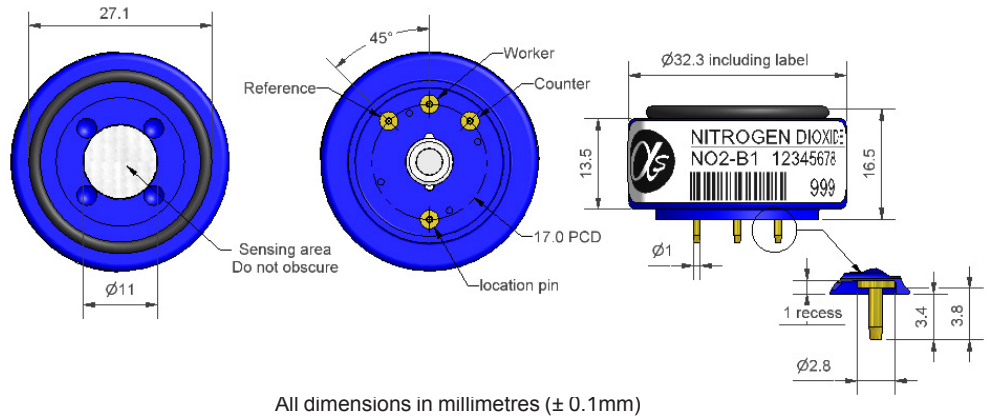
NO2-B1 Nitrogen Dioxide Sensor

PATENTED

Technical Specification

Figure 1 NO2-B1 Schematic Diagram



All dimensions in millimetres (± 0.1mm)

Top View | Bottom View | Side View

PERFORMANCE	Sensitivity	nA/ppm in 10ppm NO_2	-600 to -1100
	Response time	t_{90} (s) from zero to 10ppm NO_2 (33Ω load resistor)	< 60
	Zero current	ppm equivalent in zero air	< ± 0.2
	Resolution	RMS noise (ppm equivalent) (33Ω Load Resistor)	< 0.02
	Range	ppm NO_2 limit of performance warranty	20
	Linearity	ppm error at full scale, linear at zero and 10ppm NO_2	< ± 0.3
	Overgas range	maximum ppm for stable response to gas pulse	100
LIFETIME	Zero drift	ppm equivalent change/year in lab air	< 0.1
	Sensitivity drift	% change/month in lab air, monthly test	< 2
	Operating life	months until 80% original signal (24 month warranted)	> 24
ENVIRONMENTAL		Sensitivity @ -20°C	% (output @ -
20°C/output @ 20°C) @ 5ppm NO_2		101 to 109	
	Sensitivity @ 50°C	% (output @ 40°C/output @ 20°C) @ 5ppm NO_2	78 to 93
	Zero @ -20°C	ppm equivalent change from 20°C	< ± 0.15
	Zero @ 50°C	ppm equivalent change from 20°C	< -0.1 to -0.25
CROSS SENSITIVITY	NO sensitivity	% measured gas @ 50ppm NO	< 0.5
	SO_2 sensitivity	% measured gas @ 20ppm SO_2	< -2
	Cl_2 sensitivity	% measured gas @ 10ppm Cl_2	100
	H_2 sensitivity	% measured gas @ 400ppm H_2	< 0.1
	H_2S sensitivity	% measured gas @ 20ppm H_2S	-100
	CO sensitivity	% measured gas @ 400ppm CO	< 0.1
	C_2H_4 sensitivity	% measured gas @ 400ppm C_2H_4	< 0.1
	NH_3 sensitivity	% measured gas @ 20ppm NH_3	< 0.1
	CO_2 sensitivity	% measured gas @ 5% (Vol) CO_2	0
KEY SPECIFICATIONS	Temperature range	°C	-30 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 40ºC 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.

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.

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NO2-B1 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

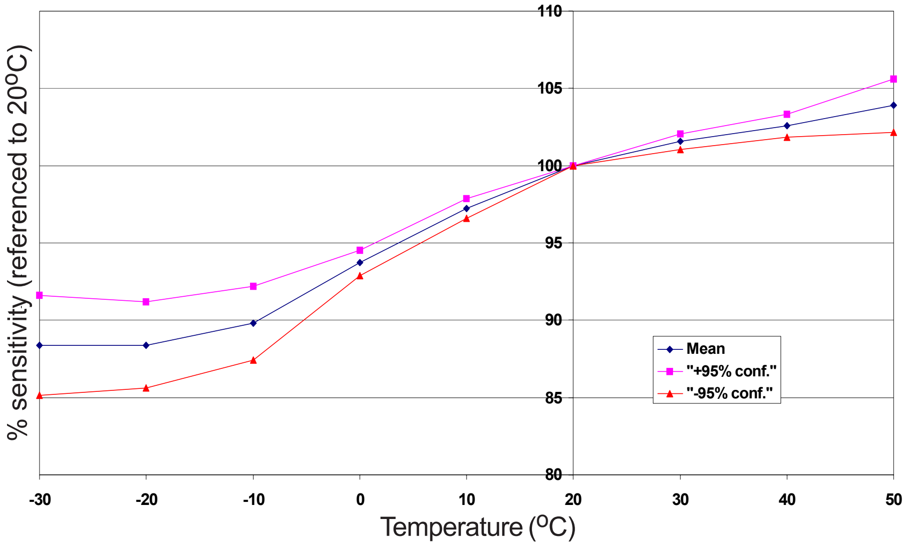


Figure 2 shows the variation in sensitivity caused by changes in temperature.

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

Figure 3 Effect of Load Resistor Value on Noise

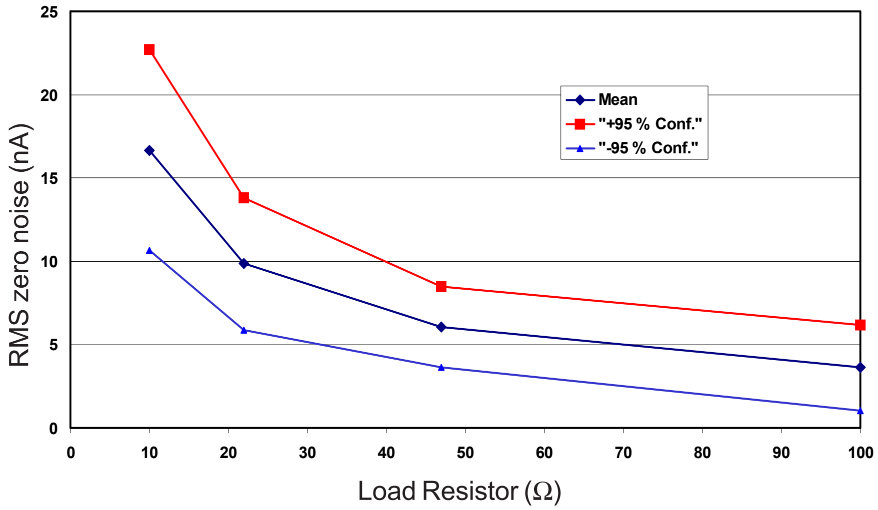
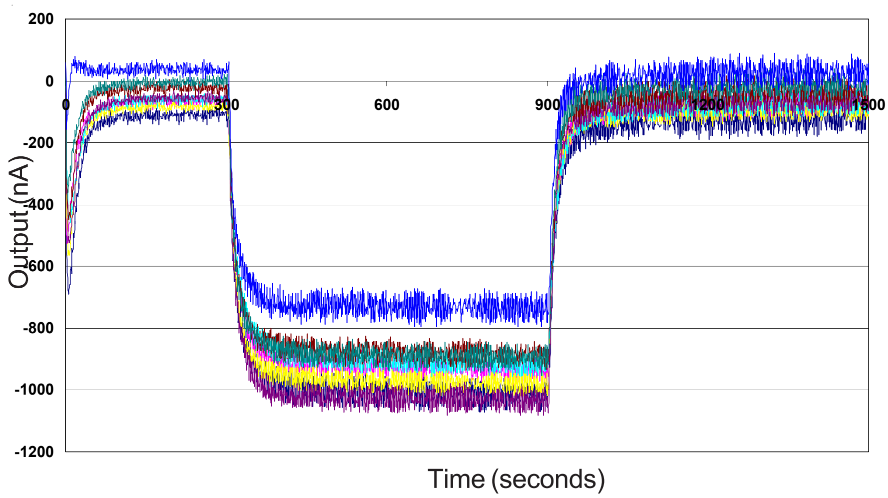


Figure 3 shows the effect of load resistor value on the RMS zero noise for the NO2-B1 sensor.

The t_{90} response time increases linearly with increasing load resistor value. If a fast response is required then a 10 Ω load resistor should be employed; this will give a 20 second response.

Figure 4 NO2-B1 Response to 1ppm NO_2



When designed with a 22 ohm 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".