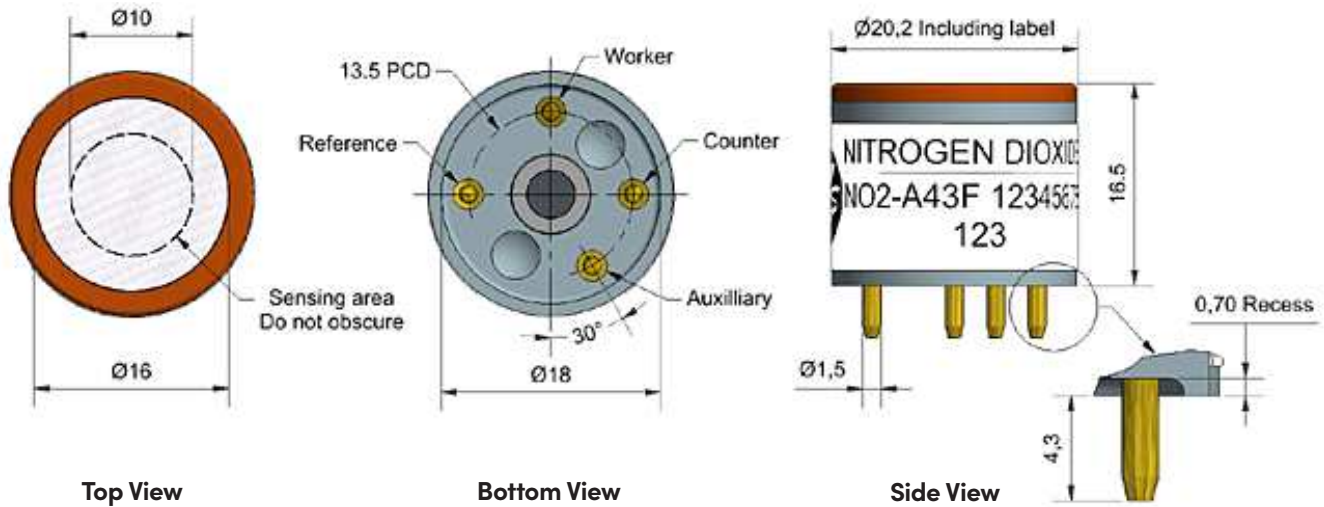


NO₂-A43F Nitrogen Dioxide Sensor – 4-Electrode



Dimensions are in millimetres (± 0.15 mm).

Performance

Sensitivity	nA/ppm at 2ppm NO ₂	-175 to -500
Response time	t ₉₀ (s) from zero to 2ppm NO ₂	< 80
Zero current	nA in zero air at 20°C	-70 to +70
Noise*	± 2 standard deviations (ppb equivalent)	15
Range	ppm NO ₂ limit of performance warranty	20
Linearity	ppm error at full scale, linear at zero and 20ppm	< ± 0.5
Overgas limit	NO ₂ maximum ppm for stable response to gas pulse	50

*Tested with Alphasense AFE 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 (24-month warranted)	> 24

Environmental

Sensitivity @ -20°C	% (output @ -20°C/output @ 20°C) @ 2ppm NO ₂	40 to 80
Sensitivity @ 40°C	% (output @ 50°C/output @ 20°C) @ 2ppm NO ₂	95 to 115
Zero @ -20°C	nA	0 to +25
Zero @ 40°C	nA	20 to 60

Cross-sensitivity

O ₃	filter capacity (ppm hrs) @ 2ppm	O ₃	< 500
H ₂ S	sensitivity % measured gas @ 5ppm	H ₂ S	< -80
NO	sensitivity % measured gas @ 5ppm	NO	< 5
Cl ₂	sensitivity % measured gas @ 5ppm	Cl ₂	< 100
SO ₂	sensitivity % measured gas @ 5ppm	SO ₂	< -3
CO	sensitivity % measured gas @ 5ppm	CO	< -3
C ₂ H ₄	sensitivity % measured gas @ 100ppm	C ₂ H ₄	< 1
NH ₃	sensitivity % measured gas @ 20ppm	NH ₃	< 0.2
H ₂	sensitivity % measured gas @ 100ppm	H ₂	< 0.1
CO ₂	sensitivity % measured gas @ 5% volume	CO ₂	< 0.1
Halothane	sensitivity % measured gas @ 100ppm	Halothane	nd

Key Specifications

Temperature range	°C	-30 to 40
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	Ω (AFE circuit is recommended)	33 to 100
Weight	g	< 6

Figure 1 Sensitivity Temperature Dependence

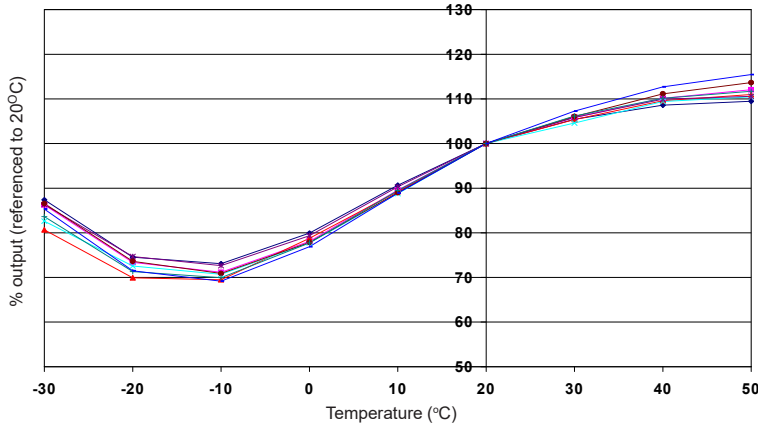


Figure 1 shows the temperature dependence of sensitivity at 2ppm NO₂.
This data is taken from a typical batch of sensors.

Figure 2 Zero Temperature Dependence

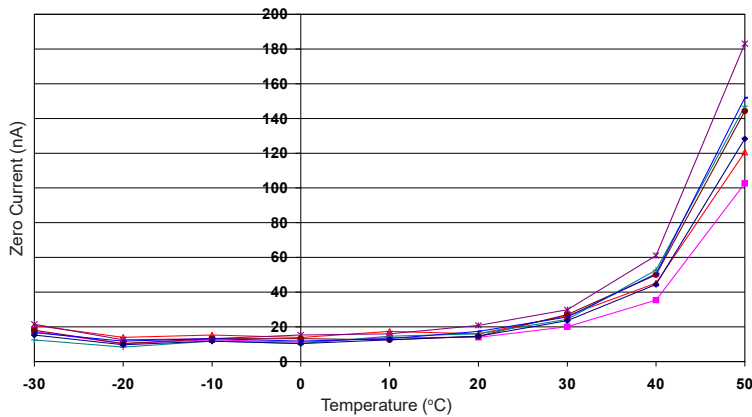


Figure 2 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.
This data is taken from a typical batch of sensors.
Contact Alphasense for further information on zero current correction.

Figure 3 Response from 200 ppb to 0 ppb NO₂

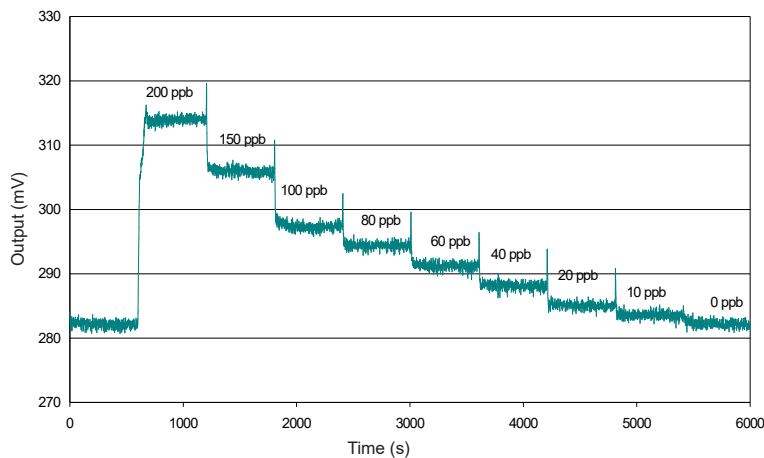


Figure 3 shows response from from 200ppb NO₂ to 0ppb NO₂.
Use of Alphasense AFE circuit reduces noise to 15ppb, with the opportunity of digital smoothing to reduce noise even further.
Offset voltage is due to intentional AFE circuit electronic offset.

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 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.

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-A43F/SEP22