

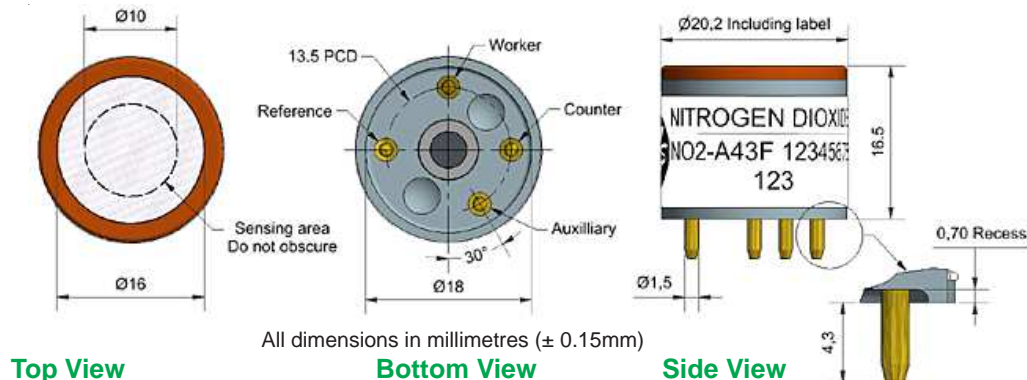


## NO<sub>2</sub>-A43F Nitrogen Dioxide Sensor 4-Electrode



Patented

Figure 1 NO<sub>2</sub>-A43F Schematic Diagram



Technical Specification

### PERFORMANCE

Sensitivity	nA/ppm at 2ppm NO <sub>2</sub>	-175 to -450
Response time	t <sub>90</sub> (s) from zero to 2ppm NO <sub>2</sub>	< 60
Zero current	nA in zero air at 20°C	-50 to +70
Noise*	$\pm 2$ standard deviations (ppb equivalent)	15
Range	ppm NO <sub>2</sub> limit of performance warranty	20
Linearity	ppm error at full scale, linear at zero and 20ppm NO <sub>2</sub>	< $\pm 0.5$
Overgas limit	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 <sub>2</sub>	40 to 80
Sensitivity @ 40°C (% output @ 50°C/output @ 20°C) @ 2ppm NO <sub>2</sub>	95 to 115
Zero @ -20°C	nA
Zero @ 40°C	nA

### CROSS SENSITIVITY

O <sub>3</sub>	Filter capacity (ppm hrs)	@ 2ppm	O <sub>3</sub>	> 500
H <sub>2</sub> S	sensitivity % measured gas	@ 5ppm	H <sub>2</sub> S	< -80
NO	sensitivity % measured gas	@ 5ppm	NO	< 5
Cl <sub>2</sub>	sensitivity % measured gas	@ 5ppm	Cl <sub>2</sub>	< 75
SO <sub>2</sub>	sensitivity % measured gas	@ 5ppm	SO <sub>2</sub>	< -5
CO	sensitivity % measured gas	@ 5ppm	CO	< -5
C <sub>2</sub> H <sub>4</sub>	sensitivity % measured gas	@ 100ppm	C <sub>2</sub> H <sub>4</sub>	< 1
NH <sub>3</sub>	sensitivity % measured gas	@ 20ppm	NH <sub>3</sub>	< 0.2
H <sub>2</sub>	sensitivity % measured gas	@ 100ppm	H <sub>2</sub>	< 0.1
CO <sub>2</sub>	sensitivity % measured gas	@ 5% Vol	CO <sub>2</sub>	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	$\Omega$ (AFE circuit recommended)	33 to 100
Weight	g	< 6



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.

**Apollosense Ltd**



## NO<sub>2</sub>-A43F Performance Data

Technical Specification

**Figure 2 Sensitivity temperature dependence**

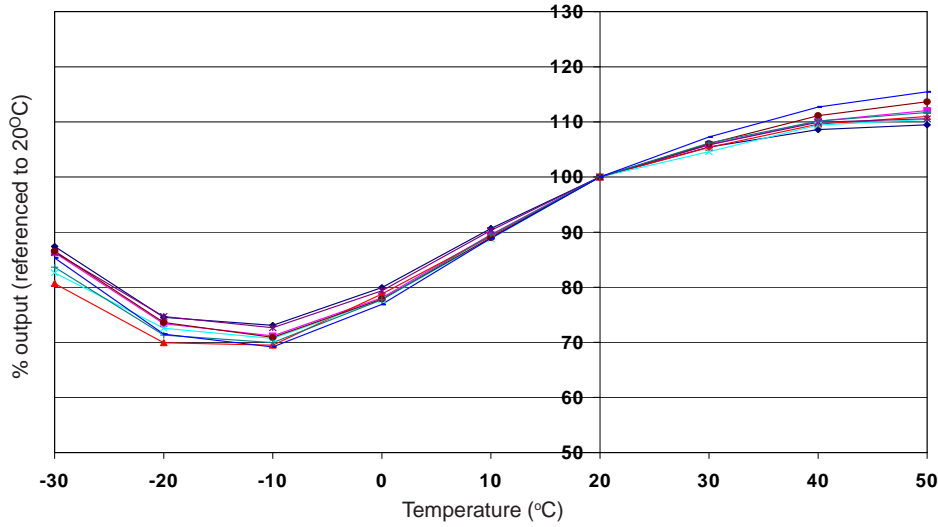


Figure 2 shows the temperature dependence of sensitivity at 2ppm NO<sub>2</sub>.

This data is taken from a typical batch of sensors.

**Figure 3 Zero temperature dependence**

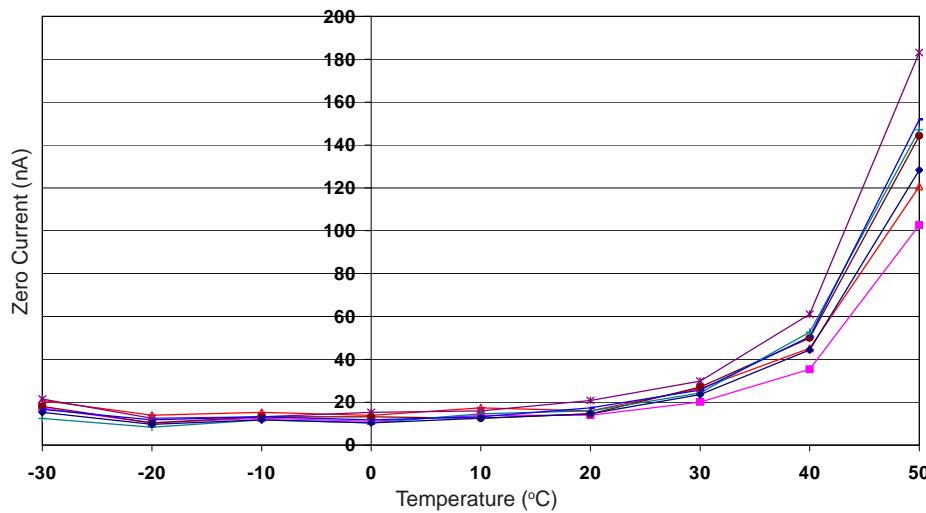


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for further information on zero current correction.

**Figure 4 Response from 200 ppb to 0 ppb NO<sub>2</sub>**

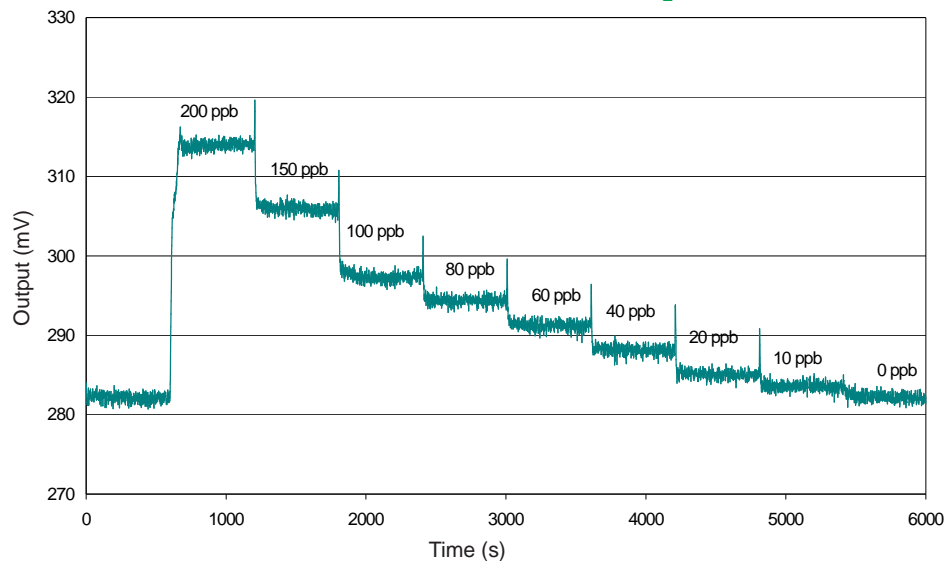


Figure 4 shows response from from 200ppb NO<sub>2</sub> to 0ppb NO<sub>2</sub>.

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.

**ApolloSense Ltd**