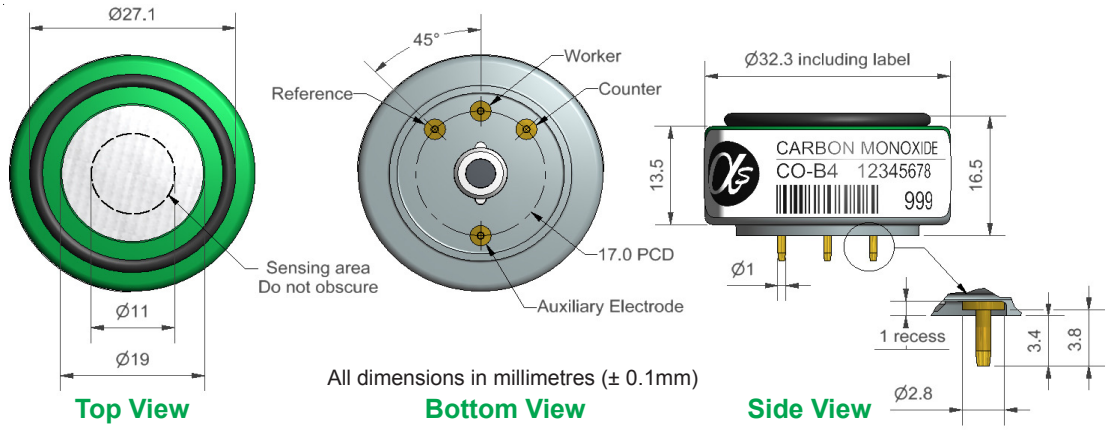
CO-B4 Carbon Monoxide Sensor
4-Electrode

PATENTED

Technical Specification

Figure 1 CO-B4 Schematic Diagram



All dimensions in millimetres (± 0.1mm)

PERFORMANCE	Sensitivity	nA/ppm at 2ppm CO	420 to 650
	Response time	t_{90} (s) from zero to 10ppm CO	< 25
	Zero current	nA in zero air at 20°C	+30 to -130
	Noise*	±2 standard deviations (ppb equivalent)	4
	Range	ppm limit of performance warranty	1000
	Linearity	ppb CO error at full scale, linear at zero, 500ppm CO	20 to 35
	Overgas limit	maximum ppm for stable response to gas pulse	2000

*** Tested with Alphasense ISB low noise circuit**

LIFETIME	Zero drift	ppb equivalent change/year in lab air	< ±100
	Sensitivity drift	% change/year in lab air, monthly test	< 10
	Operating life	months until 50% original signal (24 month warranted)	> 36

ENVIRONMENTAL	Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 5ppm CO	40 to 70
	Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 5ppm CO	110 to 125
	Zero @ -20°C	nA	-30 to +30
	Zero @ 50°C	nA	-50 to -200

CROSS SENSITIVITY

Filter capacity	ppm·hrs		H_2S	250,000
H_2S sensitivity	% measured gas @	5ppm	H_2S	< 1
NO_2 sensitivity	% measured gas @	5ppm	NO_2	< 1
Cl_2 sensitivity	% measured gas @	5ppm	Cl_2	< 1
NO sensitivity	% measured gas @	5ppm	NO	< -3
SO_2 sensitivity	% measured gas @	5ppm	SO_2	< 0.1
H_2 sensitivity	% measured gas @	100ppm	H_2 at 20°C	< 10
C_2H_4 sensitivity	% measured gas @	100ppm	C_2H_4	< 1
NH_3 sensitivity	% measured gas @	20ppm	NH_3	< 0.1

KEY SPECIFICATIONS	Temperature range	°C	-30 to 50
	Pressure range	kPa	80 to 120
	Humidity range	% rh continuous	15 to 90
	Storage period	months @ 3 to 20°C (stored in sealed pot)	6
	Load resistor	Ω (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 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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

CO-B4 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

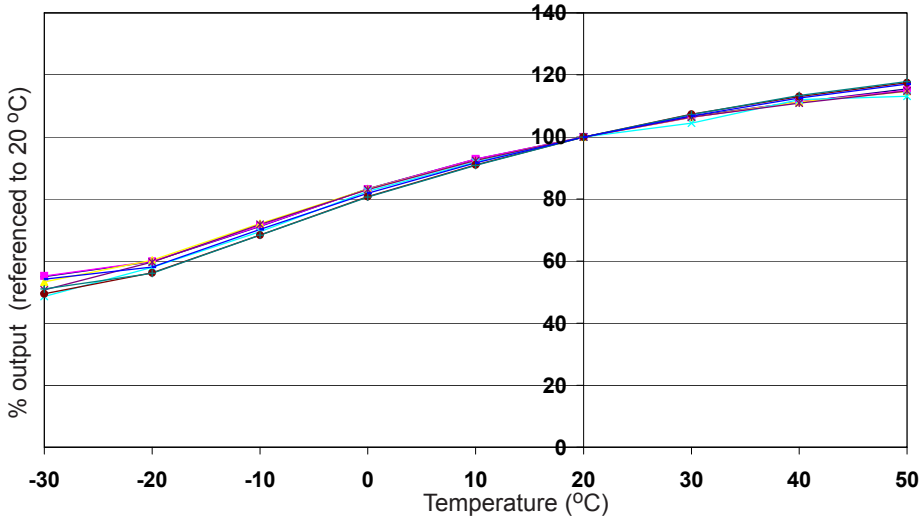


Figure 2 shows the temperature dependence of sensitivity at 2ppm CO.

This data is taken from a typical batch of sensors.

Figure 3 Zero Current Temperature Dependence (corrected)

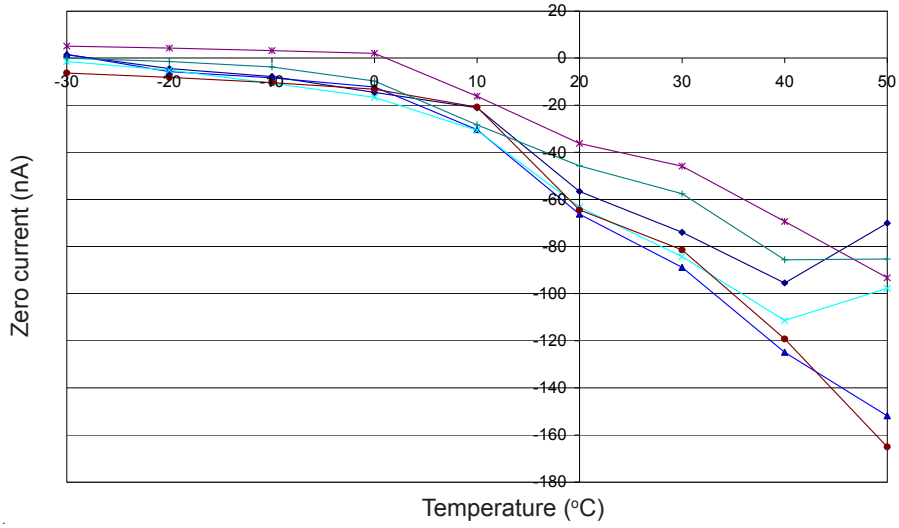


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for futher information on zero current correction.

Figure 4 Response to 0 to 1ppm CO

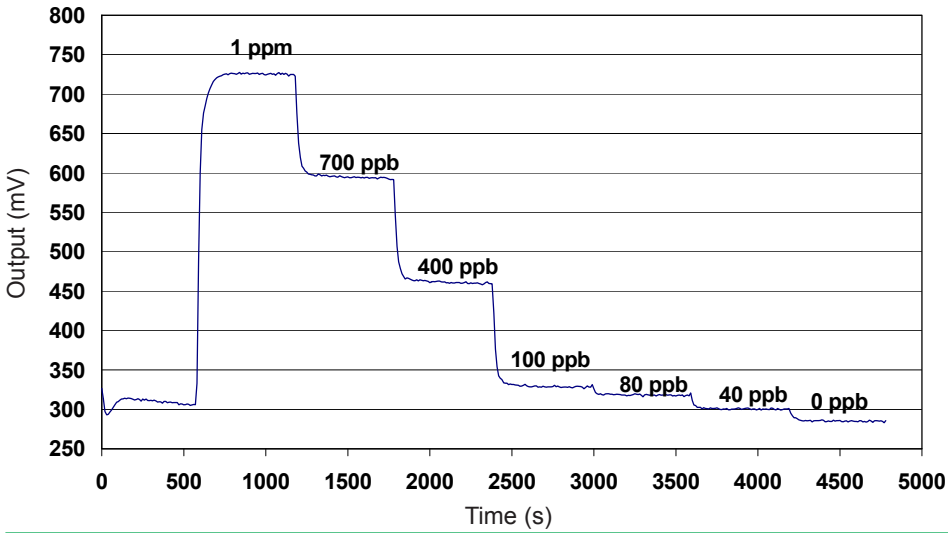


Figure 4 shows response from 0 to 1ppm CO.

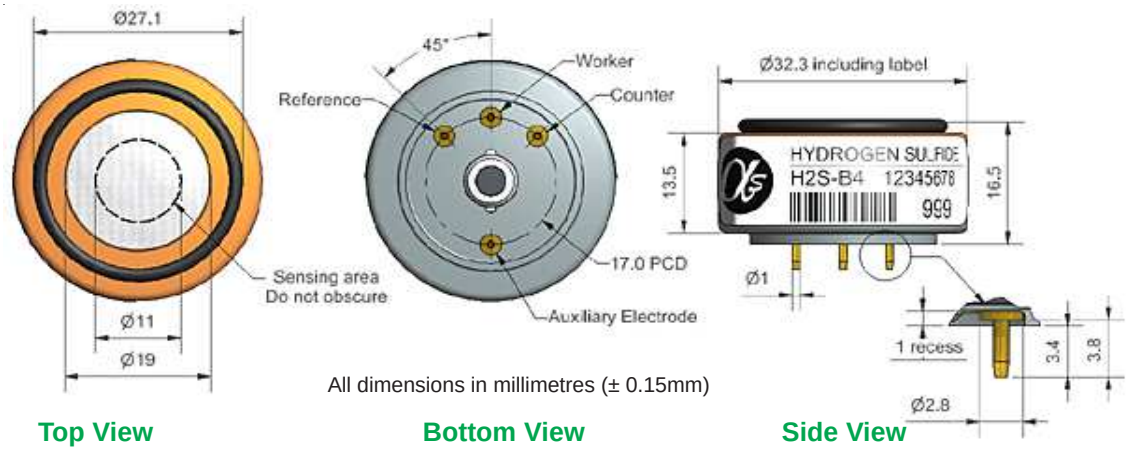
Use of Alphasense ISB circuit reduces noise to 4ppb, with the opportunity of digital smooting to reduce noise even further

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".

H2S-B4 Hydrogen Sulfide Sensor
4-Electrode

Technical Specification

Figure 1 H2S-B4 Schematic Diagram



All dimensions in millimetres (± 0.15mm)

Top View | Bottom View | Side View

PERFORMANCE	Sensitivity	nA/ppm at 2ppm H_2S	1450 to 2150
	Response time	t_{90} (s) from zero to 2ppm H_2S	< 55
	Zero current	nA in zero air at 20°C	-250 to 200
	Noise*	±2 standard deviations (ppb equivalent)	1
	Range	ppm H_2S limit of performance warranty	100
	Linearity	ppb error at full scale, linear at zero and 40ppm H_2S	< ±4
	Overgas limit	maximum ppm for stable response to gas pulse	200

*** Tested with Alphasense ISB low noise circuit**

LIFETIME	Zero drift	ppb equivalent change/year in lab air	< ±100
	Sensitivity drift	% change/year in lab air, monthly test	< 20
	Operating life	months until 50% original signal (24 month warranted)	> 24

ENVIRONMENTAL	Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 2ppm H_2S	77 to 90
	Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 2ppm H_2S	100 to 110
	Zero @ -20°C	nA change from 20°C	50 to 60
	Zero @ 50°C	nA change from 20°C	-120 to -160

CROSS SENSITIVITY	NO_2	sensitivity % measured gas @ 5ppm	NO_2	< -10
	Cl_2	sensitivity % measured gas @ 5ppm	Cl_2	< -12
	NO	sensitivity % measured gas @ 5ppm	NO	< 12
	SO_2	sensitivity % measured gas @ 5ppm	SO_2	< 20
	CO	sensitivity % measured gas @ 5ppm	CO	< 3
	H_2	sensitivity % measured gas @ 100ppm	H_2	< 0.5
	C_2H_4	sensitivity % measured gas @ 100ppm	C_2H_4	< 0.1
	NH_3	sensitivity % measured gas @ 20ppm	NH_3	< 0.1
	CO_2	sensitivity % measured gas @ 5%	CO_2	< 0.1

KEY SPECIFICATIONS	Temperature range	°C	-30 to 50
	Pressure range	kPa	80 to 120
	Humidity range	% rh	15 to 90
	Storage period	months @ 3 to 20°C (stored in sealed pot)	6
	Load resistor	Ω (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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

H2S-B4 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

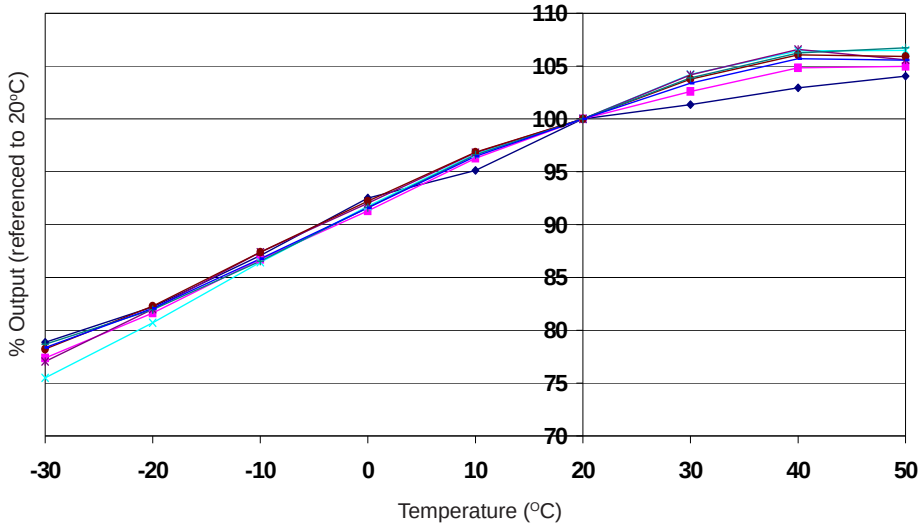


Figure 2 shows the temperature dependence of sensitivity at 2ppm H_2S.

This data is taken from a typical batch of sensors.

Figure 3 Zero Temperature Dependence

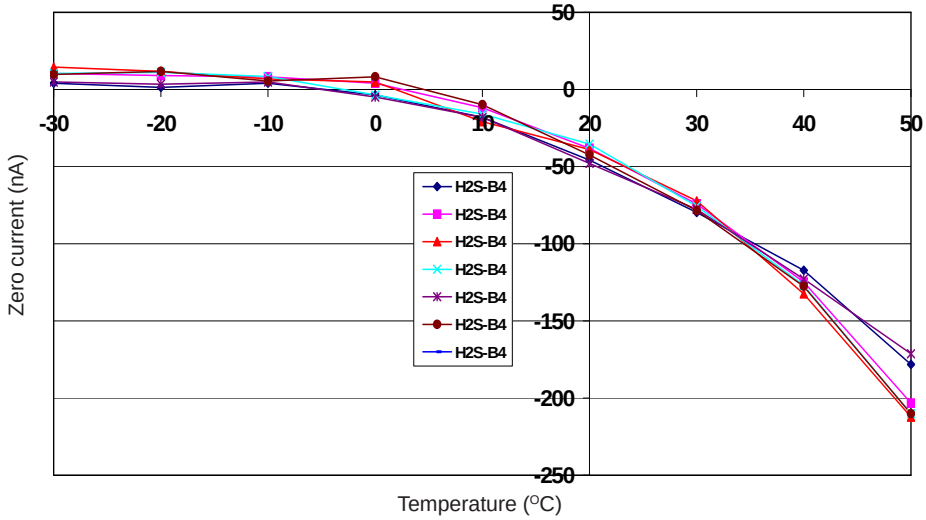


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for futher information on zero current correction.

Figure 4 Linearity to 200 ppb H_2S

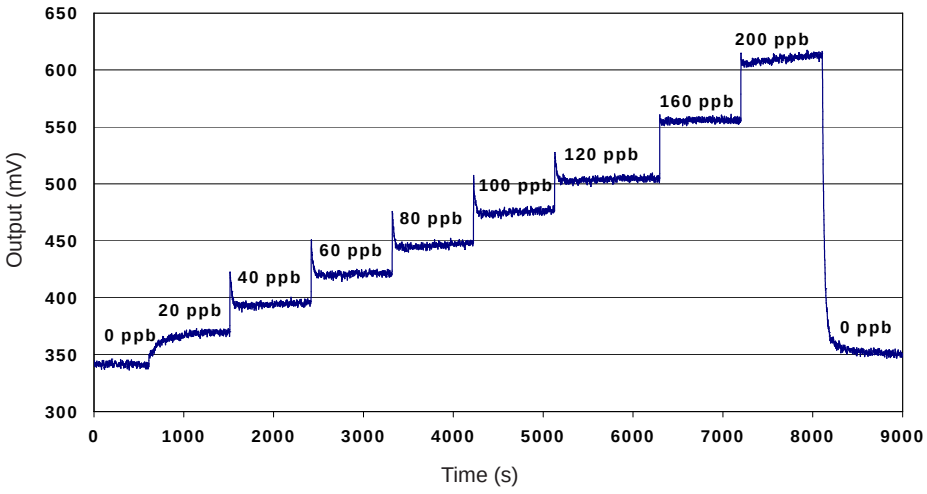
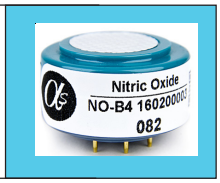


Figure 4 shows response to 200ppb H_2S.

Use of Alphasense ISB circuit reduces noise to 1ppb, with the opportunity of digital smooting to reduce noise even further

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".

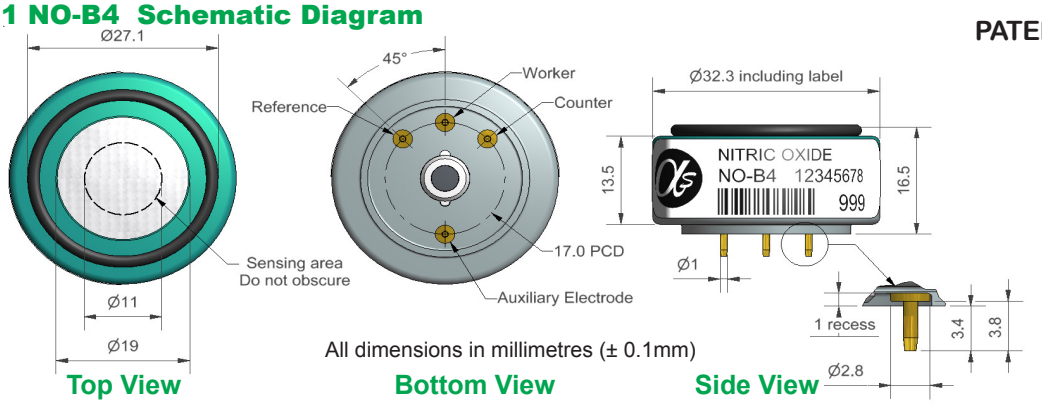
NO-B4 Nitric Oxide Sensor
4-Electrode



Technical Specification

PATENTED

Figure 1 NO-B4 Schematic Diagram



All dimensions in millimetres (± 0.1mm)

PERFORMANCE

Sensitivity	nA/ppm at 2ppm NO	500 to 850
Response time	t_{90} (s) from zero to 2ppm NO	< 45
Zero current	nA in zero air at 20°C	30 to 140
Noise*	±2 standard deviations (ppb equivalent)	15
Range	ppm NO limit of performance warranty	20
Linearity	ppb error at full scale, linear at zero and 5ppm NO	< ±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 50
Sensitivity drift	% change/year in lab air, monthly test	0 to -20
Operating life	months until 50% original signal (24 month warranted)	> 24

ENVIRONMENTAL

Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 2ppm NO	60 to 90
Sensitivity @ 40°C	(% output @ 50°C/output @ 20°C) @ 2ppm NO	97 to 110
Zero @ -20°C	nA	0 to 30
Zero @ 40°C	nA	100 to 200

CROSS SENSITIVITY

H_2S sensitivity	% measured gas @ 5ppm	H_2S (after 3 minutes)		< 10
NO_2 sensitivity	% measured gas @ 5ppm	NO_2 (after 3 minutes)		< 4
Cl_2 sensitivity	% measured gas @ 5ppm	Cl_2		< 3
SO_2 sensitivity	% measured gas @ 5ppm	SO_2		< 5
H_2 sensitivity	% measured gas @ 100ppm	H_2		< 0.1
CO sensitivity	% measured gas @ 5ppm	CO		< 0.3
NH_3 sensitivity	% measured gas @ 5ppm	NH_3		< 0.1
CO_2 sensitivity	% measured gas @ 5% Vol	CO_2		< 0.1
O_3 sensitivity	% measured gas @ 100ppb	O_3		< 4
Halothane sensitivity	@ 100ppm	Halothane		< 0.1

KEY SPECIFICATIONS

Bias voltage	mV (working electrode potential is above reference electrode)	+200
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 (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 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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

NO-B4 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

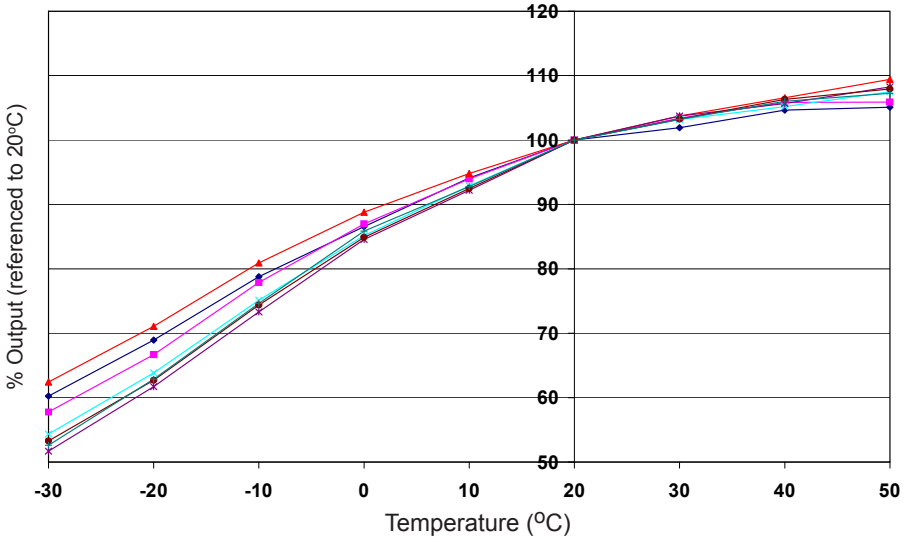


Figure 2 shows the temperature dependence of sensitivity at 2ppm NO.

This data is taken from a typical batch of sensors.

Figure 3 Zero Temperature Dependence

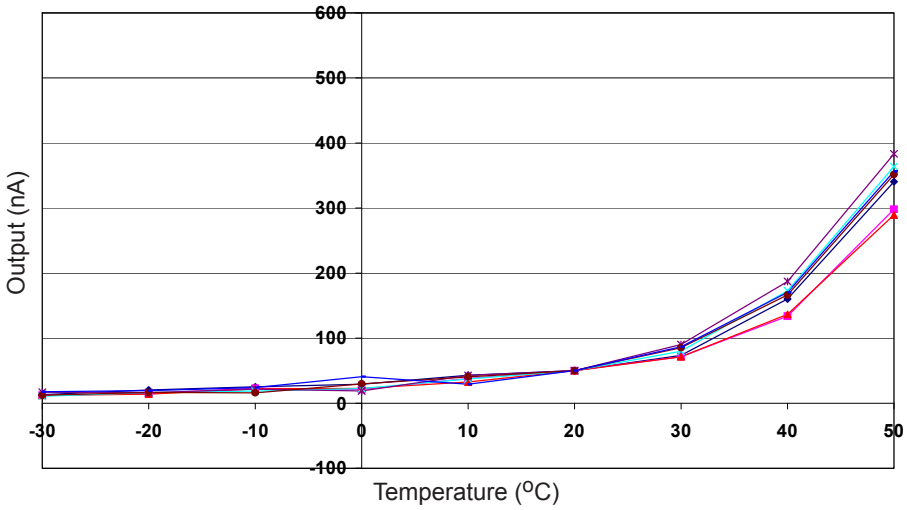


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for futher information on zero current correction.

Figure 4 Response to 200ppb NO

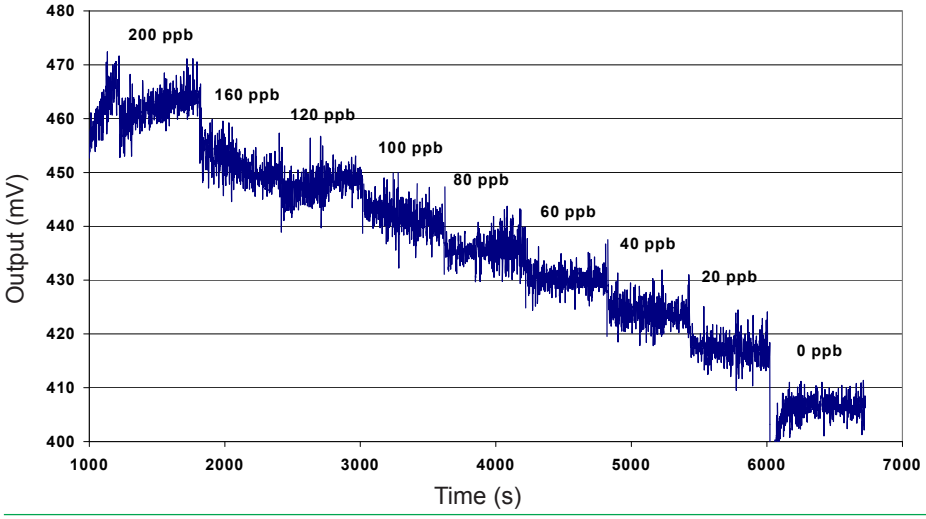


Figure 4 shows response to 200ppb NO.

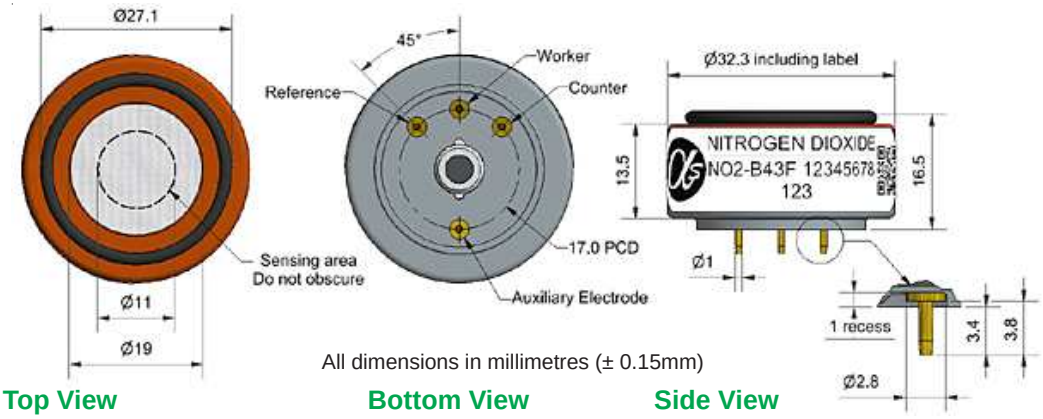
Use of Alphasense ISB circuit reduces noise to 15ppb with the opportunity of digital smooting to reduce noise even further

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".

NO2-B43F Nitrogen Dioxide Sensor
4-Electrode

Technical Specification

Figure 1 NO2-B43F Schematic Diagram



All dimensions in millimetres (± 0.15mm)

Top View | Bottom View | Side View

PERFORMANCE

	Sensitivity	nA/ppm at 2ppm NO_2	-175 to -450
	Response time	t_{90} (s) from zero to 2ppm NO_2	< 60
	Zero current	nA in zero air at 20°C	-50 to +70
	Noise*	±2 standard deviations (ppb equivalent)	15
	Range	ppm NO_2 limit of performance warranty	20
	Linearity	ppb error at full scale, linear at zero and 5ppm NO_2	< ±0.5
	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 (24 month warranted)	> 24

ENVIRONMENTAL

	Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 2ppm NO_2	60 to 80
	Sensitivity @ 40°C	(% output @ 40°C/output @ 20°C) @ 2ppm NO_2	95 to 115
	Zero @ -20°C	nA	0 to 25
	Zero @ 40°C	nA	-10 to 50

CROSS SENSITIVITY

	O_3	Filter capacity (ppm.hr)	@	2ppm	O_3	> 500
	H_2S	sensitivity % measured gas	@	5ppm	H_2S	< -80
	NO	sensitivity % measured gas	@	5ppm	NO	< 5
	Cl_2	sensitivity % measured gas	@	5ppm	Cl_2	< 80
	SO_2	sensitivity % measured gas	@	5ppm	SO_2	< 5
	CO	sensitivity % measured gas	@	5ppm	CO	< 3
	H_2	sensitivity % measured gas	@	100ppm	H_2	< 0.1
	C_2H_4	sensitivity % measured gas	@	100ppm	C_2H_4	< 0.5
	NH_3	sensitivity % measured gas	@	20ppm	NH_3	< 0.2
	CO_2	sensitivity % measured gas	@	5% Vol	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 (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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

NO2-B43F Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

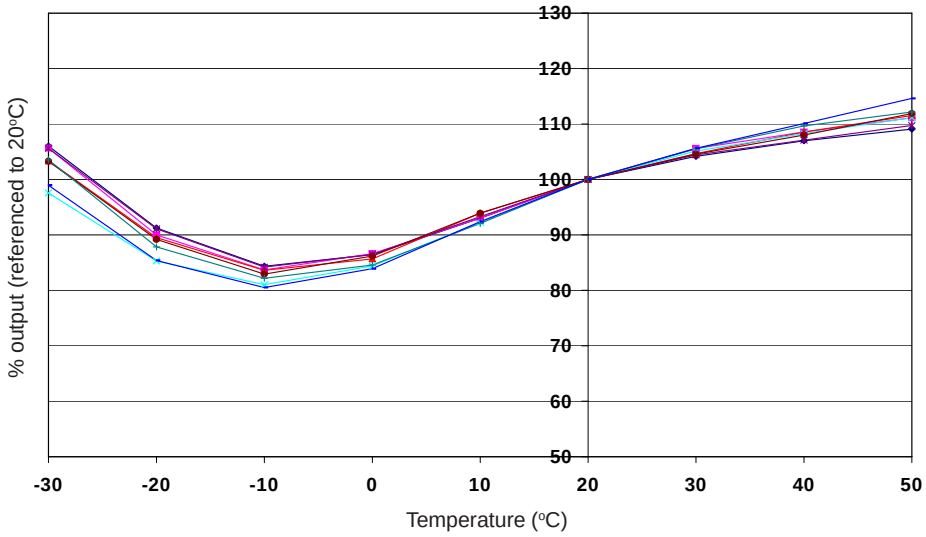


Figure 2 shows the temperature dependence of sensitivity at 2ppm NO_2.

This data is taken from a typical batch of sensors.

Figure 3 Zero Temperature Dependence

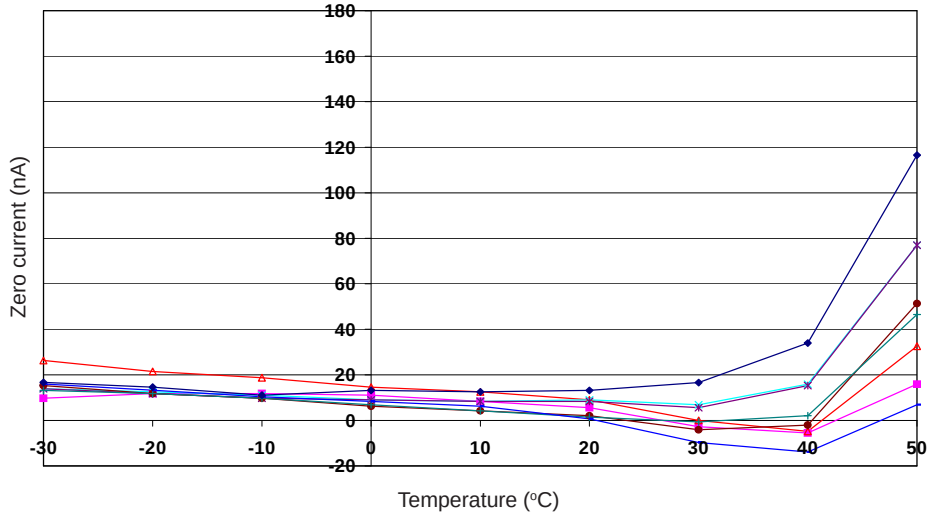
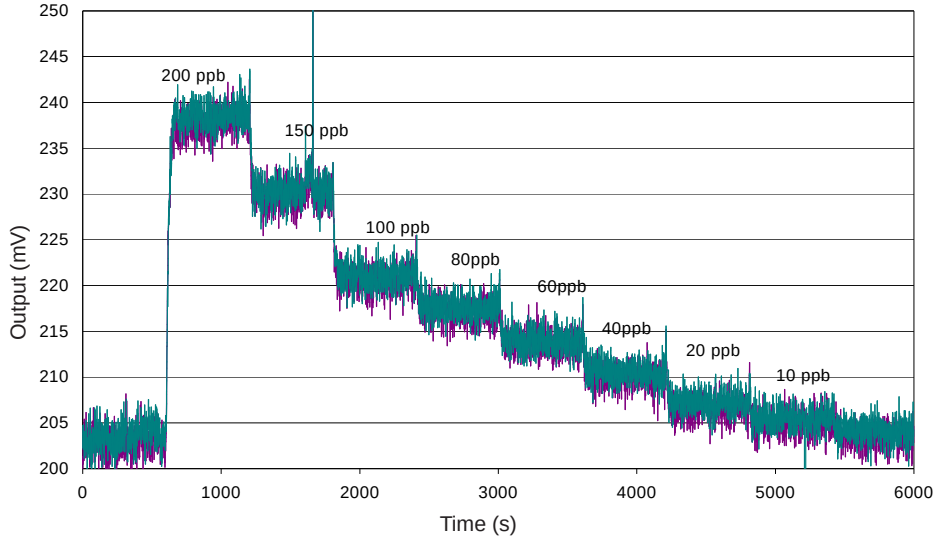


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for futher information on zero current correction.

Figure 4 Response to 200 ppb NO_2



With a 33 Ω load resistor, the NO2-B43F shows excellent resolution, even at the ppb level: ideal for outdoor air environmental testing.

Use of Alphasense ISB circuit reduces noise to 15ppb, with the opportunity of digital smooting to reduce noise even further.

Offset voltage is due to intentional ISB circuit electronic offset.

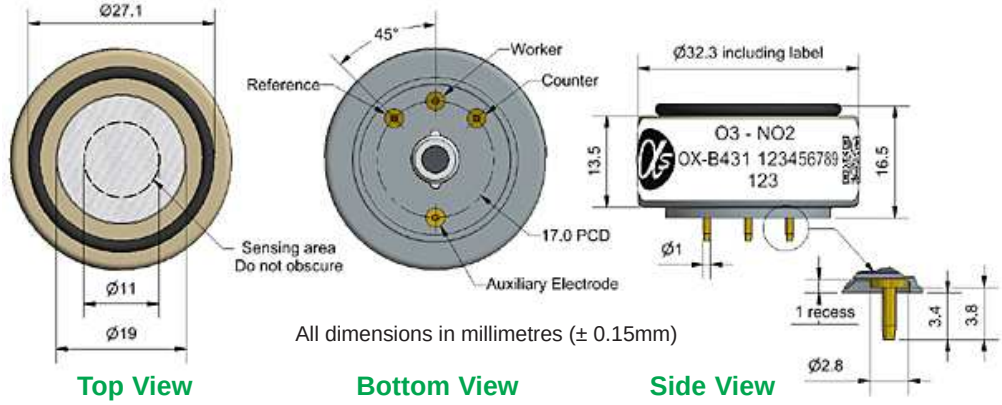
For further information on the performance of this sensor, on other sensors in the range or any other subject, please contact Alphasense Ltd. For Application Notes visit "www.alphasense.com".

OX-B431 Oxidising Gas Sensor
Ozone + Nitrogen Dioxide
4-Electrode

Patented

Technical Specification

Figure 1 OX-B431 Schematic Diagram



All dimensions in millimetres (± 0.15mm)

Top View | Bottom View | Side View

Specification O_3 Sensing

PERFORMANCE

	Sensitivity	nA/ppm at 1ppm O_3	-225 to -650
	Response time	t_{90} (s) from zero to 1ppm O_3	< 45
	Zero current	nA in zero air at 20°C	-50 to 70
	Noise*	±2 standard deviations (ppb equivalent)	15
	Range	ppm O_3 limit of performance warranty	20
	Linearity	ppm error at full scale, linear at zero and 20ppm O_3	< ±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 O_3	70 to 90
	Sensitivity @ 40°C	(% output @ 40°C/output @ 20°C) @ 2ppm O_3	95 to 125
	Zero @ -20°C	nA	0 to 25
	Zero @ 40°C	nA	5 to 100

CROSS SENSITIVITY

	H_2S	sensitivity % measured gas	@	5ppm	H_2S	< 170
	NO	sensitivity % measured gas	@	5ppm	NO	< 5
	Cl_2	sensitivity % measured gas	@	5ppm	Cl_2	< 90
	SO_2	sensitivity % measured gas	@	5ppm	SO_2	< -7
	CO	sensitivity % measured gas	@	5ppm	CO	< 0.1
	C_2H_4	sensitivity % measured gas	@	100ppm	C_2H_4	< 0.1
	NH_3	sensitivity % measured gas	@	20ppm	NH_3	< 0.1
	H_2	sensitivity % measured gas	@	100ppm	H_2	< 0.1
	CO_2	sensitivity % measured gas	@	5% Vol	CO_2	0.1
	Halothane	sensitivity % measured gas	@	100ppm	Halothane	< 0.1

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 recommended)	33 to 100
	Weight	g	< 6

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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

OX-B431 Performance Data

Technical Specification

Figure 2 Sensitivity temperature dependence to 1ppm O_3

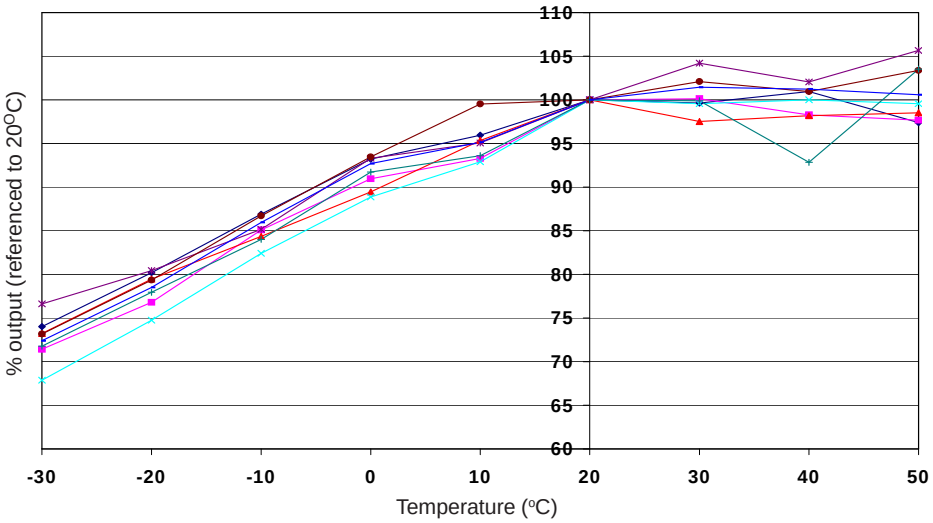


Figure 2 shows the temperature dependence of sensitivity at 1ppm O_3.

This data is taken from a typical batch of sensors.

Figure 3 Zero temperature dependence

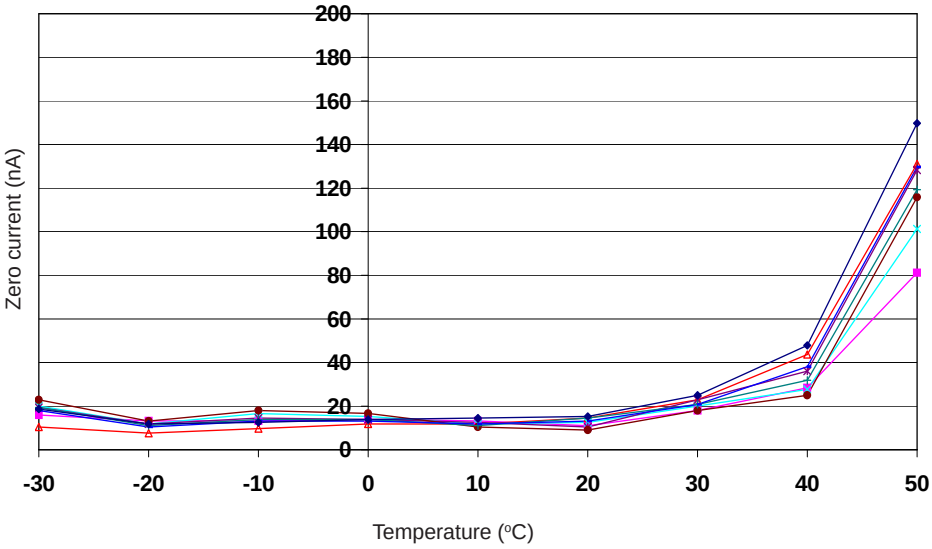


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for futher information on zero current correction.

Figure 4 Response from 200 ppb to 0 ppb O_3

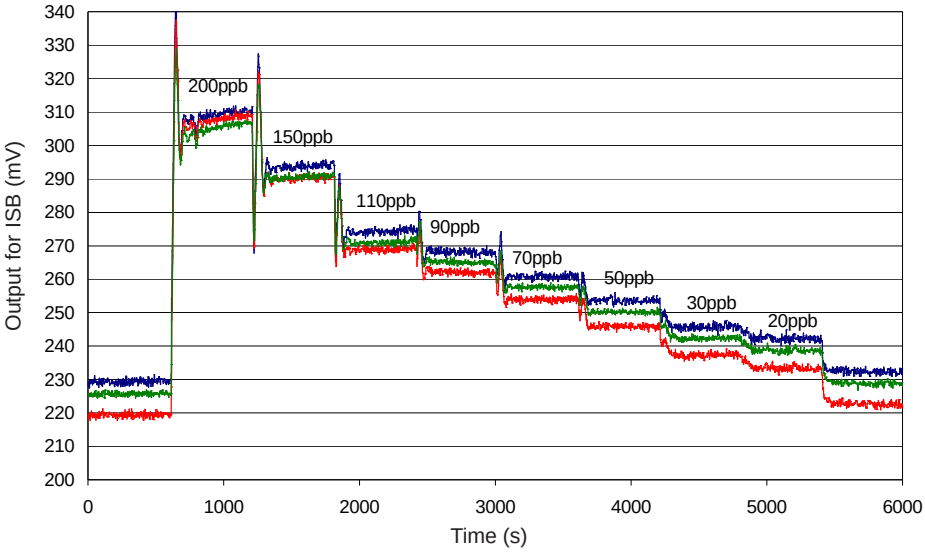


Figure 4 shows response from 200ppb O_3 to 0ppb O_3.

Use of Alphasense AFE circuit reduces noise to 15ppb, with the opportunity of digital smooting to reduce noise even further.

Offset voltage is due to intentional ISB circuit electronic offset.

OX-B431 Oxidising Gas Sensor
Ozone + Nitrogen Dioxide
4-Electrode

Patented

Technical Specification

The OX-B431 detects both ozone and nitrogen dioxide (O_3 +NO_2). The NO2-B43F measures only nitrogen dioxide, filtering out ozone. Using these sensors together allows you to calculate the O_3 concentration by subtracting the corrected NO2-B43F concentration from the corrected OX-B431 concentration.

Before subtracting to determine ozone concentration, ensure that the signals from the two sensors have been corrected for electronic zero offset, sensor zero offset and temperature dependence, and sensitivity (nA/ppm) calibration and temperature dependence.

Specification NO_2 Sensing

PERFORMANCE			
	Sensitivity to NO_2	nA/ppm at 2ppm NO_2	-250 to -650
	Response time	t_{90} (s) from zero to 2ppm NO_2	< 35
	Zero current	nA in zero air at 20°C	-50 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 NO_2	< ±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_2	70 to 90
	Sensitivity @ 40°C	(% output @ 50°C/output @ 20°C) @ 2ppm NO_2	95 to 110
	Zero @ -20°C	nA	0 to 25
	Zero @ 40°C	nA	5 to 50

CROSS SENSITIVITY	H_2S	sensitivity % measured gas	@	5ppm	H_2S	< 170
	NO	sensitivity % measured gas	@	5ppm	NO	< 5
	Cl_2	sensitivity % measured gas	@	5ppm	Cl_2	< 90
	SO_2	sensitivity % measured gas	@	5ppm	SO_2	< -7
	CO	sensitivity % measured gas	@	5ppm	CO	< 0.1
	C_2H_4	sensitivity % measured gas	@	100ppm	C_2H_4	< 0.1
	NH_3	sensitivity % measured gas	@	20ppm	NH_3	< 0.1
	H_2	sensitivity % measured gas	@	100ppm	H_2	< 0.1
	CO_2	sensitivity % measured gas	@	5% Vol	CO_2	0.1
	Halothane	sensitivity % measured gas	@	100ppm	Halothane	< 0.1

KEY SPECIFICATIONS			
	Temperature range	°C	-30 to 40
	Pressure range	kPa	80 to 120
	Humidity range	% rh continuous	15 to 85
			< 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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

OX-B431 Performance Data

Technical Specification

Figure 5 Sensitivity temperature dependence to 2ppm NO_2

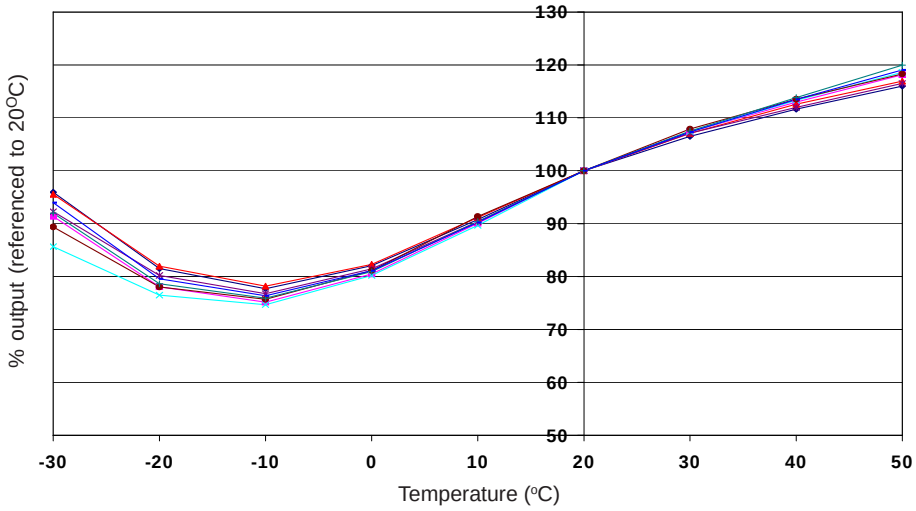


Figure 5 shows the temperature dependence of sensitivity at 2ppm NO_2.

This data is taken from a typical batch of sensors.

Figure 6 Response to 50ppb NO_2

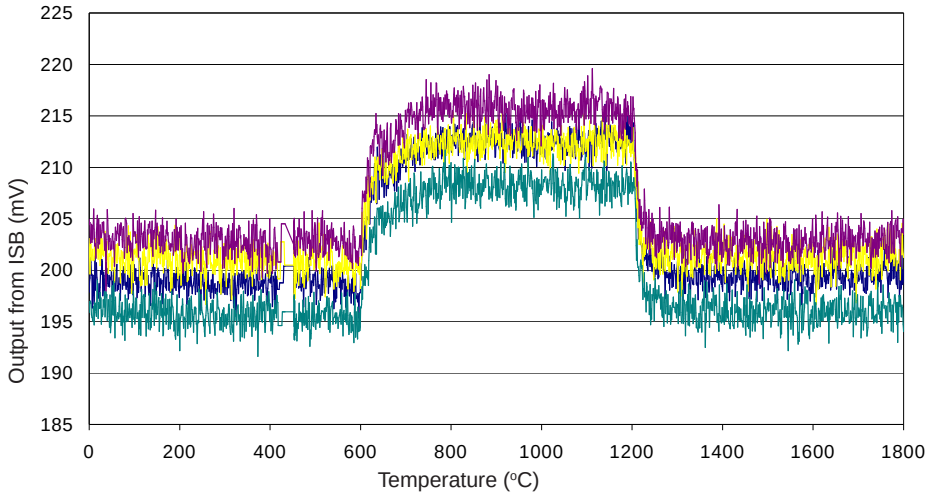


Figure 6 shows the fast response and good baseline recovery of the OX-B431 to 50ppb NO_2.

Figure 7 Response from 200 ppb to 0 ppb NO_2

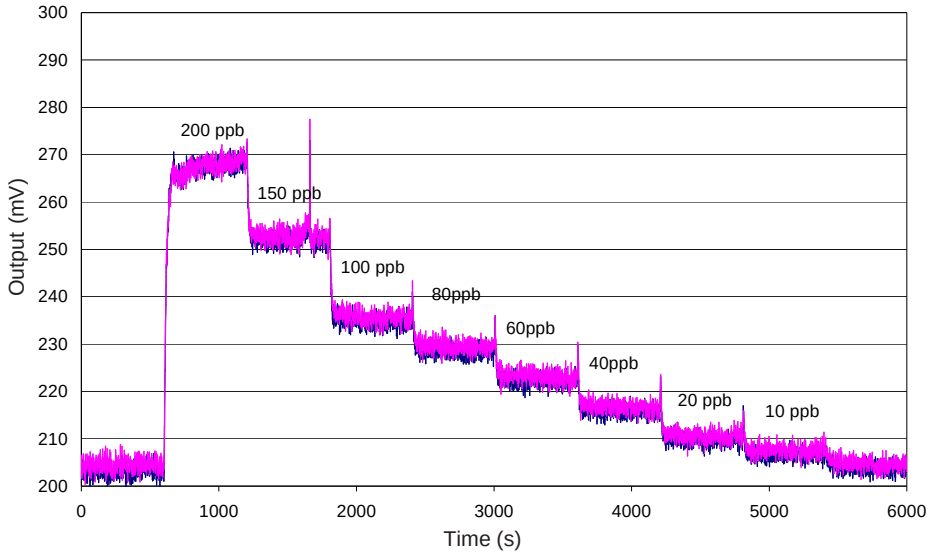


Figure 7 shows response from 200ppb NO_2 to 0ppb NO_2.

Use of Alphasense AFE circuit reduces noise to 15ppb, with the opportunity of digital smooting to reduce noise to less than ± 5ppb.

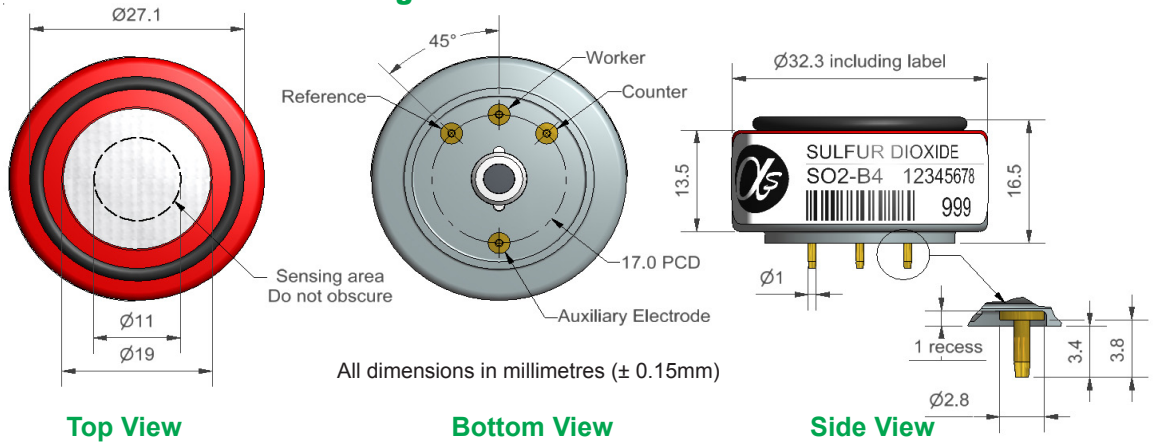
Offset voltage is due to intentional ISB circuit electronic offset.

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".

SO2-B4 Sulfur Dioxide Sensor
4-Electrode

Technical Specification

Figure 1 SO2-B4 Schematic Diagram



PERFORMANCE	Sensitivity	nA/ppm at 2ppm SO_2	275 to 475
	Response time	t_{90} (s) from zero to 2ppm SO_2	< 30
	Zero current	nA in zero air at 20°C	-80 to +80
	Noise*	±2 standard deviations (ppb equivalent)	5
	Range	ppm limit of performance warranty	100
	Linearity	ppb error at 100ppm SO_2, linear at zero and 10ppm SO_2	0 to -2
	Overgas limit	maximum ppm for stable response to gas pulse	200

*** Tested with Alphasense ISB low noise circuit**

LIFETIME	Zero drift	ppb equivalent change/year in lab air	< ±20
	Sensitivity drift	% change/year in lab air, monthly test	< ±15
	Operating life	months until 50% original signal (24 month warranted)	> 36

ENVIRONMENTAL	Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 2ppm SO_2	70 to 82
	Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 2ppm SO_2	95 to 110
	Zero @ -20°C	nA change from 20°C	0 to -10
	Zero @ 50°C	nA change from 20°C	10 to 30

CROSS SENSITIVITY	Filter capacity	ppm·hrs			450
	H_2S sensitivity	% measured gas	@ 5ppm	H_2S	< 2
	NO_2 sensitivity	% measured gas	@ 5ppm	NO_2	< -160
	Cl_2 sensitivity	% measured gas	@ 5ppm	Cl_2	< -40
	NO sensitivity	% measured gas	@ 5ppm	NO	< -2
	CO sensitivity	% measured gas	@ 5ppm	CO	< 2
	H_2 sensitivity	% measured gas	@ 100ppm	H_2	< 0.5
	C_2H_4 sensitivity	% measured gas	@ 100ppm	C_2H_4	< 1
	NH_3 sensitivity	% measured gas	@ 20ppm	NH_3	< 0.1
	CO_2 sensitivity	% measured gas	@ 5%	CO_2	< 0.1

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 (ISB circuit is recommended)	33 to 100
	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 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.

Alphasense Ltd, Sensor Technology House, 300 Avenue West, Skyline 120, Great Notley. CM77 7AA. UK
Telephone: +44 (0) 1376 556 700 Fax: +44 (0) 1376 335 899 E-mail: sensors@alphasense.com Website: www.alphasense.com

SO2-B4 Perfomance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

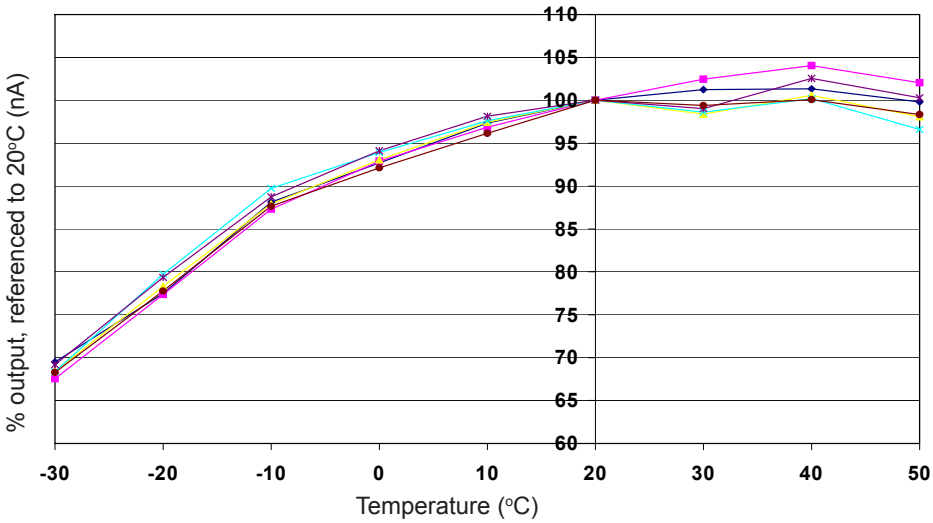


Figure 2 shows the temperature dependence of sensitivity at 2ppm SO_2.

This data is taken from a typical batch of sensors.

Figure 3 Zero Temperature Dependence

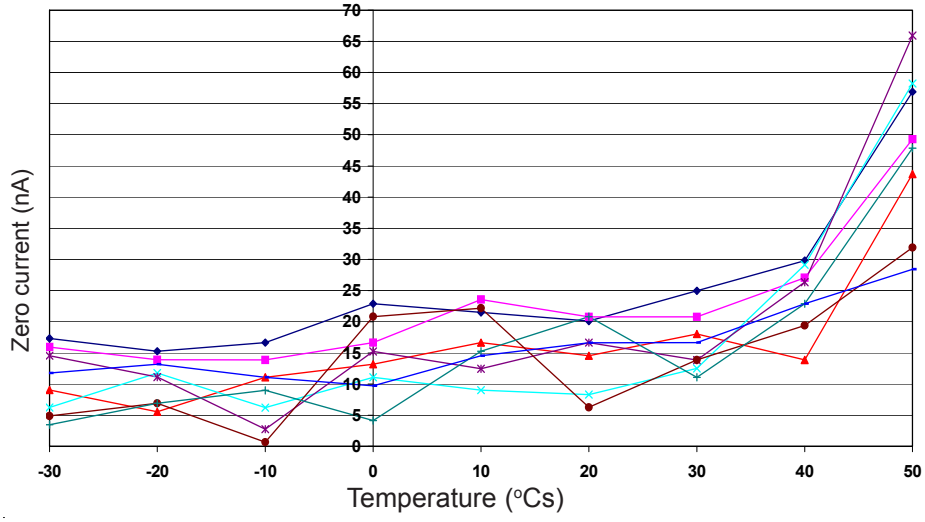


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for futher information on zero current correction.

Figure 4 Response to 200ppb SO_2

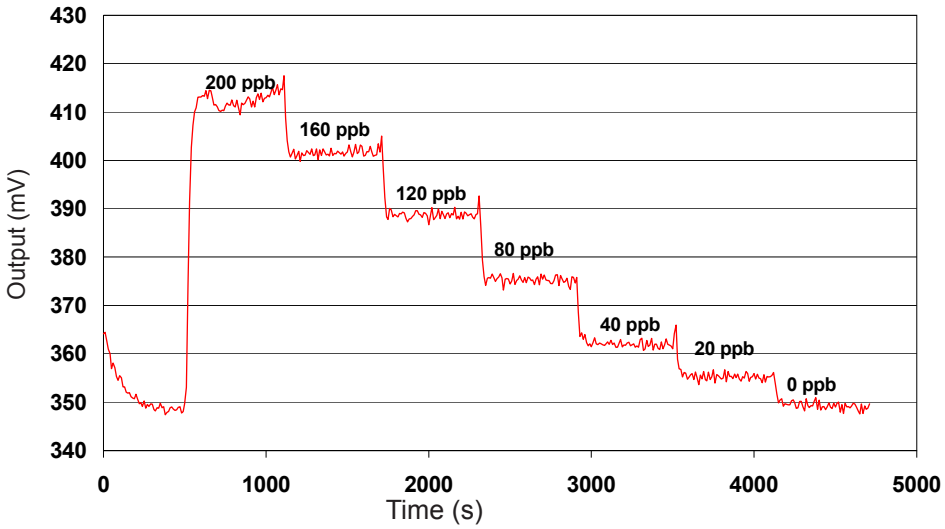


Figure 4 shows response from 20 to 200ppb SO_2.

Use of Alphasense ISB circuit reduces noise to 5ppb, with the opportunity of digital smooting to reduce noise even further.

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".