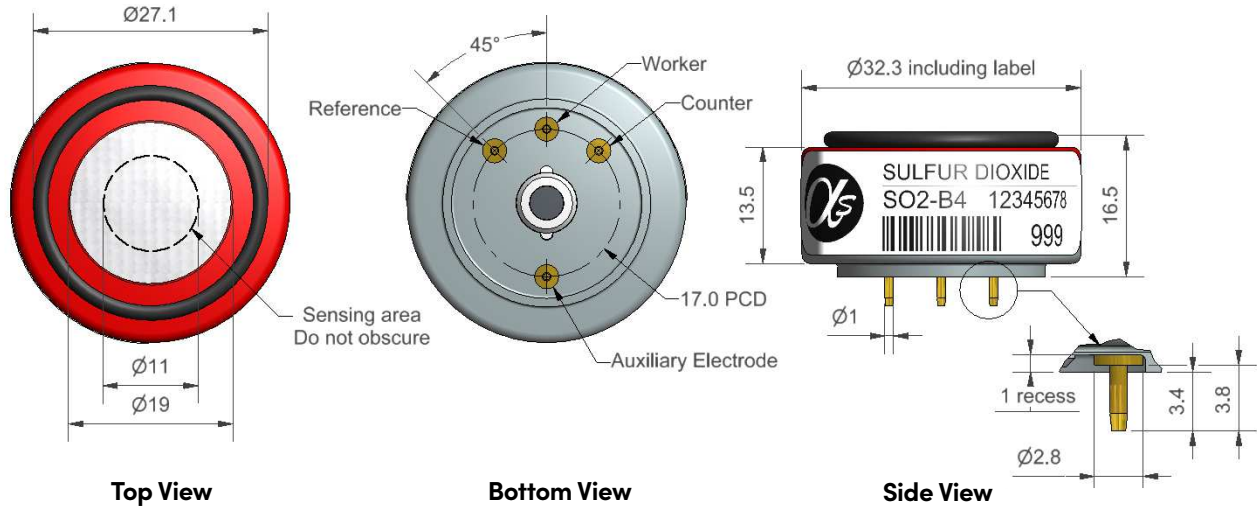


## SO<sub>2</sub>-B4 Sulfur Dioxide Sensor – 4-Electrode



Dimensions are in millimetres ( $\pm 0.15$  mm).

### Performance

Sensitivity	nA/ppm at 2ppm SO <sub>2</sub>	275 to 520
Response time	t <sub>90</sub> (s) from zero to 2ppm SO <sub>2</sub>	< 60
Zero current	nA in zero air at 20°C	-100 to +100
Noise*	$\pm 2$ standard deviations (ppb equivalent)	5
Range	ppm limit of performance warranty	100
Linearity	ppb error at 100ppm SO <sub>2</sub> , linear at zero and 10ppm SO <sub>2</sub>	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	< $\pm 20$
Sensitivity drift	% change/year in lab air, monthly test	< $\pm 15$
Operating life	months until 50% original signal (24-month warranted)	> 36

### Environmental

Sensitivity @ -20°C	% (output @ -20°C/output @ 20°C) @ 2ppm SO <sub>2</sub>	70 to 90
Sensitivity @ 50°C	% (output @ 50°C/output @ 20°C) @ 2ppm SO <sub>2</sub>	90 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 <sub>2</sub> S sensitivity	% measured gas @ 5ppm	H <sub>2</sub> S < 2
NO <sub>2</sub> sensitivity	% measured gas @ 5ppm	NO <sub>2</sub> < -120
Cl <sub>2</sub> sensitivity	% measured gas @ 5ppm	Cl <sub>2</sub> < -80
NO sensitivity	% measured gas @ 5ppm	NO < 4
CO sensitivity	% measured gas @ 5ppm	CO < 3
H <sub>2</sub> sensitivity	% measured gas @ 100ppm	H <sub>2</sub> < 0.5
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> < 0.1
CO <sub>2</sub> sensitivity	% measured gas @ 5%	CO <sub>2</sub> < 0.1
O <sub>3</sub> sensitivity	% measured gas @ 0.5ppm	O <sub>3</sub> < -120

### 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	$\Omega$ (ISB circuit is recommended)	33 to 100
Weight	g	< 13

**Figure 1 Sensitivity Temperature Dependence**

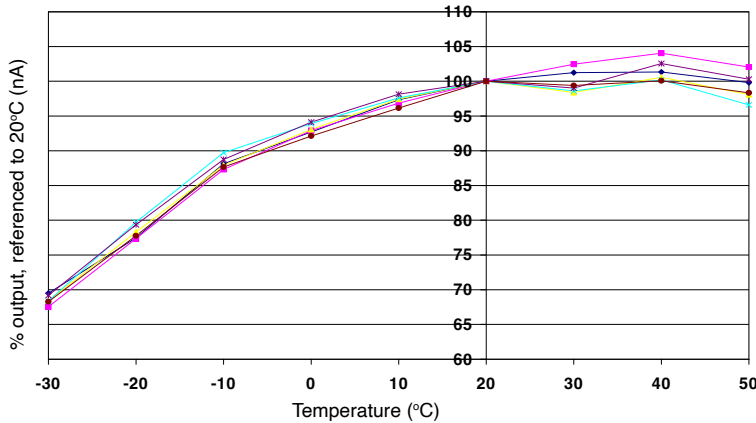


Figure 1 shows the temperature dependence of sensitivity at 2ppm SO<sub>2</sub>.  
This data is taken from a typical batch of sensors.

**Figure 2 Zero Temperature Dependence**

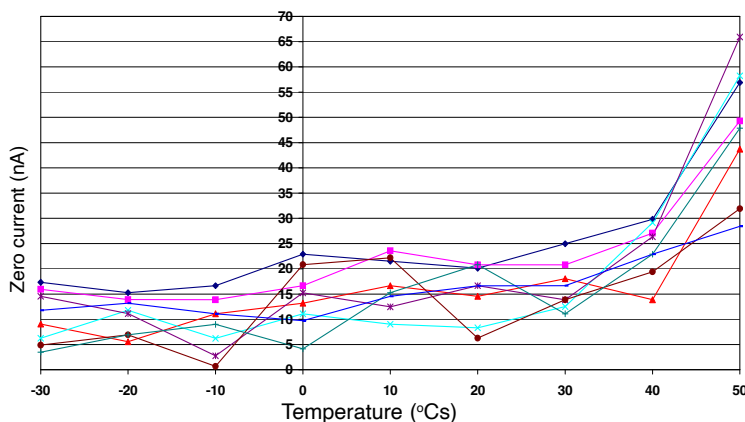


Figure 2 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.  
This data is taken from a typical batch of sensors.  
Contact Alphasense for further information on zero current correction.

**Figure 3 Response to 200ppb SO<sub>2</sub>**

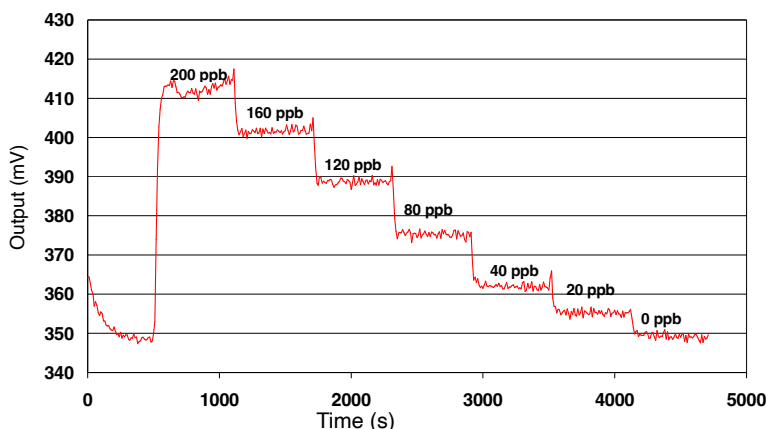


Figure 3 shows response from 20 to 200ppb SO<sub>2</sub>.  
Use of Alphasense ISB circuit reduces noise to 5ppb, with the opportunity of digital smoothing to reduce noise even further.

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 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. SO2-B4/SEP22