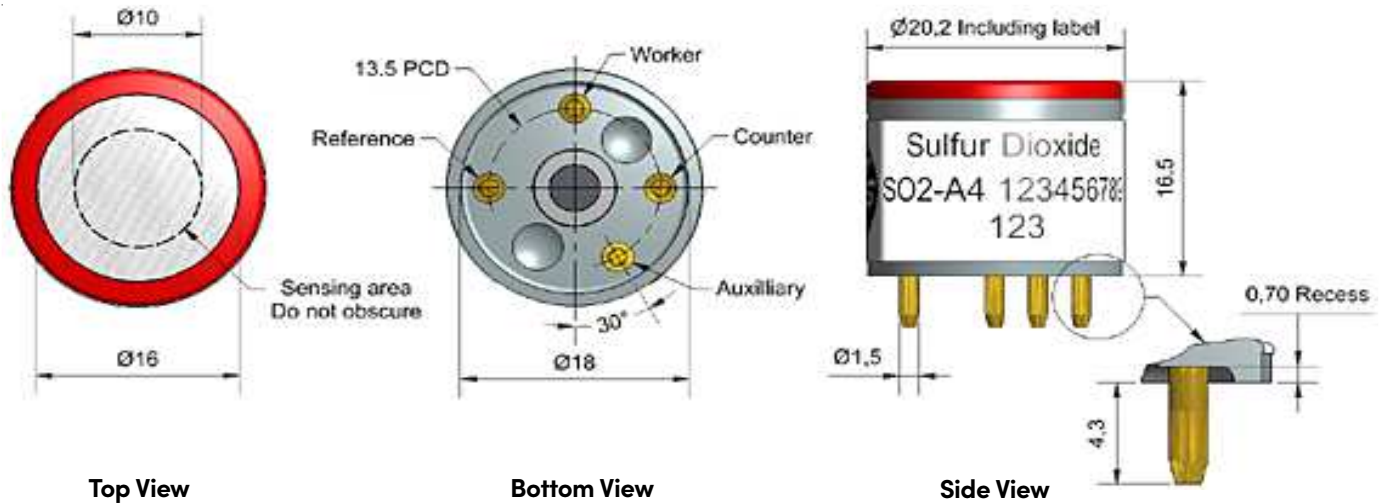


SO₂-A4 Sulfur Dioxide Sensor – 4-Electrode



Dimensions are in millimetres (± 0.15 mm).

| Performance | | | |
|---|--|--|------------|
| Sensitivity | nA/ppm at 2ppm SO ₂ | | 320 to 500 |
| Response time | t ₉₀ (s) from zero to 2ppm SO ₂ | | < 20 |
| Zero current | nA in zero air at 20°C | | -80 to +80 |
| Noise* | ± 2 standard deviations (ppb equivalent) | | 15 |
| Range | ppm limit of performance warranty | | 50 |
| Linearity | ppb error at 20ppm SO ₂ , linear at zero and 2ppm SO ₂ | | 0 to -5 |
| Overgas limit | maximum ppm for stable response to gas pulse | | 100 |
| *Tested with Alphasense AFE 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 | | 80 to 95 |
| Sensitivity @ 50°C | % (output @ 50°C/output @ 20°C) @ 2ppm SO ₂ | | 90 to 110 |
| Zero @ -20°C | nA change from 20°C | | < ± 25 |
| Zero @ 50°C | nA change from 20°C | | 150 to 300 |

| Cross Sensitivity | | | |
|---|-------------------------|-------------------------------|--------|
| Filter capacity | ppm hrs | | 450 |
| H ₂ S sensitivity | % measured gas @ 5ppm | H ₂ S | < 2 |
| NO ₂ sensitivity | % measured gas @ 5ppm | NO ₂ | < -120 |
| Cl ₂ sensitivity | % measured gas @ 5ppm | Cl ₂ | < -80 |
| NO sensitivity | % measured gas @ 5ppm | NO | < 4 |
| CO sensitivity | % measured gas @ 5ppm | CO | < 3 |
| H ₂ sensitivity | % measured gas @ 100ppm | H ₂ | < 1 |
| C ₂ H ₄ sensitivity | % measured gas @ 100ppm | C ₂ H ₄ | < 1 |
| NH ₃ sensitivity | % measured gas @ 20ppm | NH ₃ | < 0.1 |
| CO ₂ sensitivity | % measured gas @ 5% | CO ₂ | < 0.1 |
| O ₃ sensitivity | % measured gas @ 0.5ppm | O ₃ | < -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 | Ω (AFE circuit is recommended) | | 33 to 100 |
| Weight | g | | < 6 |

Figure 1 Sensitivity Temperature Dependence

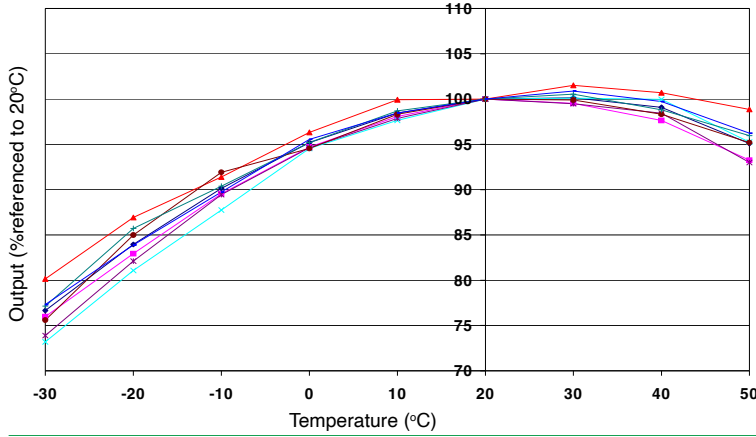


Figure 1 shows the temperature dependence of sensitivity at 2ppm SO₂.
This data is taken from a typical batch of sensors.

Figure 2 Zero Temperature Dependence

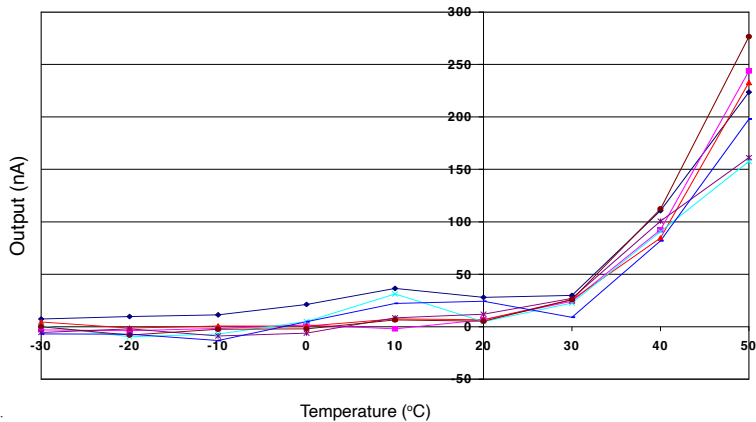


Figure 2 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.
This data is taken from a typical batch of sensors.
Contact Alphasense for further information on zero current correction.

Figure 3 Response to 200ppb SO₂

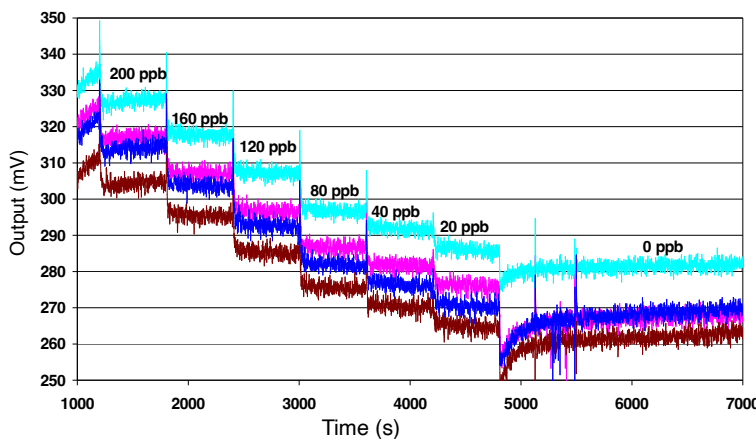


Figure 3 shows response from 20 to 200ppb SO₂.
Use of Alphasense AFE circuit reduces noise to 15ppb, with the opportunity of digital smoothing to reduce noise even further.

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-A4/SEP22