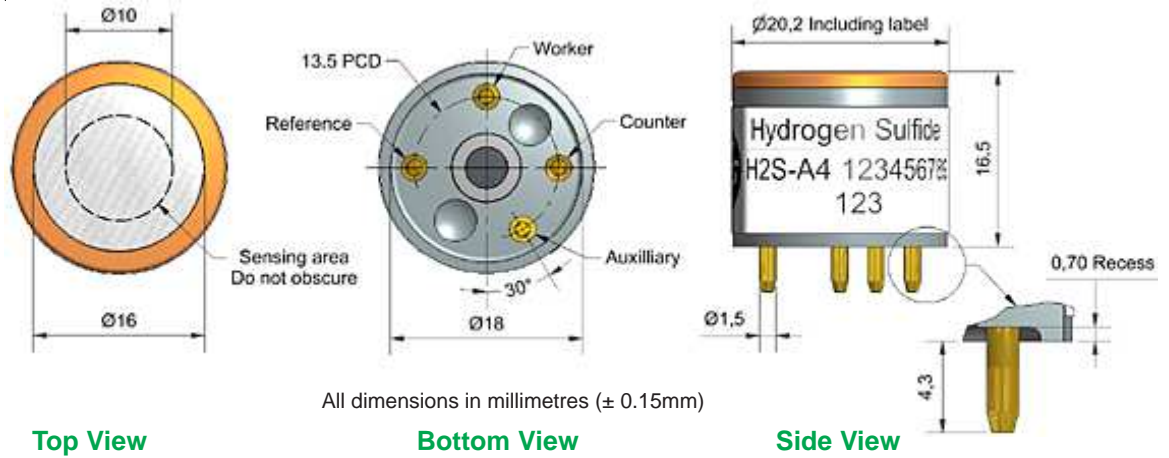




# H2S-A4 Hydrogen Sulfide Sensor 4-Electrode



**Figure 1 H2S-A4 Schematic Diagram**



Technical Specification

| PERFORMANCE   | Sensitivity  |                                 |              |
|---------------|--|---------------------------------|--------------|
|               | Sensitivity  | nA/ppm at 2ppm H <sub>2</sub> S | 1400 to 1850 |
| Response time | t <sub>90</sub> (s) from zero to 2ppm H <sub>2</sub> S             | < 45                            |              |
| Zero current  | nA in zero air at 20°C   | -250 to 100                     |              |
| Noise*        | $\pm 2$ standard deviations (ppb equivalent)                       | 5                               |              |
| Range         | ppm H <sub>2</sub> S limit of performance warranty                 | 50                              |              |
| Linearity     | ppb error at full scale, linear at zero and 10ppm H <sub>2</sub> S | < $\pm 0.5$                     |              |
| Overgas limit | maximum ppm for stable response to gas pulse                       | 100                             |              |

\* Tested with Alphasense AFE low noise circuit

| LIFETIME       | Zero drift  |  |             |
|----------------|---|--|-------------|
|                | Zero drift  | ppb equivalent change/year in lab air  | < $\pm 100$ |
|                | 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 |  |            |
|---------------|---------------------|--|------------|
|               | Sensitivity @ -20°C | (% output @ -20°C/output @ 20°C) @ 2ppm H <sub>2</sub> S | 80 to 92   |
|               | Sensitivity @ 50°C  | (% output @ 50°C/output @ 20°C) @ 2ppm H <sub>2</sub> S  | 100 to 110 |
|               | Zero @ -20°C        | nA change from 20°C                                      | 30 to 50   |
| Zero @ 50°C   | nA change from 20°C | 90 to 110  |            |

| CROSS SENSITIVITY | NO <sub>2</sub> sensitivity               |  | % measured gas @ 5ppm   | NO <sub>2</sub>               | < -20 |
|-------------------|---|--|-------------------------|-------------------------------|-------|
|                   | Cl <sub>2</sub> sensitivity               |  | % measured gas @ 5ppm   | Cl <sub>2</sub>               | < -8  |
|                   | NO sensitivity                            |  | % measured gas @ 5ppm   | NO                            | < 3   |
|                   | SO <sub>2</sub> sensitivity               |  | % measured gas @ 5ppm   | SO <sub>2</sub>               | < 15  |
|                   | CO sensitivity                            |  | % measured gas @ 5ppm   | CO                            | < 1   |
|                   | 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> | < 0.5 |
|                   | NH <sub>3</sub> sensitivity               |  | % measured gas @ 5ppm   | NH <sub>3</sub>               | < 0.1 |
|                   | CO <sub>2</sub> sensitivity               |  | % measured gas @ 5%     | CO <sub>2</sub>               | < 0.1 |

| KEY SPECIFICATIONS | Temperature range |   |           |
|--------------------|-------------------|---|-----------|
|                    | 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     | $\Omega$ (AFE circuit is 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.



# H2S-A4 Performance Data

# Technical Specification

**Figure 2 Sensitivity Temperature Dependence**

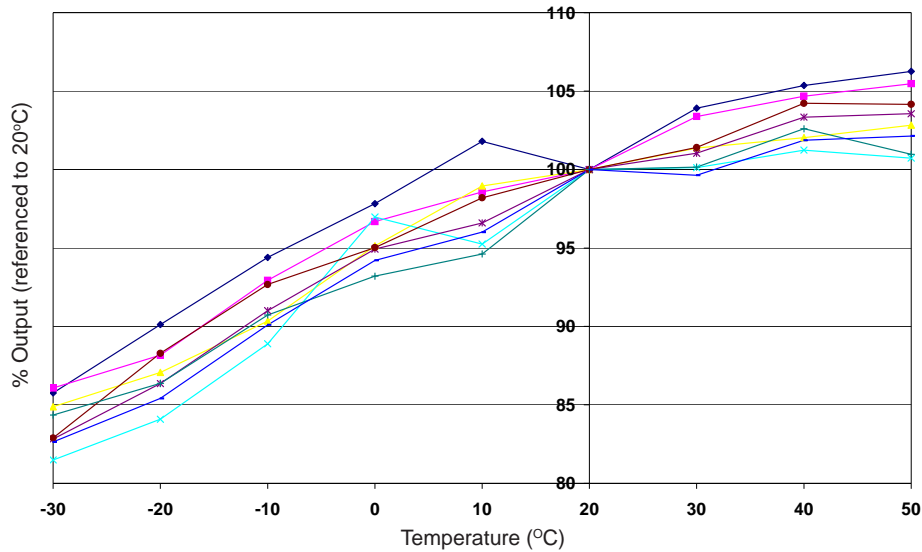


Figure 2 shows the temperature dependence of sensitivity at 2ppm H<sub>2</sub>S.

This data is taken from a typical batch of sensors.

**Figure 3 Zero Temperature Dependence (uncorrected)**

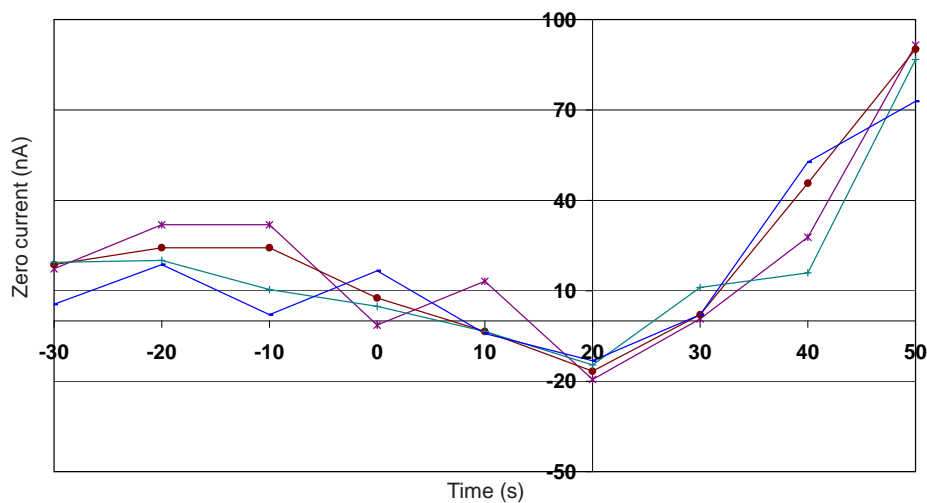


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for further information on zero current correction.

**Figure 4 0 to 200ppb Linearity**

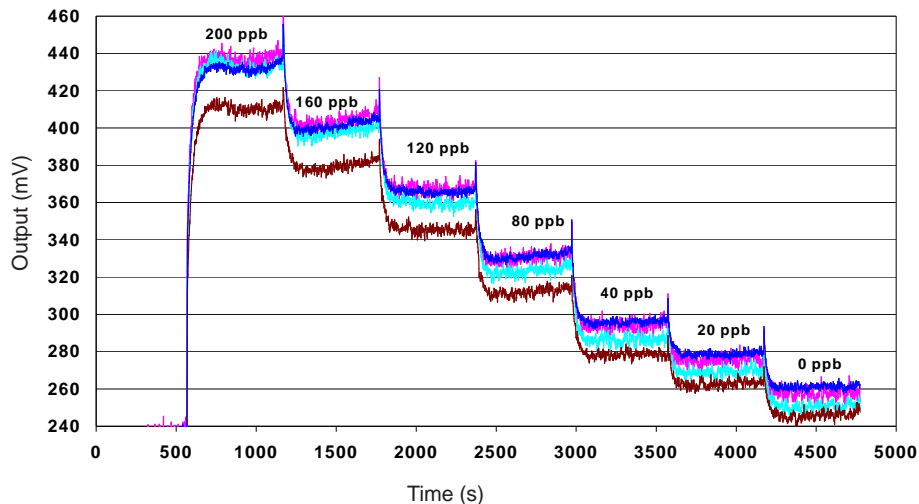


Figure 4 shows response to 200ppb H<sub>2</sub>S.

Use of Alphasense AFE circuit reduces noise to 5ppb, with the opportunity of digital smoothing 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](http://www.alphasense.com)".

*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. H2S-A4/JUL16*