



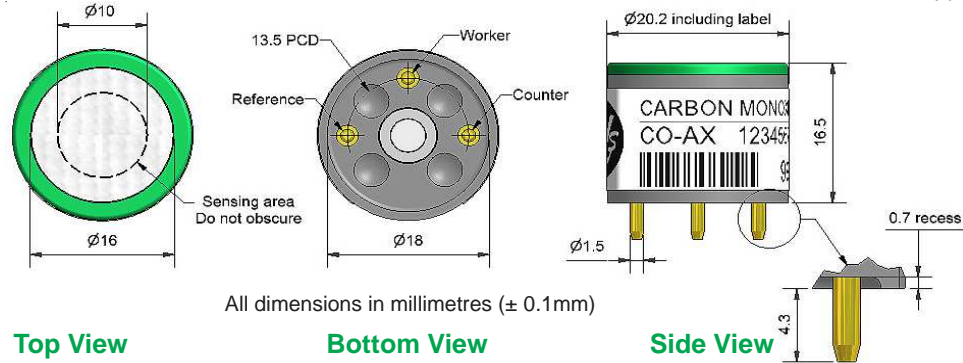
CO-AX Carbon Monoxide Sensor

EN 50379 Compliant for Stack Gases



PATENTED

Figure 1 CO-AX Schematic Diagram



Technical Specification

| | | | |
|---|--|--|------------|
| PERFORMANCE | Sensitivity | nA/ppm in 400ppm CO | 55 to 100 |
| | Response time | t_{90} (s) from zero to 400ppm CO | < 30 |
| | Zero current | ppm equivalent in zero air | < ± 3 |
| | Resolution | RMS noise (ppm equivalent) | < 0.5 |
| | Range | ppm CO limit of performance warranty | 2,000 |
| | Linearity | ppm error at full scale, linear at zero and 800ppm CO | < ± 40 |
| | Overgas limit | maximum ppm for stable response to gas pulse | 4,000 |
| LIFETIME | Zero drift | ppm equivalent change/year in lab air | < 0.2 |
| | Sensitivity drift | % change/year in lab air, monthly test | < 6 |
| | Operating life | months until 80% original signal (24 month warranted) | > 24 |
| ENVIRONMENTAL | Sensitivity @ -20°C % (output @ -20°C/output @ 20°C) @ 400ppm CO | | 55 to 75 |
| | Sensitivity @ 0°C % (output @ 0°C/output @ 20°C) @ 400ppm CO | | 75 to 90 |
| | Sensitivity @ 40°C % (output @ 40°C/output @ 20°C) @ 400ppm CO | | 106 to 120 |
| | Zero @ -20°C | ppm equivalent change from 20°C | < 0 to 4 |
| | Zero @ 0°C | ppm equivalent change from 20°C | < 0 to 3 |
| | Zero @ 50°C | ppm equivalent change from 20°C | < 0 to -6 |
| CROSS SENSITIVITY | Filter capacity | ppm-hours H ₂ S | 250,000 |
| | Filter capacity | ppm-hours NO ₂ | 500,000 |
| | Filter capacity | ppm-hours NO | 20,000 |
| | Filter capacity | ppm-hours SO ₂ | 250,000 |
| | H ₂ sensitivity | % measured gas @ 900ppm H ₂ in 900ppm CO @ 10°C | < 2 |
| | H ₂ sensitivity | % measured gas @ 900ppm H ₂ in 900ppm CO @ 20°C | < 4 |
| | H ₂ sensitivity | % measured gas @ 900ppm H ₂ in 900ppm CO @ 30°C | < 6 |
| | NO ₂ sensitivity | % measured gas @ 10ppm NO ₂ | < -1 |
| | Cl ₂ sensitivity | % measured gas @ 10ppm Cl ₂ | < 0.1 |
| | NO sensitivity | % measured gas @ 500ppm NO | < -2 |
| | SO ₂ sensitivity | % measured gas @ 20ppm SO ₂ | < 0.1 |
| C ₂ H ₄ sensitivity | % measured gas @ 400ppm C ₂ H ₄ | < 5 | |
| 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 @ 0 to 20°C (stored in sealed pot) | 6 |
| | Load resistor | Ω (recommended) | 10 to 47 |
| | Weight | g | < 6 |

Important. The CO-AX must be operated with a 0 Volt bias between Reference & Working electrodes. Failure to comply with this requirement will result in a loss of its low Hydrogen cross sensitivity performance.



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.



CO-AX Performance Data

Technical Specification

Figure 2 CO Sensitivity Temperature Dependence

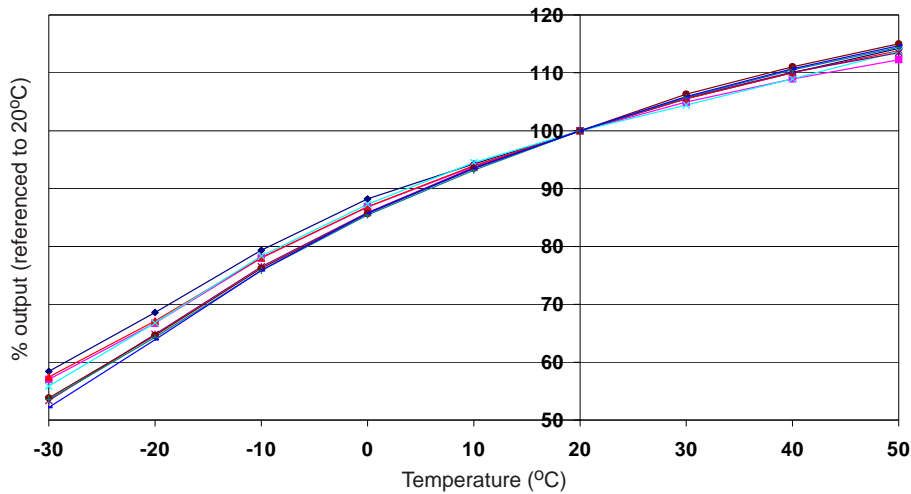


Figure 2 shows the variation in sensitivity caused by changes in temperature.

This data is taken from a typical batch of sensors.

Figure 3 Hydrogen Sensitivity Temperature Dependence

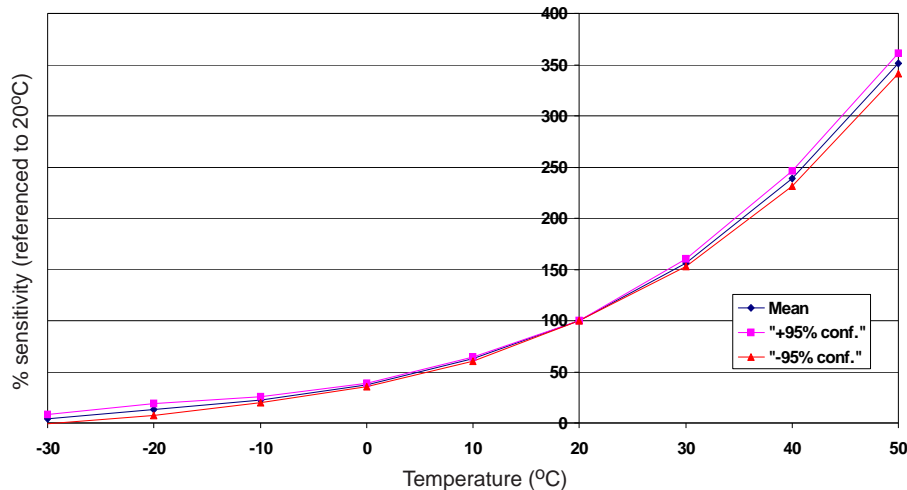


Figure 3 shows the strong temperature dependence of the CO-AX to hydrogen. Since hydrogen sensitivity is less than 4% at 20°C, hydrogen interference can practically be ignored at low temperatures. However, at 50°C hydrogen interference is 14%.

This data is taken from a typical batch of sensors. The mean and $\pm 95\%$ confidence intervals are shown.

Figure 4 Hydrogen Cross Sensitivity at 30°C

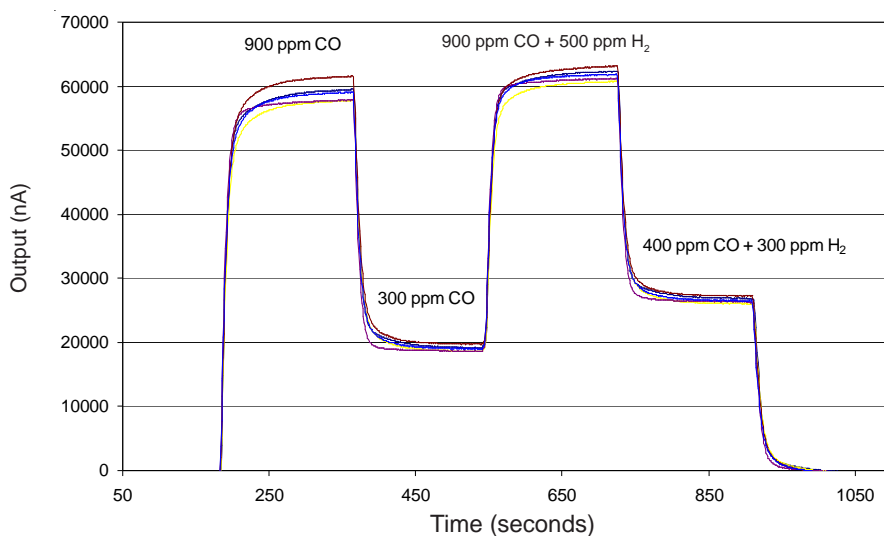


Figure 4 shows hydrogen sensitivity for a typical batch of eight CO-AX sensors at 30°C following EN50379. All sensors show less than 5% cross sensitivity when 500ppm hydrogen is added to 950ppm carbon monoxide. t_{90} is less than 45 seconds.

For further information on the performance of this sensor, on other sensors in the range or any other subject, please contact Alphasense Ltd. For detailed application notes go to "www.alphasense.com".

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