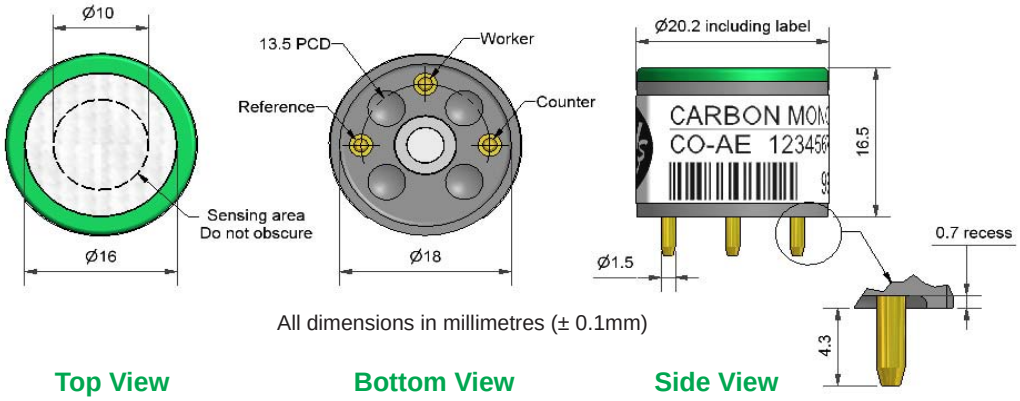
# CO-AE Carbon Monoxide Sensor

## High Concentration


Technical Specification

Figure 1 CO-AE Schematic Diagram

PATENTED




All dimensions in millimetres (± 0.1mm)

Top View Bottom View Side View

| | | | | |
|---|---|---|---|---|
| **PERFORMANCE** | Sensitivity | nA/ppm in 2,000ppm CO | | 10 to 25 |
| | Response time | $t_{90}$ (s) from zero to 2,000ppm CO | | < 50 |
| | Zero current | ppm equivalent in zero air | | < ± 20 |
| | Resolution | RMS noise (ppm equivalent) | | < 5 |
| | Range | ppm CO limit of performance warranty | | 10,000 |
| | Linearity | ppm error at full scale, linear at zero and 2000ppm CO | | < 0 to 500 |
| | Overgas limit | maximum ppm for stable response to gas pulse | | 100,000 |
| **LIFETIME** | Zero drift | ppm equivalent change/year in lab air | | < 2 |
| | Sensitivity drift | % change/year in lab air, monthly test | | < 1 |
| | Operating life | months until 80% original signal (24 month warranted) | | > 24 |
| **ENVIRONMENTAL** | Sensitivity @ -20°C | % (output @ -20°C/output @ 20°C) @ 400ppm CO | | 65 to 93 |
| | Sensitivity @ 50°C | % (output @ 50°C/output @ 20°C) @ 400ppm CO | | 98 to 115 |
| | Zero @ -20°C | ppm equivalent change from 20°C | | < ±2 |
| | Zero @ 50°C | ppm equivalent change from 20°C | | < ±5 |
| **CROSS SENSITIVITY** | Filter capacity | ppm-hours | $H_2S$ | 3,000,000 |
| | Filter capacity | ppm-hours | $NO_2$ | 8,000,000 |
| | Filter capacity | ppm-hours | NO | 200,000 |
| | Filter capacity | ppm-hours | $SO_2$ | 4,000,000 |
| | $H_2S$ sensitivity | % measured gas @ 20ppm | $H_2S$ | < 0.1 |
| | $NO_2$ sensitivity | % measured gas @ 10ppm | $NO_2$ | < 0.1 |
| | $Cl_2$ sensitivity | % measured gas @ 10ppm | $Cl_2$ | < 0.2 |
| | NO sensitivity | % measured gas @ 50ppm | NO | < 0.1 |
| | $SO_2$ sensitivity | % measured gas @ 20ppm | $SO_2$ | < 0.1 |
| | $H_2$ sensitivity | % measured gas @ 400ppm | $H_2$ at 20°C | < 75 |
| | $C_2H_4$ sensitivity | % measured gas @ 400ppm | $C_2H_4$ | < 60 |
| | $NH_3$ 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 (recommended) | 10 to 47 |
| 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 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.

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# CO-AE Performance Data

Technical Specification

## Figure 2 Sensitivity Temperature Dependence

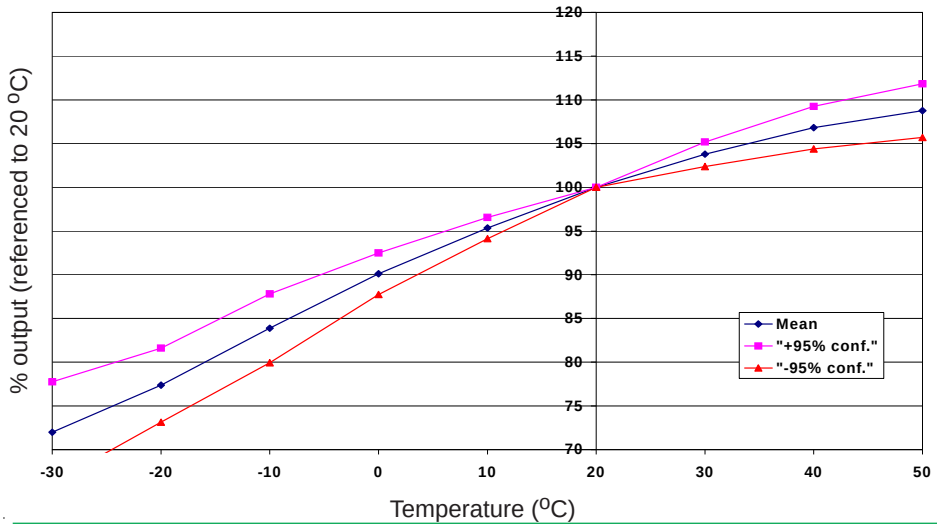



Figure 2 shows the variation in sensitivity caused by changes in temperature.

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

## Figure 3 Zero Temperature Dependence

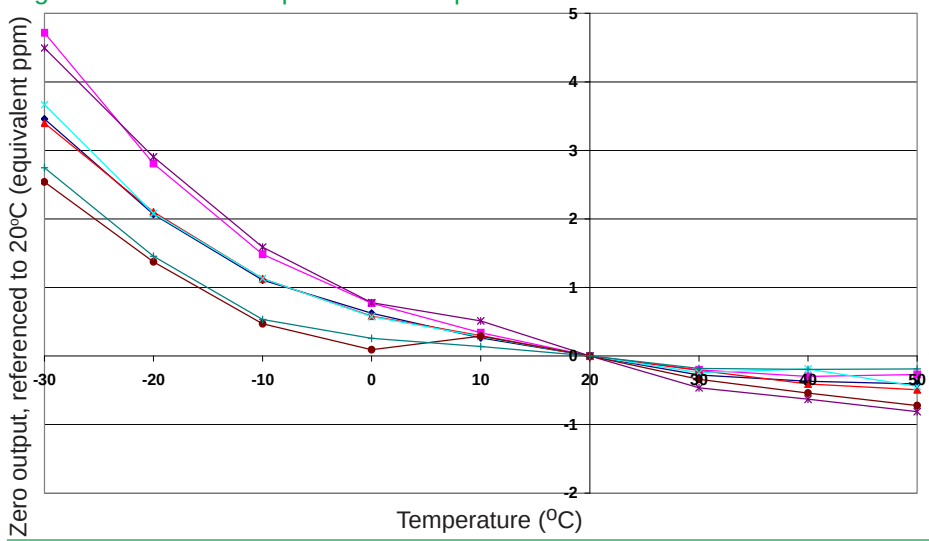
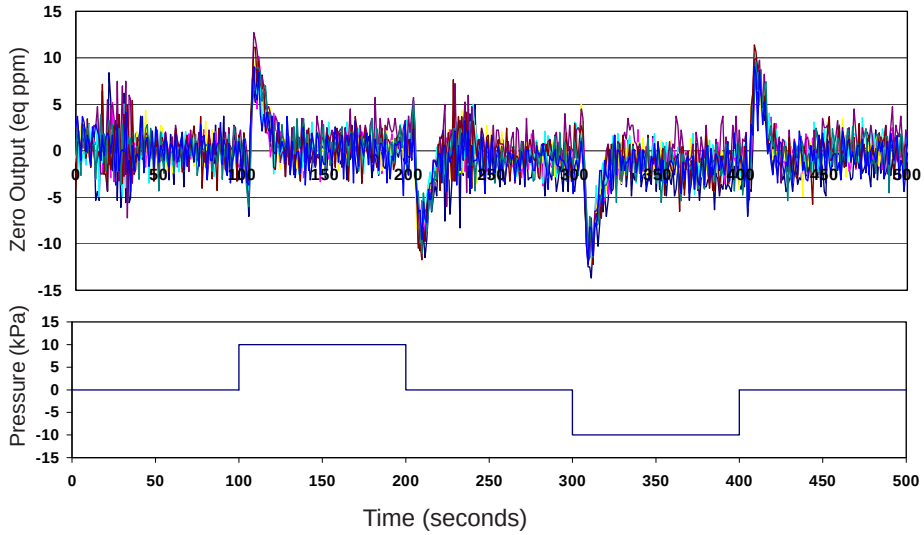



Figure 3 shows the variation in zero output caused by changes in temperature, expressed as ppm gas equivalent, referenced to zero at 20°C.

This data is taken from a typical batch of sensors.

## Figure 4 Zero Response to Pressure Steps




From ambient pressure, sensors were subjected to both positive and negative 10kPa pressure steps. The small transient rapidly decays as the sensor returns to its zero baseline.

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