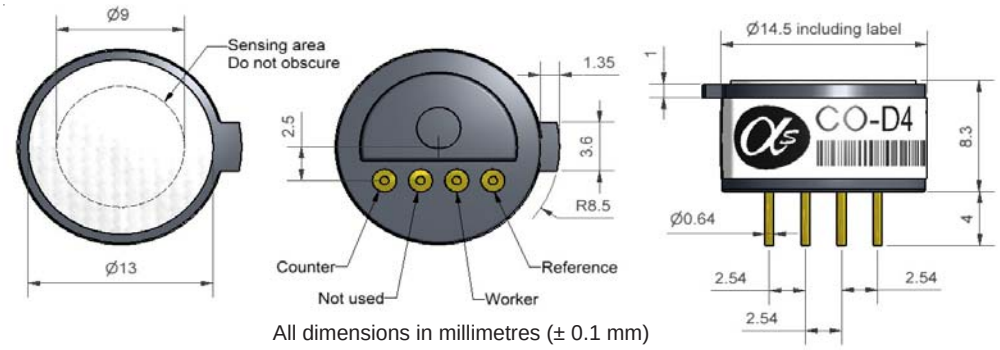
# CO-D4 Carbon Monoxide Sensor
## Miniature Size


PATENTED and PATENT PENDING

Technical Specification

Figure 1 CO-D4 Schematic Diagram




All dimensions in millimetres (± 0.1 mm)

**Top View** **Bottom View** **Side View**

(A three pin version is available on request, coded CO-DF)

| | | | |
|---|---|---|---|
| **PERFORMANCE** | Sensitivity | nA/ppm in 400ppm CO | 30 to 55 |
| | Response time | $t_{90}$ (s) from zero to 400ppm CO % 22°C | < 25 |
| | Zero current | ppm equivalent in zero air | < ± 3 |
| | Resolution | RMS noise (ppm equivalent) | < 1.5 |
| | Range | ppm limit of performance warranty | 1,000 |
| | Linearity | ppm CO error at full scale, linear at zero and 400ppm CO | ± 40 |
| | Overgas limit | maximum ppm for stable response to gas pulse | 2,000 |
| **LIFETIME** | Zero drift | ppm equivalent change/year in lab air | < 0.5 |
| | 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 | 45 to 70 |
| | Sensitivity @ 50°C | % (output @ 50°C/output @ 20°C) @ 400ppm CO | 105 to 125 |
| | Zero @ -20°C | ppm equivalent change from20°C | < ± 2 |
| | Zero @ 50°C | ppm equivalent change from 20°C | < ± 4 |

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|---|---|---|---|---|
| **CROSS SENSITIVITY** | Filter capacity | ppm·hrs | $H_2S$ | 20,000 |
| | $H_2S$ sensitivity | % measured gas @ 20ppm | $H_2S$ | < 0.1 |
| | $NO_2$ sensitivity | % measured gas @ 10ppm | $NO_2$ | < 0.1 |
| | $Cl_2$ sensitivity | % measured gas @ 10ppm | $Cl_2$ | < 0.1 |
| | NO sensitivity | % measured gas @ 50ppm | NO | < 50 |
| | $SO_2$ sensitivity | % measured gas @ 20ppm | $SO_2$ | < 0.1 |
| | $H_2$ sensitivity | % measured gas @ 400ppm | $H_2$ | < 70 |
| | $C_2H_4$ sensitivity | % measured gas @ 400ppm | $C_2H_4$ | < 100 |
| | $NH_3$ sensitivity | % measured gas @ 20ppm | $NH_3$ | < 0.1 |

| | | | |
|---|---|---|---|
| **KEY SPECIFICATIONS** | Temperature range | $^{O}$C | -20 to 50 |
| | Pressure range | kPa | 80 to 120 |
| | Humidity range | %rh (see note below) | 15 to 90 |
| | Storage period | months @ 3 to 20$^{O}$C (stored in sealed pot) | 6 |
| | Load resistor | Ω (recommended) | 10 to 47 |
| | Weight | g | < 2 |

**Note:** Above 85% rh and 40$^{O}$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, 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-D4 Performance Data

Technical Specification

## Figure 2 Sensitivity Temperature Dependence

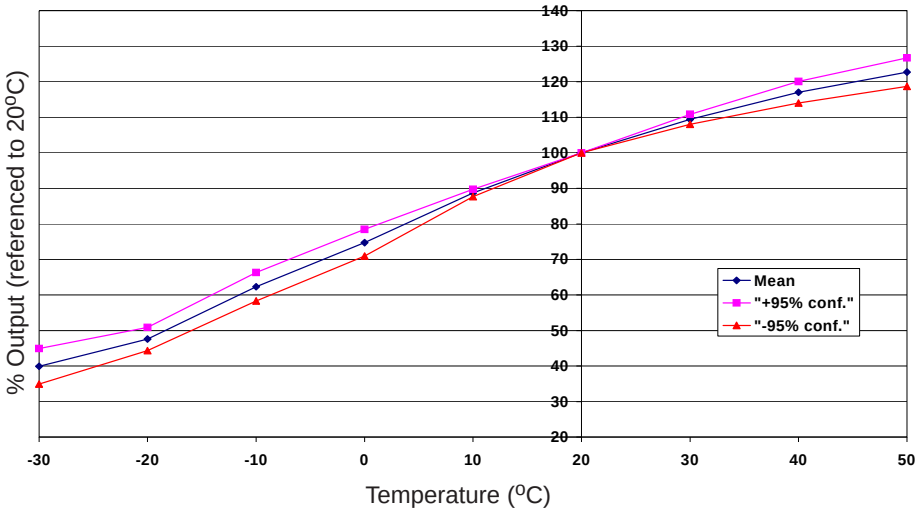


Figure 2 shows the variation in sensitivity caused by changes in temperature. Repeatable temperature dependence at elevated temperatures allows more accurate temperature compensation.

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

## Figure 3 Zero Temperature Dependence

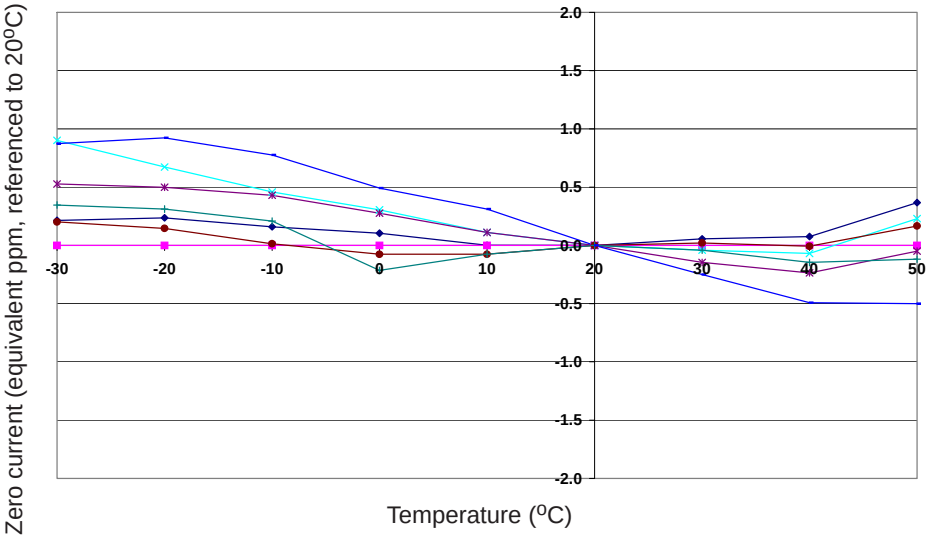


Figure 3 shows the variation in zero output caused by changes in temperature, expressed as ppm gas equivalent, referenced to zero at 20°C.

This data is taken from a typical batch of sensors.

## Figure 4 Response to 4,000ppm CO

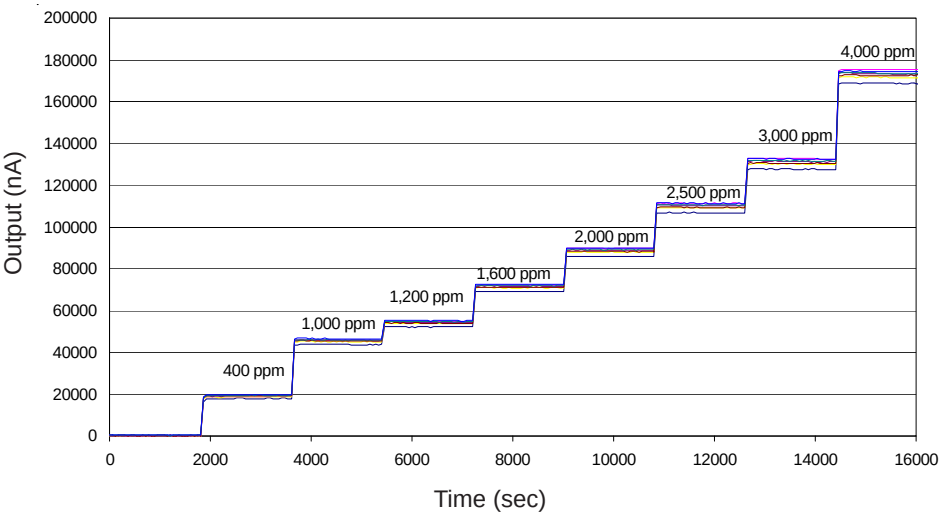


Figure 4 shows sensor output for increasing concentrations of CO, up to twice the specified overgas concentration. Data shown is eight sensors taken from a typical production batch.

This stepped overgas test shows the robustness of the sensor with fast response and straight plateaus at each step.

For further information on the performance of this sensor, on other sensors in the range or any other subject, please contact Alphasense Ltd. or visit our web site at "www.alphasense.com".