

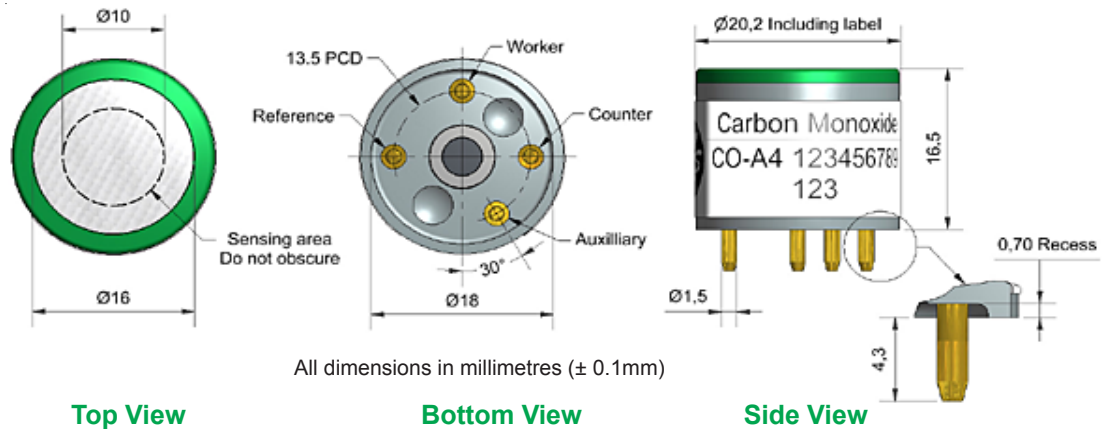


# CO-A4 Carbon Monoxide Sensor 4-Electrode



PATENTED

Figure 1 CO-A4 Schematic Diagram



Technical Specification

PERFORMANCE	Parameter	Value	Value
	Sensitivity	nA/ppm in 2ppm CO	220 to 375
	Response time	$t_{90}$ (s) from zero to 10ppm CO	< 20
	Zero current	nA in zero air at 20°C	-100 to +10
	Noise*	$\pm 2$ standard deviations (ppb equivalent)	20
	Range	ppm limit of performance warranty	500
	Linearity	ppm CO error at full scale, linear at zero, 15ppm CO	< $\pm 1$
	Overgas limit	maximum ppm for stable response to gas pulse	2000

\* Tested with Alphasense AFE low noise circuit

LIFETIME	Parameter	Value	Value
	Zero drift	ppb equivalent change/year in lab air	< $\pm 100$
	Sensitivity drift	% change/year in lab air, monthly test	< 10
	Operating life	months until 50% original signal (24 month warranted)	> 36

ENVIRONMENTAL	Parameter	Value	Value
	Sensitivity @ -20°C	(% output @ -20°C/output @ 20°C) @ 5ppm CO	50 to 85
	Sensitivity @ 50°C	(% output @ 50°C/output @ 20°C) @ 5ppm CO	110 to 125
	Zero @ -20°C	nA change from 20°C	10 to 40
	Zero @ 50°C	nA change from 20°C	-120 to -200

**CROSS SENSITIVITY**

Filter capacity	ppm·hrs	H <sub>2</sub> S	250,000
H <sub>2</sub> S sensitivity	% measured gas @ 5ppm	H <sub>2</sub> S	< 0.1
NO <sub>2</sub> sensitivity	% measured gas @ 5ppm	NO <sub>2</sub>	< -2
Cl <sub>2</sub> sensitivity	% measured gas @ 5ppm	Cl <sub>2</sub>	< 0.1
NO sensitivity	% measured gas @ 5ppm	NO	< -2
SO <sub>2</sub> sensitivity	% measured gas @ 5ppm	SO <sub>2</sub>	< 0.1
H <sub>2</sub> sensitivity	% measured gas @ 100ppm	H <sub>2</sub> at 20°C	< 10
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 @ 20ppm	NH <sub>3</sub>	< 0.1

KEY SPECIFICATIONS	Parameter	Value	Value
	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	$\Omega$ (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 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-A4 Performance Data

Technical Specification

**Figure 2 Sensitivity Temperature Dependence**

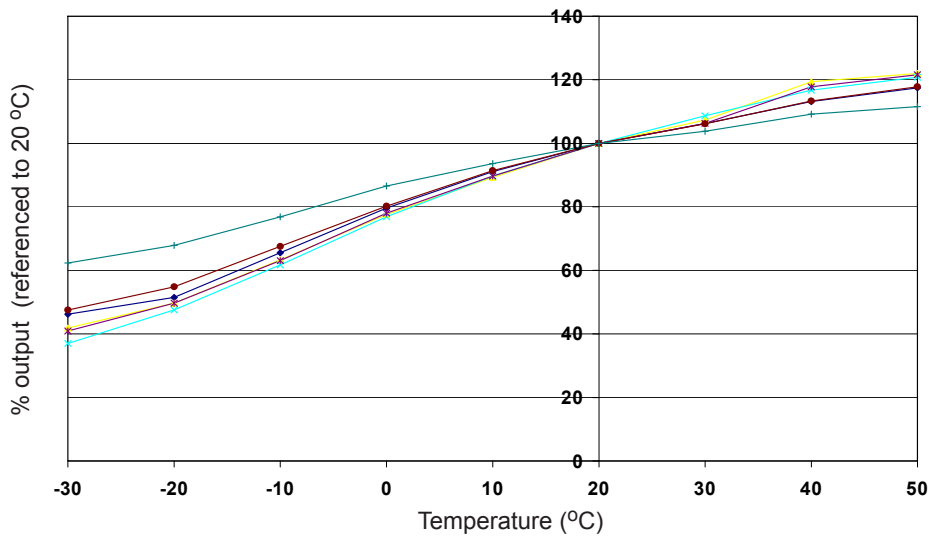


Figure 2 shows the temperature dependence of sensitivity at 2ppm CO.

This data is taken from a typical batch of sensors.

**Figure 3 Zero Temperature Dependence**

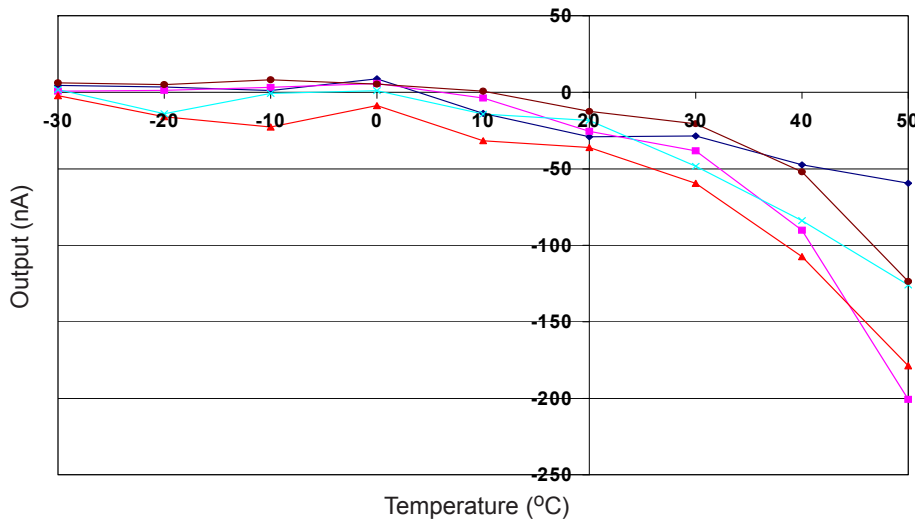


Figure 3 shows the variation in zero output of the working electrode caused by changes in temperature, expressed as nA.

This data is taken from a typical batch of sensors.

Contact Alphasense for further information on zero current correction.

**Figure 4 Linearity from 0 to 1ppm**

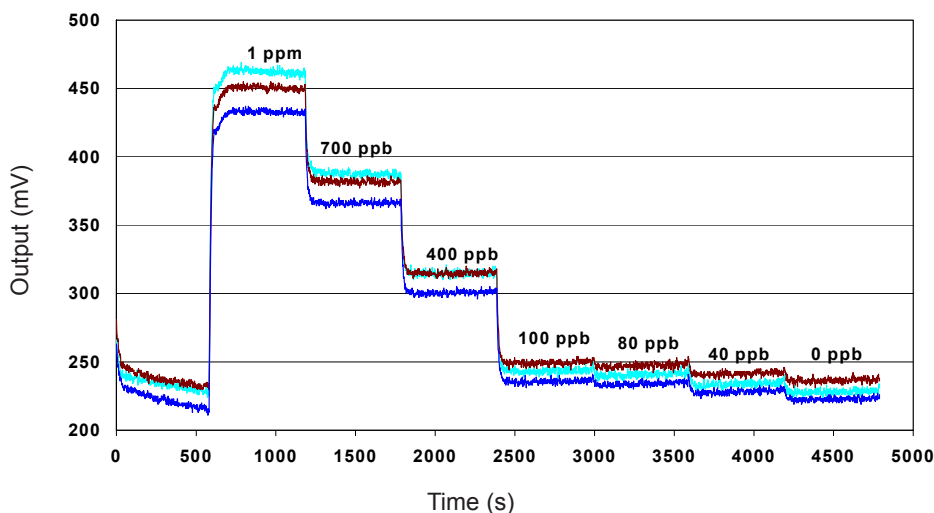


Figure 4 shows response from 0 to 1ppm CO.

Use of Alphasense AFE circuit reduces noise to 20ppb, 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. COA4/OCT14*