

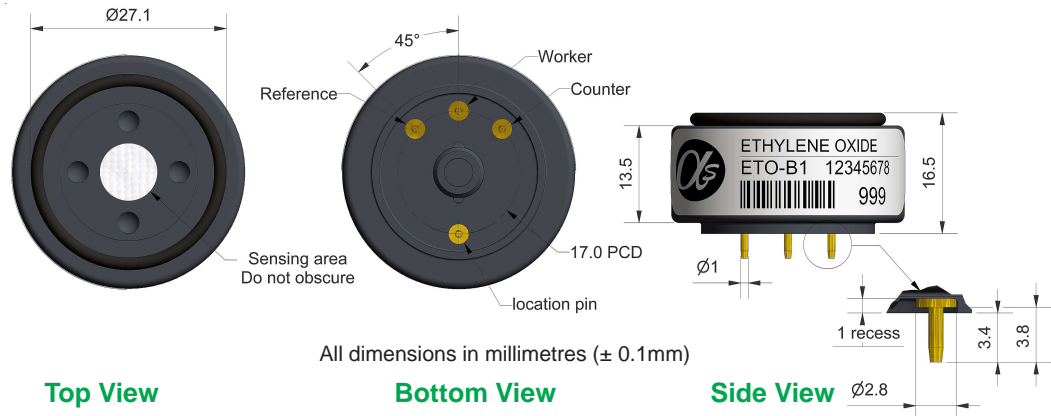


# ETO-B1 Ethylene Oxide Sensor



Figure 1 ETO-B1 Schematic Diagram

PATENTED



Technical Specification

PERFORMANCE	Parameter	Specification	Range
	Sensitivity	nA/ppm in 20ppm EtO	2000 to 3200
	Response time	$t_{90}$ (s) from zero to 20ppm EtO	< 200
	Zero current	ppm equivalent in zero air	< -0.6 to +0.75
	Resolution	RMS noise (ppm equivalent)	< 0.1
	Range	ppm EtO limit of performance warranty	100
	Linearity	ppm error at full scale, linear at zero, 40ppm EtO	5 to 10
	Overgas limit	maximum ppm for stable response to gas pulse	500

LIFETIME	Parameter	Specification	Value
	Zero drift	ppm equivalent change/year in lab air	nd
	Sensitivity drift	% change/year in lab air, twice monthly test	nd
	Operating life	months until 80% original signal (24 month warranted)	> 24

ENVIRONMENTAL	Parameter	Specification	Value
	Sensitivity @ -20°C	% (output @ -20°C/output @ 20°C) @ 50ppm CO	20 to 50
	Sensitivity @ 50°C	% (output @ 50°C/output @ 20°C) @ 50ppm CO	120 to 160
	Zero @ -20°C	ppm equivalent change from 20°C	< $\pm 0.5$
	Zero @ 50°C	ppm equivalent change from 20°C	< +2 to +5

CROSS SENSITIVITY	Gas	Sensitivity	Specification	Value
	H <sub>2</sub> S	sensitivity	% measured gas @ 20ppm	< 200
	NO <sub>2</sub>	sensitivity	% measured gas @ 10ppm	< 35
	Cl <sub>2</sub>	sensitivity	% measured gas @ 10ppm	< -3
	NO	sensitivity	% measured gas @ 50ppm	< 80
	SO <sub>2</sub>	sensitivity	% measured gas @ 20ppm	< 40
	CO	sensitivity	% measured gas @ 40ppm	< 25
	H <sub>2</sub>	sensitivity	% measured gas @ 400ppm	< 0.5
	C <sub>2</sub> H <sub>4</sub>	sensitivity	% measured gas @ 80ppm	< 100
	NH <sub>3</sub>	sensitivity	% measured gas @ 25ppm	< 0.1
	HCHO	sensitivity	% measured gas @ 4ppm	90
CO <sub>2</sub>	sensitivity	% measured gas @ 5% volume	< 0.1	

KEY SPECIFICATIONS	Parameter	Specification	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 original container)	6
	Load resistor	$\Omega$ (recommended)	10 to 33
	Bias voltage	mV (working electrode potential is above reference electrode potential)	300
	Weight	g	< 13



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.



# ETO-B1 Performance Data

Technical Specification

**Figure 2 Sensitivity Temperature Dependence**

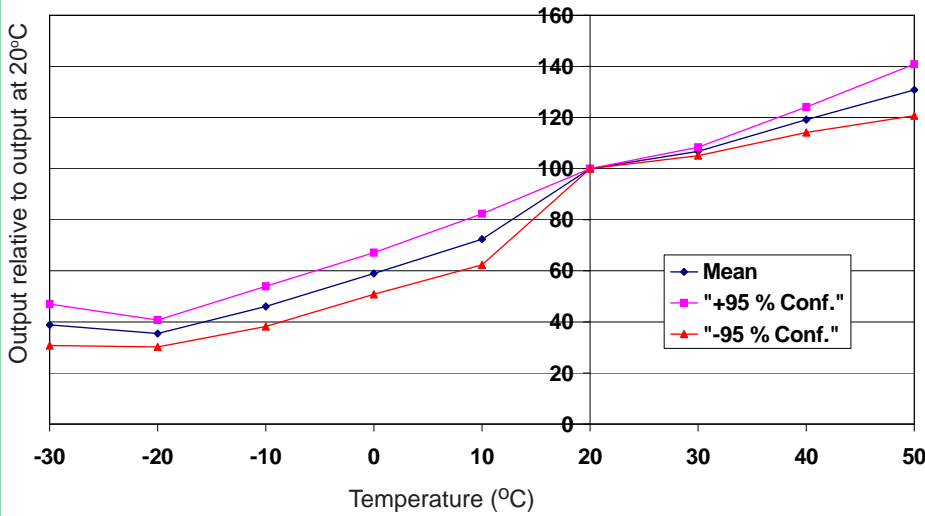


Figure 2 shows the variation in sensitivity caused by changes in temperature. This data is taken from a typical batch of sensors. The mean and  $\pm 95\%$  confidence intervals are shown.

**Figure 3 Zero Temperature Dependence**

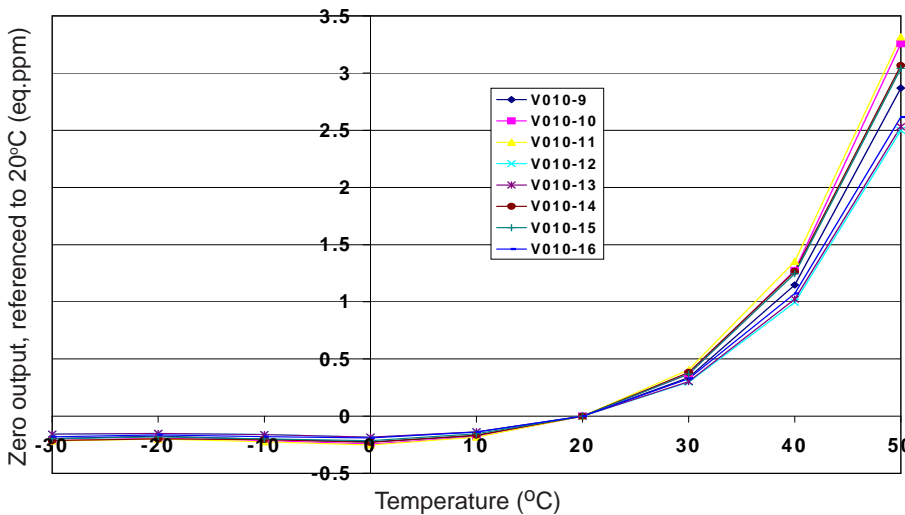
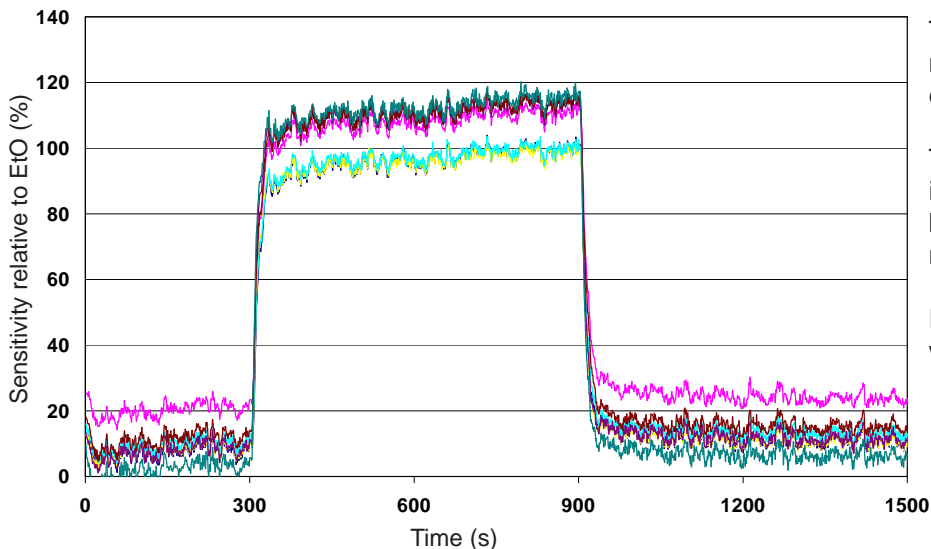


Figure 3 shows the variation in zero output caused by changes in temperature, expressed as ppm gas equivalent, referenced to zero at 20°C. This data is taken from a typical batch of sensors.

**Figure 4 Cross Sensitivity Study to 3.8 ppm Formaldehyde**



The ETO-B1 responds to most VOCs that are electrochemically active. The bias voltage of +300mV is optimum for Ethylene Oxide but needs adjusting when measuring other VOCs. Response to formaldehyde with +300mV bias is shown.

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. ETOB1/NOV16