



ETO-B1 Ethylene Oxide Sensor



Figure 1 ETO-B1 Schematic Diagram

PATENTED



PERFORMANCE	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
	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	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			
	Sensitivity @ -20°C	% (output @ -20°C/output @ 20°C) @ 40ppm EtO	30 to 50
	Sensitivity @ 50°C	% (output @ 50°C/output @ 20°C) @ 40ppm EtO	115 to 145
	Zero @ -20°C	ppm equivalent change from 20°C	< ±0.5
	Zero @ 50°C	ppm equivalent change from 20°C	< +2 to +5

CROSS SENSITIVITY	H ₂ S	sensitivity	% measured gas @ 20ppm	H ₂ S	< 200
	NO ₂	sensitivity	% measured gas @ 10ppm	NO ₂	< 35
	Cl ₂	sensitivity	% measured gas @ 10ppm	Cl ₂	< -3
	NO	sensitivity	% measured gas @ 50ppm	NO	< 80
	SO ₂	sensitivity	% measured gas @ 20ppm	SO ₂	< 40
	CO	sensitivity	% measured gas @ 40ppm	CO	< 25
	H ₂	sensitivity	% measured gas @ 400ppm	H ₂	< 0.5
	C ₂ H ₄	sensitivity	% measured gas @ 80ppm	C ₂ H ₄	< 100
	NH ₃	sensitivity	% measured gas @ 25ppm	NH ₃	< 0.1
	HCHO	sensitivity	% measured gas @ 4ppm	HCHO	90
	CO ₂	sensitivity	% measured gas @ 5% volume	CO ₂	< 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 original container)	6
	Load resistor	Ω (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.



ETO-B1 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

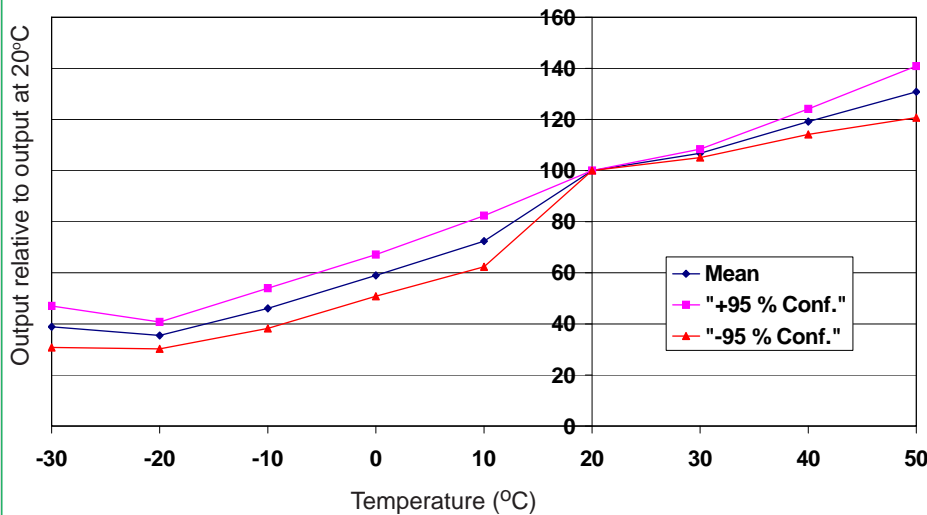


Figure 2 shows the variation in sensitivity caused by changes in temperature.

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

Figure 3 Zero Temperature Dependence

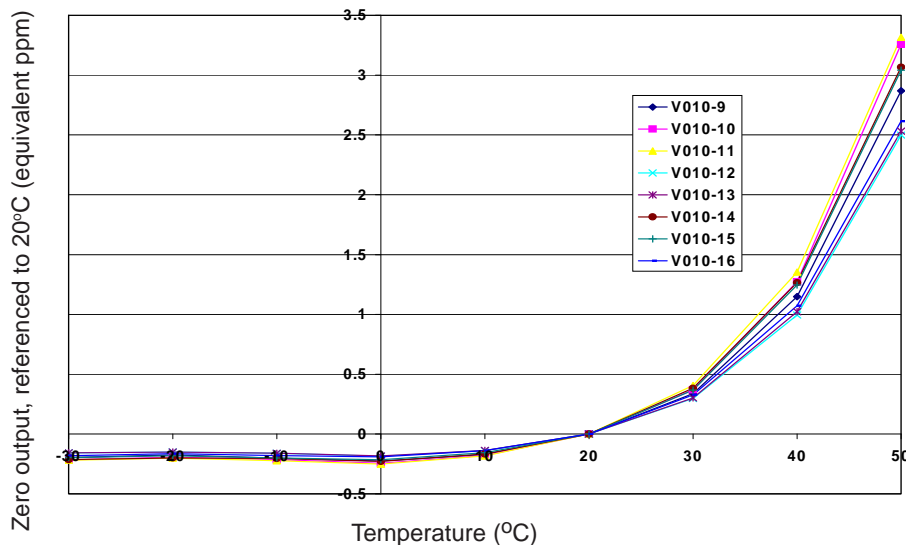
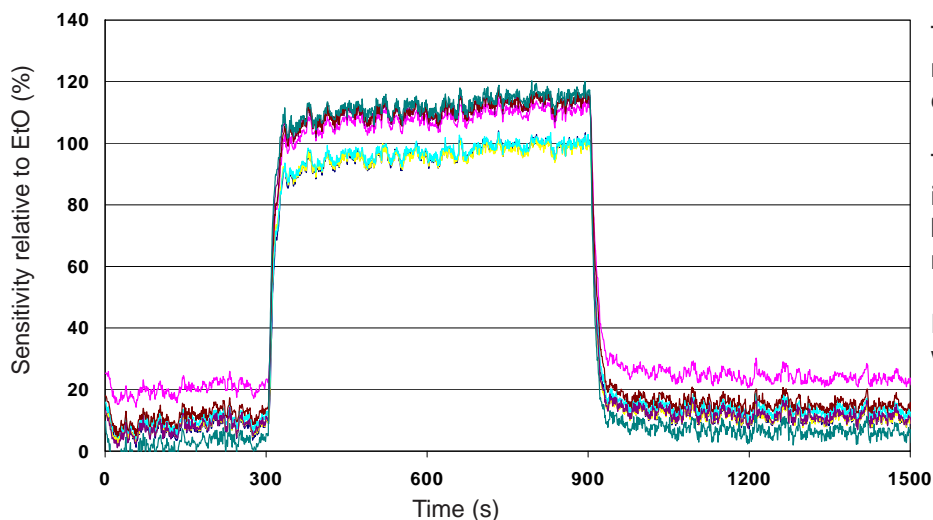


Figure 3 shows the variation in zero output caused by changes in temperature, expressed as ppm gas equivalent, referenced to zero at 20°C.

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".

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