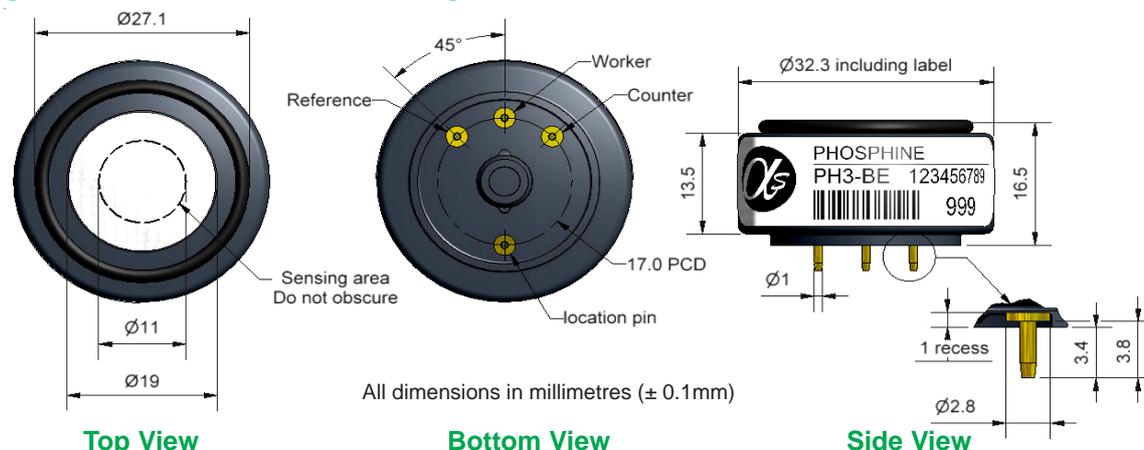


# PH3-BE Phosphine Sensor



PATENTED

Figure 1 PH3-BE Schematic Diagram



Technical Specification

PERFORMANCE	Parameter	Specification	Range
	Sensitivity	nA/ppm in 800 PH <sub>3</sub>	15 to 35
	Response time	t <sub>90</sub> (s) from zero to 800 PH <sub>3</sub>	< 30
	Zero current	ppm equivalent in zero air	< -6 to 20
	Resolution	RMS noise (ppm equivalent)	< 2
	Range	ppm PH <sub>3</sub> limit of performance warranty	2,000
	Linearity	ppm error at full scale, linear at zero, 800ppm PH <sub>3</sub>	-50 to -350
	Overgas limit	maximum ppm for stable response to gas pulse	5,000

LIFETIME	Parameter	Specification	Range
	Zero drift	ppm equivalent change/year in lab air	< 1.5
	Sensitivity drift	% change/year in lab air, monthly test	< 4
	Operating life	months until 80% original signal (24 month warranted)	> 24

ENVIRONMENTAL	Parameter	Specification	Range
	Sensitivity @ -20°C	(output @ -20°C/output @ 20°C) @ 800 ppm PH <sub>3</sub>	65 to 85
	Sensitivity @ 50°C	(output @ 50°C/output @ 20°C) @ 800 ppm PH <sub>3</sub>	120 to 140
	Zero @ -20°C	ppm equivalent change from 20°C	< ±20
	Zero @ 50°C	ppm equivalent change from 20°C	< ±15

CROSS SENSITIVITY	Gas	Sensitivity	Specification	Range
	H <sub>2</sub> S	sensitivity	% measured gas @ 20 ppm	< 110
	NO <sub>2</sub>	sensitivity	% measured gas @ 10 ppm	< -35
	CL <sub>2</sub>	sensitivity	% measured gas @ 10 ppm	< -30
	NO	sensitivity	% measured gas @ 50 ppm	< 10
	SO <sub>2</sub>	sensitivity	% measured gas @ 20 ppm	< 25
	CO	sensitivity	% measured gas @ 400 ppm	< 11
	H <sub>2</sub>	sensitivity	% measured gas @ 400 ppm	< 2
	C <sub>2</sub> H <sub>4</sub>	sensitivity	% measured gas @ 80 ppm	< 60
	NH <sub>3</sub>	sensitivity	% measured gas @ 25 ppm	< 0.1
	CO <sub>2</sub>	sensitivity	% measured gas @ 5%	< 0.1

KEY SPECIFICATIONS	Parameter	Specification	Range
	Temperature range	°C	-20 to 50
	Pressure range	kPa	80 to 120
	Humidity range	% rh continuous	20 to 90
	Storage period	months @ 0 to 20°C (stored in original container)	6
	Load resistor	Ω (recommended)	10 to 33
	Bias voltage	mV above analogue ground	not required
	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.

# PH3-BE Performance Data

Technical Specification

Figure 2 Zero Temperature Dependence

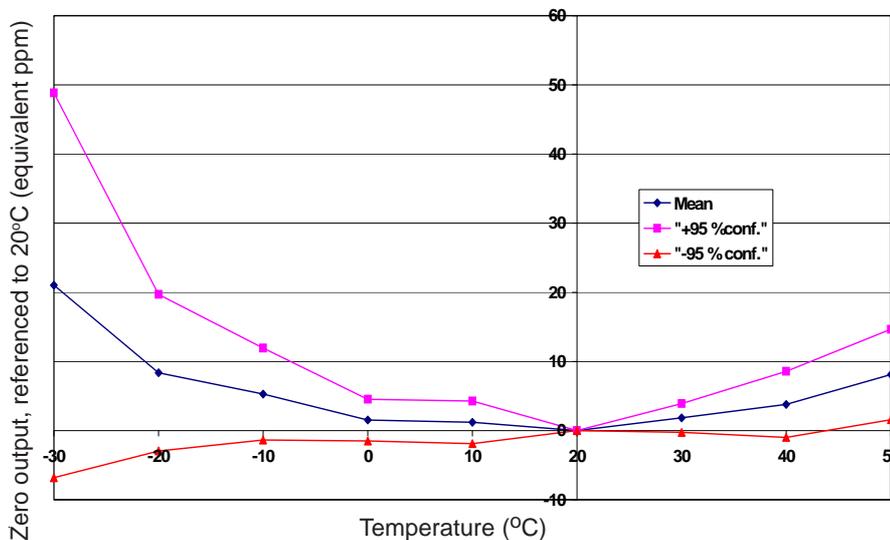
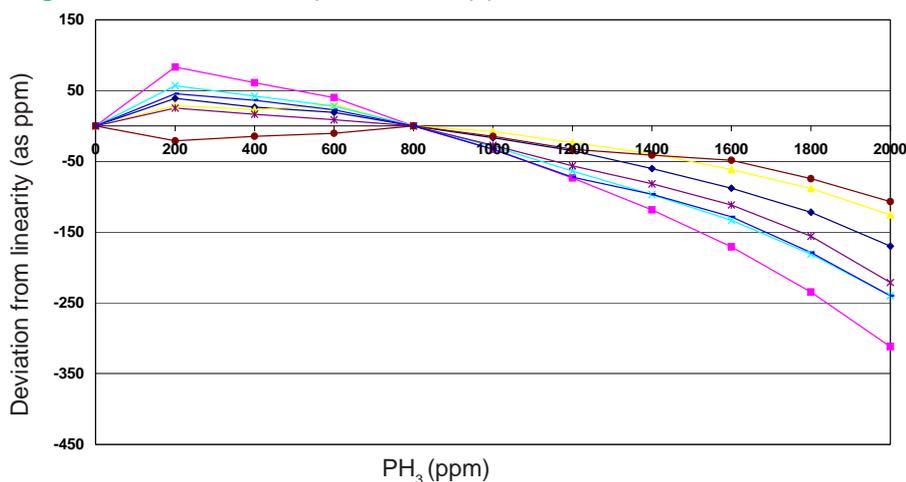


Figure 2 shows the variation in zero output caused by changes in temperature, expressed as ppm gas equivalent, referenced to zero at 20°C.

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

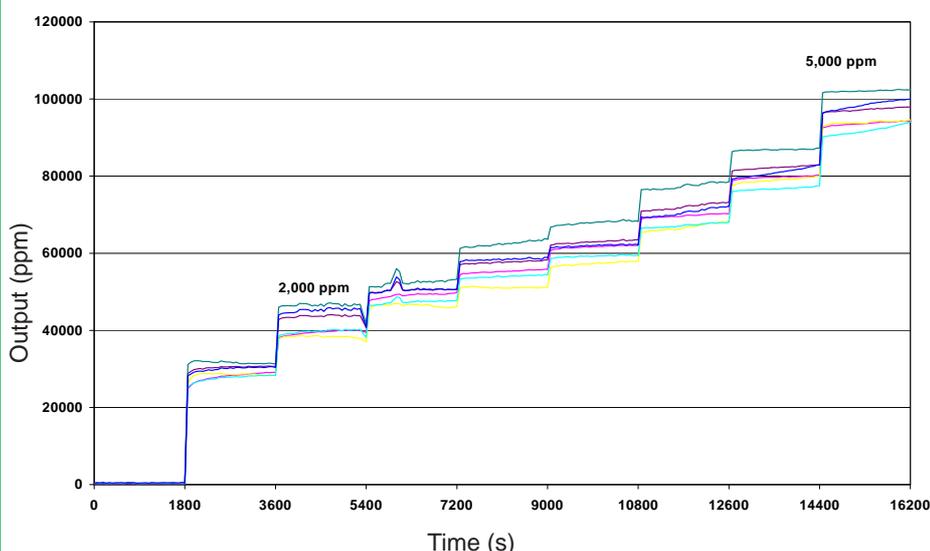
Figure 3 Deviation up to 2,000 ppm



Sensor linearity is repeatable between sensors, allowing for software correction if required.

Data is from a typical batch of sensors.

Figure 4 Overgas Linearity



Sensors respond rapidly and are stable even at 5,000 ppm  $\text{PH}_3$ .

Sensors recover after short high concentration exposure without change to performance.