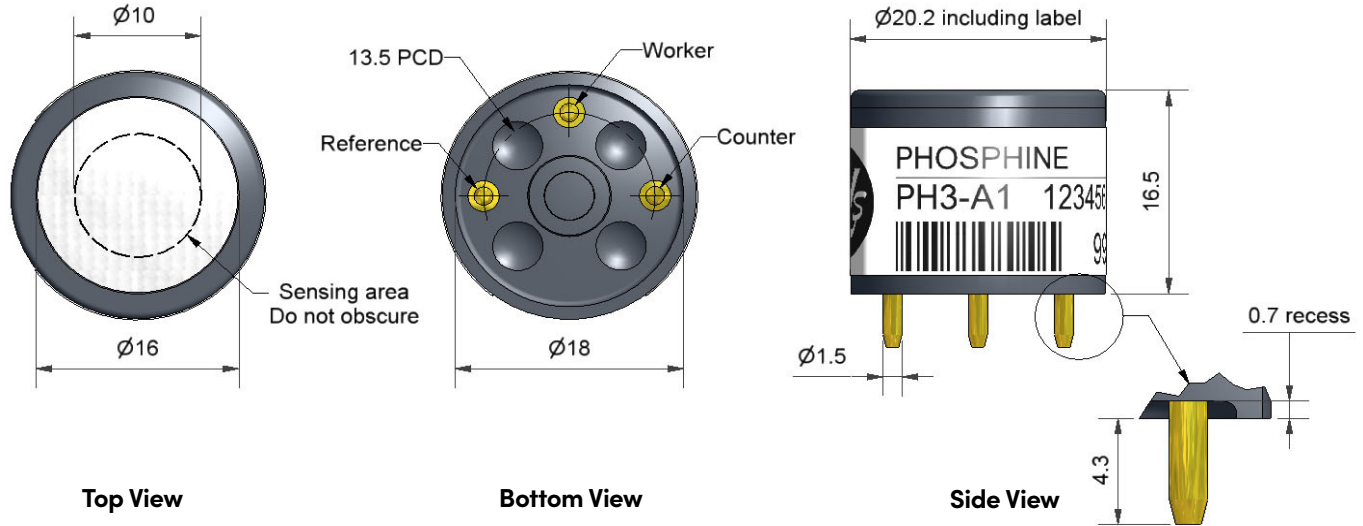


## PH3-A1 Phosphine Sensor



Dimensions are in millimetres ( $\pm 0.1$  mm).

### Performance

Sensitivity	nA/ppm in 11ppm PH <sub>3</sub>	550 to 900
Response time	t90 (s) from zero to 5ppm PH <sub>3</sub>	< 25
Zero current	ppm equivalent in zero air	< $\pm 0.5$
Resolution	RMS noise (ppm equivalent)	< 0.1
Range	ppm PH <sub>3</sub> limit of performance warranty	10
Linearity	ppm error at full scale, linear at zero, 20ppm PH <sub>3</sub>	< -0.6
Overgas limit	maximum ppm for stable response to gas pulse	75

### Lifetime

Zero drift	ppm equivalent change/year in lab air	< $\pm 0.05$
Sensitivity drift	% change/year in lab air, monthly test	< 10
Operating life	months until 80% original signal (24-month warranted)	> 24

### Environmental

Sensitivity @ -20°C	% (output @ -20°C/output @ 20°C) @ 11ppm PH <sub>3</sub>	20 to 70
Sensitivity @ 50°C	% (output @ 50°C/output @ 20°C) @ 5ppm PH <sub>3</sub>	130 to 160
Zero @ -20°C	ppm equivalent change from 20°C	< $\pm 0.04$
Zero @ 50°C	ppm equivalent change from 20°C	< $\pm 0.04$

### Cross Sensitivity

H <sub>2</sub> S sensitivity	% measured gas @ 20ppm	H <sub>2</sub> S	< 15
NO <sub>2</sub> sensitivity	% measured gas @ 10ppm	NO <sub>2</sub>	< -30
Cl <sub>2</sub> sensitivity	% measured gas @ 10ppm	Cl <sub>2</sub>	< -30
NO sensitivity	% measured gas @ 50ppm	NO	< 1
SO <sub>2</sub> sensitivity	% measured gas @ 20ppm	SO <sub>2</sub>	< 60
CO sensitivity	% measured gas @ 400ppm	CO	< 0.7
H <sub>2</sub> sensitivity	% measured gas @ 400ppm	H <sub>2</sub>	< 0.2
C <sub>2</sub> H <sub>4</sub> sensitivity	% measured gas @ 80ppm	C <sub>2</sub> H <sub>4</sub>	< 10
NH <sub>3</sub> sensitivity	% measured gas @ 25ppm	NH <sub>3</sub>	< 0.2
CO <sub>2</sub> sensitivity	% measured gas @ 5% volume	CO <sub>2</sub>	< 0.1

### Key Specifications

Temperature range	°C	-30 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	$\Omega$	10 to 33
Bias voltage	mV	not required
Weight	g	< 6

**Figure 1 Sensitivity Temperature Dependence**

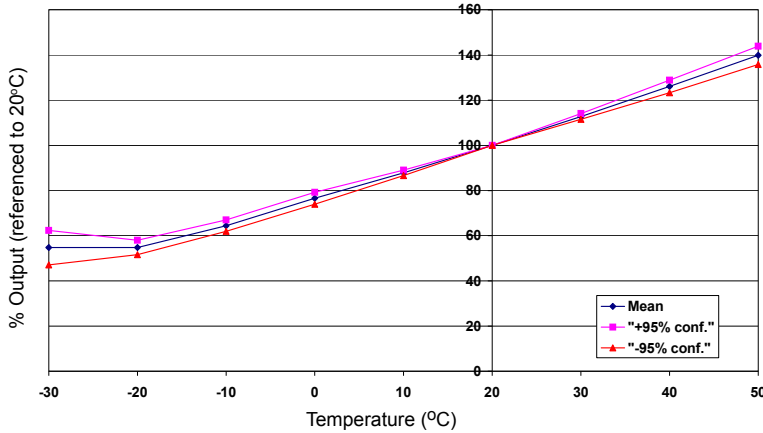


Figure 1 shows the variation in sensitivity caused by changes in temperature.

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

**Figure 2 Zero Temperature Dependence**

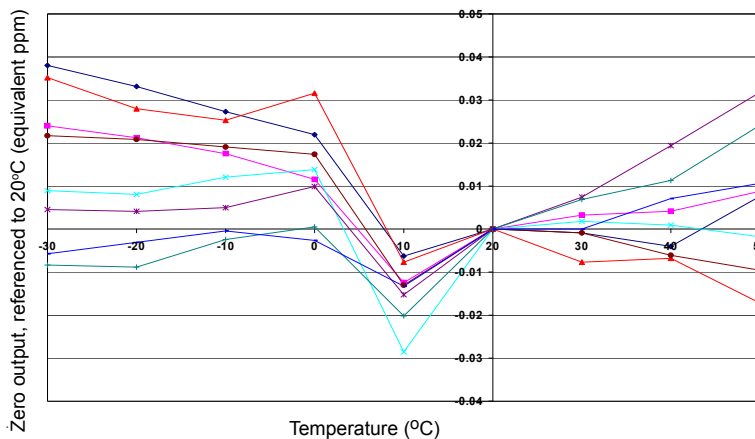


Figure 2 shows the variation in zero output caused by changes in temperature expressed as ppm gas equivalent, referenced to zero at 20°C.

This data is taken from a typical batch of sensors.

**Figure 3 Linearity**

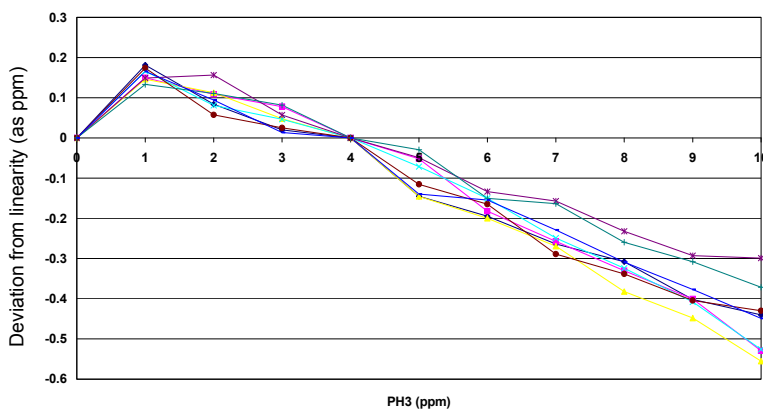


Figure 3 shows variation from linearity to 10ppm.

Software correction between 0 and 0.5ppm can improve overall linearity.

Repeatable performance means linearity can be corrected in software.

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.

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 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.

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. PH3-A1/SEP22