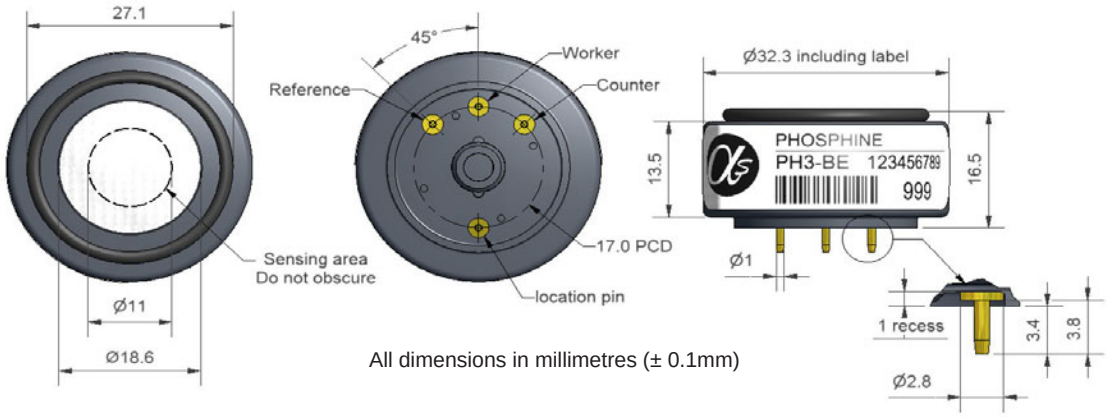
# PH3-BE Phosphine Sensor


PATENTED

Technical Specification

Figure 1 PH3-BE Schematic Diagram




All dimensions in millimetres (± 0.1mm)

**Top View** **Bottom View** **Side View**

| | | | |
|---|---|---|---|
| **PERFORMANCE** | Sensitivity | nA/ppm in 800 $PH_3$ | 15 to 25 |
| | Response time | $t_{90}$ (s) from zero to 800 $PH_3$ | <25 |
| | Zero current | ppm equivalent in zero air | <±3 |
| | Resolution | RMS noise (ppm equivalent) | <2 |
| | Range | ppm $PH_3$ limit of performance warranty | 2,000 |
| | Linearity | ppm error at full scale, linear at zero, 800ppm $PH_3$ | -50 to -350 |
| | Overgas limit | maximum ppm for stable response to gas pulse | 5,000 |
| **LIFETIME** | 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** | | | |
| | Sensitivity @ -20°C | % (output @ -20°C/output @ 20°C) @ 800 ppm $PH_3$ | 65 to 85 |
| | Sensitivity @ 50°C | % (output @ 50°C/output @ 20°C) @ 800 ppm $PH_3$ | 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** | $H_2S$ sensitivity | % meaured gas @ 20 ppm $H_2S$ | <70 |
| | NO2 sensitivity | % meaured gas @ 10 ppm $NO_2$ | <-20 |
| | $CL_2$ sensitivity | % meaured gas @ 10 ppm $Cl_2$ | <-5 |
| | NO sensitivity | % meaured gas @ 50 ppm NO | <10 |
| | $SO_2$ sensitivity | % meaured gas @ 20 ppm $SO_2$ | <30 |
| | CO sensitivity | % meaured gas @ 400 ppm CO | <6 |
| | $H_2$ sensitivity | % meaured gas @ 400 ppm $H_2$ | <4 |
| | $C_2H_4$ sensitivity | % meaured gas @ 80 ppm $C_2H_4$ | <10 |
| | $NH_3$ sensitivity | % meaured gas @ 25 ppm $NH_3$ | <0.1 |
| | CO2 sensitivity | % meaured gas @ 5% $CO_2$ | <0.1 |
| **KEY SPECIFICATIONS** | 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 |

**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

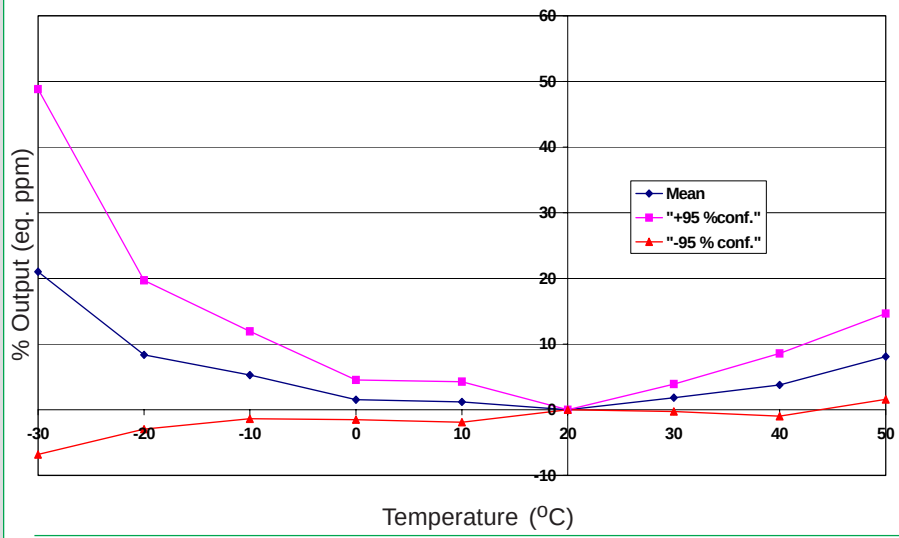
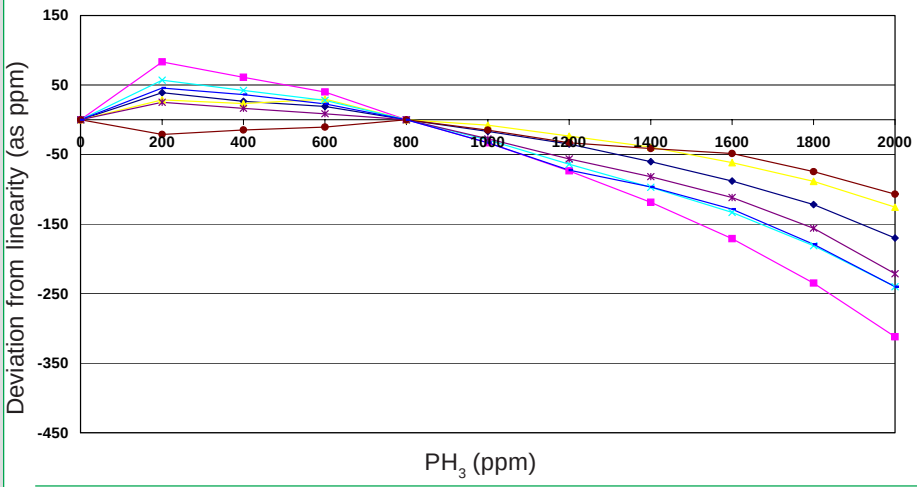



Figure 2 shows the variation in sensitivity caused by changes in temperature.

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

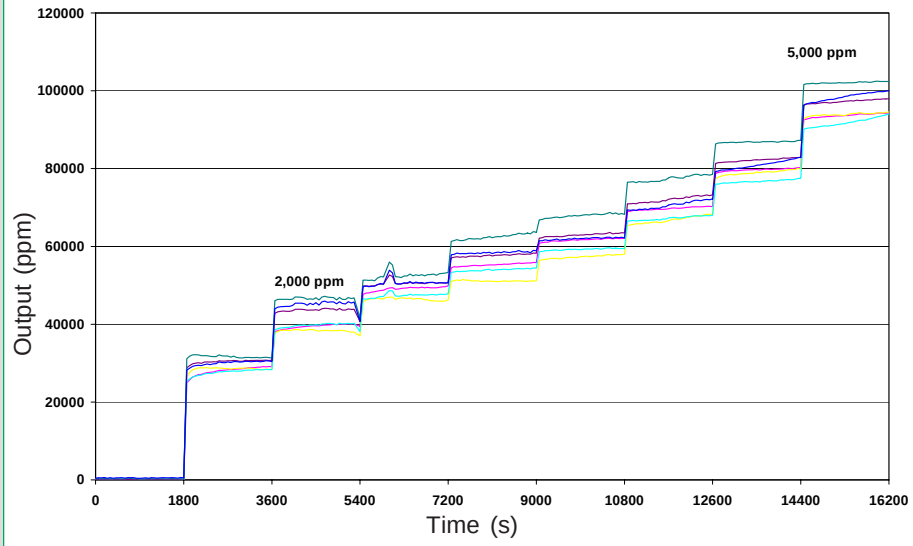
## Figure 3 Deviation from Linearity




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

Data is from a set of six sensors from a typical batch

## Figure 4 Overgas Linearity




Sensors respond rapidly and show stability, even to 5,000 ppm $PH_3$