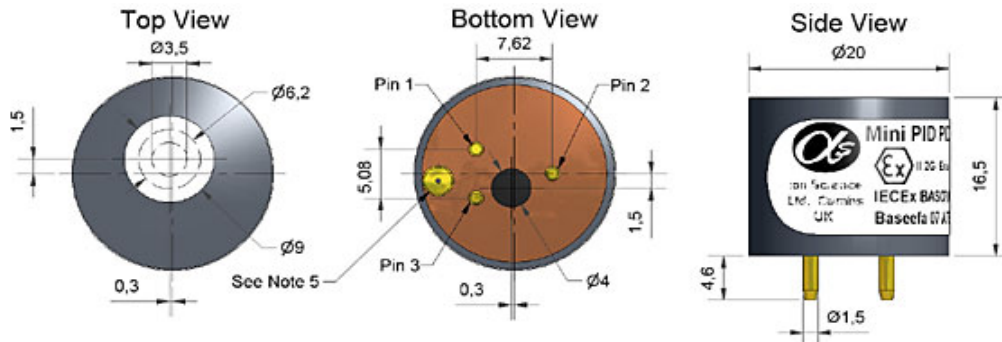




PID-A1 Photo Ionisation Detector



Figure 1 PID-A1 Schematic Diagram



PATENTED

Notes:

1. Do not obstruct Ø3.5 sensing area
2. Seal between Ø6.2 and Ø9.0 (if different to atmosphere) .
3. Pin out details:
Pin 1: + V supply (See note 5)
Pin 2: Signal output.
Pin 3: 0 V supply.
4. All dimensions '0.1mm unless otherwise stated.
5. Input voltage selector hole:
a) When filled with solder the onboard regulator is disabled. A regulated supply of 2.8 - 3.6 V (typically 3.0 - 3.2 V) is then required. Normally shipped with regulator disabled.
b) When not filled with solder the onboard regulator is enabled. A regulated or unregulated supply between 3.6 - 20 V is then required.

PERFORMANCE

Target gases	VOCs with ionisation potentials < 10.6eV	
Minimum detection level	(ppb isobutylene)	100
Linear range	(ppm isobutylene)(5% deviation)	300
Overrange	(ppm isobutylene)	6,000
Sensitivity	(linear range) (mV / ppm Isobutylene)	> 0.6
Full stabilisation time	(minutes to 100ppb)	20
Warm up time	(seconds) time to full operation	5
Offset voltage	(mV)	52-57
Response time (t ₉₀)	(seconds) diffusion mode	<3

ELECTRICAL

Power consumption	Typical at 3.3V	110mW
Supply voltage	3.0 to 3.6VDC Ideally regulated ±0.01V 3.6 to 20VDC Onboard regulator can be enabled by removing solder blob	
Output signal	Offset Voltage to V _{max} (V _{max} = V _{supply} -0.1V)	

ENVIRONMENTAL

Temperature range		-40°C to +40°C (Intrinsically safe) -40°C to +60°C (Non IS)
Temperature dependence	0°C to 40°C -20°C	95% to 100% of signal 125% of signal at 25°C
Relative humidity range	non-condensing	0 to 95%
Humidity sensitivity		Near zero

KEY SPECIFICATIONS

Expected operating life	5 years (excluding replaceable lamp and electrode stack)
IS Approval	IECEx Ex ia IIC T4; ATEX Ex ia II 1G -40°C < T _a < +40°C
Onboard filter	To remove liquids and particulates
Lamp replacement	User replaceable (10.6 eV)
Electrode stack	User replaceable
Error state signal	Lamp out: 35mV
Package type	Alphasense™ CH-A3 or City Technology™ 4P
Weight	< 8g
Position sensitivity	None



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.

Technical Specification



PID-A1 Performance Data

Technical Specification

Figure 2 Sensitivity Temperature Dependence

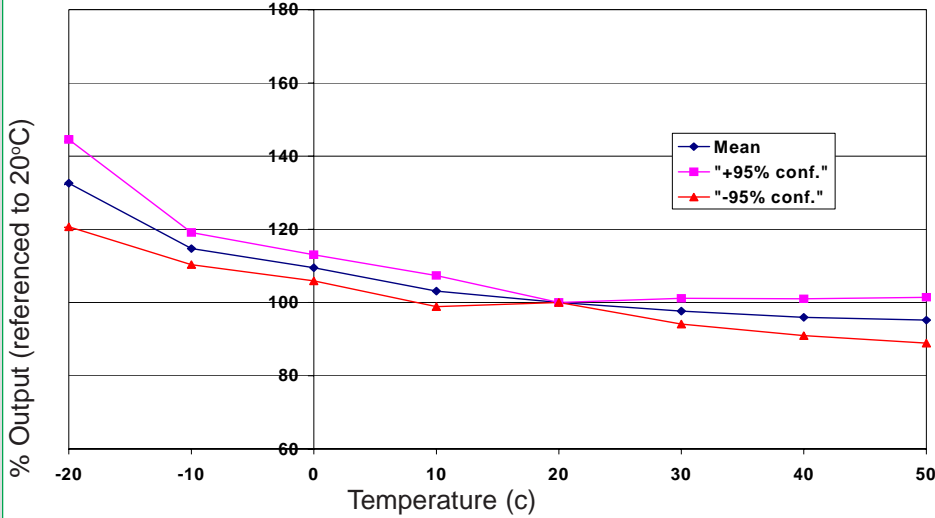
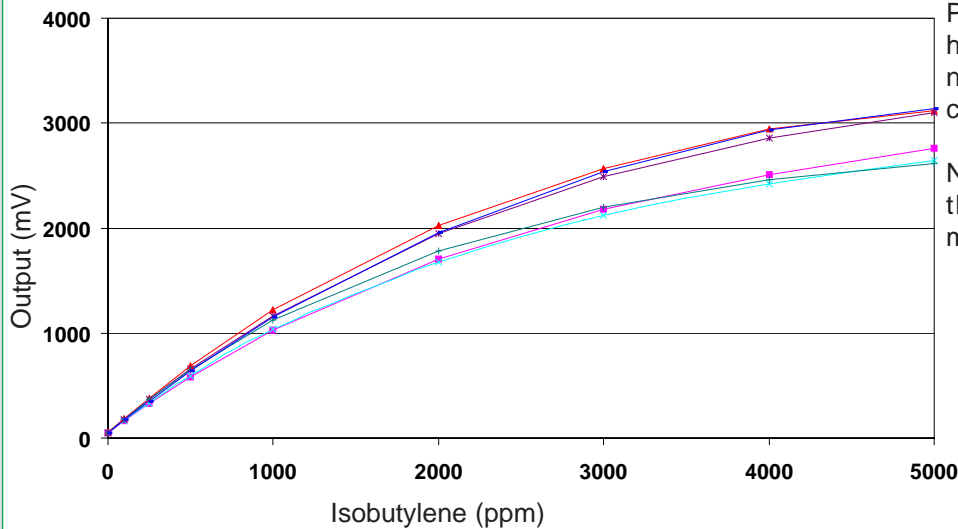


Figure 2 shows the temperature dependence, corrected for the gas law.

This data is taken from a typical batch of PID-A1 sensors tested with 100ppm Isobutylene.

The mean and $\pm 95\%$ confidence intervals are shown.

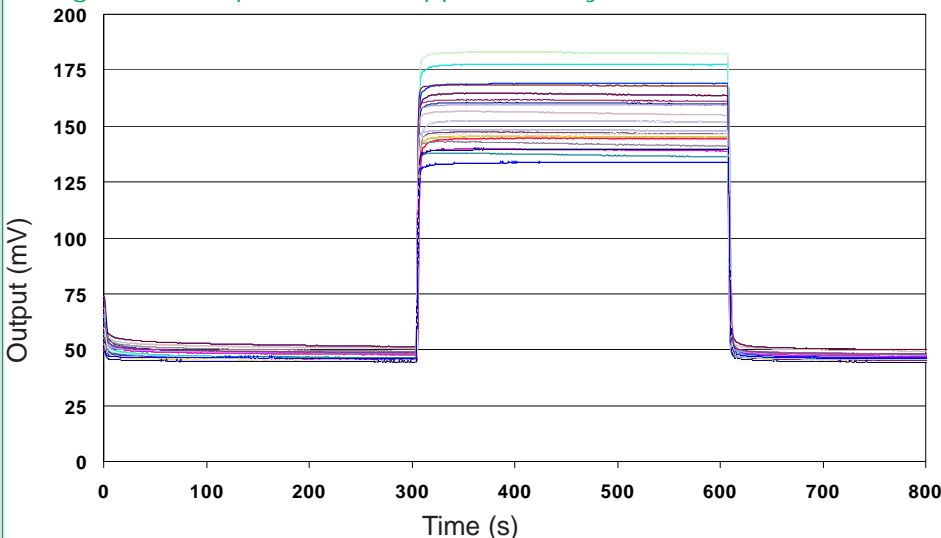
Figure 3 Linearity



PID output is non-linear at higher concentrations but non-linearity can be corrected in software.

Non-linearity depends on the VOC gas being measured.

Figure 4 Response to 100ppm Isobutylene



Results from a batch of PID-A1s show fast, stable response to Isobutylene.

Initial cleaning of the cell and electrode stack may be needed after monitoring a contaminated site.

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".