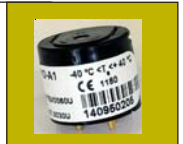


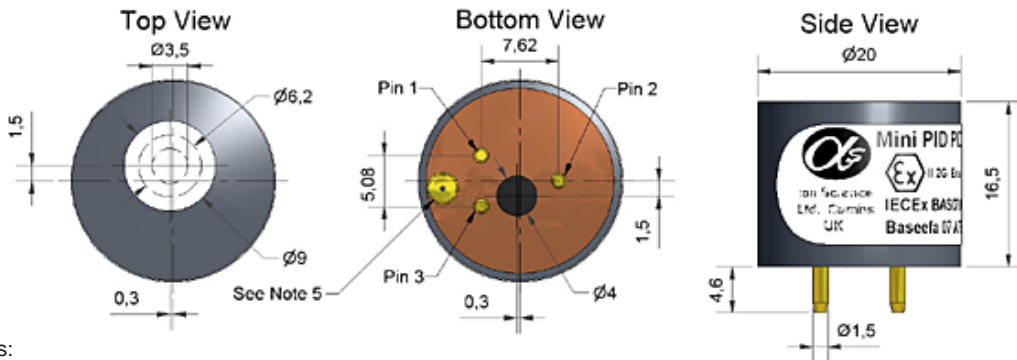


PID-A1 Photo Ionisation Detector



US patent 7,046,012
 US patent 7,821,270
 EU patent 1474681
 Other patents

Figure 1 PID-A1 Schematic Diagram



Notes:

- Do not obstruct $\varnothing 3.5$ sensing area
- Seal between $\varnothing 6.2$ and $\varnothing 9.0$ (if different to atmosphere)
- Pin out details:
 Pin 1: + V supply (See note 5)
 Pin 2: Signal output
 Pin 3: 0 V supply
- All dimensions ± 0.1 mm unless otherwise stated
- 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.
 b) When not filled with solder the onboard regulator is enabled.
 A regulated or unregulated supply between 3.6 - 20 V is then required

Normally shipped with regulator disabled..

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 110mW at 3.3V
Supply voltage	3.0 to 3.6VDC Ideally regulated ± 0.01 V (onboard regulator disabled) 3.6 to 18VDC Onboard regulator can be enabled by removing solder blob
Output signal	>50mV to positive supply voltage (less 0.1V)

ENVIRONMENTAL

Temperature range	-40°C to +55°C (Intrinsically safe) -40°C to +65°C (Non IS)
Temperature dependence	0°C to 40°C 95% to 100% of signal -20°C 125% of signal at 20°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 < +55°C (<10VDC supply) ETL Class 1, Division 1, Groups A,B,C,D Conforms to UL 913 and certified to CSA 22.2 No.157 (<10VDC supply)
Onboard filter	To remove liquids and particulates
Lamp replacement	User replaceable (10.6 eV) (Optional 9.6eV)
Electrode stack	User replaceable
Error state signal	Lamp out: 35mV
Package type	Alphasense™ CH-A3 or City Technology™ 4P

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

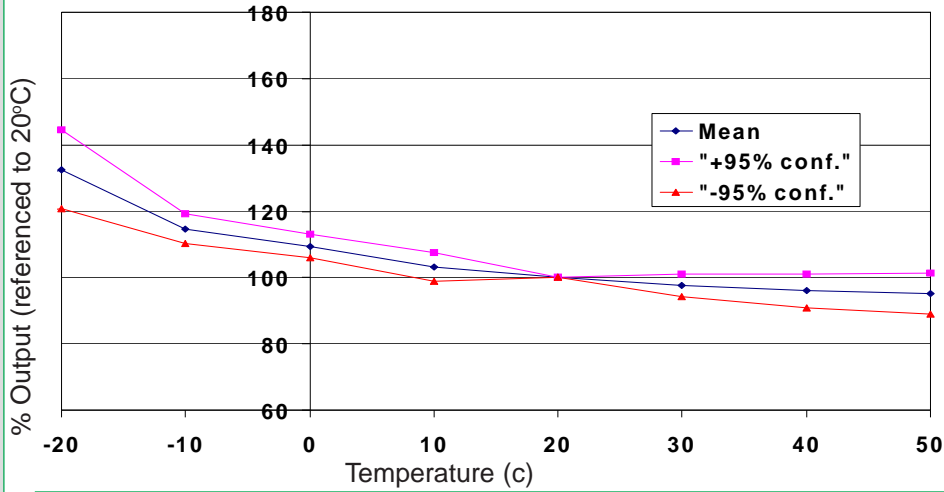
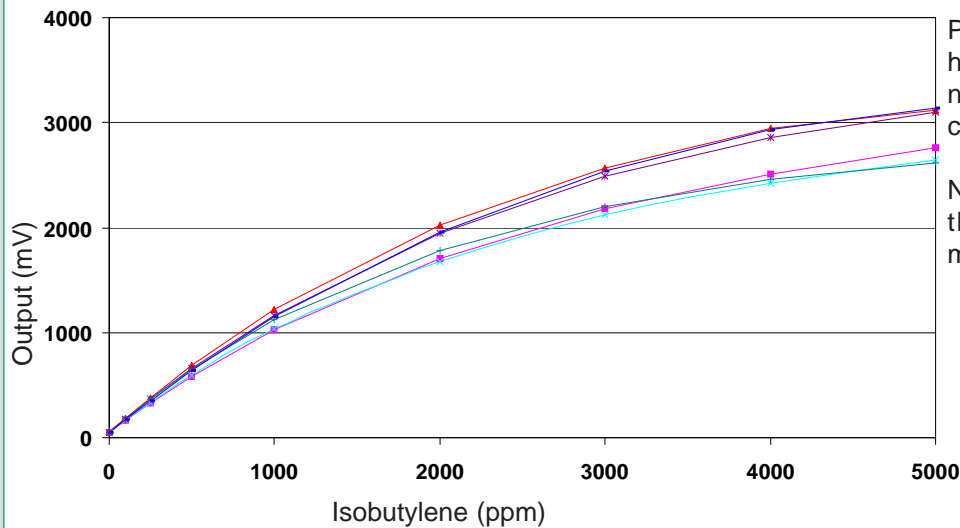


Figure 2 shows the temperature dependence, corrected for the gas law.

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.

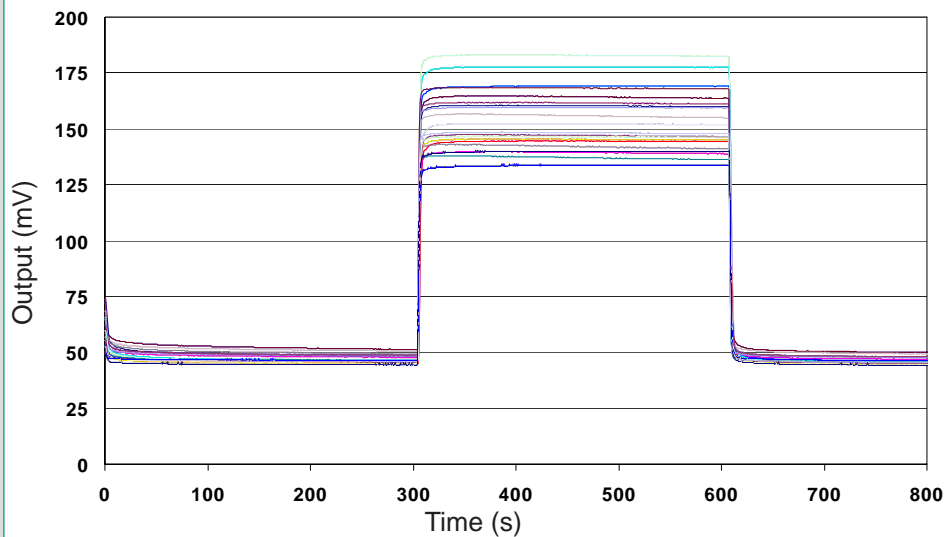
Figure 3 Linearity



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.



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.

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".

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. PID-A1/MAR11