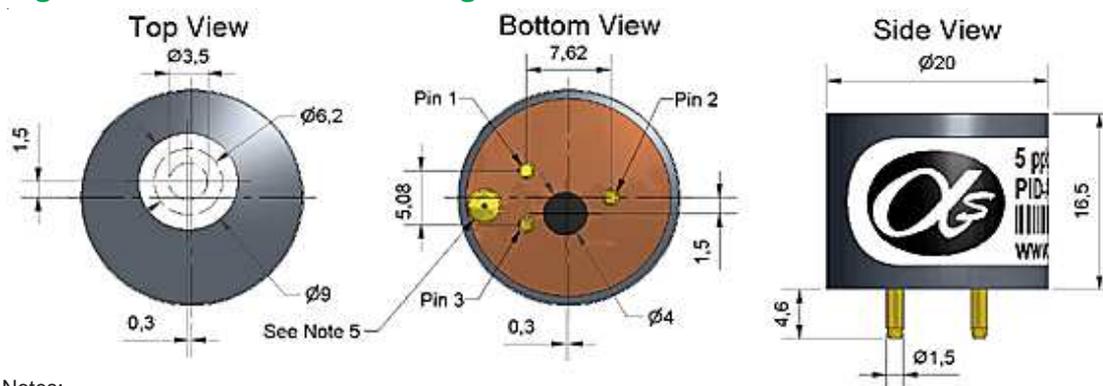


PID-AH Photo Ionisation Detector



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

Figure 1 PID-AH 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: 0V 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 3.2 - 3.6 V (typically 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 - 10 V is then required for IS applications, or up to 18 V for non-IS applications.

Normally shipped with regulator enabled.

PERFORMANCE

Target gases	VOCs with ionisation potentials < 10.6 eV		
Minimum detection level	ppb isobutylene		1
Linear range	ppm isobutylene	3% deviation	50
Overrange	ppm isobutylene		50
Sensitivity	linear range	mV / ppm Isobutylene	> 20
Full stabilisation time	minutes to 20 ppb		20
Warm up time	seconds	time to full operation	5
Offset voltage	mV variable between detectors		46 to 60
Response time (t_{90})	seconds	diffusion mode	< 3

ELECTRICAL

Power consumption	85 mW (max) at 3.2 V, 300 mW transient for 200 msec on switch-on
Supply voltage	3.2 to 3.6 VDC Ideally regulated ± 0.01 V (onboard regulator disabled) 3.2 to 10 VDC (onboard regulator enabled) (maximum 10V for IS approval, maximum 18 V for non-IS)
Output signal	Offset voltage (minimum 46 mV) to V_{max} ($V_{max} = V_{supply} - 0.1$ V when regulator is enabled)

ENVIRONMENTAL

Temperature range	-40°C to +55°C (Intrinsically Safe); -40°C to +65°C (non-IS)		
Temperature dependence	0°C to 40°C	90% to 100% of signal at 20°C	
	-20°C	140% of signal at 20°C	
Relative humidity range	Non-condensing		0 to 95%
Humidity sensitivity	During operations: 0% to 75% rh transient		near zero

KEY SPECIFICATIONS

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)
Onboard filter	To remove liquids and particulates
Lamp	User replaceable
Electrode stack	User replaceable
Error state signal	Lamp out: 35 mV
Weight	< 8g
Position sensitivity	None
Warranty period	Electronics and housing: 24 months Lamp and electrode stack are user replaceable. 10.6eV lamp: 5,000 lit hours

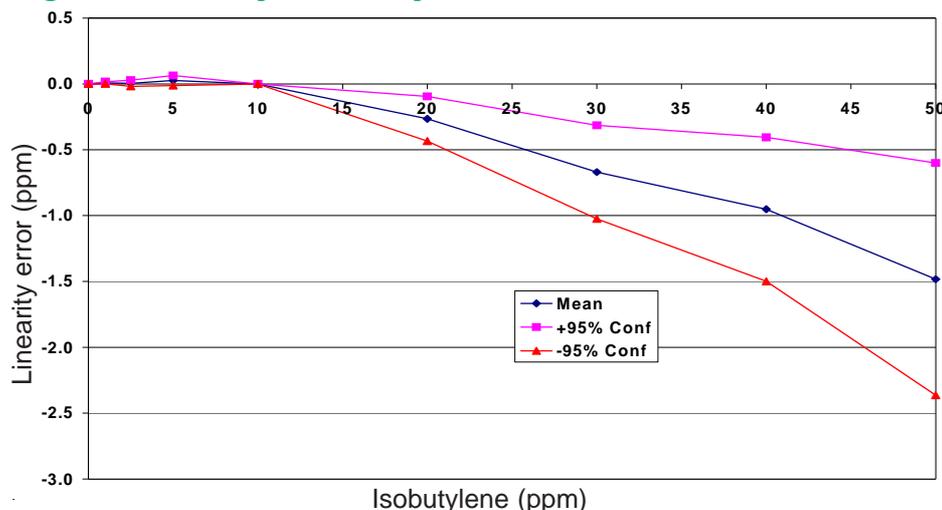
NOTE: all sensors are tested at ambient environmental conditions, unless otherwise stated. As applications of use are outside our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors are suitable for their own requirements.

Technical Specification

PID-AH Performance Data

Technical Specification

Figure 2 Linearity to Isobutylene



Reduced sensitivity at higher concentrations is a chemical/physical effect and can be corrected in software for a specific VOC.

Non-linearity correction depends on the VOC being measured.

Figure 3 Selecting the right lamp

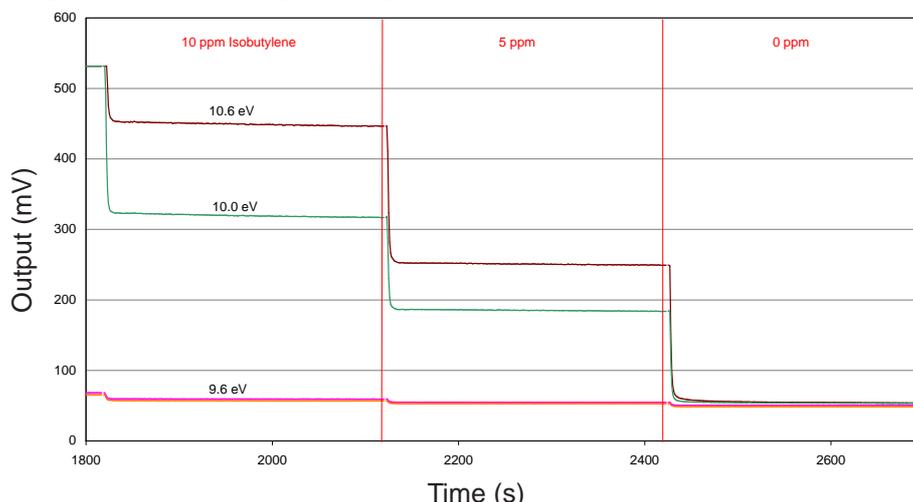


Figure 3 compares the output to 5 and 10ppm Isobutylene for 9.6 eV, 10.0 eV and 10.6eV lamps.

9.6eV lamps are slightly more selective for BTEX detection, but 10.0 eV lamps give better sensitivity.

PID Replaceable Parts/Consumables List

Lamp type	Product code	Minimum sensitivity mV/ppm	Minimum range ppm isobutylene	Lamp life lit hours
10.0 eV	001-0030-02	0.2	9000	5000
10.6 eV (HPPM)	001-0019-04	0.3	6000	2000
10.6 eV (LLHS)	001-0030-01	0.8	2000	5000
11.7 eV	001-0019-03			24
Electrode stack	001-0018-01			
Stack removal tool	001-0020-00			
Lamp spring	001-0023-00			
Lamp cleaning kit	001-0024-00			



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 "