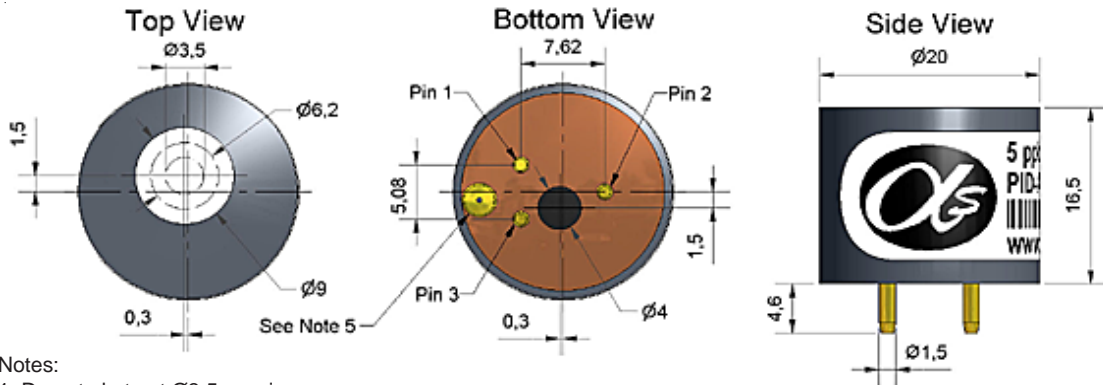


PID-AH Photo Ionisation Detector



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 2.8 - 3.6V (typically 3.0 - 3.3V) 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

Normally shipped with regulator enabled

PERFORMANCE

Target gases	VOCs with ionisation potentials < 10.6 eV	
Minimum detection level	(ppb isobutylene)	5
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)	52 to 70
Response time (t_{90})	(seconds) diffusion mode	< 3

ELECTRICAL

Power consumption	110 mW (typical) at 3.3 V, 300 mW transient for 200 msec on switch-on
Supply voltage	3.0 to 3.6 VDC Ideally regulated ± 0.01 V (onboard regulator disabled) 3.6 to 10 VDC (onboard regulator enabled) (maximum 10V for IS approval)
Output signal	Offset voltage to V_{max} ($V_{max} = V_{supply} - 0.1$ V)

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 at 20°C -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 < Ta < +55°C (< 10VDC supply)
Onboard filter	To remove liquids and particulates
Lamp replacement	User replaceable (10.6 eV) (Optional 9.6 eV and 10.0 eV lamps)
Electrode stack	User replaceable
Error state signal	Lamp out: 35 mV
Package type	Alphasense™ CH-A3 or City Technology™ 4P
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

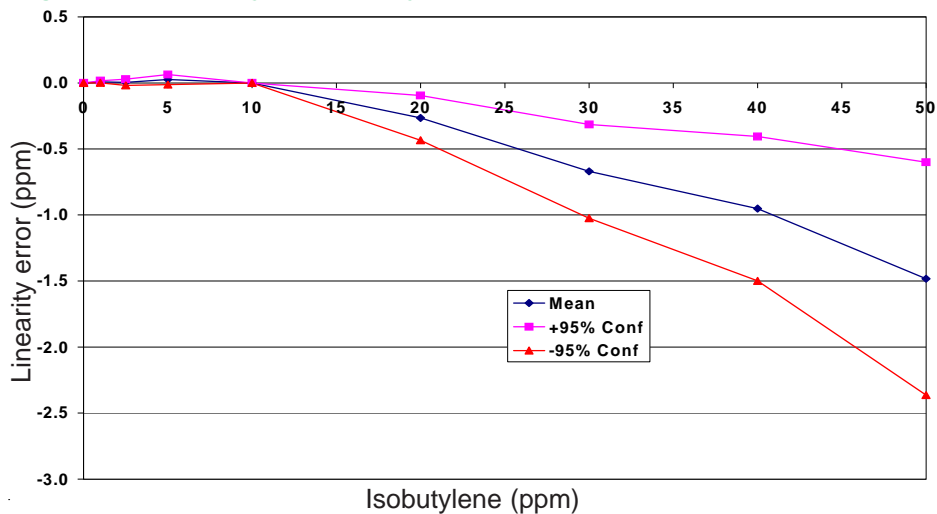
NOTE: all sensors are tested at ambient environmental conditions, unless otherwise stated. As applications of use are outside our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors are suitable for their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

Figure 3 Selecting the right lamp

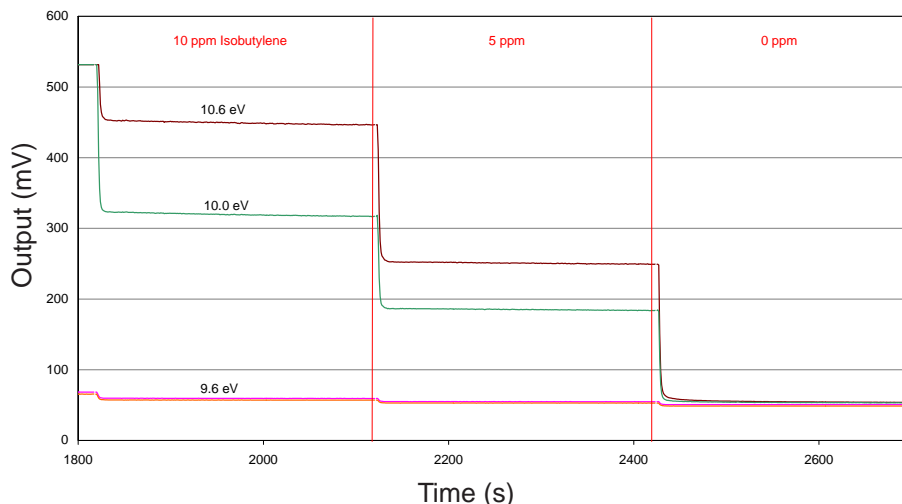


Figure 3 compares the output to 5 and 10ppm Isobutylene for 9.6 eV, 10.0 eV and 10.6 eV lamps.

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

PID Replaceable Parts/Consumables List

PART	PART NUMBER
Lamp 10.6 eV	PID-LP 10.6
Lamp 10.0 eV	PID-LP 10.0
Lamp 9.6 eV	PID-LP 9.6
Electrode Stack	PID-EH
Cleaning Kit	PID-CK
Stack Removal Tool	PID-RT
Lamp Spring	PID-SP

