

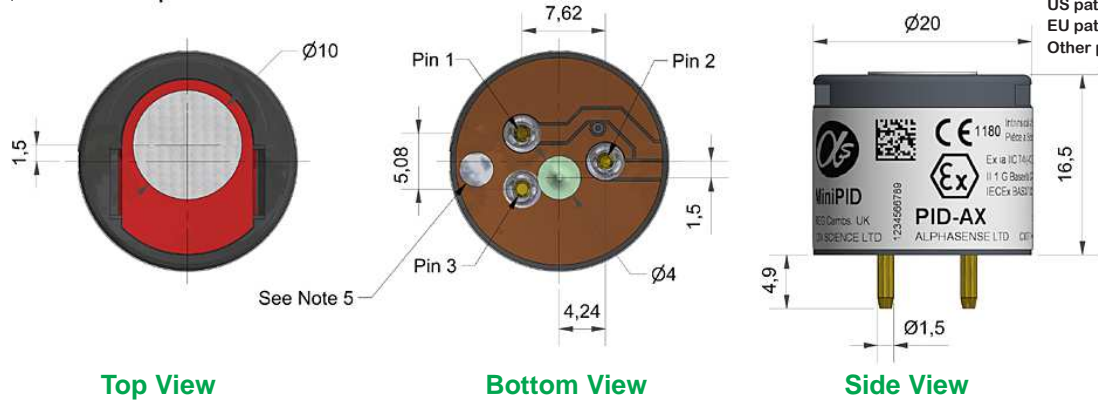


PID-AX Photo Ionisation Detector

High Sensitivity



Figure 1 PID-AX Schematic Diagram



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

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

5. Input voltage selector hole:

- When filled with solder the onboard regulator is disabled. A regulated supply of 3.0 - 3.2 V or 3.2 - 3.6 V is then required.
- When not filled with solder the onboard regulator is enabled. A regulated or unregulated supply between 3.6 - 10 V (IS approved) or 3.6 - 18V (not IS approved) will be required. These sensors will then be internally regulated to 3.3V.

PERFORMANCE (using 10.6 eV lamp 001-0019-04)

Target gases	VOCs with ionisation energies less than the lamp energy, see Table 1		
Minimum detection limit	ppb isobutylene		0.5
Linear range	ppm isobutylene	5% deviation	< 3
Overrange	ppm isobutylene		3
Sensitivity	linear range	mV / ppm Isobutylene, see Table 1 for options	> 500
Full stabilisation time	minutes to 0.5 ppb	time to full operation	20
Warm up time	minutes		10
Offset voltage	mV		70 to 200
Response time (t_{90})	seconds	diffusion mode	< 12

ELECTRICAL

Power consumption: 85 mW (max) at 3.2 V, 350 mW transient for 200 msec on switch-on
90 mW at 3.3 V, 460 mW transient for 200 msec on switch-on

Output signal: Offset voltage (minimum 70 mV) to V_{max}
($V_{max} = V_{supply} - 0.2 V$ when regulator is enabled)

Supply voltage

Product code	Description	Voltage regulator
000-0B28-AX	3.2 V to 3.6 V certified	Disabled
000-0B28-AX3	3.0 V to 3.2 V certified	Disabled
000-0U28-AX	3.6 v to 10.0 V certified	Enabled
000-0U28-AX	3.6 V to 18.0 V non-certified	Enabled

ENVIRONMENTAL

Temperature range: -40°C to +55°C (Intrinsically safe)

Temperature dependence: Please refer to figures 2 and 3

Relative humidity range: Non-condensing 0 to 99%

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: n/a
Electronic error (mV): 41 ±3

Weight: < 8g

Position sensitivity: None

Warranty period: Electronics and housing: 24 months
Lamp and electrode stack are user replaceable, see Table 1

Technical Specification



PID-AX Performance Data

Technical Specification

Figure 2 Zero air baseline deviation

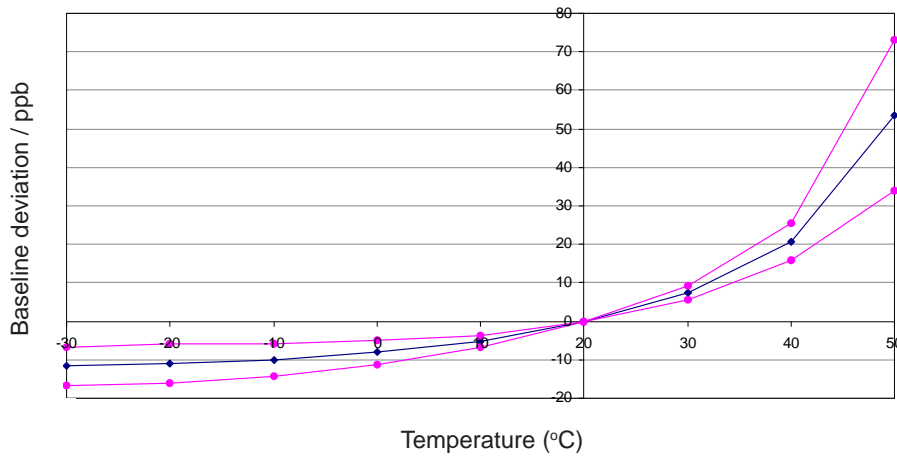


Figure 2 shows the deviation of the zero air baseline with temperature from a typical batch of sensors

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

Figure 3 Sensitivity temperature dependence

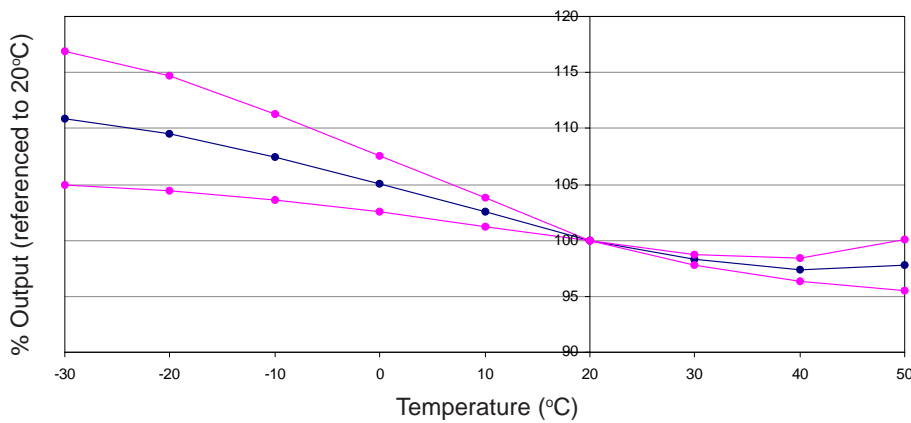


Figure 3 shows the variation of sensitivity with temperature from a typical batch of sensors.

The mean and 95% confidence intervals are shown.

Table 1: PID replacements/consumables

Lamp type	Product code	Minimum sensitivity mV/ppm	Minimum range ppm isobutylene	Lamp life lit hours
9.6 eV	001-0030-00	4	300	TBD
10.0 eV	001-0030-02	150	8	5,000
10.6 eV (HPPM)	001-0019-04	500	2.5	5,000
10.6 eV (LLHS)	001-0030-01	500	2	5,000
Electrode stack	001-0018-03			
Stack removal tool	001-0020-00			
Lamp spring	001-0023-00			
Lamp cleaning kit	001-0024-00			

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.



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".

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