

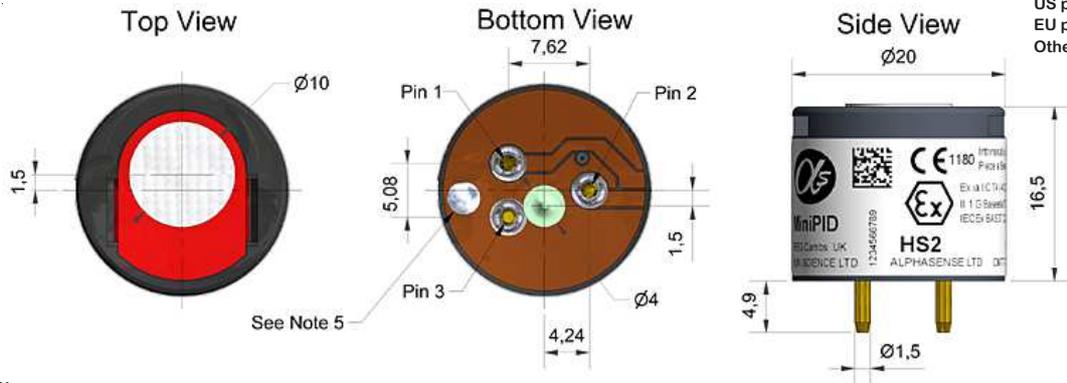


PID-HS Photo Ionisation Detector



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

Figure 1 PID-HS 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

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 - 18 V (not IS approved) will be required. These sensors will then be internally regulated to 3.3V.

PID-HS2 shipped with regulator disabled.

PERFORMANCE

Target gases	VOCs with ionisation energies less than the lamp energy, see Table 1		
Minimum resolution	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	seconds		5
Offset voltage	mV		70 to 200
Response time (t_{90})	seconds	diffusion mode	< 10

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 Vmax (Vmax = Vsupply - 0.2 V when regulator is enabled)
Supply voltage	

Part number	Description	Product code	Voltage regulator
PID-HS2	3.2V to 3.6V certified	000-0028-HS2	Disabled
PID-HS3	3.0V to 3.2V certified	000-0028-HS3	Disabled
PID-HS4	3.6V to 10.0V certified	000-0028-HS4	Enabled
PID-HS5	3.6V to 18.0V non-certified	000-0028-HS2	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 < Ta < +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: < 50 mV
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-HS Performance Data

Technical Specification

Figure 2 Zero air baseline deviation

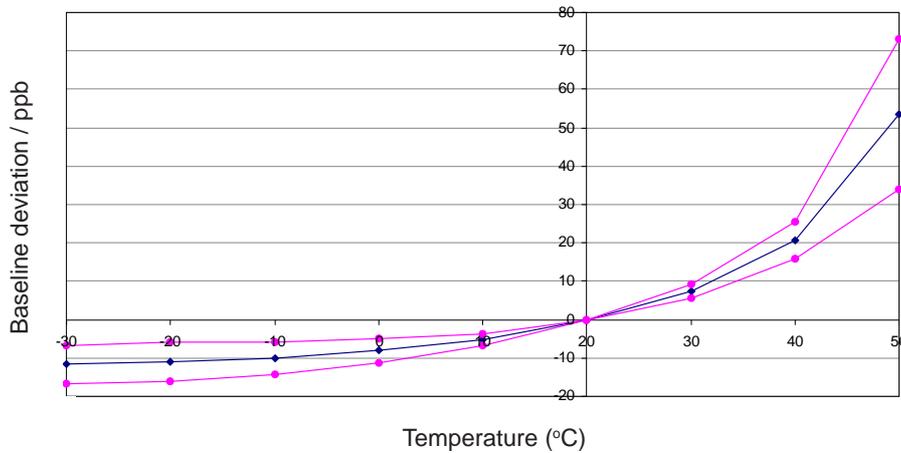


Figure 2 shows the deviation of the zero air baseline with temperature from a typical batch of sensors

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

Figure 3 Sensitivity temperature dependence

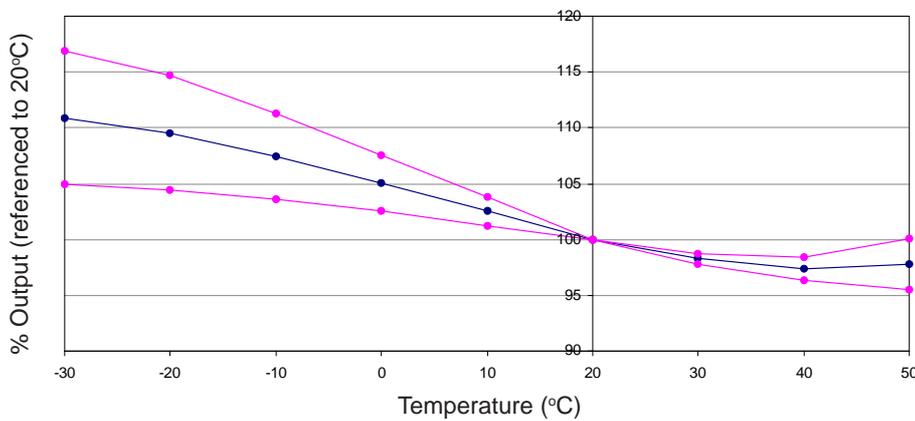


Figure 3 shows the variation of sensitivity with temperature from a typical batch of sensors.

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
10.0 eV	001-0030-02	250	> 6	5,000
10.6 eV (HPPM)	001-0019-04	500	3	5,000
10.6 eV (LLHS)	001-0030-01	500	3	5,000
11.7 eV	001-0019-03	TBD	TBD	200
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".

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-HS/FEB18