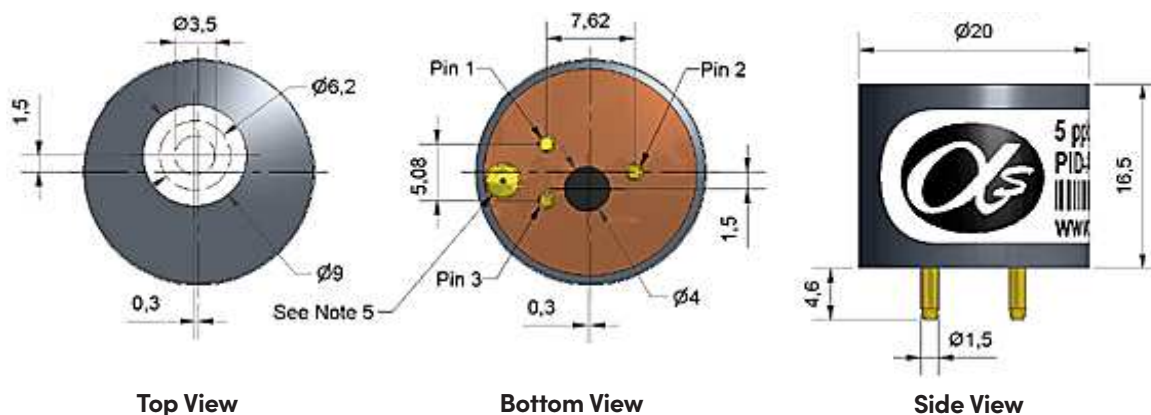


## PID-AH2 Photo Ionisation Detector



### 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  $\pm 0.1$ mm unless otherwise stated
- Input voltage selector hole:
  - 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.
  - 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 which will be internally regulated to 3.3V.

**Normally shipped with regulator enabled.**

### Performance

(using 10.6 eV lamp 001-0019-04)

|                            |   |          |
|----------------------------|---|----------|
| Target gases               | VOCs with ionisation potentials < 10.6 eV |          |
| Minimum detection level    | ppb isobutylene                           | 1        |
| Linear range               | ppm isobutylene 3% deviation              | 40       |
| Overrange                  | ppm isobutylene                           | 40       |
| Sensitivity                | linear range mV / ppm Isobutylene         | > 25     |
| Full stabilisation time    | minutes to 20 ppb                         | 5        |
| 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 (at switch on) | Onboard regulator enabled (default): < 100 mW at 3.6 V, < 550 mW transient for 200ms  |
| Supply voltage                   | Onboard regulator disabled: < 85 mW at 3.2 V, < 300 mW transient for 200ms<br>3.2 to 3.6 VDC Ideally regulated $\pm 0.01$ V (onboard regulator disabled)<br>3.6 to 10 VDC (onboard regulator enabled)<br>(maximum 10V for IS approval, maximum 18 V for non-IS) |
| Output signal                    | Offset voltage (minimum 46 mV) to $V_{max}$<br>( $V_{max} = V_{supply} - 0.15$ V when regulator is disabled, or 3.15 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 of signal at 20°C<br>-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 specification

|                      |   |
|----------------------|---|
| 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: 41 $\pm$ 3  |
| Weight               | < 8g  |
| Position sensitivity | None  |
| Warranty period      | Electronics and housing: 24 months<br>Lamp and electrode stack are user replaceable. 10.6eV lamp: 5,000 lit hours |



Figure 1 Linearity to Isobutylene at 3.6 V

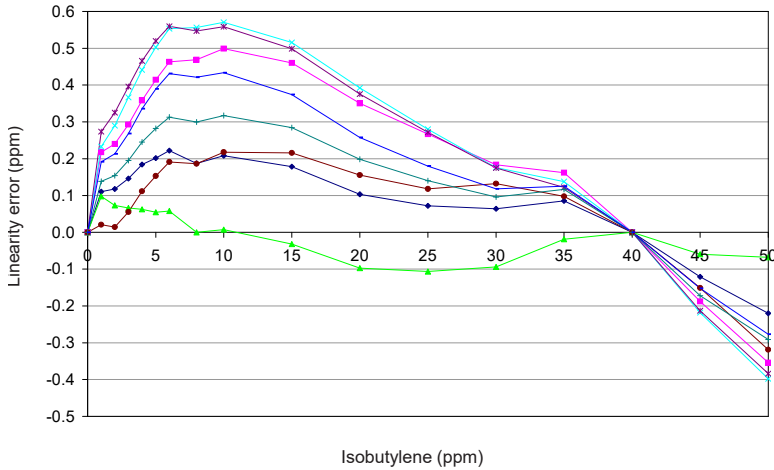


Figure 1 shows reduced sensitivity at higher concentrations is a chemical/physical effect and can be corrected in software for a specific VOC. Non-linearity correction depends on the VOC being measured.

Figure 2 Selecting the right lamp

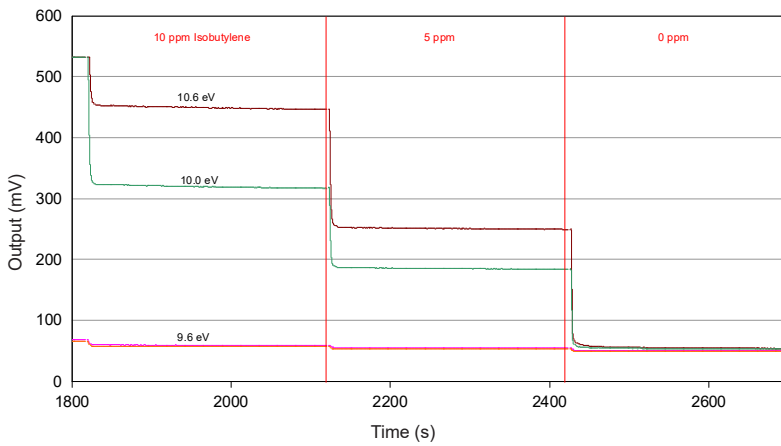


Figure 2 compares the output to 5 and 10 ppm Isobutylene for 9.6eV, 10.0eV and 10.6eV lamps.

Table 1 PID Replaceable Parts/Consumables List

| Lamp Type*         | Product Code | Minimum sensitivity mV/ppm | Minimum range ppm isobutylene | Lamp life lit hours |
|--------------------|--------------|----------------------------|-------------------------------|---------------------|
| 9.6 eV             | 001-0030-00  | 0.25                       | 8,000                         | TBD                 |
| 10.0 eV            | 001-0030-02  | 10                         | 100                           | 5,000               |
| 10.6 eV (HPPM)     | 001-0019-04  | 25                         | 40                            | 5,000               |
| 10.6 eV (LLHS)     | 001-0030-01  | 25                         | 40                            | 5,000               |
| Electrode stack    | 001-0018-01  |                            |                               |                     |
| Stack removal tool | 001-0020-00  |                            |                               |                     |
| Lamp spring        | 001-0023-00  |                            |                               |                     |
| Lamp cleaning kit  | 001-0024-00  |                            |                               |                     |

Customer information

| Part No  | Regulator | Lamp         | Usage voltage          | Certified |
|----------|-----------|--------------|------------------------|-----------|
| PID-AH2  | Disabled  | HPPM 10.6 eV | 3.2 to 3.6             | Yes       |
| PID-AH2  | Enabled   | HPPM 10.6 eV | 3.6 to 10 (10.1 to 18) | Yes (NO)  |
| PID-AH20 | Disabled  | LLHS 10.6 eV | 3.2 to 3.6             | Yes       |
| PID-AH20 | Enabled   | LLHS 10.6 eV | 3.6 to 10 (10.1 to 18) | Yes (NO)  |
| PID-AH29 | Disabled  | 9.6 eV       | 3.2 to 3.6             | Yes       |
| PID-AH29 | Enabled   | 9.6 eV       | 3.6 to 10 (10.1 to 18) | Yes (NO)  |
| PID-AH2X | Disabled  | 10.0 eV      | 3.2 to 3.6             | Yes       |
| PID-AH2X | Enabled   | 10.0 eV      | 3.6 to 10 (10.1 to 18) | Yes (NO)  |

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. 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.

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