**PID-AH2 Photo Ionisation Detector**

**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 (t₉₀):** 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)
  - (maximum 10V for IS approval, maximum 18 V for non-IS)
- **Output signal:** Offset voltage (minimum 46 mV) to Vmax
  - (Vmax = Vsupply -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 < Ta < +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:** < 8 g
- **Position sensitivity:** None
- **Warranty period:** Electronics and housing: 24 months
  - Lamp and electrode stack are user replaceable. 10.6eV lamp: 5,000 lit hours

**Notes:**
1. Do not obstruct Ø3.5 sensing area
2. Seal between Ø6.2 and Ø9.0 (if different to atmosphere)
3. Pin out details:
   - Pin 1: + V supply (See note 5)
   - Pin 2: Signal output
   - Pin 3: 0V supply
4. All dimensions ±0.1mm unless otherwise stated

5. 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.

**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

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>Product code</th>
<th>Minimum sensitivity mV/ppm</th>
<th>Minimum range ppm isobutylene</th>
<th>Lamp life lit hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 eV</td>
<td>001-0030-02</td>
<td>0.2</td>
<td>70</td>
<td>5,000</td>
</tr>
<tr>
<td>10.6 eV (HPPM)</td>
<td>001-0019-04</td>
<td>0.3</td>
<td>50</td>
<td>5,000</td>
</tr>
<tr>
<td>10.6 eV (LLHS)</td>
<td>001-0030-01</td>
<td>0.8</td>
<td>50</td>
<td>5,000</td>
</tr>
<tr>
<td>Electrode stack</td>
<td>001-0018-01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stack removal tool</td>
<td>001-0020-00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lamp spring</td>
<td>001-0023-00</td>
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<tr>
<td>Lamp cleaning kit</td>
<td>001-0024-00</td>
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</tbody>
</table>

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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