NO2-B1 Nitrogen Dioxide Sensor

**PERFORMANCE**

- Sensitivity nA/ppm in 10ppm NO₂: -450 to -1000
- Response time t₉₀ (s) from zero to 10ppm NO₂: < 60
- Zero current ppm equivalent in zero air: < ± 0.4
- Resolution RMS noise (ppm equivalent): < 0.02
- Range ppm NO₂ limit of performance warranty: 20
- Linearity ppm error at full scale, linear at zero and 10ppm NO₂: < ± 0.2
- Overgas limit maximum ppm for stable response to gas pulse: 100

**LIFETIME**

- Zero drift ppm equivalent change/year in lab air: < 0.03
- Sensitivity drift % change/year in lab air, monthly test: < -20 to -40
- Operating life months until 80% original signal (24 month warranted): > 24

**ENVIRONMENTAL**

- Sensitivity @ -20°C % (output @ -20°C/output @ 20°C) @ 5ppm NO₂: 75 to 95
- Sensitivity @ 50°C % (output @ 50°C/output @ 20°C) @ 5ppm NO₂: 100 to 112
- Zero @ -20°C ppm equivalent change from 20°C: < ± 0.1
- Zero @ 50°C ppm equivalent change from 20°C: < 0 to -0.5

**CROSS SENSITIVITY**

<table>
<thead>
<tr>
<th>Gas</th>
<th>Sensitivity</th>
<th>Measured Gas @</th>
<th>H₂S</th>
</tr>
</thead>
<tbody>
<tr>
<td>H₂S</td>
<td>sensitivity</td>
<td>20ppm</td>
<td>&lt; -100</td>
</tr>
<tr>
<td>NO</td>
<td>sensitivity</td>
<td>50ppm</td>
<td>&lt; 0.5</td>
</tr>
<tr>
<td>Cl₂</td>
<td>sensitivity</td>
<td>10ppm</td>
<td>&lt; 100</td>
</tr>
<tr>
<td>SO₂</td>
<td>sensitivity</td>
<td>20ppm</td>
<td>&lt; -2</td>
</tr>
<tr>
<td>CO</td>
<td>sensitivity</td>
<td>400ppm</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>H₂</td>
<td>sensitivity</td>
<td>400ppm</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>C₂H₄</td>
<td>sensitivity</td>
<td>400ppm</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>NH₃</td>
<td>sensitivity</td>
<td>20ppm</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>CO₂</td>
<td>sensitivity</td>
<td>5% (Vol)</td>
<td>0</td>
</tr>
</tbody>
</table>

**KEY SPECIFICATIONS**

- Temperature range °C: -20 to 50
- Pressure range kPa: 80 to 120
- Humidity range % rh continuous (see note below): 15 to 90
- Storage period months @ 3 to 20°C (stored in sealed pot): 6
- Load resistor Ω (for optimum performance): 33
- Weight g: < 13

*Note: Above 85% rh and 40°C a maximum continuous exposure period of 10 days is warranted. Where such exposure occurs the sensor will recover normal electrolyte volumes when allowed to rest at lower % rh and temperature levels for several days.*

*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, with 10 ohm load resistor, 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.*

**Figure 1 NO2-B1 Schematic Diagram**

All dimensions in millimetres (± 0.1mm)
Figure 2 shows the variation in sensitivity caused by changes in temperature. This data is taken from a typical batch of sensors.

Figure 3 shows the effect of the load resistor on the RMS zero noise for the NO2-B1 sensor. The mean and ±95% confidence intervals are shown.

Figure 4 shows the effect of the load resistor on the RMS zero noise for the NO2-B1 sensor. The mean and ±95% confidence intervals are shown.

The $t_{90}$ response time increases linearly with increasing load resistor value. If a fast response is required then a 10 Ω load resistor should be employed; this will give a fast response.

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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