

## Product Data Sheet

### Product Datasheet AO2 Oxygen Sensor

#### Document Purpose

The purpose of this document is to present the performance specification of the AO2 oxygen gas sensor.

This document should be used in conjunction with the Product Data Handbook (autooxops.pdf) and the Product Safety Datasheet (PSDS 4).

The data provided in this document are valid at 20°C, 50% RH and 1013 mBar for 3 months from the date of sensor manufacture.

Output signal can drift below the lower limit over time. For guidance on the safe use of the sensor, please refer to the Product Data Handbook (autooxops.pdf).

## Product Data Sheet

### Key Features & Benefits

- Molex Connector
- Linear Output from 0-100% Oxygen

### Technical Specifications

#### MEASUREMENT

|   |                                  |
|---|----------------------------------|
| <b>Operating Principle</b>                          | Partial Pressure Electrochemical |
| <b>Measurement Range</b>                            | 0-100% O <sub>2</sub>            |
| <b>Output*</b>                                      | 9 - 13 mV in Air                 |
| <b>Response Time (T<sub>90</sub>)*</b>              | <5 s                             |
| <b>Response Time (T<sub>99.5</sub>) See Note 1*</b> | <40 s                            |
| <b>Baseline Offset*</b>                             | <20 μV                           |
| <b>Linearity</b>                                    | Linear 0-100% O <sub>2</sub>     |

#### ELECTRICAL

|  |  |
|--|--|
| <b>On Board Temperature Compensation</b> | <2% O <sub>2</sub> equivalent variation from 0°C to 40°C                           |
| <b>External Load Resistor</b>            | 10 kΩ Minimum  |
| <b>Connector</b>                         | 3 Pin Molex header (MOLEX 22-29-2031)  |
| <b>Recommended Mating Part</b>           | Molex 3-Way Housing (MOLEX 22-01-2035)<br>Molex Crimp Terminals (MOLEX 08-45-0110) |

#### MECHANICAL

|                         |                |
|-------------------------|----------------|
| <b>Weight</b>           | 40 g (nominal) |
| <b>Housing Material</b> | Red ABS        |
| <b>Orientation</b>      | Any            |

#### ENVIRONMENTAL

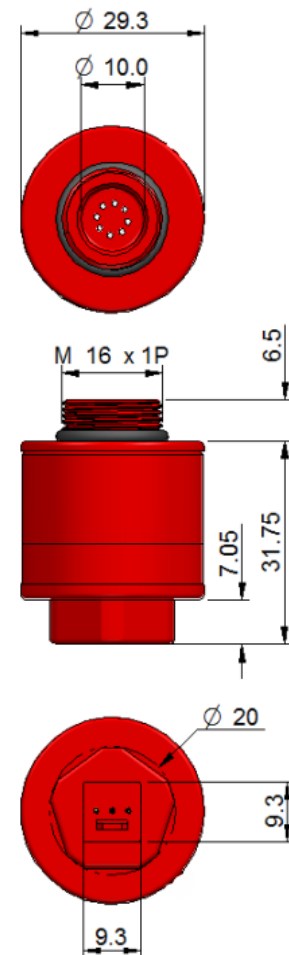
|                                    |                           |
|------------------------------------|---------------------------|
| <b>Typical Application</b>         | Vehicle Exhaust Analysis  |
| <b>Operating Temperature Range</b> | -20°C to +50°C            |
| <b>Operating Pressure Range</b>    | 0.5 - 2.0 Bar             |
| <b>Differential Pressure Range</b> | 0 to 500 mBar max         |
| <b>Operating Humidity Range</b>    | 0 - 99% RH non-condensing |

#### LIFETIME

|   |   |
|---|---|
| <b>Long Term Output Drift in 100% O<sub>2</sub></b> | <10% signal loss/year   |
| <b>Expected Operating Life</b>                      | 360,000% O <sub>2</sub> hours at 20°C<br>286,000% O <sub>2</sub> hours at 40°C<br>or 2 years in air at STP. |
| <b>Packaging</b>                                    | Sealed blister  |

**Note 1:** T<sub>99.5</sub> Response is equivalent to a change in concentration from 20.9% O<sub>2</sub> to 0.1% O<sub>2</sub>

### Product Dimensions



All dimensions in mm

All tolerances ±0.15 mm unless otherwise stated

**IMPORTANT NOTE:** Connection should be made via PCB sockets only. Soldering to the pins will seriously damage your sensor.

\* Specifications are valid at 20°C, 50% RH and 1013 mBar, using City Technology recommended circuitry. Performance characteristics outline the performance of sensors supplied within the first 3 months. Output signal can drift below the lower limit over time.

## Product Data Sheet

### Poisoning

CiTiceLs are designed for operation in a wide range of environments and harsh conditions. However, it is important that exposure to high concentrations of solvent vapours is avoided, both during storage, fitting into instruments and operation.

When using sensors with printed circuit boards (PCBs), degreasing agents should be used before the sensor is fitted. Do not glue directly on or near the CiTiceL as the solvent may cause crazing of the plastic.

### Mechanical Installation

When installing the sensor, it must only be screwed in hand-tight and a gas tight seal ensured. Spanners and similar mechanical aids may not be used, as excessive force may damage the sensor thread.

### Cross Sensitivity Table

Whilst CiTiceLs are designed to be highly specific to the gas they are intended to measure, they will still respond to some degree to various other gases. The table below is not exclusive and other gases not included in the table may still cause a sensor to react.

**IMPORTANT NOTE : The cross sensitivity data shown below does not form part of the product specification and is supplied for guidance only. Values quoted are based on tests conducted on a small number of sensors and any batch may show significant variation. For the most accurate measurements, an instrument should be calibrated using the gas under investigation.**

The AO2 has been tested with a number of gases which may be present in automotive exhaust to establish their level of cross interference.

| Gas                             | Concentration | Balance        | %O <sub>2</sub> Equivalent |
|---------------------------------|---------------|----------------|----------------------------|
| Carbon Dioxide, CO <sub>2</sub> | 16%           | N <sub>2</sub> | <0.1                       |
| Carbon Monoxide, CO             | 6%            | N <sub>2</sub> | <0.1                       |
| Nitric Oxide, NO                | 3000 ppm      | N <sub>2</sub> | <0.1                       |
| n-Hexane                        | 2000 ppm      | N <sub>2</sub> | <0.1                       |
| Hydrogen, H <sub>2</sub>        | 5000 ppm      | N <sub>2</sub> | <0.1                       |

### **SAFETY NOTE**

This sensor is designed to be used in safety critical applications. To ensure that the sensor and/or instrument in which it is used, are operating properly, it is a requirement that the function of the device is confirmed by exposure to target gas (bump check) before each use of the sensor and/or instrument. Failure to carry out such tests may jeopardize the safety of people and property.

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