

# Product Data Sheet

## Product Datasheet

### 5ND Nitrogen Dioxide Sensor

#### Document Purpose

The purpose of this document is to present the performance specification of the 5ND Nitrogen Dioxide gas sensor.

This document should be used in conjunction with the Operating Principles OP08 and Product Safety Datasheet PSDS 5.

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 Operating Principles OP08.

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### Key Features & Benefits

- Fast response and recovery time
- Superior long-term performance at temperature and humidity extremes.

### Technical Specifications

#### MEASUREMENT

<b>Operating Principle</b>	3-electrode electrochemical
<b>Nominal Range</b>	0 to 200 ppm NO <sub>2</sub>
<b>Maximum Overload</b>	1000 ppm NO <sub>2</sub>
<b>Filter</b>	None
<b>Sensitivity*</b>	0.37 ± 0.07 µA/ppm
<b>Response Time (T<sub>90</sub>)*</b>	< 60 s
<b>Baseline Offset (clean air)*</b>	± 0.5 ppm equivalent
<b>Baseline Shift: (+20°C to +40°C)</b>	-1 ppm equivalent
<b>Repeatability</b>	2% of signal
<b>Linearity</b>	Linear

#### ELECTRICAL

<b>Resolution</b> (Electronics dependent)	0.5 ppm
<b>Recommended Load Resistor</b>	33 Ω
<b>Bias Voltage</b>	Not required

#### MECHANICAL

<b>Weight</b>	10 g
<b>Orientation Sensitivity</b>	None

#### ENVIRONMENTAL

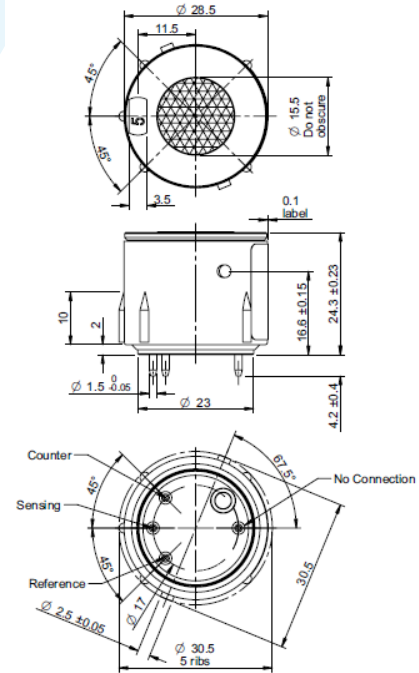
<b>Operating Temperature Range</b>	-20°C to +50°C
<b>Operating Pressure Range</b>	Atmospheric ± 10%
<b>Pressure Coefficient</b>	0.037 %signal/mBar
<b>Operating Humidity Range</b>	15% to 90% rH

#### LIFETIME

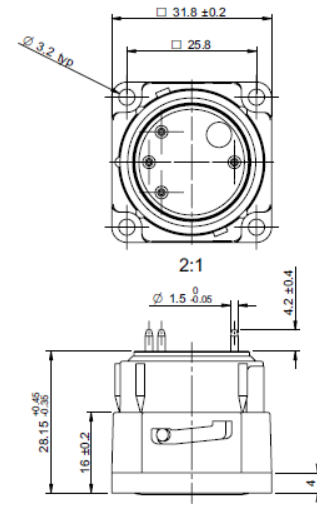
<b>Long Term Output Drift*</b>	< 2% signal loss per month
<b>Recommended Storage Temp</b>	0°C to +20°C in sealed container
<b>Expected Operating Life</b>	2 years in air

**\* 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 Dimensions



### With Bayonet Fitting Accessory



All dimensions in mm.  
All tolerances ±0.15 mm unless otherwise stated

Bayonet Block is available separately  
Order Code : B505

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

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### 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.

### 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.**

Gas	Cross Sensitivity (%)
Hydrogen Sulfide (H <sub>2</sub> S)	~ -25
Sulfur Dioxide (SO <sub>2</sub> )	~ -3
Nitric Oxide (NO)	< 1
Hydrogen (H <sub>2</sub> )	< -1
Hydrogen Chloride (HCl)	< -1
Ethylene (C <sub>2</sub> H <sub>4</sub> )	< -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.

Every effort has been made to ensure the accuracy of this document at the time of printing. In accordance with the company's policy of continued product improvement City Technology Limited reserves the right to make product changes without notice. The products are always subject to a programme of improvement and testing which may result in some changes in the characteristics quoted. As the products may be used by the client in circumstances beyond the knowledge and control of City Technology Limited, we cannot give any warranty as to the relevance of these particulars to an application. It is the clients' responsibility to carry out the necessary tests to determine the usefulness of the products and to ensure their safety of operation in a particular application.