

# 10<sub>2</sub> Sensor

Oxygen (O<sub>2</sub>) Analogue Gas Sensor  
Part Number: AAW85-07WA-CIT

## Document Purpose

The purpose of this document is to present the performance specification of the 1series 10<sub>2</sub> oxygen gas sensor.

This document should be used in conjunction with the 10<sub>2</sub> Characterisation Note, the Operating Principles (OP09), and the Product Safety Datasheet (PSDS 5).

For guidance on sensor performance outside of these limits, please refer to the 10<sub>2</sub> Characterisation Note.

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 (OP09).



## KEY FEATURES & BENEFITS



Enables smaller instruments



Designed to meet global performance standards:

ANSI/ISA 92.04.01:2007  
BS EN 50104:2010  
AS/NZS 4641-2007



Enhanced performance over an extended environmental range



5-years of expected operating life

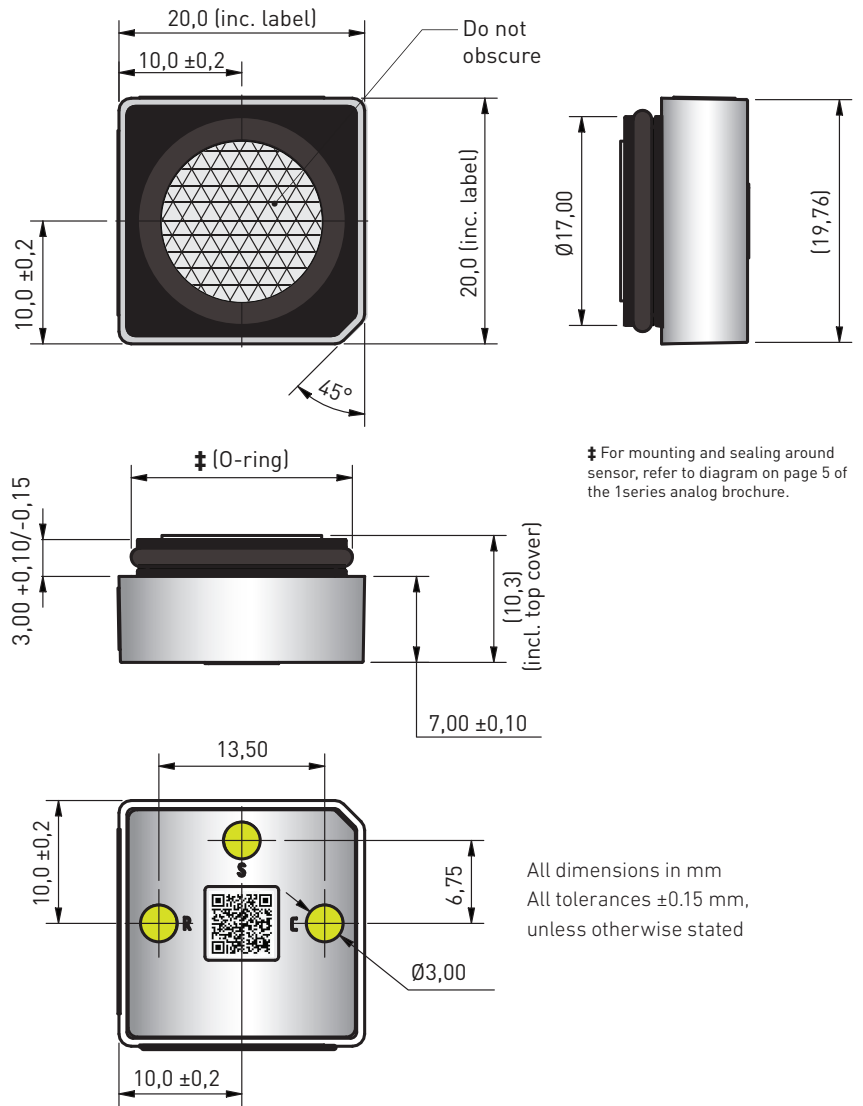
**RoHS** 

RoHS compliant and lead-free electrochemical design

TECHNICAL SPECIFICATIONS	
<b>Measurement</b>	
<b>Technology</b>	Lead-free electrochemical
<b>Measurement Range</b>	0.6% vol. O <sub>2</sub> to 25% vol. O <sub>2</sub>
<b>Maximum Overload</b>	30% vol. O <sub>2</sub>
<b>Onboard Filter</b>	None
<b>Sensitivity*</b>	80 µA to 130 µA in Air
<b>T50 Response Time*</b>	< 10 seconds (@ 20°C) < 15 seconds (@ -40°C to +60°C)
<b>T90 Response Time*</b>	Typically < 15 seconds
<b>R90 Recovery Time*</b>	< 45 seconds (@ -20°C to +60°C)
<b>R95 Recovery Time*</b>	< 60 seconds
<b>Zero Current (Offset)</b> (after 3 minutes N <sub>2</sub> )	< 0.6% vol. O <sub>2</sub> equivalent Typically < 0.3% vol. O <sub>2</sub> equivalent
<b>Warm-up Time</b>	Refer to Characterization Note
<b>Repeatability*</b>	< ±5% of measured value
<b>Linearity</b>	S = K log <sub>e</sub> 1/(1 - C)
<b>Electrical</b>	
<b>Recommended Load Resistor</b>	10 Ω
<b>Bias Voltage</b>	-600 mV ± 10 mV
<b>Power Requirement at 20.9% O<sub>2</sub></b>	0.5 mW
<b>Mechanical</b>	
<b>Weight</b>	< 5 g
<b>Outer Plastic Body Material</b>	Modified PPO
<b>O-ring Material</b>	FKM75 ±5 shore A
<b>Contact Material</b>	Gold plated
<b>Orientation Sensitivity</b>	<0.5% of signal
<b>Environmental</b>	
<b>Operating Temperature Range</b>	-40°C to +60°C
<b>Thermal Transient</b> (Temp Plunge +22°C to -20°C)	< 23.5% vol. O <sub>2</sub>
<b>Operating Humidity Range</b>	5% rH to 95% rH non-condensing (Refer to Characterization Note)
<b>Operating Pressure Range</b>	600 mbar to 1200 mbar
<b>Pressure Coefficient*</b>	< 0.02% signal/mbar
<b>Pressure Transient</b> (60 cm H <sub>2</sub> O step change)	< 150% signal change
<b>Lifetime</b>	
<b>Long Term Output Drift*</b>	< 5% signal loss over operating life
<b>Expected Operating Life</b>	5 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



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

## Pinout

Pin	Label	Description
1	S	Sensing electrode
2	R	Reference electrode
3	C	Counter electrode

## Poisoning

Gas sensors 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 during 1) storage, 2) fitting into instruments and 3) 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 sensor as the solvent may cause crazing of the plastic.

### 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 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, we cannot give any warranty as to the relevance of these particulars to an application. City Technology warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. City Technology's standard product warranty applies unless agreed to otherwise by City Technology in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to City Technology during the period of coverage, City Technology will repair or replace, at its option, without charge those items that City Technology, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall City Technology be liable for consequential, special, or indirect damages.** Though City Technology provides application assistance personally, or through our literature and website, it is buyer's sole responsibility to determine the suitability of the product in the application. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, City Technology assumes no responsibility for its use.