$1O_2$ Sensor

Oxygen (O_2) Analogue Gas Sensor
Part Number: AAW85-07WA-CIT

Document Purpose

The purpose of this document is to present the performance specification of the 1series $1O_2$ oxygen gas sensor.

This document should be used in conjunction with the $1O_2$ 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 $1O_2$ 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

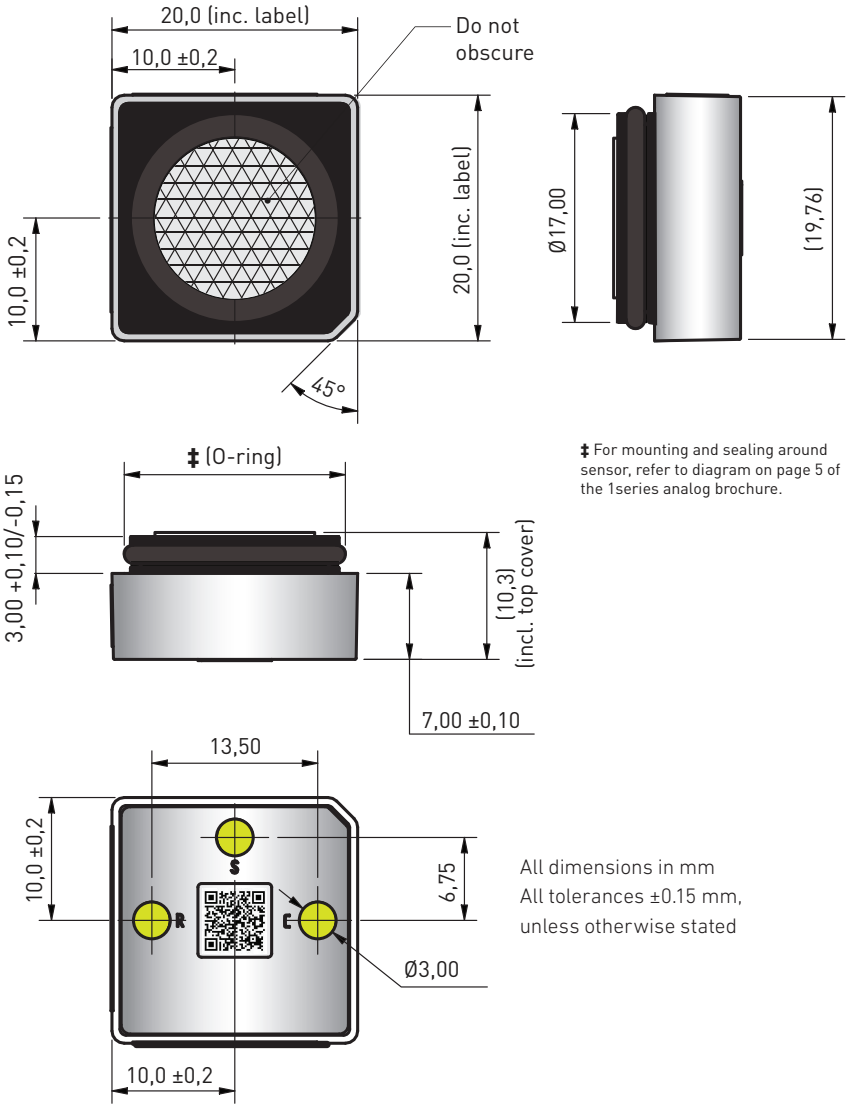
5-years of expected operating life

RoHS compliant and lead-free electrochemical design

TECHNICAL SPECIFICATIONS	
Measurement	
Technology	Lead-free electrochemical
Measurement Range	0.6% vol. O_2 to 25% vol. O_2
Maximum Overload	30% vol. O_2
Onboard Filter	None
Sensitivity*	80 µA to 130 µA in Air
T50 Response Time*	< 10 seconds (@ 20°C) < 15 seconds (@ -40°C to +60°C)
T90 Response Time*	Typically < 15 seconds
R90 Recovery Time*	< 45 seconds (@ -20°C to +60°C)
R95 Recovery Time*	< 60 seconds
Zero Current (Offset) (after 3 minutes N_2)	< 0.6% vol. O_2 equivalent Typically < 0.3% vol. O_2 equivalent
Warm-up Time	Refer to Characterization Note
Repeatability*	< ±5% of measured value
Linearity	S = K $\log_e$1/(1 - C)
Electrical	
Recommended Load Resistor	10 Ω
Bias Voltage	-600 mV ± 10 mV
Power Requirement at 20.9% O_2	0.5 mW
Mechanical	
Weight	< 5 g
Outer Plastic Body Material	Modified PPO
O-ring Material	FKM75 ±5 shore A
Contact Material	Gold plated
Orientation Sensitivity	<0.5% of signal
Environmental	
Operating Temperature Range	-40°C to +60°C
Thermal Transient (Temp Plunge +22°C to -20°C)	< 23.5% vol. O_2
Operating Humidity Range	5% rH to 95% rH non-condensing (Refer to Characterization Note)
Operating Pressure Range	600 mbar to 1200 mbar
Pressure Coefficient*	< 0.02% signal/mbar
Pressure Transient (60 cm H_2O step change)	< 150% signal change
Lifetime	
Long Term Output Drift*	< 5% signal loss over operating life
Expected Operating Life	5 years in air

*Specifications are valid at 20°C, 50% RH, and 1013 mBar, using manufacturer 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



‡ For mounting and sealing around sensor, refer to diagram on page 5 of the 1series analog brochure.

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.