

102 GAS SENSOR

002789

Issue 2

Oxygen (O₂) Analogue Gas Sensor

DOCUMENT PURPOSE

The purpose of this document is to present the performance specification of the 1series 102 oxygen gas sensor.

This document should be used in conjunction with the 102 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 102 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 (OP19).



PORTFOLIO

The 1series gas sensor is a small sensor that enables slim profile gas detector design.

With the 1series low-profile design, the sensors have turrets to mount into the front of the instrument in order to minimize instrument height. This revolutionary design also simplifies target-gas access to the sensor face and features an option for a replaceable external membrane.



2 YEAR WARRANTY

(24 months from date of despatch)



Oxygen (O₂) Sensor: **102**
Part Number: AAW85-07WA-CIT

DESCRIPTION

The 1series analogue gas sensor is compact low profile sensor utilizing the trusted Honeywell Technology. These sensors have an extended operating life of five years along with extended temperature and humidity ranges.

FEATURES AND 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-year expected operating life in clean air



RoHS compliant and lead-free electrochemical design

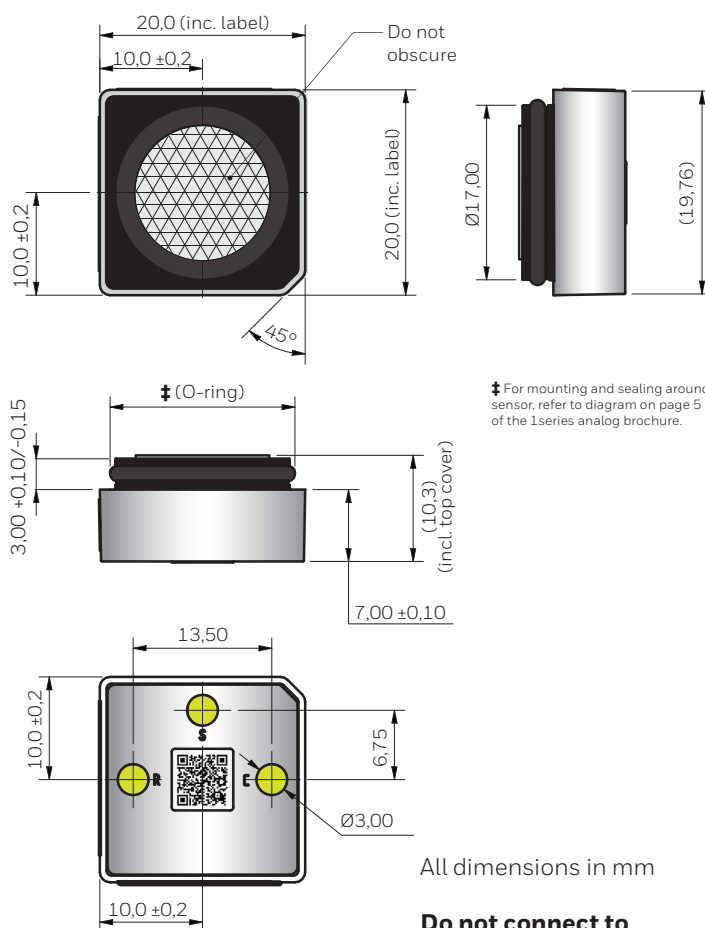
ANALOGUE GAS SENSOR (1SERIES) 102 SERIES

TABLE 1. 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% O₂	0.5 mW
MECHANICAL	
Weight	< 5 g
Outer Plastic Body Material	Modified PPO
O-ring Material	FKM60 ±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 ₂ O 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 Honeywell recommended circuitry. Performance characteristics outline the performance of sensors supplied within the first three months. Output signal can drift below the lower limit over time.

Product Dimensions



All dimensions in mm

Do not connect to unlabeled pins.

TABLE 2. PINOUT

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

ANALOGUE GAS SENSOR (1SERIES)

102 SERIES

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.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, 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 Honeywell be liable for consequential, special, or indirect damages.**

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, 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, Honeywell assumes no responsibility for its use.

FOR MORE INFORMATION

Honeywell Advanced Sensing Technologies services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit sps.honeywell.com/ast or call:

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WARNING MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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.