

# AQ3ND SENSOR

Nitrogen Dioxide (NO<sub>2</sub>) Gas Sensor

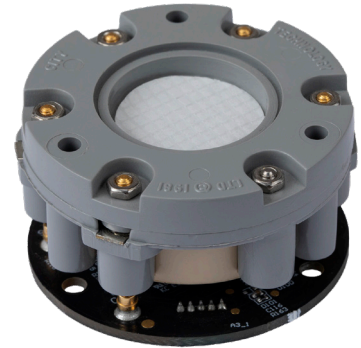
The purpose of this document is to present the performance specification of the AQ3 Series AQ3ND Nitrogen Dioxide Gas Sensor.

## DOCUMENT PURPOSE

This document should be used in conjunction with the AQ3ND Characterization Note and the Product Safety Datasheet (PSDS 5).

The data provided in this document is based on the assumption that the sensor is used at 20°C, 50% rH, and 1013 mBar for three months from the date of sensor manufacture. For guidance on sensor performance outside of these limits, please refer to the AQ3ND Characterization Note.

Output signal can drift below the lower limit over time. For guidance on the safe use of the sensor, please refer to the Characterization Note.



Sensor Part Number (without board):  
AGQ004-300

Module Part Number (with board):  
QAG004-300

PCBA Part Number: AQ3-BP02

## FEATURES AND BENEFITS



High resolution



Low detection limit



Custom-built low noise board achieves high accuracy under ppb level



Individual compensation for temperature and cross sensitivity



High correlation with control station

# AQ3ND Nitrogen Dioxide Gas Sensor Technical Specifications

TECHNICAL SPECIFICATIONS	
<b>MEASUREMENT</b>	
<b>Technology</b>	4-electrode electrochemical
<b>Measurement Range</b>	0 ppm NO <sub>2</sub> to 1 ppm NO <sub>2</sub>
<b>Maximum Overload</b>	without board: 5 ppm NO <sub>2</sub> with board: 1.5 ppm NO <sub>2</sub>
<b>Onboard Filter</b>	to remove Ozone
<b>Sensitivity*</b>	without board: 2300 nA/ppm ±500 nA/ppm with board: 1700 mV/ppm ±500 mV/ppm
<b>Response Time (T<sub>90</sub>)</b>	≤ 120 seconds
<b>Resolution*</b>	10 ppb when used with recommended circuitry
<b>Baseline Offset*</b>	without board: ≤ ±200 nA with board: ≤ ±160 mV
<b>Repeatability*</b>	< ±2% of signal
<b>Linearity**</b>	linear
<b>Low Detection Limit*</b>	10 ppb
<b>ELECTRICAL</b>	
<b>Recommended Load Resistor</b>	68 Ω
<b>Sensor Bias Voltage</b>	no bias (without board)
<b>Power Supply Required</b>	5 Vdc (with board)
<b>Power Consumption</b>	350 μA @ 5 Vdc (with board)
<b>MECHANICAL</b>	
<b>Weight</b>	without board: < 22 g with board: < 30 g
<b>Outer Plastic Body Material</b>	polycarbonate
<b>Sealing Gasket Material</b>	TPU
<b>Contact Material</b>	mild steel with gold flash-over nickel plate
<b>Orientation Sensitivity</b>	none
<b>ENVIRONMENTAL</b>	
<b>Operating Temperature Range</b>	-30°C to 50°C
<b>Recommended Storage Temperature</b>	0°C to 20°C in original sealed container
<b>Operating Humidity Range</b>	15% rH to 90% rH non-condensing
<b>Operating Pressure Range</b>	atmospheric ±10%
<b>Typical Applications</b>	ambient environmental monitoring
<b>LIFETIME</b>	
<b>Storage Life</b>	6 months in original sealed container
<b>Long-Term Sensitivity Drift*</b>	< 10% signal loss per annum
<b>Expected Oper. Life</b>	two years in air
<b>Warranty</b>	one year

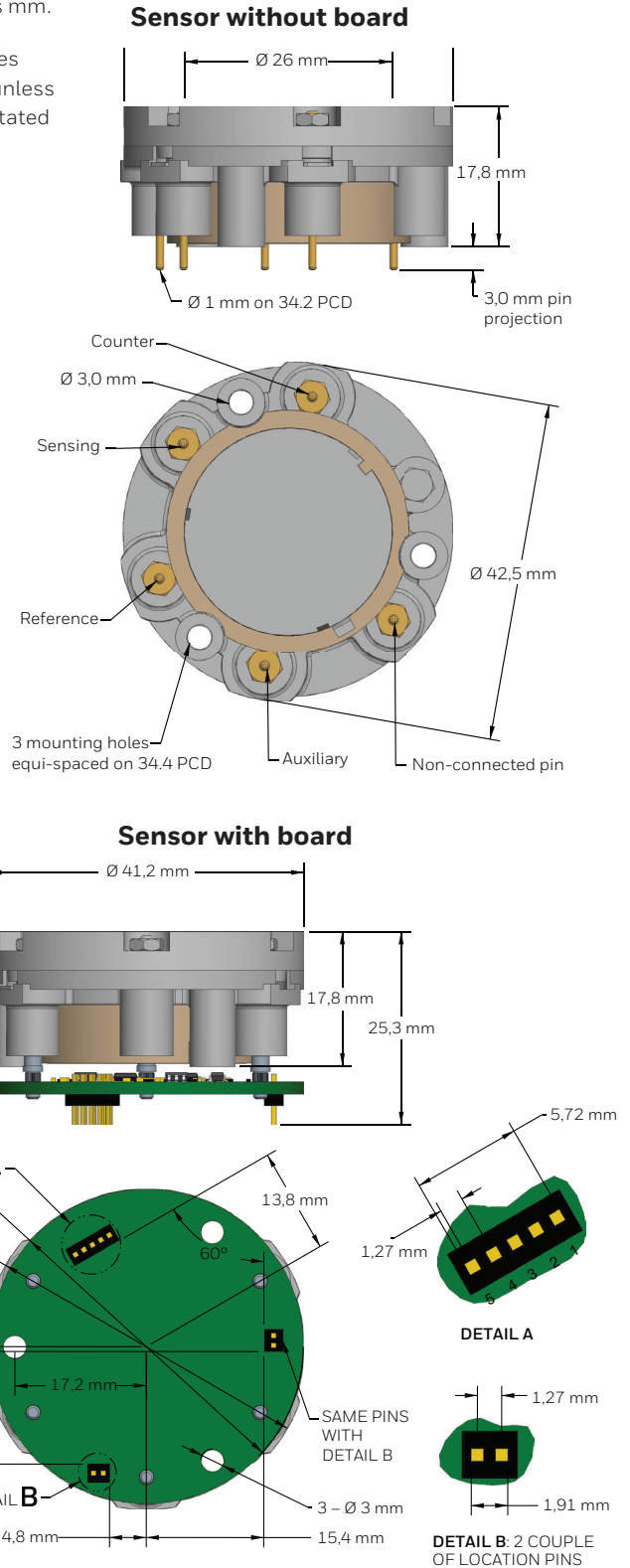
\*Specifications are valid at 20°C, 50% RH, and 1013 mbar using AQ3 low noise board. Performance characteristics outline the performance of sensors supplied within the first 3 months. Output signal can drift below the lower limit over time. Please be aware that sensors' performance also reflected by circuit board design.

\*\* Linear through the concentration range across the whole operational environment range.

## Product Dimensions

Dimensions mm.

All tolerances ±0,15 mm unless otherwise stated



### Pin Definition

1	Vin (4.8 V ~ 5.5 V)
2	GND
3	Aux
4	GND
5	Sensing

# AQ3ND Nitrogen Dioxide Gas Sensor Technical Specifications

## Filter Information

Removes Ozone

## 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 vapors is avoided, 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 sensor as the solvent may cause crazing of the plastic.

## Cross Sensitivity Table

Whilst AQ3 Series gas sensors 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	Gas Concentration	Cross Interference
Carbon Monoxide (CO)	5 ppm	-2%<x%<0
Sulfur Dioxide (SO <sub>2</sub> )	5 ppm	-1%<x%<0
Ozone (O <sub>3</sub> )	1 ppm	~None
Isobutylene (C <sub>4</sub> H <sub>8</sub> )	1 ppm	~None

## 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 [our website](#) or call:

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### Honeywell Advanced Sensing Technologies

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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 environmental 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.