AQ3STF SENSOR

Sulfur Dioxide (SO_2) Gas Sensor

The purpose of this document is to present the performance specification of the AQ3 Series AQ3STF Sulfur Dioxide Gas Sensor.

Sensor Part Number (without board): ADQ045-H04

Module Part Number (with board): QAD045-H04

PCBA Part Number: AQ3-BP01

DOCUMENT PURPOSE

This document should be used in conjunction with the AQ3STF Characterization Note and the Product Safety Datasheet (PSDS 19).

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 AQ3STF 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 Operating Principles.

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

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AQ3STF Sulfur Dioxide Gas Sensor Technical Specifications

TECHNICAL SPECIFICATIONS	
MEASUREMENT	
Technology	4-electrode electrochemical
Measurement Range	0 ppm SO_2 to 5 ppm SO_2
Maximum Overload	without board: 10 ppm SO_2 with board: 10 ppm SO_2
Onboard Filter	to remove H_2S and HCl
Sensitivity*	without board: 600 nA/ppm ±150 nA/ppm with board: 220 mV/ppm ±70 mV/ppm
Response Time (T_{90})	≤ 60 seconds (typ. < 40 seconds)
Resolution*	5 ppb when used with recommended circuitry
Baseline Offset*	without board: -80 nA ~ 150 nA with board: -35 mV ~ 60 mV
Repeatability*	< ±3% of signal
Linearity**	linear
Low Detection Limit*	10 ppb
ELECTRICAL	
Recommended Load Resistor	68 Ω
Sensor Bias Voltage	no bias (without board)
Power Supply Required	5 Vdc (with board)
Power Consumption	370 µA @ 5 Vdc (with board)
MECHANICAL	
Weight	without board: < 22 g with board: < 30 g
Outer Plastic Body Material	polycarbonate
Sealing Gasket Material	TPU
Contact Material	mild steel with gold flash-over nickel plate
Orientation Sensitivity	none
ENVIRONMENTAL	
Operating Temperature Range	-20°C to 50°C
Recommended Storage Temperature	0°C to 20°C in original sealed container
Operating Humidity Range	15% rH to 90% rH non-condensing
Operating Pressure Range	atmospheric ±10%
Typical Applications	ambient environmental monitoring
LIFETIME	
Storage Life	6 months in original sealed container
Long-Term Sensitivity Drift*	< 10% signal loss per annum
Expected Oper. Life	three years in air
Warranty	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.

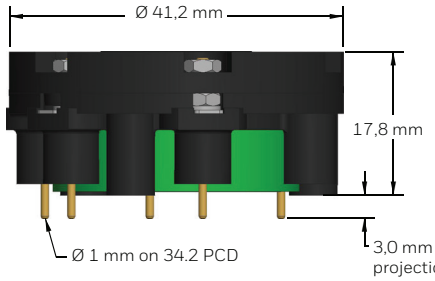
** Linear through the concentration range across the whole operational environment range.

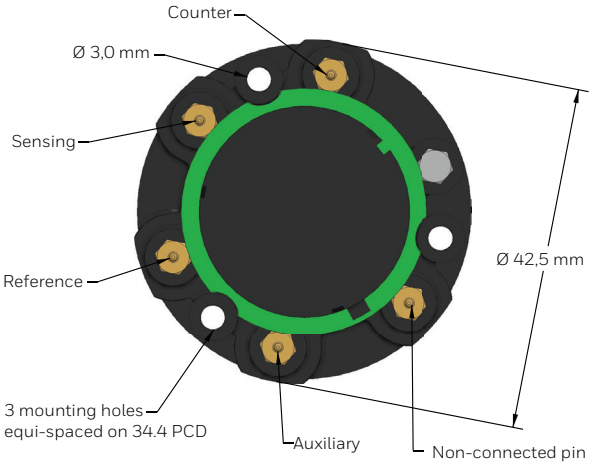
Product Dimensions

Dimensions mm.

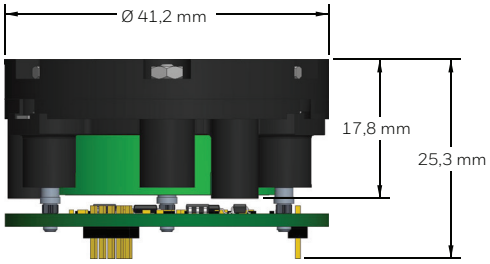
All tolerances ±0,15 mm unless otherwise stated

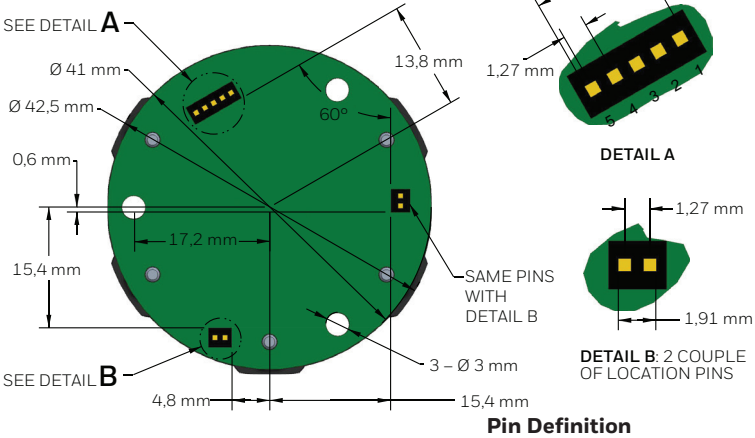
Sensor without board





Sensor with board





Pin Definition

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

AQ3STF Sulfur Dioxide Gas Sensor Technical Specifications

Filter Information

To remove H_2S and HCl

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	~None
Nitric Oxide (NO)	5 ppm	~None
Nitrogen Dioxide (NO_2)	0.4 ppm	-110%<x%<0%
Hydrogen Sulfide (H_SS)	5 ppm	~None
Ozone (O_3)	0.4 ppm	-50%<x%<0%
Isobutylene (C_4H_8)	5 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.

⚠ 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.

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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