

# 4NH3LL-100 GAS SENSOR

002864

Issue 1

0 ppm to 100 ppm Long Life Ammonia (NH<sub>3</sub>) - 4 Series Gas Sensor



Ammonia (NH<sub>3</sub>) Sensor:

**4NH3LL-100**

Part Number: CLE-1012-40L

## DESCRIPTION

Honeywell 4 Series gas sensors are the industry standard portable and fixed gas detectors. The range includes sensors which detect oxygen, toxic gases, and fully certified pellistors for combustible gas detection.

## DOCUMENT PURPOSE

The purpose of this document is to present the performance specification of the 4NH3LL-100, ammonia sensor.

This document should be used in conjunction with the Product Safety Datasheet (4NH3LL-100) and the Operating Principles (OP08).

The data provided in this document are valid at 20°C, 50 %RH, and 1013 mBar for three months from the date of sensor manufacture.

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 OP08.

## APPLICATIONS

Portable and fixed-point applications:

- Outdoor and indoor farming – livestock and poultry
- Refrigeration – medium to large systems
- General industry – food industry, semiconductor industry & chemical industry

## PORTFOLIO

The 4 Series Honeywell sensor family is part of the extensive line of Honeywell gas sensors. To learn more about the product, or the many other gas sensors in this series, [click here](#).

## FEATURES AND BENEFITS



Able to withstand background levels of ammonia without compromising its performance or expected lifetime



Extended operating temperature range



Lifespan of two years

**Honeywell**

# 4 SERIES GAS SENSORS

## 4NH3LL-100 SERIES

**TABLE 1. TECHNICAL SPECIFICATIONS**

### PERFORMANCE CHARACTERISTICS

<b>Operating Principle</b>	3-electrode electrochemical
<b>Measurement Range</b>	0 ppm to 100 ppm NH <sub>3</sub>
<b>Maximum Overload</b>	200 ppm NH <sub>3</sub>
<b>Sensitivity*</b>	30 nA/ppm ±20 nA/ppm
<b>Baseline Offset*</b> (clean air)	< ±200 nA
<b>Baseline Shift*</b> (-20°C to 40°C)	< 5 ppm equivalent NH <sub>3</sub>
<b>Resolution*</b>	< 1 ppm
<b>Response Time (T90)*</b>	≤ 90 seconds
<b>Linearity*</b>	Linear
<b>Long-Term Output Drift*</b>	< 24 % signal/annum (continuous exposure)

### OPERATION CONDITIONS

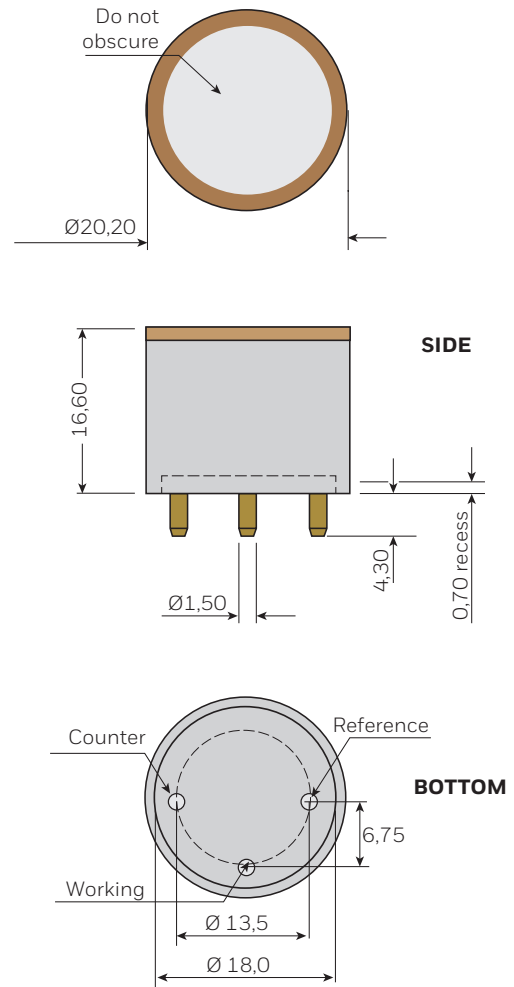
<b>Temperature Range</b>	Continuous: -20°C to 40°C Intermittent: -40°C to 50°C
<b>Operating Humidity</b>	15 %RH to 90 %RH, non condensing
<b>Pressure Range</b>	91 kPa to 111 kPa
<b>Bias Potential</b>	0 mV
<b>Storage Temperature</b>	0°C to 20°C
<b>Sensor Life Expectancy</b>	2 years in fresh air; Sensor capacity > 300k ppm/hr (1 year of continuous exposure to 30 ppm NH <sub>3</sub> )
<b>Warranty</b>	12 months from date of shipment

### PHYSICAL CHARACTERISTICS

<b>Weight</b>	5 g approx.
<b>Orientation Sensitivity</b>	None

\* Specifications are valid at 20°C, 50%RH, 70 ml/min flow rate 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

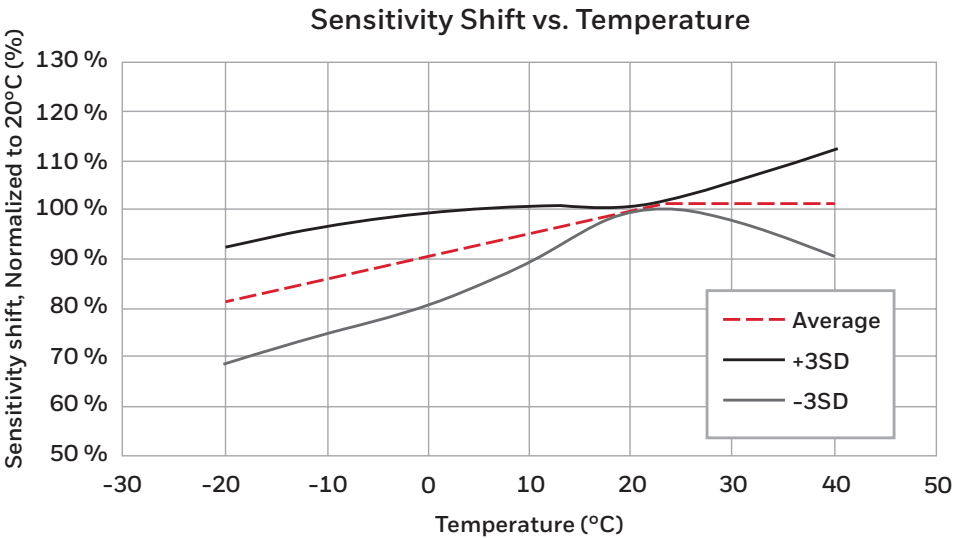
All tolerances  $\pm 0,20$  mm unless otherwise stated

### IMPORTANT NOTE

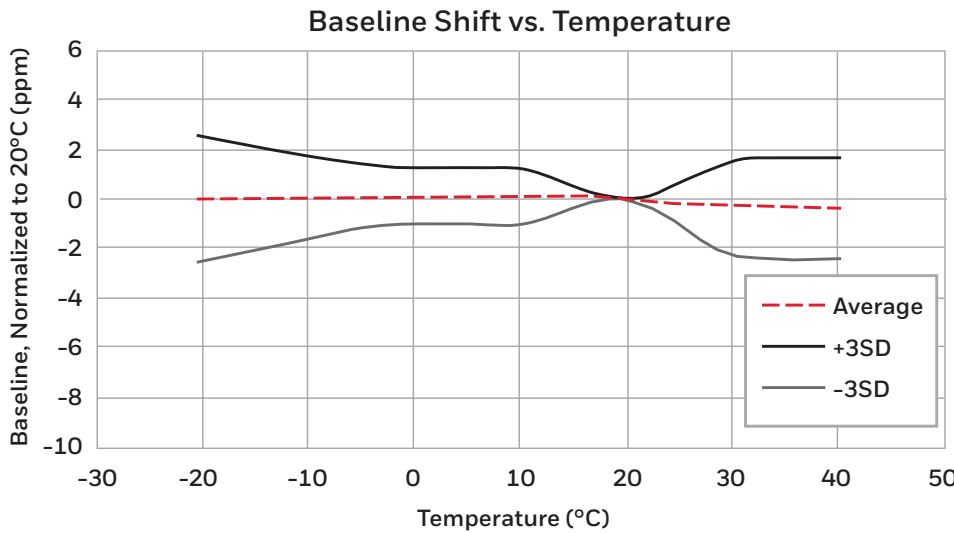
Connection should be made via PCB sockets only. Soldering to the pins will seriously damage your sensor.

4 SERIES GAS SENSORS  
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Temperature Dependence



	-20	-10	0	10	20	30	40
Average	80.5 %	85.3 %	89.7 %	94.8 %	100.0 %	101.5 %	101.1 %
+3SD	92.3 %	96.2 %	99.1 %	100.5 %	100.0 %	105.5 %	112.0 %
-3SD	68.7 %	74.4 %	80.2 %	89.1 %	100.0 %	97.5 %	90.2 %



	-20	-10	0	10	20	30	40
Average	-0.01	0.06	0.17	0.14	0.00	-0.31	-0.35
+3SD	2.50	1.74	1.26	1.27	0.00	1.50	1.65
-3SD	-2.53	-1.63	-0.92	-1.00	0.00	-2.13	-2.35

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Cross Sensitivity Data

Sensors may exhibit a response to certain gases in a sample other than the target gas. 4NH3LL-100 sensors have been tested with a number of commonly cross-interfering gases and the results are given below. The table shows the typical response to be expected from a sensor when exposed to a given test gas concentration (relevant to safety, e.g. TLV levels).

**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.**

TABLE 2. CROSS SENSITIVITY		
Gas	Concentration (ppm)	Output signal (ppm NH <sub>3</sub> equivalent)
Carbon Monoxide, CO	10	0
Hydrogen Sulfide, H <sub>2</sub> S	20	< 40
Sulfur Dioxide, SO <sub>2</sub>	5	-1 to -4
Nitrogen Dioxide, NO <sub>2</sub>	5	-1 to -4

## 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 information or engineering support for its products through Honeywell personnel, literature and website, it is the buyer's sole responsibility to determine the suitability of the Honeywell product(s) for the buyer's requirements.

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 Sensing Solutions services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit [automation.honeywell.com](http://automation.honeywell.com) or call:

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ECN-00046617  
002864-1-EN | 1 | 06/24  
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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.

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