

## Product Data Sheet

### Product Datasheet

### NH3 3E 1000 Ammonia Gas Sensor

#### Document Purpose

The purpose of this document is to present the performance specification of the NH3 3E 1000 ammonia gas sensor.

This document should be used in conjunction with Operating Principles (OP08) and the Product Safety Datasheet (PSDS Sensoric-Organic.pdf).

The data provided in this document are valid at 20°C, 50% RH and 1013 mBar for 3 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.

## Product Data Sheet

- Key Features & Benefits:**
- Excellent stability
  - Refrigeration applications
  - Compact Size

### Technical Specifications

#### MEASUREMENT

<b>Operating Principle</b>	3-electrode electrochemical
<b>Measurement Range</b>	0-1000 ppm NH <sub>3</sub>
<b>Maximum Overload</b>	5000 ppm
<b>Lower Detection Limit</b>	40 ppm
<b>Filter</b>	None
<b>Sensitivity*</b>	6 ± 3 nA/ppm
<b>Response Time (T<sub>90</sub>)*</b>	< 120 s <small>calculated from 4 minute exposure time</small>
<b>Baseline Offset (clean air)*</b>	< ±40 nA
<b>Resolution</b>	Dependent on Electronics : < 15 ppb when using recommended circuitry
<b>Zero Shift (-40°C to +40°C)</b>	< 14 ppm equivalent
<b>Linearity</b>	< 5% of full scale

#### ELECTRICAL

**Bias Voltage** | Not required

#### MECHANICAL

<b>Weight</b>	2.7 g : Mini 5.0 g : 4-Series 7.1 g : 7-Series 2.7 g : Smart 3.8 g : Classic
<b>Orientation</b>	Membrane / filter pointing downwards or horizontal direction

#### ENVIRONMENTAL

<b>Operating Temperature Range</b>	-40°C to +40°C
<b>Operating Pressure Range</b>	Atmospheric ± 10%
<b>Operating Humidity Range</b>	15% to 90% RH non-condensing

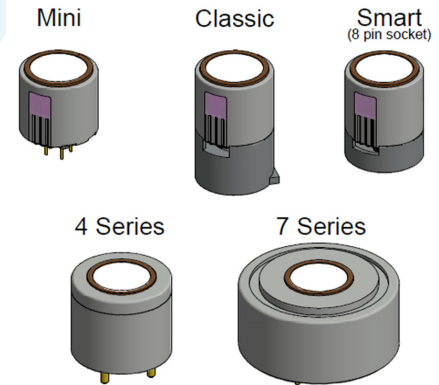
#### INTRINSIC SAFETY DATA

<b>Maximum at 1000ppm</b>	< 9 mA
<b>Maximum o/c Voltage</b>	< 500 mV
<b>Maximum s/c Current</b>	< 50 µA

#### LIFETIME

<b>Long Term Output Drift*</b>	< 10% per 6 months
<b>Expected Operating Life</b>	18 months in air
<b>Storage Life</b>	8 weeks in sealed container

### Available in:



**IMPORTANT NOTE:** Connection should be made via PCB sockets only. Soldering to pins will render your warranty void.

### Part Numbers

NH3 3E 1000	Part Number
Mini	1854-031-30009
Classic	1854-031-30069
Smart	1854-031-30209
4-Series	1854-031-30049
7-Series	1854-031-30079

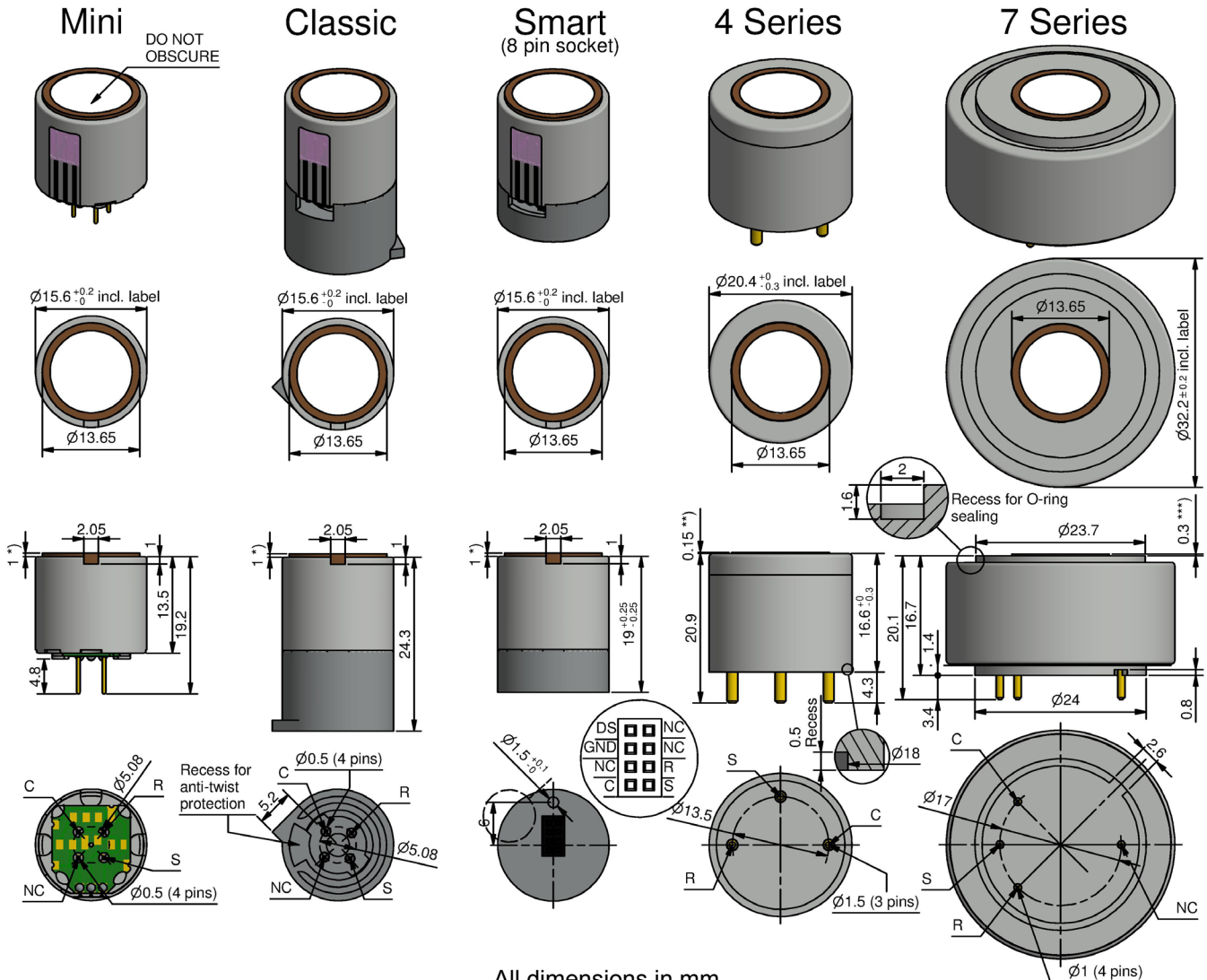
For the NH3 3E 1000 with 4-20 mA output, refer to the NH3 3E 1000 Transmitter datasheet

Orders should be placed through Sensoric Gas Sensors in Bonn.

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

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### Product Dimensions



All dimensions in mm  
All tolerances  $\pm 0.15$  mm unless otherwise stated

S Sensing  
C Counter  
R Reference  
NC Not Connected

\*) Projection 0.6 - 1.25 mm depending on gastype  
\*\*) Projection up to 0.4 mm for 4 Series  
\*\*\*) Projection up to 0.55 mm for 7 Series  
Please contact [sales\\_europe@citytech.com](mailto:sales_europe@citytech.com) for details information

**Important Note:** Connection should be made via PCB sockets only. Soldering to the pins will void the warranty.

Plugs and customised adaptations available on request

This drawing may be subject to corrections or changes without prior notice

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### Poisoning

Sensoric cells 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, both 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 Sensoric cells as the solvent may cause crazing of the plastic.

**WARNING:** Under certain and infrequent conditions, electrochemical sensors may not perform to specification without warning. Where life safety is a performance requirement of the product, we recommend that all sensors and instruments using City sensors are checked for response to gas before each use.

### Cross Sensitivity Table

Whilst 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	Concentration Used (ppm)	Reading (ppm NH <sub>3</sub> )
Carbon Dioxide, CO <sub>2</sub>	5000	0
Alcohols	1000	yes
Carbon Monoxide, CO	100	100
Hydrogen Sulfide, H <sub>2</sub> S	20	80
Sulfur Dioxide, SO <sub>2</sub>	20	3
Nitrogen Dioxide, NO <sub>2</sub>	10	-20
Hydrogen, H <sub>2</sub>	3000	1100
Chlorine, Cl <sub>2</sub>	5	-15
Ozone, O <sub>3</sub>	0.25	-1
Hydrogen Chloride, HCl	10	0

### **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.

Every effort has been made to ensure the accuracy of this document at the time of printing. In accordance with the company's policy of continued product improvement City Technology Limited reserves the right to make product changes without notice. The products are always subject to a programme of improvement and testing which may result in some changes in the characteristics quoted. As the products may be used by the client in circumstances beyond the knowledge and control of City Technology Limited, we cannot give any warranty as to the relevance of these particulars to an application. It is the clients' responsibility to carry out the necessary tests to determine the usefulness of the products and to ensure their safety of operation in a particular application.