

# ECOSURE<sup>®</sup> X GAS SENSOR

002860

Issue 4

## Carbon Monoxide (CO) Gas Sensor



Carbon Monoxide  
(CO) Sensor:  
Part Number: 2112B3001

### DESCRIPTION

ECOSURE<sup>®</sup> 4 Series gas sensors are the industry standard for portable gas detectors. The range includes sensors which detect oxygen and toxic gases, an infrared version for carbon dioxide and hydrocarbons and fully certified pellistors for combustible gas detection.

### DOCUMENT PURPOSE

The purpose of this document is to present the performance specification of the ECOSURE<sup>®</sup> X gas sensor.

This document should be used in conjunction with the ECOSURE X Characterisation Note, Operating Principles (OP07), and the Product Safety Datasheet (PSDS 12.1).

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 sensor performance outside of these limits, please refer to the ECOSURE<sup>®</sup> X Characterisation Note.

For guidance on the safe use of the sensor, please refer to the Operating Principles (OP07).

### APPLICATIONS

- Residential
- Fire detection
- Ventilation control

### PORTFOLIO

The 4 Series ECOSURE<sup>®</sup> 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



Long-life



Stable performance



UL certified - UL2075



Six Sigma output  
performance

# CARBON MONOXIDE GAS SENSOR ECOSURE X

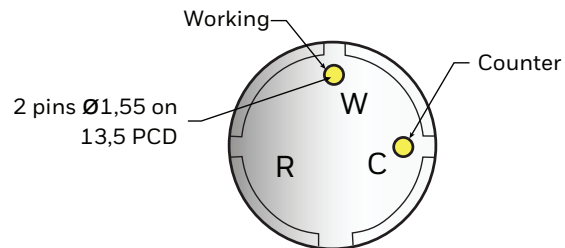
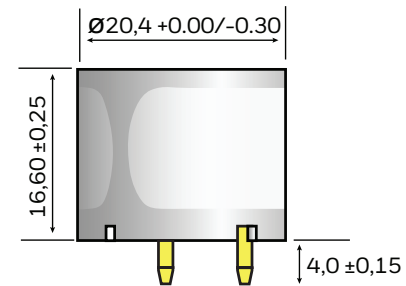
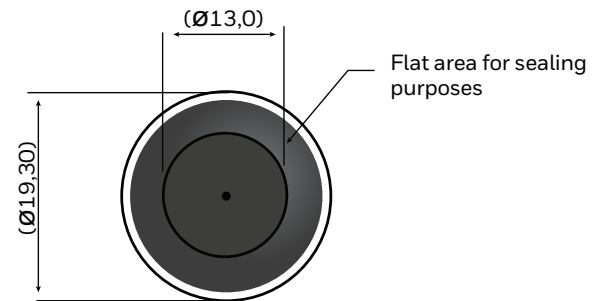
**TABLE 1. TECHNICAL SPECIFICATIONS**

MEASUREMENT	
<b>Operating principle</b>	2-electrode electrochemical
<b>Measurement range</b>	4 ppm CO to 1000 ppm CO
<b>Maximum overload</b>	2000 ppm CO
<b>Sensitivity</b>	50 $\mu\text{A/ppm}$ $\pm 10$ $\mu\text{A/ppm}$
<b>Response time (<math>T_{90}</math>)</b>	< 30 seconds
<b>Baseline offset</b> (clean air)	-2 ppm to 4 ppm equivalent
<b>Zero shift*</b> (-10°C to 50°C)	< 10 ppm equivalent
<b>Repeatability</b>	< $\pm 5$ %
<b>Linearity</b>	Within $\pm 5$ %
ELECTRICAL	
<b>Recommended load resistor</b>	5 Ohm
<b>Bias voltage</b>	Not required
MECHANICAL	
<b>Housing material</b>	Noryl N110
<b>Weight</b>	5 g (nominal)
<b>Orientation</b>	Any
ENVIRONMENTAL	
<b>Operating temperature range*</b>	Continuous: -10°C to 50°C Intermittent: -20°C to 50°C
<b>Operating pressure range</b>	1 atm $\pm 10$ %
<b>Operating humidity range*</b>	Continuous: 15 %RH to 90 %RH, non-condensing Intermittent: 0 %RH to 99 %RH, non-condensing
INTRINSIC SAFETY DATA*	
<b>Maximum at 1000 ppm</b>	0.1 mA
<b>Maximum o/c voltage</b>	1.3 V
<b>Maximum s/c current</b>	< 1.0 A
LIFETIME	
<b>Long-term output drift</b>	< 5 % signal drift per year
<b>Recommended storage temperature</b>	10 °C to 30°C
<b>Expected operating life*</b>	> 10 years in normal use from date of manufacture
<b>Storage life</b>	6 months in original packaging

\* With the exception of items marked \* the stated parameters have been verified under the UL component recognition programme.

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

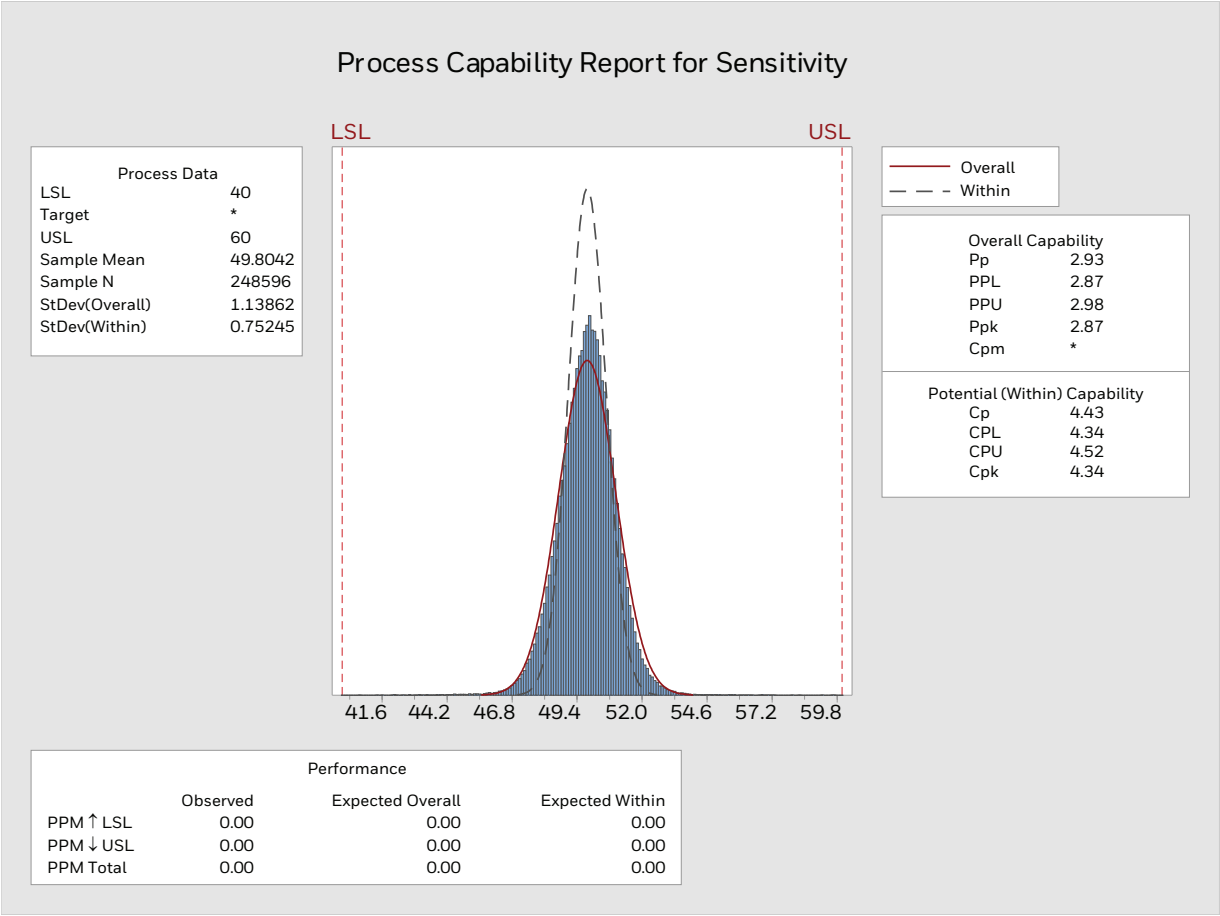
All tolerances  $\pm 0,15$  mm unless otherwise stated

# CARBON MONOXIDE GAS SENSOR

## ECOSURE X

### Output

ECOSURE® X sensors are produced using an automated manufacturing line. This process enables the product to be both more repeatable and reproducible resulting in Six Sigma levels of output performance.



### 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, 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 ECOSURE X sensor as the solvent may cause crazing of the plastic.

# CARBON MONOXIDE GAS SENSOR

## ECOSURE X

### Cross-Sensitivity Table

While 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.**

**TABLE 3. CROSS SENSITIVITY**

Gas	Concentration used (PPM)	Exposure time (min)	Reading (PPM CO)
Carbon Monoxide, CO	100	5	100
Hydrogen Sulfide, H <sub>2</sub> S	25	5	0
Sulfure Dioxide, SO <sub>2</sub>	50	600	< 0.5
Nitrogen Dioxide, NO <sub>2</sub>	50	900	-1
Nitric Oxide, NO	50	5	8
Chlorine, Cl <sub>2</sub>	2	5	0
Hydrogen, H	100	5	20
Carbon Dioxide, CO <sub>2</sub>	5000	5	0
Ammonia, NH <sub>3</sub>	100	5	0
Ethanol, C <sub>2</sub> H <sub>6</sub> O	2000	30	5
Iso-Propanol, C <sub>3</sub> H <sub>8</sub> O	200	120	0
Acetone, C <sub>3</sub> H <sub>6</sub> O	1000	5	0
Acetylene, C <sub>2</sub> H <sub>2</sub>	40	5	80

### WARNING

By the nature of the technology used, any electrochemical or catalytic bead sensor can potentially fail to meet specification without warning. Although Honeywell makes every effort to ensure the reliability of our products of this type, where life safety is a performance requirement of the product, and where practical we recommend that all sensors and instruments using these sensors are checked for response to gas before use.

## 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 Sensing & Safety 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](https://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.

**Honeywell**