

ECO-SURE X

Carbon Monoxide (CO) Gas Sensor

Part Number: 2112B3001

Document Purpose

The purpose of this document is to present the performance specification of the ECO-SURE X carbon monoxide sensor.

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

To the best of City Technology's knowledge, the data provided in this document is more suitable when 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 ECO-SURE X Characterisation 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 OP07.



KEY FEATURES & BENEFITS



Long Life



Stable Performance



UL Certified - UL2075



Six Sigma Output
Performance

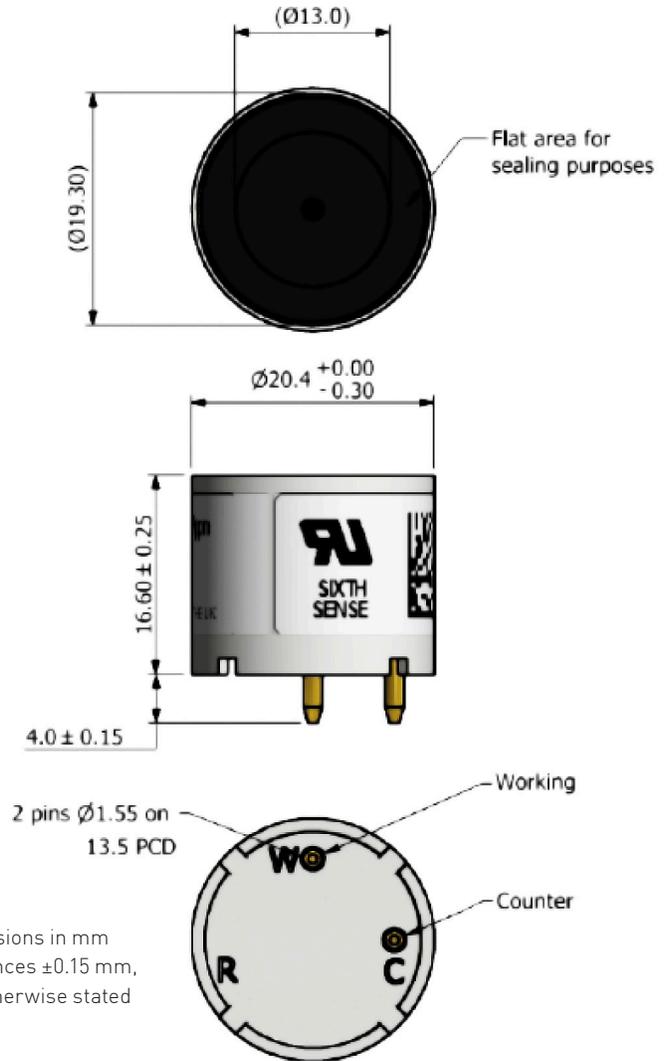
Applications:

- Residential
- Fire Detection
- Ventilation Control

TECHNICAL SPECIFICATIONS	
Measurement	
Operating Principle	2-electrode electrochemical
Measurement Range	4-500 ppm CO
Maximum Overload	1000 ppm CO
Sensitivity	50 ± 10 nA/ppm
Response Time (T90)	<30 seconds
Baseline Offset (clean air)	-2 to 4 ppm equivalent
Zero Shift* (-10°C to +50°C)	< +10 ppm equivalent
Repeatability	< ±5%
Linearity	Within ±5%
Electrical	
Recommended Load Resistor	5 Ω
Bias Voltage	Not required
Mechanical	
Housing Material	Noryl N110
Weight	5 g (nominal)
Orientation	Any
Environmental	
Operating Temperature Range*:	
Continuous	-10°C to +50°C
Intermittent	-20°C to +50°C
Operating Pressure Range	1 atm ± 10%
Operating Humidity Range*:	
Continuous	15% to 90% RH non-condensing
Intermittent	0% to 99% RH non-condensing
Intrinsic Safety Data*	
Maximum at 1000ppm	0.1 mA
Maximum o/c Voltage	1.3 V
Maximum s/c Current	<1.0 A
Lifetime	
Long Term Output Drift	<5% signal drift per annum
Recommended Storage Temp	+10°C to +30°C
Expected Operating Life*	> 10 years in normal use from date of manufacture
Storage Life	6 months in original packaging

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

Product Dimensions

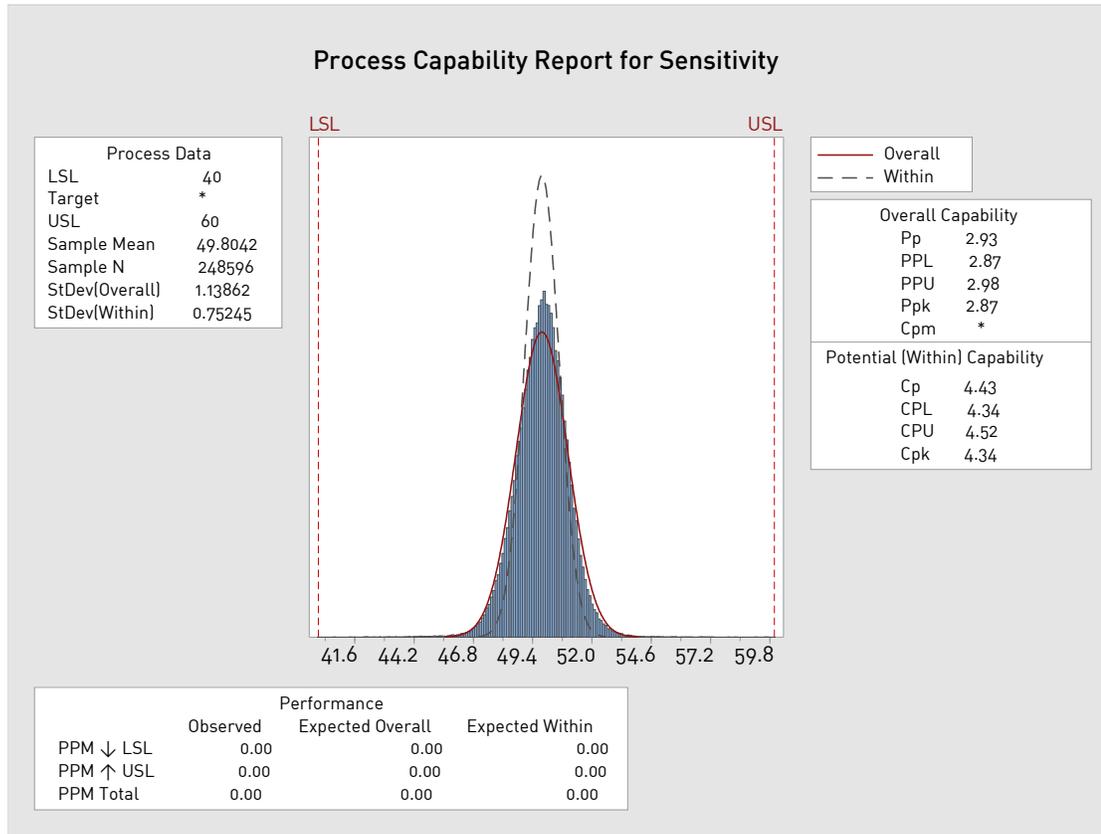


All dimensions in mm
All tolerances ± 0.15 mm,
unless otherwise stated

* Specifications are more ideal for when the sensor is used at 20°C, 50% RH and 1013 mBar, using City Technology 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.

Output

ECO-SURE-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 ECO-SURE X sensor as the solvent may cause crazing of the plastic.

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.

Gas	Concentration Used (ppm)	Exposure Time (mins)	Reading (ppm CO)
Carbon Monoxide	100	5	100
Hydrogen Sulfide	25	5	0
Sulfur Dioxide	50	600	<0.5
Nitrogen Dioxide	50	900	-1
Nitric Oxide	50	5	8
Chlorine	2	5	0
Hydrogen	100	5	20
Carbon Dioxide	5000	5	0
Ammonia	100	5	0
Ethanol	2000	30	5
Iso-Propanol	200	120	0
Acetone	1000	5	0
Acetylene	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 City Technology 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.

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 reserves the right to make product changes without notice. The products are always subject to a program 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, we cannot give any warranty as to the relevance of these particulars to an application. City Technology warrants goods of its manufacture as being free of defective materials and faulty workmanship. City Technology's standard product warranty applies unless agreed to otherwise by City Technology in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to City Technology during the period of coverage, City Technology will repair or replace, at its option, without charge those items it 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 City Technology be liable for consequential, special, or indirect damages. Though City Technology provides application assistance personally, or through our literature and website, it is up to the customer to determine the suitability of the product in the application.

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