



Innovation, Quality and Expertise for Gas Detection.

## SureCell - CO (M)

### Operating Performance

Operating Principle	3-electrode electrochemical
Gas Detected	Carbon Monoxide
Measurement Range	0-1000 ppm
Maximum Overload <sup>2</sup>	2000 ppm
Expected Operating Life	2 years in air
Output Signal	0.07 ±0.015µA per ppm
Temperature Range	Continuous: -20°C to +40°C Intermittent: -40°C to +55°C
Pressure Range	1 atm ±10%
Humidity Range (non-condensing)	Continuous: 15 - 90% Intermittent: 0 - 99%
Response Time (T <sup>5</sup> <sub>90</sub> )	<30 seconds
Baseline Offset (clean air)	<±5.0ppm equivalent
Zero Shift (-40 to +55°C)	<±3.0ppm equivalent
Long Term Output Drift	<5% per annum
Repeatability	<±3%
Linearity	Linear ±<5%
Recommended Load Resistor	5Ω
Bias Voltage	Not required

### Intrinsic Safety Data

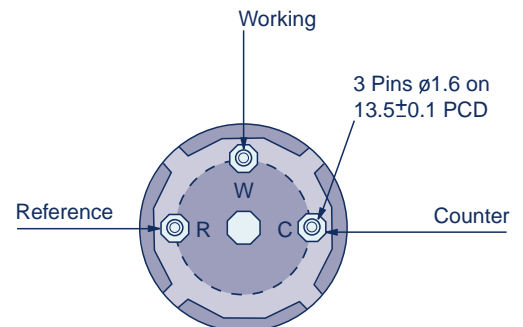
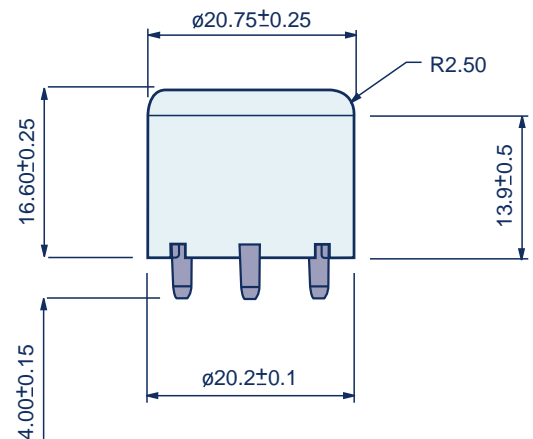
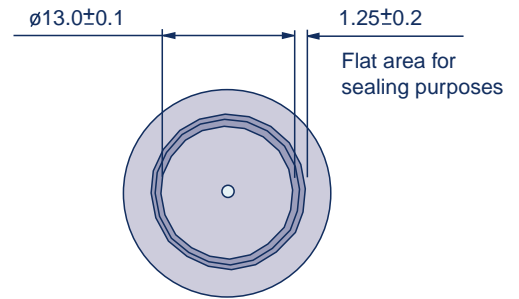
Maximum at 2000ppm	0.2mA
Maximum o/c Voltage	1.3V
Maximum s/c Current	<1.0A

### Physical Specification

Weight	5g (approx)
Housing Material	Noryl 110
Storage Life	6 months in sealed container
Storage Conditions	+10°C to +30°C
Orientation	Any
Warranty Period	18 months from date of despatch

### Ordering Details

Part Number	2112B2003
-------------	-----------

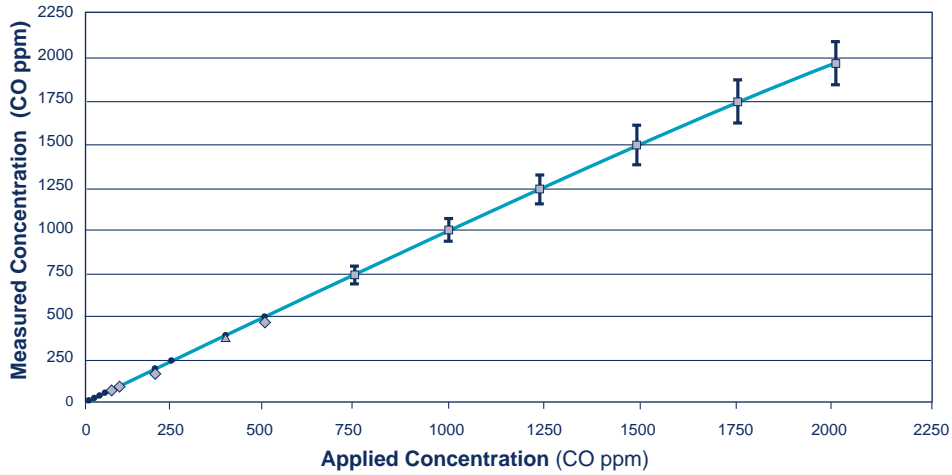




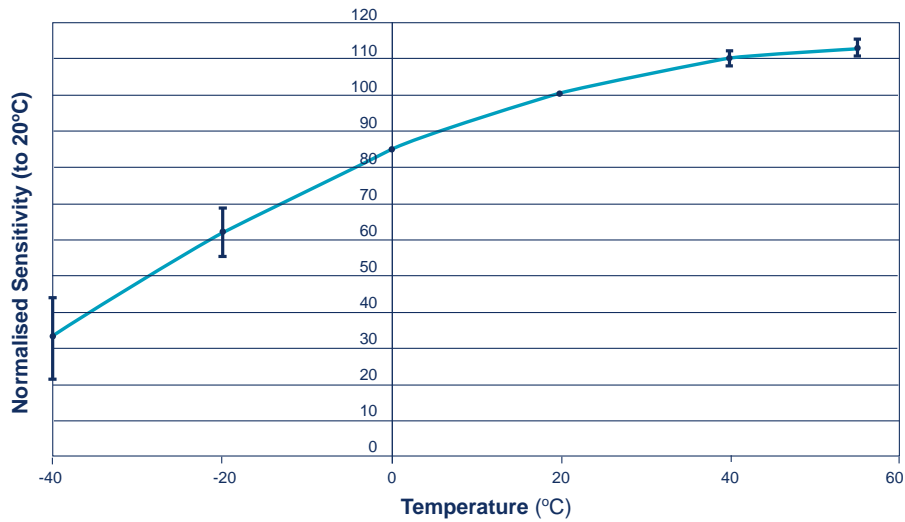
## Additional Information

Innovation, Quality and Expertise for Gas Detection.

Linearity of CO SureCells (0 to 2000 ppm)



Temperature Coefficients of CO SureCells



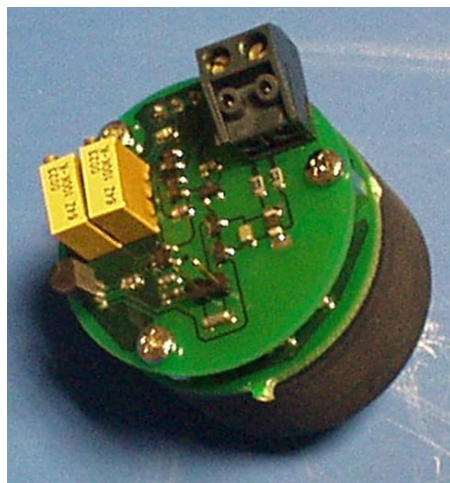
Cross Sensitivity Table

Gas Type	Concentration (ppm)	Exposure (mins)	Reading (ppm CO)
Acetone	1000	5	0
Acetylene	40	5	80
Ammonia	100	5	0
Carbon monoxide	100	5	100
Chlorine	2	5	0
Ethanol	2000	30	3
Ethylene	100	5	85
Hydrogen	100	5	20
Hydrogen sulphide	25	5	0
Iso-Propanol	200	120	0
Nitric Oxide	50	5	8
Nitrogen dioxide	800	30	20
Sulfur dioxide	50	600	0.5

In the interest of product improvement, Sixth Sense reserves the right to alter design features and specifications without notice. Unless otherwise stated, all product specifications are quoted at standard temperature and pressure.

**\*Note:** The figures in this table are typical values and should not be used as a basis for cross calibration. Cross sensitivities may not be linear and should not be scaled. All data based on a 5 minute gassing. For some cross interferences break through will occur if gas is applied for a longer time period.

# 4-20mA BOARD FOR SURECELL



**Figure 1.** 4–20mA transmitter with zero and span potentiometer, screw terminals and installation ring, complete with SureCell sensor CO(H) or H<sub>2</sub>S(L) or Cl<sub>2</sub>

- With SureCell Carbon Monoxide CO (M): range 0-1000 ppm
- With SureCell Hydrogen Sulphide H<sub>2</sub>S (L): range 0-200 ppm
  - With SureCell Chlorine Cl<sub>2</sub>: range 0-20 ppm

Output signal: 4 – 20 mA using two-wire technology

## Features

Electronic transmitter designed to equivalent sensors

Measuring signal 4 – 20 mA

Calibration on required range

## User benefits

Immediate use and evaluation of electrochemical SureCells

Standard interface

Equivalent to specification



# 4-20mA BOARD FOR SURECELL

## SPECIFICATION

<b>Measuring principle:</b>	Electrochemical
<b>Operation:</b>	continuous
<b>Gas entry:</b>	by diffusion
<b>Range:</b>	CO: calibratable up to 1000 ppm CO f.s.d. H <sub>2</sub> S: calibratable up to 200 ppm H <sub>2</sub> S f.s.d. Cl <sub>2</sub> : calibratable up to 20 ppm Cl <sub>2</sub> f.s.d.
<b>Repeatability:</b>	CO: < ± 3% of signal H <sub>2</sub> S: < ± 3% of signal Cl <sub>2</sub> : < ± 5% of signal
<b>Response time:</b>	CO: t <sub>90</sub> < 30 sec H <sub>2</sub> S: t <sub>90</sub> < 10 sec Cl <sub>2</sub> : t <sub>90</sub> < 60 sec
<b>Cross sensitivity:</b>	see equivalent sensor data sheet
<b>Linearity:</b>	CO: < ± 5% of nominal value H <sub>2</sub> S: < ± 5% of nominal value Cl <sub>2</sub> : < ± 3% of nominal value
<b>Temperature range:</b>	-20°C to +40°C
<b>Humidity range (non-condensing):</b>	15 – 90% r.H.
<b>Operating voltage:</b>	24 V ± 10% d.c.
<b>Output signal:</b>	4 – 20 mA, two-wire; max. load 500 Ω Ohms at 24 V d.c. (+/- 4V)
<b>Zero adjustment:</b>	via potentiometer
<b>Span adjustment:</b>	via potentiometer
<b>RFI:</b>	according EN 50082
<b>Storage conditions:</b>	+ 10°C to +30 °C
<b>Mechanical design:</b>	SureCell sensor plugged into transmitter and surrounded by installation ring
<b>Dimensions:</b>	40 mm Ø, 55 mm high
<b>Warranty period:</b>	6 months from despatch date



# Operating Instructions for SureCell Sensors (CO(M), H<sub>2</sub>S(L) or Cl<sub>2</sub>) + 4-20 mA pcb

## Potentiometer

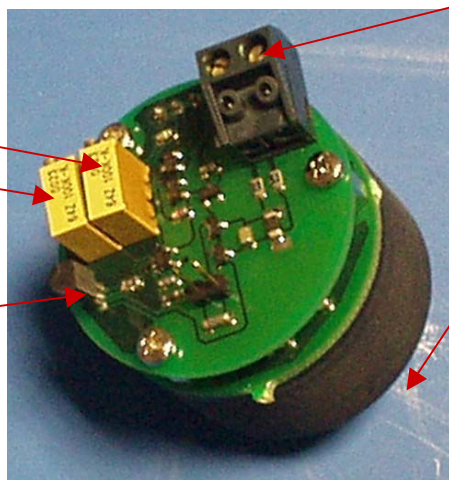
for calibration adjustment

Zero potentiometer

Span potentiometer

**Test pins** for one man calibration;

0.4 – 2.0 volts signal output



## Two wire screw terminal

for 24V d.c. power supply (+/-10%); +4-20mA signal output

Please note: No polarity (+/-) requirements

## Test Gas

For calibration, flow relevant gas through a test flow cap. Test flow cap, installation kit and calibration gases also available from Euro-Gas. Please ask for details

**Two wire screw terminal:** The transmitter has a two wire screw terminal to connect a 24V d.c. power supply. There is no polarity requirement across the two screw terminals (i.e. there is no +/- logic). On the same two wires, you will receive the 4-20 mA signal output. The transmitter is precalibrated on:

With SureCell CO (M): 0-1000ppm CO range

With SureCell H<sub>2</sub>S (L): 0-200ppm H<sub>2</sub>S range

With SureCell Cl<sub>2</sub>: 0-20ppm Cl<sub>2</sub> range

When there is zero gas concentration, you will receive a 4mA signal. With the full concentration, you will receive a 20mA signal.

**Potentiometer:** This is used for adjusting the signal to the correct value if you apply a test gas concentration to the transmitter and it gives an incorrect signal.

**Test pins:** The two test pins allow for one man calibration. Please kindly note that the signal here is not 4-20 mA but **0.4 – 2.0 Volts**.

<u>Gas Concentration</u>					
CO	0ppm	250ppm	500ppm	750ppm	1000ppm
H <sub>2</sub> S	0ppm	50ppm	100ppm	150ppm	200ppm
Cl <sub>2</sub>	0ppm	5ppm	10ppm	15ppm	20ppm
Signal at wires	4 mA	8 mA	12 mA	16 mA	20 mA
Signal at test pins	0.4 V	0.8 V	1.2 V	1.6 V	2.0 V



# 4-20mA BOARD FOR SURECELL

## SPECIFICATION

### Part Numbers

CO(M) sensor with transmitter:	2112B1020
H <sub>2</sub> S(L) sensor with transmitter:	2112B1015
Cl <sub>2</sub> sensor with transmitter:	2112B1035

### Accessories

- Installation kit suitable for all transmitters above, part no: 2112B1022
- Test gas cap, part no: 2112B1010
- Gas Measuring System – sensor with transmitter and installation kit, provided as a complete housed unit in aluminium housing:

CO Gas Measuring System:	Part no. 2112B1023
H <sub>2</sub> S Gas Measuring System:	Part no. 2112B1016
Cl <sub>2</sub> Gas Measuring System:	Part no. 2112B1018



**Figure 2. Test gas cap**  
Part no. 2112B1010



**Figure 3. Gas Measuring System**

SureCell sensor with 4-20mA transmitter and installation kit, provided as a complete unit, fitted into aluminium housing.

Part no.:	CO: 2112B1023. Range: 0-1000ppm CO
	H <sub>2</sub> S: 2112B1016. Range: 0-200ppm H <sub>2</sub> S
	Cl <sub>2</sub> : 2112B1018. Range: 0-20ppm Cl <sub>2</sub>

The data contained in this document is believed to be accurate and reliable. The data given is for guidance only. Euro-Gas Management Services Ltd accepts no liability for any consequential losses, injury or damage resulting from the use of this datasheet or the information contained in it. Customers should test the sensors under their own conditions to ensure that the sensors are suitable for their own requirements and in accordance with the plans and circumstances of the specific project and any standards/regulations pertaining to the country in which the sensors will be utilised. This datasheet is not intended to form the basis of a contract and in the interest of product improvement, Euro-Gas reserves the right to alter design features and specifications without notice. 08/10

