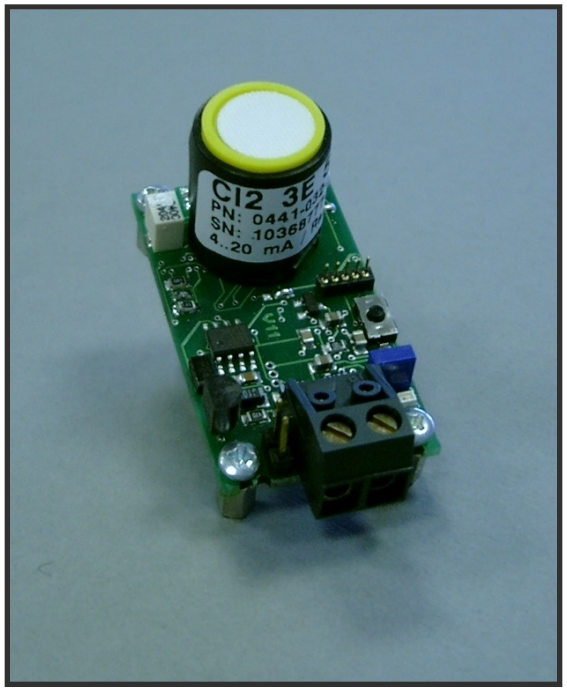
Sensoric 4-20 mA Transmitter Board
Operation Manual



Rev. 06/2012

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Content

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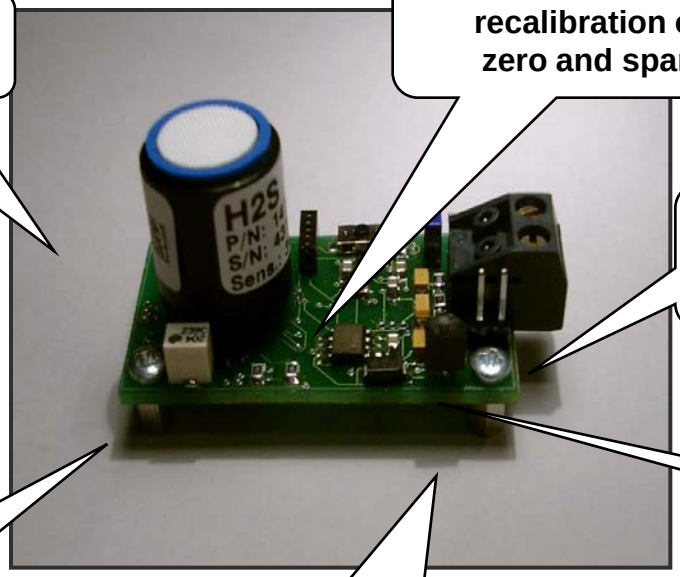
Features



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Operation Manual - Introduction

The Transmitter is a small though robust device which converts the raw sensor signal of an electrochemical sensor cell into a standard 4..20 mA output. Additionally, the output signal is converted by an on-board resistor into a 40..200 mV voltage output.

The Transmitter board is available for all existing Sensoric electrochemical gas sensors.

The Transmitter Board has on-board temperature compensation and allows the use of an optional external temperature sensor for temperature compensation.

In general, it is shipped fully calibrated including the sensor cell. There are two possibilities for recalibration when appropriate:

- by use of a small button for zero and/or span calibration and
- by use of a potentiometer for span calibration.

The Transmitter Board is equipped with 4 mounting holes and an LED for calibration acknowledgement.

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Operation Manual - Standard Operation

Please attach power supply to the screw-connector/plug, either polarity of the power supply will do.

This connector also is the 4..20 mA 2-wire interface. It can be used in two orientations: either vertical or horizontal to the board.

Now the Transmitter Board is ready to operate and the sensor signal can be read from the 4..20 mA interface and/or from the 40..200 mV voltage output.

Operational status can be retrieved by pressing the button for 0.5 to 3 seconds. The blinking pattern of the LED shows the status:

- 1x factory settings (as delivered);
- 2x individual settings (recalibrated);
- 3x factory settings after reset.

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Operation Manual - Error conditions

Error signalling:

- errors are signalled with the output signal going to 21.0 mA only under the below circumstances

Error conditions the board can recognize are:

- the output drops to less than 3.8 mA
- the output rises above 20.5 mA

- the board is operated more than 5 K outside temperature specifications of the sensor.

Other errors are not automatically signalled.
For additional error recognition and signalling use the process control system.

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Operation Manual - Calibration with button

Zero Reading Calibration:

Before starting the calibration, please allow the signal to stabilize for at least 5 min during exposure to zero gas.

Once output signal is stable, press the calibration button for 6 to 12 sec.
The LED acknowledges calibration by 6x blinking.
(Please note that warranty on calibration is lost once you perform a recalibration.)

Span Calibration – via calibration button:

The sensor cell is exposed to calibration gas in full-scale concentration. Please allow the signal to stabilize for at least 5 min.

Once output signal is stable, press the calibration button for 12 to 60 sec. The LED acknowledges calibration by 8x blinking.

Remove gas. (Please note that warranty on calibration is lost once you perform a recalibration.)

Reset:

The zero and span parameters of the board can be resetted to the default factory values.

Press the button for 3 to 6 seconds. The LED acknowledges the reset by 4x blinking.

For further technical support please contact us.

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Operation Manual - Calibration with potentiometer

Span Calibration – via potentiometer:

The sensor cell is exposed to calibration gas in full-scale concentration. Please allow the signal to stabilize for at least 5 min.

Once output signal is stable, adjust the signal to the appropriate value by changing the potentiometer setting.

Remove gas.
(Please note that warranty on calibration is lost once you change potentiometer setting.)

For further technical support please contact us.

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Technical Details – Transmitter board

Output :	4..20 mA, 2 wire loop powered 40..200 mV
Supply voltage :	10 to 30 V DC
Maximum Loop Load :	700 Ohms
Protection :	Reverse polarity protection
No power equivalent :	Short circuit via FET, if applicable for sensor cells
Operating current range :	0 .. 30 nA to 0 … 500 µA, bipolar operation
Bias range :	0 .. –1500 mV
Minimal Resolution :	0.01 mA
Optional Zero Adjust :	Button press (compensates negative or positive offsets)
Recalibration :	Button press for full scale adjustment (span gas concentration), optional manual calibration via potentiometer
Temperature Range :	-40 .. +50 °C (transmitterboard) For sensor operating conditions please see sensor data sheet.
Temp. Compensation :	-40 .. +50 °C via temperature sensor and microprocessor if applicable by sensor specification.
Special features :	10 Ohms on board for voltage output (200 mV = 20 mA), Four mounting holes (3 mm)

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Important Information Regarding the Use of Sensors in Safety Critical Applications

The Sensoric transmitter has been designed to ensure a maximum reliability in the field at minimum cost.
Therefore, the sensor cell is soldered onto the board and cannot be replaced easily in the field.

Should the sensor no longer fulfill its function of gas monitoring, Sensoric recommends replacing the complete low cost transmitter rather than exchanging the sensor in the field.

Designing gas detection solutions around the Sensoric transmitter may require additional mounting tools for the transmitter. Sensoric offers technical support and customized solutions to ensure the correct and most effective integration.

Reliable calibration of gas sensors and transmitters in field applications requires extensive training and experience in handling trace levels of calibration gas concentrations.

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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.

Attention

Use of the Sensoric range sensors requires complete understanding of the instructions. Before using Sensoric range sensors please carefully read 'Application Notes' which can be found at www.citytech.com under the heading '*Support' -> 'Application Notes' -> 'Sensoric'*

Product Safety Data Sheets (PSDS) can be obtained at www.citytech.com under the heading '*Support' -> 'Product Safety Datasheets'*

For further assistance on sensor selection and use, please contact a member of the Technical Sales team.

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Rev. 06/2012