

### • Description

This module is specifically designed for 4-series electrochemical sensors to measure the concentration of a variety of gases including CO, H<sub>2</sub>S, NO<sub>2</sub>, HCL, NH<sub>3</sub>, SO<sub>2</sub>, etc. The module possesses the pluggable contacts and offers analogue voltage / I2C-BUS digital signal output. It also provides the function of onboard temperature measurement.

### • Technical Parameters

#### • Input Voltage

The module operating voltage is (+3.3 ~ +5.0) VDC. The absolute maximum value is +5.5VDC.

#### • Power Consumption

The operating current is less than 0.5mA (electronics without sensor).

#### • Signal Offset

+0.02 VDC (Can be adjusted according to customer's requirement).

#### • Sensors Available

By selecting different resistor value of R4 and R5 as shown in Figure 1, users can achieve different biased voltage configuration. Therefore it works with most of 4-series (three-electrode type) electrochemical sensors listed in the table below.

R4	R5	Biased Voltage	Available Sensor
162k	5.6k	200 mV	HCL
Open	5.6k	300 mV	ETO, NO, C <sub>2</sub> H <sub>3</sub> CL
160k	68k	-600 mV	O <sub>2</sub>
162k	18k	0 mV	CO, H <sub>2</sub> S, SO <sub>2</sub> , PH <sub>3</sub> , NH <sub>3</sub> , H <sub>2</sub> , HCN, etc

#### • Measurement Ranges

Please refer to related sensor datasheets available at [www.semeatech.com](http://www.semeatech.com).

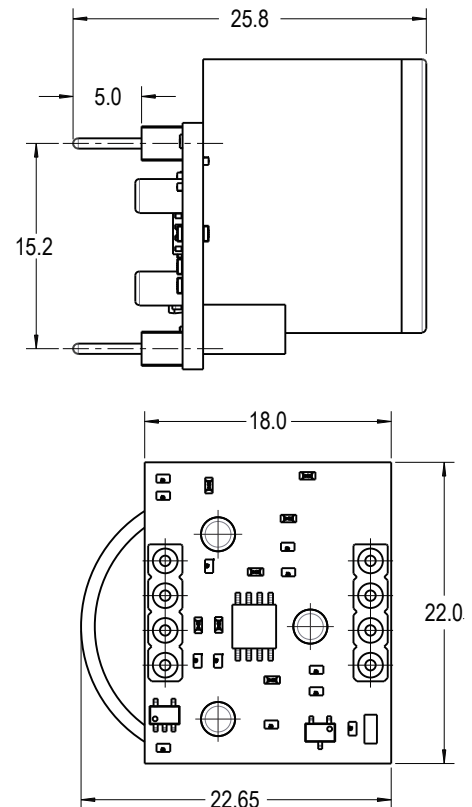
#### • Contacts

8-pin contact, 2.54mm contact spacing.

#### • Temperature Measurement

The applicable measurement range is -40 ~ +125°C. The analogue voltage output is 500mV at 0°C, and it changes 10mV per degree °C when temperature varies.

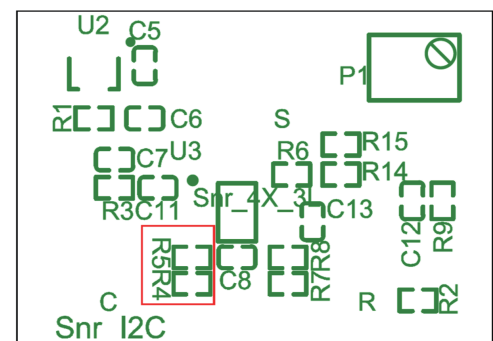
### • Product Dimensions



All dimensions in mm

All tolerances ±0.20mm unless otherwise stated

Figure 1 - Top Layer Layout



### • Voltage Output

It is from 0.02 VDC to 4.7 VDC. Users can adjust the potentiometer to achieve the voltage output to match the required system parameters. It is recommended that the maximum output remain less than +4.5 VDC.

### • Digital Output

Users can achieve the sensor digital output from the I2C-BUS communication mode. The module is assembled with Microchip's MCP3221A5T-E/OT that is a successive approximation A/D converter with a 12-bit resolution. Communication to the MCP3221 functions and can be activated by using a 2-wire, I2C compatible interface.

#### Note:

- 1) MCP3221A5T-E/OT's device code is 1001 and address bits are 101;
- 2) The reference voltage of MCP3221 is +3.0VDC. If using the I2C-BUS output mode, please adjust the potentiometer to make the maximum voltage value at +3.0VDC;
- 3) There are no pull-up resistors of I2C-BUS on the module, users need to add the pull-up resistors on the system.

### • Pin Configuration

Pin	Definition
1	Digital output: I2C-BUS SCL signal
2	Digital output: I2C-BUS SDA signal
3	Analogue output
4	GND
5	GND
6	GND
7	Temperature output
8	Input voltage: (+3.3 ~ +5.0) VDC

