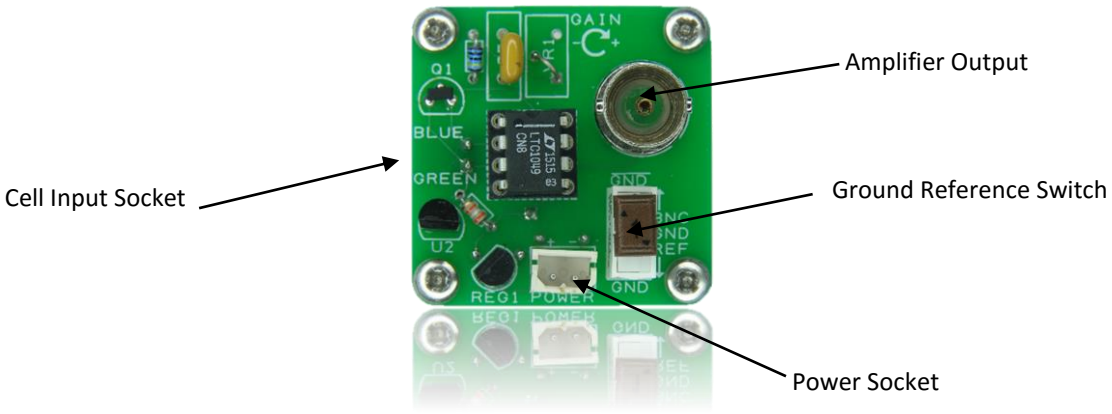
USER GUIDE

FEATURES



OPERATION

Before use, connect a sensor, power supply and some means of measuring output voltage. Set the ground reference switch to the up or down position, depending on the output signal required. In the down position, the output signal ground is measured from 0V; in the up position from the sensor bias voltage. The setting tailors the output signal to best suit the external measurement system. For example, if reading the output voltage manually using a voltmeter, it is usually most convenient to be viewing the absolute sensor output – in this case the switch should be in the up position. If the board is attached to an external A/D convertor that cannot accept signals below 0V, the switch should be in the down position.

When left disconnected, electrochemical sensors can build up offset voltages that can take up to several hours to settle when connected to the amplifier. Leaving the sensor connected to the amplifier when not in use will avoid this. It is not necessary to leave the power supply connected when not in use – the amplifier contains circuitry to prevent these offsets when disconnected.

DATA INTERPRETATION

The circuit is supplied pre-configured with a fixed gain of 1,000,000×. This is sufficient to increase output into the mV range, permitting formaldehyde monitoring from the ppb range up to 10ppm. The concentration of gas in any given sample can be calculated using the factory calibrated sensitivity value provided with the sensor.

1. Find the absolute sensor output. If the reference switch is in the up position the voltage output is the absolute value. If the reference switch is in the down position the sensor bias voltage must be subtracted from the amplifier output voltage.
2. Calculate the gas concentration:

$$Gas\ Concentration\ (ppm) = \frac{Absolute\ Sensor\ Output\ (mV)}{Sensor\ Sensitivity\ (nA/ppm)}$$

CALIBRATION

The above procedure can be reversed to determine the sensitivity of an uncalibrated sensor. Calibration requires a supply of clean, humidified air and suitable reference standard to provide the sensor with a test gas of known concentration.

1. Allow the sensor signal to settle in the clean, humidified air and note the reading. This value is the *zero offset*.
2. Introduce the sensor to the test gas, wait for a stable signal and note the new absolute sensor output – the *span voltage*.
3. The sensitivity value can then be calculated:

$$Sensitivity\ (nA/ppm) = \left(\frac{Span\ Voltage\ (mV) - Zero\ Offset\ (mV)}{Test\ Gas\ Concentration\ (ppm)}\right)$$

SPECIFICATIONS

Specifications given are for the standard configuration. Application-specific configurations are available on request.

Maximum Input Voltage	30V DC
Current Draw (typ.)	2.5mA
Maximum Output Voltage	5V
Sensor Bias Voltage	1.235V

SUPPORT

For further support, please contact our technical sales team.