

## Oxygen Gas Sensor XLS1047



**NB** – This sensor is for measuring gaseous concentrations of oxygen only, not dissolved oxygen concentrations, for which there is a separate sensor.

### Technical Specifications

Oxygen concentration range: 0 - 100% O<sub>2</sub>

Output voltage range: 0 - 4 V in air at 25°C, sea level (standard) other range optional.

Resolution: 0.03% (12 bit)

Gas Sampling Mode: Diffusion through solid membrane

Linearity(R): 0.9999(R) of full scale at constant temperature and pressure

Response Time (90%): 30 Seconds

Humidity: 0 - 95% RH, non condensing

Operation Temperature Range: 0 - 50°C

Storage Temperature Range: -20°C to +60 °C

Expected Life: 2 years at 20.9% O<sub>2</sub>, 25°C, 50% RH

### Instructions

- Do not place the sensor in any liquids.
- The sensor should only be used with the membrane pointing downwards or sideways and not pointing upwards.
- Even though the sensor responds quickly to changes in oxygen concentration, remember that the gas has to diffuse into the electrochemical cell located at the top of the sensor shaft before any changes in concentration can be detected. Since diffusion of gases is a fairly slow process, there can be a delay of about 30s in detecting correct readings.

## **Storage**

- The oxygen gas sensor should be stored horizontally and never with the membrane pointing upwards as this may result in damage to the sensor.
- The sensor should only be stored at temperatures in the range  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .

## **Hazards**

- The electrolyte contained in the sensor is acidic. Appropriate precautions should be taken as for dealing with weak acids. If any electrolyte is swallowed or comes into contact with clothing, skin or eyes follow the appropriate remedial actions as for dealing with weak acids.
- The sensor contains heavy metals.

## **Operation**

The Oxygen Gas Sensor measures the gaseous oxygen concentration in the range of 0 to 100 %. It uses an electrochemical cell which contains a lead anode. The anode and cathode are immersed in an electrolyte. When oxygen molecules enter the cell, they get electrochemically reduced at the cathode. This electrochemical reaction generates a current that is proportional to the partial pressure of oxygen in the gas mixture. The current is measured across a resistance to generate a small voltage output. The voltage output is amplified to the 0 - 5V output range.