# The ALBA Oxygen Gas Sensor

The Oxygen Gas Sensor is intended for use with the ALBA Interface and Logger. It is an electro-chemical cell with additional electronics to increase its life and condition the signal for the ALBA Interface. The manufacturer of the cell states that its life is two years but with skillful design of circuitry by djb microtech this life is now extended and is anticipated to be in excess of four years.
The Oxygen Gas Sensor connects directly to channel 3 or 4 on the ALBA Interface.

**The sensor must be allowed at least 5 minutes to reach stable operating conditions.**

If small changes of less than 0.1% are expected then the sensor should be left for one hour to stabilize. It should be noted that the sensor responds slightly to changes in temperature and pressure – see Technical Information below.

The sensor should be used for measuring gaseous oxygen concentrations and consequently must be kept dry – do not immerse in water or other liquids.

The sensor should be used with:
- ALBA Applications software
- The Investigator
- The Analogue Snapshot.

**Calibration**
The oxygen sensor is supplied with a default calibration and in many instances this will be sufficiently accurate for classroom work. Over a period of time the output from the sensor will fall (approximately 5% per annum). However it is very easy to re-calibrate your sensor and the steps below outline the procedure.

To calibration the Oxygen Sensor carry out the following steps:
- Connect the Oxygen Sensor to channel 3 or 4 on ALBA and leave for at least 7 minutes to enable stable operating conditions to be reached.
- Place the sensor in fresh air.
- From the *Experiment* menu select *Calibration Manager*.
- Select *New* and then give your calibration a name and enter the units as %.
- Your Calibration Manager screen will require you to enter a value for the oxygen concentration of the air – enter 20.9. When the reading is reasonably steady (allow at least 15 seconds) click *Take Measurement* then click *Done* – this will give a one point calibration. This calibration can then be allocated to your sensor when you run the Applications or Investigator software.

**Oxygen Sensor – Technical Information**
Nominal Range: 0-25% Oxygen
Max Overload: 30% Oxygen
T 95 Response Time: <10 seconds
Temperature Range: -20°C to +45°C
Temperature Coefficient: 0.2% signal/°C
Pressure Range: Atmospheric ± 10%
Pressure Coefficient: <0.02% signal/mBar
Operating Humidity: 0 to 99% RH non-condensing
Long Term Output Drift: <5% signal loss/year
Recommended Storage Temperature: 0-20°C

Acid gases such as $CO_2$ and $SO_2$ will be slightly absorbed by the electrolyte and tend to increase the flux of oxygen to the electrode. This gives an enhanced oxygen signal of about 0.3% of signal per 1%

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