djb microtech
Dissolved Oxygen Probe

Items included along with the Dissolved Oxygen Probe
Dissolved Oxygen Probe with storage bottle.
Replacement membrane cap
Electrode Fill Solution with dropper
Small plastic bottle with hole in lid – used in calibration procedure.

Preparation of the Dissolved Oxygen Probe
Remove the probe from the storage bottle.
Unscrew the membrane cap from the tip of the probe.
Using the dropper add 1ml of electrolyte then screw the cap back on.
The probe is now ready for use.

Connecting the probe
Connect the probe to the BNC connector on the pH/Dissolved Oxygen sensor box.
Connect the lead from the sensor box to channel 3 or 4 on the ALBA Interface and Logger.

Calibrating the Sensor
The Dissolved Oxygen probe is supplied with a default calibration that was obtained using fresh water at 17 °C. In many classroom situations this will be adequate to show the trends in an experiment. The saturated level of oxygen in warm water is less than in cold water. If the water that you are testing is warmer than 17 °C and you are using the default calibration then it would be possible to obtain displayed values of dissolved oxygen greater than 100%.

To calibrate the dissolved oxygen probe carry out the following steps:

- Connect the ALBA Interface to your PC.
- Connect the probe to the sensor box.
- Connect the sensor box to channel 3 or 4 on the ALBA Interface.
- The probe requires a 2 minute warm up period.
- Load the ALBA Software and from the *Experiment Menu* select *Calibration Manager*. Click *New* then *OK* for the next two screens. Next enter a name for your calibration and also enter the units as '%'.
- Half fill the calibration bottle with a sample of the water that you are testing and place the dissolved oxygen probe through the hole in the lid. Tighten the lid.
- Vigorously shake the bottle for at least 20 seconds to saturate the water with air - this produces a 100% reference standard *at the water temperature*.
- When the voltage reaches its highest value and just starts to fall enter the value as 100% and click *Take Measurement*. This will put a point in your Table and on your Graph.
- Click *Done* and on the next screen click ok to close the message box. You will be presented with a best fit line. You are now finished calibrating your sensor. This calibration can be assigned to your sensor in the normal way when you use the Investigator software.

Zero Point
The sensor box has been designed to produce zero volts when the oxygen concentration is zero. If you wish to enter a measured value instead of using the default value then you must prepare a solution that has 0% oxygen:
To do this, add 25g of sodium sulphite crystals to 100ml of distilled water. The solution should be prepared a day in advance.
When taking the 0% reading insert the probe at an angle into the solution – this is to avoid trapping air at the tip of the probe. Once the probe is in the solution it can be positioned vertically. When the voltage stabilizes take a reading and proceed as before.

Using the Dissolved Oxygen Probe

The Dissolved Oxygen probe can be used along with the Investigator software to study :

- photosynthesis and respiration in aquatic plants
- dissolved oxygen levels in a tank containing different combinations of plants and animals.

When taking measurements the probe should have water moving past its tip. This can be achieved by very gently moving the probe in the water sample. If it is being used in an aquarium with a pump then there may be sufficient flow of water past the tip. If the probe is left still in the water then the oxygen in the water at the tip of the probe will be depleted and the readings will fall.

Before data logging you could check the operation of your sensor by selecting the Meter option in the Investigator software.

Care of your Dissolved Oxygen Probe

From time to time (dependent on use) the fill solution round the membrane will have to be replaced. To do this, rinse out with fresh fill solution and refill. Cleaning of the metal anode and cathode with a jewelers rouge (not silver or gold polish) or very fine soft abrasive (flour paper) is necessary when the metals have dulled. Always rise with de-ionized water and fill solution prior to re-assembly.

Store the probe dry or in de-ionized water.

The electrode fill solution is a 5% sodium chloride solution.

Replacement Parts

djb microtech can supply the following replacement parts for your dissolved oxygen probe:

membrane
calibration bottle

Connecting Other Probes

Users of the dissolved oxygen probe should be aware that it must not be used with certain other sensors i.e.

pH sensor
Conductivity sensor
Temperature Sensor

Placing any of the above in the same tank as the dissolved oxygen probe will give erroneous readings.

If you wish to take simultaneous readings of dissolved oxygen and temperature then place the steel tube of the temperature probe in a polythene freezer bag then place the bag in the water. Alternatively if you are using water in a tank fill a measuring cylinder with water from the tank then stand it in the tank ensuring that the top of the cylinder is above the level of the water. Now place the thermometer in the measuring cylinder.

Specification

Type: Galvanic
Output at saturation: 33-40 mV
Output at Zero Oxygen: <1% Saturation
Membrane: Teflon
Temperature range 1 – 28 °C.
Accuracy: ±2% within 10 °C of calibration temperature.
Response time: 2 minutes.
Minimum flow rate over membrane: 150 mm per minute.

Warranty

Our Dissolved Oxygen Sensors are warranted to be free from defects in material and workmanship for a period of twelve months from purchase provided the electrode has been used in accordance with this instruction sheet and used under normal laboratory conditions. The warranty does not apply when the electrode has been subjected to accident, alternate use, misuse, or abuse in any manner.

djb microtech ltd

Delfie House, 1 Delfie Drive, Greenock, Renfrewshire, PA16 9EN
Phone/Fax : 01475 786540 Email : info@djb.co.uk Website : www.djb.co.uk