

Oxygen Sensor with Electrode

Product Number: ENOXY-A222



Overview

The Oxygen sensor is a maintenance-free galvanic oxygen electrode, capable of measuring Oxygen in solutions.

The Oxygen sensor can be used to perform a wide variety of experiments taking place in a number of different environments such as measuring the amount of oxygen in an aquarium.

The Oxygen Sensor can be connected to all types of einstein™ Tablets, einstein™LabMate™, and einstein™LabMate™+.

Typical experiments



Biology

- Monitoring changes in oxygen levels during photosynthesis and respiration of plants
- Consumption of oxygen by yeast during respiration of sugars
- Fermentation of yogurt



Water Quality

- Monitoring dissolved oxygen concentrations resulting from photosynthesis and respiration in an

- aquarium containing plants and/or fish
- Monitoring the pattern between light and dissolved oxygen levels, in an aquarium with pondweed
- On-site testing in streams and ponds to evaluate the capability of their water to support different types of plant and animal life



Chemistry

- Oxidation of metals

Sensor specification

Range:	0 to 12.5 mg/L DO ₂
Accuracy:	± 7% over entire range
Resolution (12-bit):	0 to 12.5 mg/L 0.003 mg/L
Temperature Compensation:	No
Response Time for 95% of Reading:	Up to 2 minutes
Default Sample Rate	10 samples per second


Note: sensor cables sold separately

Technical Notes

- The sample temperature has to be 25 °C since the Oxygen sensor can only be calibrated at 25 °C.
- Before use, remove the protective cap, use the dropper to fill it with Galvanic O₂ Fill solution and replace it. Make sure it contains no air bubbles.
- If other electrochemical type sensors (pH and Conductivity) are placed in the same solution at the same time and connected to the same data logger, they can interfere with each other's signals. Keep the sensors as far apart as possible - the distance required will depend on the conductivity of the solution. If there is still a problem, try connecting the sensors to different data loggers or take readings using one sensor at a time.
- It is important to stir the solution during measurement as oxygen consumption by the probe can momentarily reduce the oxygen concentration at the probe's surface.
- Do not allow any air bubbles to be trapped on the membrane surface, as it will read an air bubble as an oxygen-saturated sample.
- The DO₂ electrode membrane is very robust, relative to other electrodes. Its function is more of a physical barrier (permeable to O₂) rather than a chemical reaction type membrane. In pond water, its useful life is determined by how well it is cared for e.g. by avoiding stretching, scratching, and fouling the membrane.
- The membranes only problem areas are:
 - Scratches or tears - Scratches could change the accuracy of the probe, tears will cause immediate failure
 - Fouling of the membrane - Impacts measurement only if it impedes the membranes permeability to DO₂. This is unlikely in pond water whereas in wastewater this may be a common problem.
 - Stretching of the membrane - The thickness of the membrane and position of the membrane on the cathode are critical parameters of the measurement.
- The Oxygen electrode is supplied with a protective cap that covers the membrane. Before using the electrode for the first time remove the protective cap.

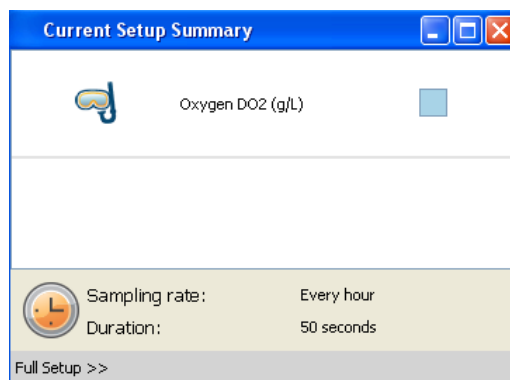
Data logging and analysis

MiLAB™

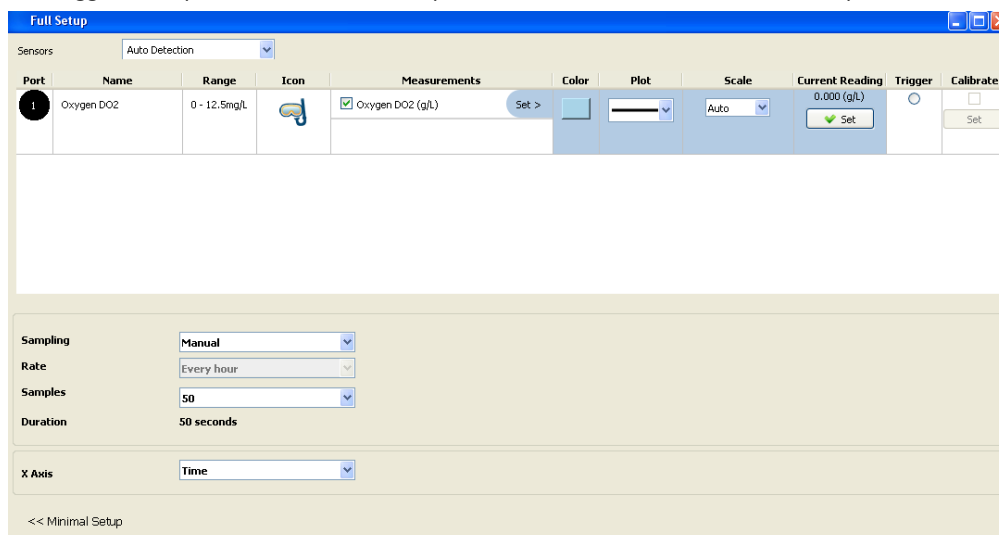
1. Take your einstein™ Tablet or pair your einstein™LabMate™ with your Android or iOS tablet via Bluetooth
2. Insert the sensor cable into one of the sensor ports
3. Launch MiLAB
4. MiLAB will automatically detect the sensor and show it in the Launcher View
5. Check the icon next to the sensor () to enable it for logging


MultiLab4

1. Pair your einstein™LabMate™ with your PC, MAC, or Linux machine via Bluetooth, or connect it via the USB cable (found in the einstein™LabMate™ box).
2. Insert the sensor cable into one of the sensor ports.
3. Launch MultiLab™4.
4. MultiLab4 will automatically detect the sensor and show it in the Current Setup Summary window



5. Click Full Setup, located at the bottom of the Current Setup Summary window to program the data logger's sample rate, number of samples, units of measurement, and other options.



6. Click the Run button () on the main toolbar of the Launcher View to start logging.

Experiment set up

The Oxygen Sensor comes with:

- One Oxygen sensor

- One electrode
- One bottle Galvanic O₂ Fill Solution
- One bottle Salt for zero solution – (Sodium Sulfite, Na₂SO₃)
- One plastic dropper
- Extra membranes

Troubleshooting

If the Oxygen sensor isn't automatically recognized by MultiLab/ MiLAB, please contact Fourier Education's technical support.

Technical support

For technical support, you can contact the Fourier Education's technical support team at:

Web: www.einsteinworld.com/support

Email: support@fourieredu.com

Phone (in the US): (877) 266-4066

Copyright and Warranty

All standard Fourier Systems sensors carry a one (1) year warranty, which states that for a period of twelve months after the date of delivery to you, it will be substantially free from significant defects in materials and workmanship.

This warranty does not cover breakage of the product caused by misuse or abuse.

This warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.

©Fourier Systems Ltd. All rights reserved. Fourier Systems Ltd. logos and all other Fourier product or service names are registered trademarks or trademarks of Fourier Systems. All other registered trademarks or trademarks belong to their respective companies.