

Standard Operating Procedure (SOP) 3.1.1.3

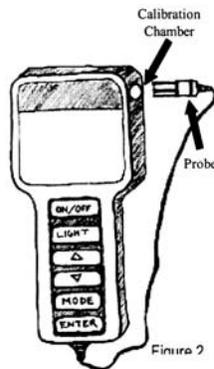
By Erick Burres

Measurements of Dissolved Oxygen (D.O.) with an Electrode

Green plants release oxygen underwater during photosynthesis, but the same plants consume oxygen overnight. Dissolved oxygen levels are lowest in the early morning hours, which is why the test is performed then. This measurement should also be the first one taken when visiting a monitoring station/site.

Calibration: The first part of testing for oxygen is to calibrate the meter. This calibration procedure must be done every time you use the meter.

Turn the D.O. meter on at least 15 minutes prior to being calibrated, and place the probe into the moistened calibration chamber before proceeding.



1. Simultaneously press and release the two arrow keys.
2. The LCD will prompt you to enter the altitude for your monitoring station (usually in hundreds of feet). Use the arrow keys to scroll either up (increase) or down (decrease). Entering 12 would indicate an elevation of 1200 feet. Then press the ENTER key to accept that elevation.
3. The meter should then display CAL in the lower left of the LCD and the calibration value in the lower right. The main display will show the current D.O. measurement before calibration. When the main display stabilizes press the ENTER key.
4. The LCD will then prompt you to enter the approximate salinity of the water you will be sampling. After you have entered the salinity value (zero for fresh water) press the ENTER key.
5. **Repeat** this calibration each time you visit a new sampling station/site that has either or both a change in elevation or salinity.

Tip: To save time leave the meter turned between sampling stations.

Occasionally, such as during an intercalibration session, check your meter against standards. Zero oxygen standards can be purchased and oxygen saturated water can be produced with either a magnetic stirrer or an aquarium pump.

Measurement of Dissolved Oxygen:

1. Remove the probe from the calibration chamber. Lower the probe in the water halfway between the stream's surface and bottom. Be careful not to let the probe hit the stream bottom.
2. At a rate of one foot per second, move the probe tip in a circular motion through the stream. Keep the circle size and speed constant throughout the measurement.
3. Let the D.O. reading on the meter stabilize. The unit will either give a reading in milligrams per liter (mg/l) or percent saturation. By pressing the mode button you can toggle between these two units. You now can then record the temperature and dissolved oxygen measurements as displayed on the meter.
4. After taking your measurements rinse the probe with distilled water and place it back into the calibration chamber.

Tip: Keep extra membranes on hand in case of a rupture while in the field.

Maintenance: Follow the manufacturer's guidelines.

Quality Control and Assurance: Maintain records for each meter's maintenance activity or standard calibration.

Contributors:

Mark Abramson, Heal the Bay Stream Team Water Chemistry Training Manual
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