HOBO® Data Loggers
Dissolved Oxygen
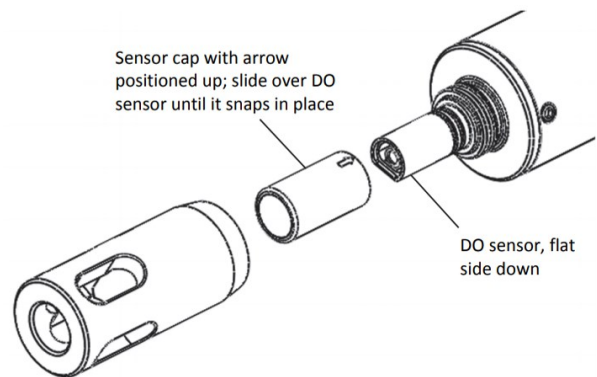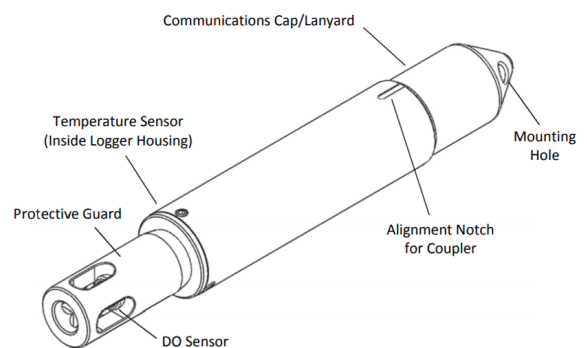
Dissolved Oxygen Components

Pendant   COUPLER2-C   Base-U-4   USB Connector to PC

Install the Sensor Cap

The logger ships with a replaceable sensor cap that provides six months of continuous use. Once the cap is initialized, an internal clock within the logger will count down until the sensor cap expiration date. When the sensor cap expires, you will need to replace it with a new cap (U26-RDOB-1). The sensor cap is intended for six months of actual deployment, but the expiration date is seven months from the date the cap was initialized. This allows for any time needed between launching the logger and physically deploying as well as extra time in case you are not able to get the logger after exactly six months of deployment.

1. To install the sensor cap, unscrew the protective guard covering the DO sensor.

2. Remove the red dust cap that protects sensor during shipping.

3. Take the green sensor cap out of the canister.

4. With the flat part of the DO sensor pointing down and the green sensor cap oriented with the arrow up, slide the sensor cap over the sensor until it snaps in place. The cap should be snug against the logger housing without any gaps. (If you see a gap, the protective guard installed in the next step will close the gap by pushing the sensor cap down into place.)

5. Screw the external protective guard back on until tight.

IMPORTANT: The sensor cap expires 7 months (to the day) after it has been initialized.

HOBO® Data Loggers:
Dissolved Oxygen (continued)

Connect the Logger to a Computer

1. Open HOBOware® Pro software.

2. Attach the USB Optic Base Station (BASE-U-4) to a USB port on the computer.

3. Attach dissolved oxygen HOBO coupler: COUPLER2-C to the base station.

4. Unscrew the pointed cap on the communications end of the logger. Insert the logger into the compatible coupler. Be sure to align the bump/arrow on the coupler with the arrow on the logger so it is properly seated.

Calibrate the Logger with the Lab Calibration Tool
Manufacture recommendations to calibrate every 4 weeks.

Use the Lab Calibration tool in HOBOware when you need to calibrate the logger before deploying it or after replacing an expired sensor cap.

1. Open Connect the logger to the computer as described in the previous section. Stop the logger if it is currently logging or awaiting a coupler or delayed start.

2. From the Device menu, click Lab Calibration.

3. The current gain and offset adjustments are displayed in the top pane of the Lab Calibration window along with the date and time the last lab calibration was completed.

Step 1: 100% Saturation

4. Select the "If using sea level barometric pressure, enter elevation" checkbox and enter your elevation in either meters or feet.

5. Make sure the logger either has the protective guard installed so that the sensor is covered.

6. Wet the small sponge with fresh water. Squeeze out any excess water. Place the sponge in the end of the calibration boot.

7. Insert the logger in the calibration boot so that there is approximately a 0.5 in overlap between the end of the boot and the body of the logger.

8. Wait for approximately 15 minutes until the logger reaches temperature equilibrium.

9. Click the "Get DO value from the logger" button to display the 100% saturation results. You can click this button as often as needed. The results are updated each time you click the button. To check for equilibrium, click the "Get DO value from the logger" button several times in a row to check the current "DO Conc from logger at 100% Saturation" value. If the value remains the same or varies very little with each button click, then temperature equilibrium has likely been reached.

10. When you are satisfied with the results displaying in the "Step 1: 100% Saturation" tab, click the Next button to proceed to "Step 2: 0% Saturation."

HOBO® Data Loggers:
Dissolved Oxygen (continued)

Step 2: 0% Saturation (optional)

11. If the logger will be deployed in water with DO levels greater than 4 mg/L, click the "Skip this Step" button. Otherwise, continue with the following procedure.

12. Pour the sodium sulfite into the beaker so that it is about two-thirds full.

13. Place the sensor end of the logger into the solution so that the entire protective guard or anti-fouling guard and at least 1 in of the logger body are submerged in the beaker. Allow it to rest on the bottom of the beaker.

14. Wait for approximately 15 minutes until the logger reaches temperature equilibrium.

15. Click the "Get DO value from the logger" button to display the 0% saturation results.

16. When you are satisfied with the results displaying in the "Step 2: 0% Saturation" tab, click the Next button to proceed to "Step 3: Finish."

Step 3: Finish

11. The results from the first two steps are displayed as well as the overall calibration results and the new gain and offset adjustment values.

12. If you are satisfied with the results, click the "Send Calibration to Logger" button. The logger will then be calibrated based on the new values. These values will not take effect until the logger is launched.

13. If you do not want to save these values, click Close to cancel the calibration and revert back to the last saved logger values. Or, click "Reset to Factory Defaults" to return to the original values.

14. If you performed Step 2, then remove the logger from the solution and thoroughly rinse it with fresh water to remove any excess sodium sulfite.

Launch the logger

1. Follow "Connecting the Logger to a Computer" steps.

2. From the Device menu in HOBOware, select Launch.

3. Select both the DO and Temperature channels to log.

4. Type description of purpose in 'Name' box.

    For example: YYYY.MM.DD - Deployment Location

4. Set range for the deployment by selecting 30 minutes.

5. Set 'launch options' by selecting 'Now' and click Start. Logging will begin based on the settings you selected.

6. Select any other launch settings and click Start. Logging will begin based on the settings you selected.

Deploy the Logger

1. Remove the calibration boot before deploying the logger.

2. Make sure the logger is fully submerged and not in direct sunlight to minimize temperature changes that are unrelated to water temperature.

3. Insert the logger in a PVC or ABS pipe for protection from debris (if possible). The pipe should have enough holes to ensure good circulation of water to the sensor.

4. Position the logger so the sensor face is oriented vertically. After deploying in the water, move the logger around slightly to eliminate any bubbles that may have formed.

Take Field Calibration Readings (if logger is expected to foul)

1. The logger must be logging. Take a DO measurement of the water where the logger is being deployed using a DO meter. Make sure the meter is calibrated and allow time for the meter probe to stabilize (this will occur when three meter measurements taken in a row are within your accuracy tolerance).

2. If the logger is being deployed in salt water, adjust the meter measurements for salinity using a meter with both conductivity and DO probes. If the salt water has a constant salinity, you can use a DO meter where you can enter that salinity value to adjust the readings. Place both devices in the water long enough for them to stabilize and then for the DO logger to log at least two values, and take a concurrent meter reading.

3. Record the reading, date, and time of the measurement in a field notebook.

4. At the end of the deployment, repeat steps 1-3.

5. Use information for post-processing (see ONSET manual for protocol).

Download Data from the Logger

1. Remove logger from facility. Logger should still be active and logging.

2. Follow steps 1-4 in "Launch the Logger" section.

9. From the Device menu in HOBOware, select 'Read Out'.

Save the Data

Save the data in three different file formats

1. When first selecting to "read out" logger, you will automatically be prompted to save file as a Onset HOBO Datafile (.hobo).

2. After reading out data, select "File", select "Save Project". This will save data as an Onset Project File (.hproj).

3. After reading out data, select "File", select "Export Table Data", select "Export". This will save data as a Microsoft Excel Comma Separated file (.csv)

HOBO® Data Loggers:
Dissolved Oxygen (continued)

Battery Maintenance

1. The battery life of the logger should be three years or more if the logging interval is 5 minutes or more. Actual battery life depends on the number of deployments, logging interval, and operation/ storage temperature of the logger

2. The logger can report and log its battery voltage. If the battery falls below 3.1 V, the logger will record a "bad battery" event in the datafile. The battery is failing and the logger should be returned to Onset for battery replacement.

3. To have your logger's battery and sensor replaced, contact Onset. Do not attempt to replace the battery yourself. Severe damage to the logger will result if the case is opened without special tools, and the warranty will be voided.

Reference:

HOBO® Dissolved Oxygen Logger (U26-001) Manual
https://www.onsetcomp.com/files/manual_pdfs/15603-J%20MAN-U26x.pdf