

AquaLab Water Activity Meter Standard Operating Procedure

for CX-2 and CX-2T models

I. Objective

To establish guidelines for proper AquaLab measurement procedures in order to ensure the accuracy and precision of the instrument.

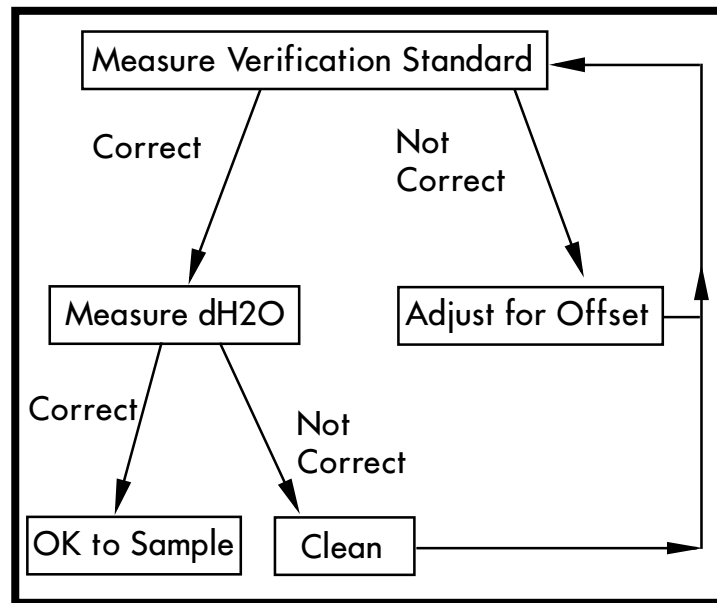
Performance verification should be conducted before sampling at least once per day or shift; or if readings become unstable.

II. Setup

A. Location

1. Place AquaLab on a level surface.
2. Place AquaLab in a relatively temperature-stable environment.
3. Allow instrument to warm up 15 minutes to an hour after turning it on for optimal performance.

III. Performance Verification



This flowchart is a graphical representation of the directions given below for performance verification.

Verify the performance of the instrument with verification salt standards that have known water activities:

Verification

1. Choose a verification standard that is close to the a_w of the sample you are measuring. Make sure that your standard is at ambient temperature before you load it into the sample drawer, and that your AquaLab has warmed up long enough to make accurate readings.
2. Empty the whole vial of verification standard into a sample cup and place it in the AquaLab's sample drawer.
3. Carefully slide the drawer closed, being careful not to splash or spill the solution and contaminate the chamber.
4. Turn the drawer knob to the READ position to make an a_w reading. Make two readings. The a_w readings should be within ± 0.003 of the given value for your verification standard.
5. If your AquaLab is reading within 0.003 of the salt solution, prepare a sample cup half full of distilled water and make two readings. The second a_w reading should be 1.000 ± 0.003 . If your salt reading is correct and your distilled water reading is not, it is probably due to contamination of the sensor chamber. Refer to the manual for cleaning instructions. After cleaning, repeat these instructions.

If you consistently get readings that are outside of the a_w of your salt solution by more than ± 0.003 , a linear offset has probably occurred. In this case, adjust the reading on the salt solution to its correct value. This is done by the following:

Adjusting for linear offset

1. Once you are certain that a linear offset has occurred, choose a verification standard that is close to the a_w of the sample you are measuring. Each of the verification standards supplied by Decagon has its a_w labeled. Before you begin sampling, make sure that your standard is at ambient temperature before you load it into the sample drawer, and that your AquaLab has warmed up long enough to make accurate readings.
2. Empty the whole vial of solution into a sample cup and place it in the AquaLab's sample drawer.
3. Carefully slide the drawer closed, being careful not to splash or spill the solution and contaminate the chamber.
4. Turn the drawer knob to the READ position to make an a_w reading.

After it has finished sampling the verification standard, adjust the reading on the AquaLab to the correct value while the AquaLab is still beeping. This is done by twisting the potentiometer located on the left side of the screen with a small flat-head screwdriver.

Note: The potentiometer only turns one complete rotation. Please use the flat-head screwdriver provided with your instrument to prevent damage to the screw head.

5. Adjust the water activity value to its proper value for the particular solution you are measuring.
6. Remeasure your verification standards. It should read the proper value for your particular standard $\pm 0.003a_w$.
7. Prepare and read a sample of distilled water. Read it twice. It should read $1.000 \pm 0.003a_w$.
8. If the water activity value of distilled water is correct, resume sampling. If, after adjusting for linear offset and cleaning the chamber, you still are getting incorrect readings when reading verification standards, contact Decagon at 509 332-2756 (1-800-755-2751 in US and Canada) for further instructions.

IV. Sampling Procedure

1. Make sure that the sample to be measured is homogeneous.
2. Place the sample in a disposable sample cup, completely covering the bottom of the cup, if possible.
3. **Do not fill the sample cup more than half full. Overfilled cups will contaminate the sensors in the sampling chamber!**
4. Make sure that the rim and outside of the sample cup are clean.
5. Turn the sample drawer knob to the OPEN/LOAD position and pull the drawer open.
6. Place your prepared sample in the drawer. Check the top lip of the cup to make sure it is free from sample residue (remember, an over-filled sample cup will contaminate the chamber's sensors).
7. Carefully slide the drawer closed, being especially careful if you have a liquid sample that may splash or spill and contaminate the chamber.
8. Turn the sample drawer knob to the READ position to seal the sample cup with the chamber. This will start the read cycle. In about 60 seconds, the first a_w measurement will be displayed on the display. Length of read times may vary depending on temperature differences between the chamber and your sample, and other properties of your sample.
9. When the AquaLab is finished measuring your sample, it will beep and the decimal point on the display will flash. The water activity and the sample temperature will be displayed on screen.
10. Remove sample from drawer when finished sampling.

Note: Do not leave samples inside the chamber overnight or for extended periods of time, as this can contribute to contamination of the chamber.