KNOW YOUR H_2O

Quick Reference Guide for Testing Water Quality

PURDUE UNIVERSITY | Extension - Forestry and Natural Resources

NOAA

Sea Grant ILLINOIS-INDIANA

IISG24-SFA-BRC-030

YSI Pro20i

Dissolved Oxygen Meter with Polarographic Sensor A

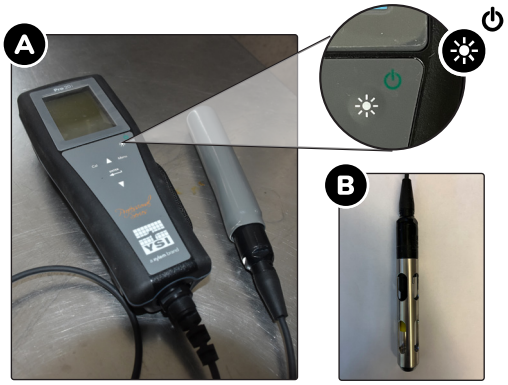
YSI PRO20i Manual

https://www.ysi.com/File%20Library/Documents/Manuals/YSI_Pro20_Pro20i_User_Manual_English.pdf

Product Page: https://www.ysi.com/ph10a

TAKING MEASUREMENTS

1. Turn the instrument on by pressing the power/backlight key.
2. Check that the barometric pressure and salinity compensation values located in the bottom left corner of the screen are correct. Change the values if they are not correct for your location and the salinity of the water.
   (See Changing Barometer Value and Changing Compensation Value).
3. Wait 5–15 minutes.
4. Place the probe B in the water and shake it to release any air bubbles.
5. Allow the temperature reading to stabilize.
6. Move the probe using a stirring motion. For the reading to be accurate, you must provide at least 6 inches (16 cm) per second of water movement.
7. Wait until the dissolved oxygen reading stabilizes. C
8. Record the measurement.
9. Press and hold the power/backlight key for 3 seconds to turn it off.



CHANGING BAROMETER VALUE

1. Determine the barometric pressure at your facility by using a barometer or by looking it up online.

Note: Weather readings are not "true" values, they have been corrected to sea level. Here is the manufacturer's suggestion for starting with a corrected barometric pressure.

$$\text{True BP} = \text{Corrected BP} - \left[2.5 \times \left(\frac{\text{Local altitude in feet above sea level}}{100}\right)\right]$$

2. Use the ▲▼ arrow keys to highlight the barometric pressure box. (D) This box has the unit mmHg (millimeters of mercury) below the value.
3. Press the ENTER button.
4. Adjust the barometer reading by using the ▲▼ arrow keys. To change the value more rapidly, continually press the up or down arrow keys.
5. Press the ENTER key once to confirm and then once more to save the new value.

CHANGING SALINITY COMPENSATION VALUE

1. Determine the salinity of the water.
2. Use the ▲▼ arrow keys to highlight the salinity box. (D) This box has the unit ppt (part per thousand) below the value.
3. Press the ENTER key.
4. Use the up or down arrow keys to change the value.
5. Press the ENTER key once to confirm and then once more to save the new value.

Note: The salinity compensation value can be changed at any time.

ONE TOUCH CALIBRATION

1. Leave the probe in the storage sleeve. (E)
2. Power the instrument on and wait 5–15 minutes to allow the sensor to stabilize.
3. Ensure the barometer reading is accurate.
4. Press and hold the calibration Cal key for 3 seconds.
5. Wait for the calibration to complete and the instrument display to return to the run screen.

Note: The instrument will automatically calibrate the sensor to the barometer and salinity correction values. This may take a couple of seconds to a couple of minutes. When the calibration is complete, the words Calibration Successful will display for a few seconds and then the run screen will reappear. If the calibration is unsuccessful, an error message will appear. If this happens press the Cal key to exit the calibration and read the Troubleshooting Guide in the manual.

(D) ▲▼

(E)

SAMPLE COLLECTION TIPS:

- Use a cleaned bottle with a secure lid.
- The representative sample should be around 1–2 liters.
- Label your sample collection bottle.

EcoSense pH10A

Pen Tester[A]

EcoSense pH10A Manual

https://www.ysi.com/File%20Library/Documents/Manuals/605112-pH10A-Instruction-Manual-RevC.pdf

Product Page: https://www.ysi.com/ph10a

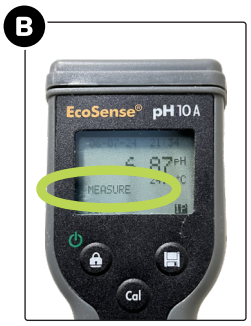
TAKING MEASUREMENTS

1. Press and hold the on/off key (lock) for 3 seconds to turn on.
2. Confirm that Measure is displayed on the run screen[B] indicating that the instrument is in measure mode.
3. Remove the storage cap.
4. Dip the electrode[C] into the sample and wait for temperature and pH readings to stabilize.
5. Record measurements.
6. Press and hold the on/off key for 3 seconds to turn it off.
7. Check the sponge in the storage cap. Moisten the sponge if it's dry . Put the storage cap on.

THREE POINT CALIBRATE pH

1. Press and hold the on/off key (lock) for 3 seconds to turn on.
2. Press Cal key for 2 seconds and release it to enter calibration mode.
3. Immerse the meter into pH 7.00 buffer solution.[D] WAIT will flash. The meter is calibrated when WAIT disappears. The meter will automatically enter the next calibration point 5 seconds later.
4. Repeat Step 3 for 2-point calibration by immersing the meter in pH 4.00 or 10.00 buffers. The meter will indicate which buffer solution to use.
5. Repeat Step 3 for 3-point calibration by immersing the meter in pH 4.00 or 10.00 buffers.
6. When WAIT disappears the unit will automatically return to Measurement mode.

Note: For accuracy, it is recommended that pH calibration is performed routinely with good buffer solutions. One and 2-point calibrations can also be done by Pressing the Cal key to exit after the first or second-point calibration is complete.



LaMotte

Aquaponics Test Kit (A)

Recommended Personal Protection:
Gloves, eye protection, and lab coat

LaMotte Aquaponics Test Kit Manual

https://lamotte.com/amfile/file/download/file/733/product/351/

Product Page: https://lamotte.com/aquaponics-kit-3637 · **Testing Procedures:** https://lamotte.com/amfile/file/download/file/732/product/351/

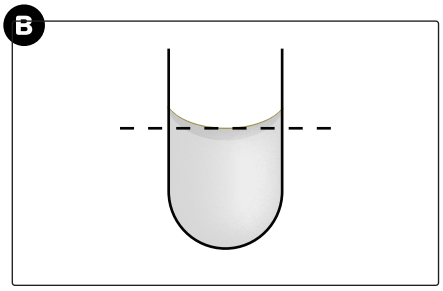
Note: Some reagents may be harmful if misused. It is recommended to read cautions on each container carefully. Not to be used by children except under adult supervision.

(A)

ADDING SAMPLE TO TEST TUBES

Fill to the appropriate mark. The bottom of the meniscus should be level with the desired mark. (B)

(B)



Measuring a concave meniscus

TOTAL AMMONIA NITROGEN

1. Insert Ammonia Nitrogen Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Fill 10 mL test tube to 5 mL line with water sample.
3. Add 10 drops Salicylate Ammonia #1. Cap and mix.
4. Remove the cap. Add 7 drops of Salicylate Ammonia #2. Cap and mix.
5. Wait 1 minute.
6. Remove the cap. Add 7 drops of Salicylate Ammonia #3. Cap and mix.
7. Wait 20 minutes.
8. Insert the test tube into the Octa-Slide 2 Viewer.
9. Match the color. Record measurement as ppm ammonia nitrogen (NH_3-N) also known as total ammonia-nitrogen.
10. **Extra Step:** To find the amount of unionized ammonia (NH_3) take ppm ammonia nitrogen (NH_3-N) and multiply by 1.2.

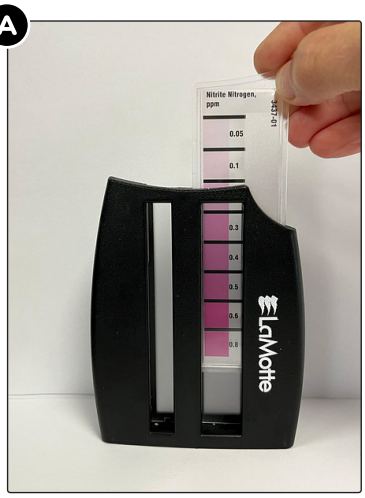
Unionized ammonia (NH_3) = ppm ammonia nitrogen (NH_3-N) × 1.2

Note: See page 12 of the LaMotte Aquaponics Test Kit Instruction Manual to learn how to calculate the amount of unionized and ionized ammonia at varying pH and temperature.

NITRITE NITROGEN Ⓐ

1. Insert Nitrite Nitrogen Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Fill 10 mL test tube to 2.5 mL line with water sample.
3. Add Mixed Acid Reagent to bring the diluted sample to the 5 mL line.
4. Use the 0.1 g scope to add 0.1 g of Color Developing Reagent. Cap and mix for 1 minute.
5. Wait 5 minutes.
6. Insert the test tube into the Octa-Slide 2 Viewer.
7. Match the color. Record measurement as ppm nitrite nitrogen (NO_3-N).
8. To convert to nitrite multiply result by 3.3.

nitrite-nitrogen (NO_3-N) × 3.3 = ppm nitrite (NO_2-)



NITRATE-NITROGEN Ⓑ

1. Insert Nitrate-Nitrogen Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Fill 10 mL test tube to 5 mL line with water sample.
3. Add 1 Nitrate #1 Tablet. Cap and mix until the tablet dissolves.
4. Add 1 Nitrate #2 Tablet. Immediately slide the test tube into a protective sleeve (0106-FP). Cap and mix unit tablet dissolves – about 2 minutes. Nitrate #2 CTA Tablets are sensitive to UV light. If testing indoors, there is no need to use the protective sleeve.
5. Wait 5 minutes. Remove from the protective sleeve.
6. Insert the test tube into the Octa-Slide 2 Viewer.
7. Match the color. Record measurement as ppm nitrate nitrogen (NO_3-).

pH Ⓒ

1. Insert Wide Range pH Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Fill 10mL test tube to 10 mL line with water sample.
3. Add 8 drops Wide Range pH Indicator. Cap and mix.
4. Insert the test tube into the Octa-Slide 2 Viewer.
5. Match the color. Record as pH.

ALKALINITY D

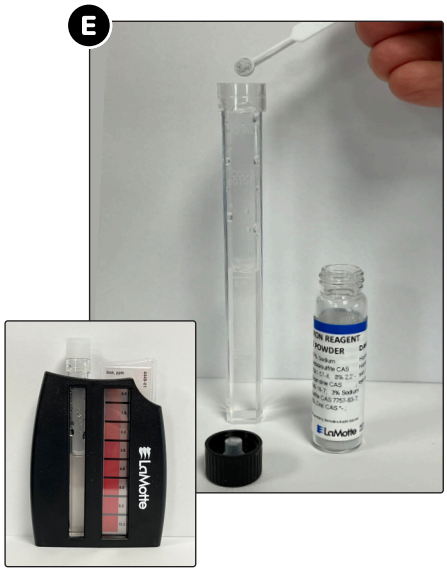
1. Fill the 25 mL titration test tube (CODE 0608) to the 5 mL line with sample water.
2. Add 1 BCG/MR Indicator Tablet . Cap and swirl until the tablet is dissolved and the solution is blue-green.
3. Fill the Direct Reading Titrator (0382) with Alkalinity Titration Reagent B.
4. Titrate the sample until the blue-green color changes to purple. Add one drop at a time and swirl. See the color chart.
5. Read the result from the scale. Record as ppm alkalinity ($CaCO_3$).

D

TOTAL IRON E

1. Insert Iron Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Rinse 10mL test tube with sample water.
3. Fill 10 test tube to 5 mL line with water sample.
4. Add 5 drops Iron Reagent #1. Cap and mix.
5. Use the 0.05g scope to add 0.05 g of Iron Reagent #2 Powder. Cap and shake until the powder dissolves.
6. Wait 3 minutes.
7. Insert the test tube into the Octa-Slide 2 Viewer.
8. Match the color. Record as ppm total iron.

E

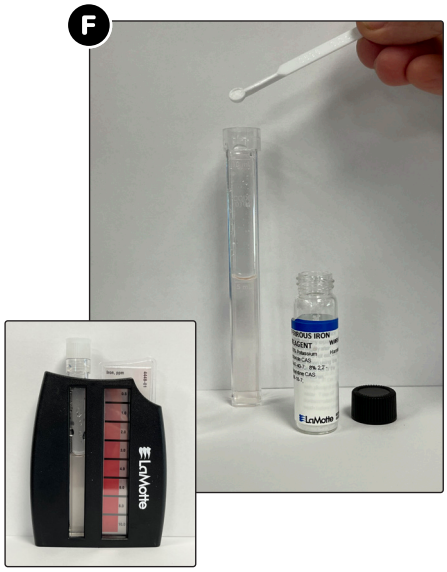


FERROUS IRON F

9. Insert Iron Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
10. Rinse the 10mL test tube with sample water.
11. Fill test tube to 5 mL line with water sample.
12. Add 5 drops Iron Reagent #1. Cap and mix.
13. Used the 0.05g scope to add 0.05 g of Ferrous Iron Reagent. Cap and mix.
14. Insert the test tube into the Octa-Slide 2 Viewer.
15. Match the color. Record as ppm ferrous iron.
15. **Extra Step:** Find ferric iron by subtracting ferrous iron from total iron.

Ferric iron = total iron - ferrous iron

F



LaMotte

Phosphate Test Kit[A]

LaMotte Phosphate Test Kit Manual

https://lamotte.com/amfile/file/download/file/743/product/212/

Product Page: https://lamotte.com/phosphate-test-kit-4408-01

LOW RANGE PHOSPHATE (0.5–10 PPM)[B]

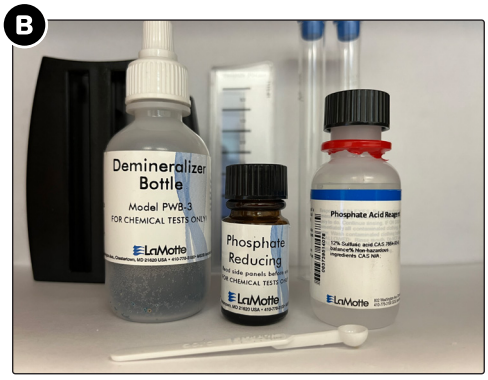
1. Insert Phosphate Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Fill 10 mL test tube to 10 mL line with water sample.
3. Use a 1.0 mL pipette to add 1.0 mL of Phosphate Acid Reagent. Cap and mix.
4. Use a 0.1 g scope to add 0.1 g of Phosphate Reducing Reagent. Cap and mix until dissolved.
5. Wait 5 minutes.
6. Insert the test tube into the Octa-Slide 2 Viewer. Hold the viewer so that no direct light enters through the back.
7. Match color. Record as ppm phosphate.

WIDE RANGE PHOSPHATE (5–100 PPM, 1:10 DILUTION)[C]

1. Insert Phosphate Octa-Slide 2 Bar into the Octa-Slide 2 Viewer.
2. Use a 1.0 mL pipette to add 1.0 mL of sample water to a 10 mL test tube.
3. Dilute to 10 mL line with deionized water from the Demineralizer Bottle.
4. Using a second 1.0 mL pipette add 1.0 mL of Phosphate Acid Reagent. Cap and mix.
5. Use a 0.1 g scope to add 0.1 g of Phosphate Reducing Reagent. Cap and mix until dissolved.
6. Wait 5 minutes.
7. Insert the test tube into the Octa-Slide 2 Viewer. Hold the viewer so that no direct light enters through the back.
8. Match color. Record as ppm phosphate.

A

B



C