- HM Digital PH-80 Handheld Hydro Tester pH Meter:
- The PH-80 is a **reliable pH meter** that is ideal for testing applications such as hydroponics & gardening, pools & spas, aquariums & reef tanks, water ionizers, drinking water and more.
- The PH HydroTester Handheld Meter measures **pH and Temperature**.
- The HM Digital PH-80 has **one-touch automatic digital calibration**.
- This pH Meter is **water resistant**.
- The Handheld Hydro Tester PH-80 **displays temperature simultaneously**.
- This handheld ph Meter has a **sleek and lightweight design**.
- The PH80 has a **large LCD display**.
- This pH Meter has **Automatic Temperature Compensation (ATC)**.
- Includes storage solution in a sponge embedded in a translucent cap.
- The Hydro Tester has an auto-off function, data-hold function and low-battery indicator for convenience.
- The PH-80 is **factory calibrated to pH 7.0**. The meter can easily and quickly be recalibrated to pH 4.0, 7.0 or 10.0 using the meter's simple one-touch process.
- This pH Meter **includes a cap, batteries, storage solution and pH 7.0 buffer**.

**NOTE:** Your PH-80 is shipped with the sponge in the cap dry. Prior to use, pour a small amount of storage solution from the Mylar packet into the sponge so that the sponge is moist (not dripping wet). Put the cap back on and allow to soak for 15 minutes (standing upright) prior to use. Additional electrode storage solution is available for purchase.

## Calibration, Care and Maintenance

### TDS & EC Calibration

1. HM Digital meters come factory calibrated (at 342 PPM or 1413 µS, depending on the product) and are ready to use out of the box. They are designed to stay consistent. However, after prolonged usage, it may help to recalibrate your meter using a commercial standard NaCl-based solution (for most HM Digital meters), which is approximately, 0.5 µS of conductivity.
2. Immerse the meter into the calibration solution. If the meter does not read within 2% of the calibration solution, adjust the reading by either digital calibration (for some products) or inserting a mini screwdriver (not included) into the trimmer pot (the hole on the back of the meter). Turn the trimmer clockwise to increase the reading and counterclockwise to decrease the reading. Note that the adjuster is very sensitive. Always refere to the calibration instructions for your particular product.

**Note:** HM Digital products are calibrated with a 342 PPM NaCl or 1413 *µS* solution. This is suitable for most applications. However, if you are measuring samples that are consistently over 1000 PPM, it is recommended to recalibrate the meter for that specific application. TDS meters are more accurate when calibrated at levels that are as close as possible to the sample being tested (such as for hydroponics, aquaculture, tinting and dying or brackish water). HM Digital sells NaCl calibration solution at 342 PPM and 1000 PPM. Calibration solutions at signifcantly higher levels are commercially available.
View calibration instructions (for the TDS-EZ, TDS-3, TDS-4, TDS-4TM)
View calibration instructions (for the AP-2)
Click here for details about HM Digital's calibration solutions.

**Care & Maintenance**

3. Do not drop or completely submerge the unit in water or dip beyond the maximum immersion level. This unit is not watertight and is not covered under the warranty if water gets into the unit. (NOTE - The COM-100, PH-200 and ORP-200 are watertight and completely submersible. Please ensure that the battery compartment and probe gasket ring are firmly tightened before submersing in water.)
4. Do not store the unit in high temperature or direct sunlight. This will shorten the lifespan of the product.
5. After repeated usage in high TDS water, it is advised to clean the electrodes to prevent residue build-up.
6. When necessary, clean the electrodes by soaking the tip in an acid (e.g., vinegar or diluted hydrochloric acid (muriatic acid)) and then rinsing well in water. If it is heavily fouled with organic material, soaking the tip in alcohol or bleach may help. Gentle wiping with a soft, nonabrasive cloth may also be acceptable.
7. For best results, always rinse the sensor pins in distilled water and allow to air dry before replacing the cap. TDS electrodes should be stored dry. (NOTE: pH and ORP electrodes must be stored in a special storage solution.)
8. The batteries may need to be replaced after extended usage or lifespan. To change the batteries, remove the top compartment of the meter (on the opposite end of the sensor for handhelds, on the rear of the unit for monitors) and insert new batteries according to the polarity of the diagram inside.

Read our warranty.

## ADDITIONAL INFORMATION ABOUT CALIBRATING TDS/EC METERS & TESTERS

Any brand TDS meter can be calibrated to any brand of calibration solution.
The issues are 1) what the calibration solution composition is; and 2) what the value of that calibration solution is.

**Calibration Solution Composition**

The calibration solution composition should match the conversion factor of the meter. HM Digital's TDS-3, for example, uses the NaCl conversion factor, so a NaCl calibration solution should be used. HM Digital's COM-100 uses one of three selectable conversion factors (NaCl, 442 or KCl), so any of these three types of calibration solutions can be used for the COM-100.
It should be noted that calibration compositions have equivalent values in alternate compositions. Better brands of calibration solutions print the equivalent values directly on the label or in the instructions. For example, 1060 ppm KCl = 1000 ppm NaCl. Therefore, if you have a 1060 ppm KCl calibration solution, but a meter with the NaCl conversion factor, such as the TDS-3, you can still calibrate the TDS-3 with the KCl calibration solution. In other words, if putting the TDS-3 into a 1060 ppm KCl solution, the meter should read 1000 ppm.
For EC meters, there is no convesion factor, so the points above are not relevant.
**Note - Some brands do not print the calibration solution composition on the label. Though NaCl is the most common, it is always recommended to contact the calibration solution manufacturer for verification of the composition.

**Calibration Solution Values**

All of HM Digital meters can be calibrated to any point within the range of the meter. For example, the TDS-4 has a range of 0-9990 ppm. Therefore, it can be calibrated to any point within that range. The COM-100 has varying ranges depending upon the conversion factor that is selected. On the TDS side, these ranges are from 0-5000 ppm to 0-8560 ppm. On the EC side, the COM-100's range is 0-9990 $\mu$S. Therefore, the COM-100 can be calibrated to any value within the selected range.
Certain brands of TDS/EC meters can only be calibrated to specific values that are pre-programmed into the meter. HM Digital does not do this.

**Benefits of HM Digital's TDS/EC Calibration Solutions**

9. Laboratory quality NIST-traceable solutions
10. Solutions list alternate composition equivalents on the bottle labels.
11. Bottles are a convenient 3 oz. (88 ml) size - neither too big nor too small.
12. Bottles have a convenient wide mouth, allowing a user to simply insert the meter into a stable bottle (much easier to use than a wobbly Mylar pouch).

**Additional Notes about TDS/EC Meters and Calibration**

For best results, a meter should be calibrated as close as possible to what will be tested. For example, if the water you are testing is always around 150 ppm, then the meter should be calibrated as close to 150 ppm as possible.

If you are testing a range of values, the meter should be calibrated to the upper third of that range. For example, if you are testing RO water and tap water, and the RO water is approximately 0-10 ppm and the tap water is typically 400-500 ppm, the meter should be calibrated to approximately 350 ppm.

13. The average tap water in the U.S. is approximately 350 ppm (though this varies widely from location to location and can be anywhere from zero to greater than 1000 ppm). Therefore, HM Digital factory calibrates our meters to 342 ppm.
14. All HM Digital meters are factory calibrated. Therefore, calibration is not necessary out of the box. Typically, with proper care and normal usage, HM Digital TDS and EC meters will retain their calibration for at least a year.
15. Only calibrate a meter if you are sure you need to. As a general rule of thumb, if you are unsure if you need to calibrate, you probably don't. It is always safer not to calibrate than to attempt doing so.
16. Though calibrating correctly will improve results, for normal usage and ranges, the difference will not be dramatic.
17. Never calibrate a meter to the air.
18. Never calibrate a meter to distilled water.
19. Never calibrate a meter to tap water, or any water or solution that is not certified.
20. HM Digital calibration solutions have a shelf life of approximately 1 year unopened.
21. Once opened, HM Digital calibration solutions have a shelf life of approximately 6 months, if properly stored and not contaminated.
22. All calibration solutions should be stored in a cool place, out of the heat and sun.
23. Contamination can occur if dipping a meter in water or a second calibration solution with a different value, and then dipping that meter back into the first calibration solution. The droplets from the water and other calibration solution will change the value. If testing between water and a calibration solution, always let the meter air dry or spray it with a compressed air can to avoid contamination.