

VER2.2E.US.BK(W-US)

**AP-1 LIMITED WARRANTY**

This HM Digital, Inc. ("the Company") product (Digital Refractometer) is warranted to the purchaser against defective materials and workmanship for one (1) year from the date of purchase.

**What is covered:** Repair parts and labor, or replacement at the Company's discretion. Transportation Charges for repaired or new product to be returned to the purchaser.

**What is NOT covered:** Transportation charges for the defective products to be sent to the Company. Any consequential damages, incidental damages, or incidental expenses, including damages to property. This includes damages from abuse or improper maintenance such as tampering, wear and tear, water damage, or any other physical damage. The product is water resistant and splash proof. Therefore please ensure that the battery compartment is firmly tightened before use. The warranty does not cover water damage to the product due to parts not securely closed.

**To obtain warranty service,** please contact 800.383.2777 or email [Warranty@HMDigital.com](mailto:Warranty@HMDigital.com) to receive further instructions. Before sending the product back to us, please include the following below.

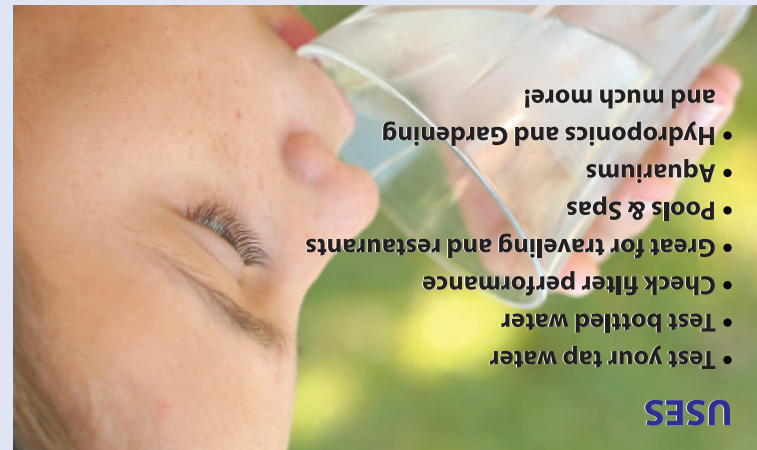
- Your name
- Phone number/ Address
- Description of problem
- Proof of purchase, must include Date

**\* If a returned product does not include the above-mentioned items, the Company reserves the right to refuse warranty service.**

**Implied Warranties:** Any implied warranties, including implied warranties of merchantability and fitness for a particular purpose, are limited in duration to **ONE YEAR** from the date of purchase. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. To the extent any provision of this warranty is prohibited by federal and state law and cannot be preempted, it shall not be applicable. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

**NOTE:** Warranties are product-specific. Third-party products and products deemed by HM Digital as "accessories" are not covered under warranty. Third-party products include, but are not limited to, batteries and spool. Accessories included, but not limited to, detachable cover and product boxes.

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**USES**

- Test your tap water
- Check filter performance
- Great for traveling and restaurants
- Pools & Spas
- Aquariums
- Hydroponics and Gardening
- and much more!

Thank you for purchasing HM Digital's **Aquapro** digital water tester (model AP-1). The **Aquapro** is your first step in determining your water quality, or checking if your water filtration or purification system needs service. With a simple push of a button, the **Aquapro** will measure levels of Total Dissolved Solids (TDS) in your water. See the TDS section inside this User's Guide for more information on TDS and how to use the **Aquapro**.

**FEATURES**

- Measures TDS and Temperature
- Digital calibration
- Easy-to-read display
- Wide range
- Water-resistant
- Auto-off, data hold and magnetic housing

**SPECIFICATIONS**

- TDS Range:** 0-5000 ppm (mg/L)
- Temperature Range:** 0-80°C; 32-176°F
- Resolution:** 1 ppm; Temp. resolution is 0.1°C/F
- Accuracy:** +/- 2% (of the reading)
- Calibration:** Factory calibrated to 342 ppm; adjustable by digital calibration by push button
- Automatic Temperature Compensation:** Yes
- Power Source:** 1 x 3V button cell (model CR2032)
- Auto Shut-Off:** After 5 minutes
- Dimensions:** 15 x 2.8 x 1.3 cm (5.9 x 1.1 x .5")
- Weight:** 42.5 g (1.5 oz)

**Unfold and open for complete usage instructions**



**HM Digital, Inc.**  
 Los Angeles, CA USA  
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 info@hmdigital.com / HMDigital.com

**aquapro**  
 digital water tester  
**USER'S GUIDE**



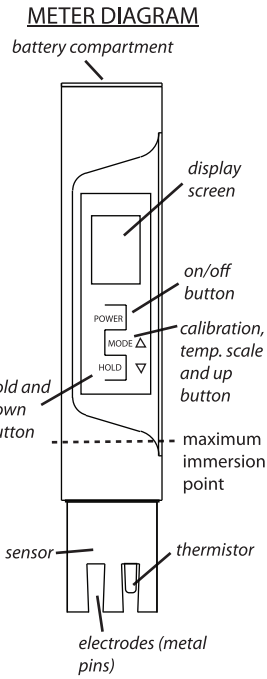
model AP-1

**HOW PURE IS YOUR WATER?®**

# TAKING MEASUREMENTS

## TDS

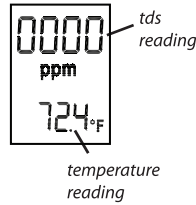
1. Remove the sensor cap (at the bottom of the meter, below the logo).
2. Press the POWER button to turn the meter on. The display should always read zero in the air (unless there is residual water on the electrodes).
3. Immerse the meter into the water/solution up to the maximum immersion point (just over the logo).
4. Lightly stir the meter to dislodge any air bubbles.
5. You will immediately see the TDS level on the screen (the top number) change. Allow the reading to stabilize (approx. 10 seconds). This is the TDS level of your water.
6. To view the reading out of the water, press the HOLD button once. This will freeze the reading on the screen. To release the reading, press the HOLD button again. The TDS reading will reset to zero.
7. After usage, turn off the power and shake any excess water from your meter. Replace the cap.
8. When not in use, place the AquaPro on your refrigerator for easy access (it's magnetic).



## Temperature

1. Remove the sensor cap.
2. Press the POWER button to turn the meter on.
3. The temperature will always be displayed on the screen, in liquid or in air.
4. To change from Fahrenheit (°F) to Celsius (°C), press the MODE button once. This will toggle between the two temperature scales.
5. To freeze the temperature reading, press the HOLD button once. This will freeze the reading on the screen. To release the reading, press the HOLD button again.
6. After usage, turn the power off and shake any excess water from your meter. Replace the cap. Store on your fridge!

## DISPLAY DIAGRAM



## CALIBRATION

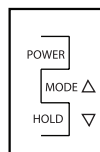
The AP-1 is factory calibrated to 342 ppm NaCl. This means that it is ready for use right out of the box for the majority of applications, including any type of drinking water. However, like all instruments, it may need to be tuned (aka calibrated) once in a while. Or, you may wish to re-calibrate the meter for certain testing applications.

With normal usage and care, the AP-1 will retain its calibration for 1-2 years. You can determine if the AP-1 needs to be re-calibrated if you believe the readings are incorrect, or by testing the meter with a certified calibration solution (available from most HM Digital distributors).

If you are using the AP-1 to test water or solutions for aquariums, hydroponics, or other applications where the TDS will be greater than 1000 ppm, it is suggested that you re-calibrate to a higher point for best results.

NOTE: If you are unsure about calibration, consult a professional. Also, do not switch the meter into calibration mode, unless you are certain you need to re-calibrate the meter. If you accidentally enter calibration mode, turn the meter off immediately to cancel the operation, so that you do not risk calibrating the meter to zero.

1. Before attempting to re-calibrate the AP-1, make sure to have a certified bottle of NaCl calibration solution. Any brand will work. Never calibrate the meter to distilled or de-ionized water (below 2 ppm).
2. Press the POWER button to turn the meter on. Dip the meter into the calibration solution. If the reading matches the TDS value of the calibration solution level, then you do not need to re-calibrate the meter.
3. If the reading does not match the calibration solution, press and hold the MODE button for five seconds. The temperature reading will switch to "CAL."
4. Change the reading so that it matches the calibration solution. Raise the reading by pressing the UP (MODE) button. Lower the reading by pressing the DOWN (HOLD) button.
5. Once the reading matches the calibration solution level, press the POWER button to calibrate the meter. The screen will show "C-CA-CAL" while calibrating and show "End" when finished.



# WHAT IS TDS?

**Total Dissolved Solids (TDS)** are the total amount of mobile charged ions, including minerals, salts or metals dissolved in a given volume of water. TDS, which is based on conductivity, is expressed in parts per million (ppm). TDS includes any conductive inorganic elements present other than the pure water molecules (H<sub>2</sub>O) and suspended solids.

TDS affects everything that consumes, lives in or uses water, from fish and plants to plumbing and laboratories. The lower the TDS level, the purer the water.

For people, the lower the TDS level in the water you drink, the more efficiently your body's cells are hydrated. The higher the TDS level in water, the greater the probability of harmful contaminants that can pose health risks or hinder the absorption of water in the body.

## TDS & Water Hardness

High TDS indicates hard water, which causes scale buildup in pipes and valves. Since TDS is related to water hardness, using a TDS meter can be your first step in determining the degree of hardness of the water. Generally speaking, the higher the level of TDS, the higher the degree of hardness.

Water hardness is typically measured in grains per gallon. One grain of hardness equals approximately 17 ppm in TDS. Note: Since TDS includes hard and soft solids, 17 ppm does not necessarily equal 1 grain of hardness. Consult a professional for water hardness problems.

## TDS & Water Filtration / Purification Systems

If you have a filter or RO system in your home, you need to periodically check the water it produces to make sure it's working properly. The performance of RO systems and filters are measured by the amount of TDS reduced by the filters and membranes.

Check the TDS levels of both your tap water and water filtration system monthly to ensure optimum performance. To determine the percent rejection, please visit [www.tdsmeter.com](http://www.tdsmeter.com) and click on "What is TDS?" and "Filter Performance" for a percent rejection calculator.

⇒ Consult your system manufacturer for optimum TDS levels and settings.

# GENERAL INFORMATION ABOUT WATER PURITY

The AquaPro will detect most metals, minerals and inorganic elements, and is therefore your first step in determining water quality. If the TDS level of your water is very high (see the chart on the opposite side), you may wish to contact your local water department for a complete analysis or have a water sample sent to a laboratory for analysis. Contact info for state certification offices can be found at [www.epa.gov/safewater/faq/sco.html](http://www.epa.gov/safewater/faq/sco.html). If you do not have access to the internet, call the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

The TDS in your water may or may not be harmful, but it will always determine water purity, and at certain levels, TDS will affect taste and hydration. Microorganisms, organic chemicals and suspended solids will not be detected by the AquaPro.

Harmful contaminants found in water that the AquaPro will detect include arsenic, asbestos, cadmium, chromium, copper, cyanide, lead, mercury, nitrates, selenium, thallium and more.

**The U.S. EPA's Maximum Contaminant Level for TDS is 500 ppm.**

For more information on TDS, visit [HMDigital.com](http://HMDigital.com)

# CARE & MAINTENANCE

The AP-1 requires very little maintenance. You may need to change the batteries or clean the unit or the electrodes from time to time. In addition, please note these general techniques:

1. Do not store the unit in high temperature or direct sunlight.
2. Do not touch the platinum electrodes (sensor pins). Skin oils may adversely affect the reading. If you do touch the electrodes, clean immediately with alcohol or distilled water.
3. After repeated usage in high TDS water, it is advised to clean the electrodes to prevent residue build-up.
4. For best results, always stir or tap the meter in the water sample to remove any air bubbles or lingering electrical charges.
5. Water volume, positioning of the electrode in the water sample and temperature may affect the reading. Minor fluctuations are normal.
6. Do not keep the meter in very hot water for extended periods of time.
7. If testing high TDS water (e.g., greater than 1000 ppm), make sure to rinse the electrodes with DI or distilled water after each test to ensure accurate readings and prevent build-up of TDS on the electrodes.

## Changing the batteries:

If the meter does not turn on, has a faded display or incorrect readings, the battery may be dead.

To change the battery:

1. Remove the battery compartment on the top of the meter using your fingernail. It is firmly in the meter, but it will slide out. Remove and properly discard the old battery.
2. Insert a new battery (model CR2032 or equivalent) with the correct polarity. There are small plus and minus symbols on the bottom of the white compartment tabs.
3. Close the battery compartment. The positive side should face forward. Make sure it is tightly closed to retain waterproofness.

## Cleaning:

To clean the unit, use a soft tissue or towel. Wipe with water and a mild soap.

To clean the electrodes, use rubbing alcohol and a cotton swab. Lightly clean the electrodes. Rinse with DI or distilled water. Air dry.