What is TDS?

Total Dissolved Solids (TDS) are the total amount of inorganic elements, including minerals, salts or metals dissolved in water, other than the pure water molecules (H₂O) and suspended solids. A TDS meter works by measuring the total amount of mobile charged ions dissolved in a given volume of water, expressed in total quantity as parts per million (ppm), or in weight as mg/liter. TDS is directly related to the purity of water and the quality of water purification systems. TDS affects everything that consumes, lives in, or uses water, whether organic or inorganic, for better or for worse. For people, a lower TDS level in drinking water is typically preferred.

The U.S. EPA's Secondary Regulations for drinking water advise a maximum contamination level of 500 ppm for TDS.

Warranty

This product is warranted to the purchaser against material and workmanship for one (1) year from the date of purchase.

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

What is not covered: Transportation charges for the defective product 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. This product is not waterproof and should not be fully submerged in water. Products with any evidence of such damage will not be repaired or replaced.

How to obtain warranty performance: Include with the product, your name, address, phone number, description of problem, and proof of date of purchase and return to:

HM Digital, Inc.
ATTN: Returns
5819 Uplander Way
Culver City, CA 90230
U.S.A.

Implied Warranties: Any implied warranties, including implied warranties of merchantability and fitness for a particular purpose, are limited in duration to five years from 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, fittings and adhesives.

Please contact the manufacturer of your water system for recommended TDS levels.

Reverse Osmosis (RO) systems work by filtering the tap water and rejecting the waste water. You can determine your system’s effectiveness by calculating the percent rejection rate.

HOW TO CALCULATE PERCENT REJECTION FOR RO SYSTEMS

((Tap TDS - RO TDS) ÷ (Tap TDS)) x 100 = Percent Rejection

Example: Tap TDS = 361 ppm and RO TDS = 18 ppm. Percent rejection = 95%.

Contact the manufacturer of your system to determine minimum percent rejection levels and when to change the filter or membrane.

TRIPLE INLINE
TDS MONITOR
model TRM-1
USER'S GUIDE

Measure the TDS levels of water at three different sensing points, such as the tap water, RO water and DI water, or, in three different water lines, tanks or reservoirs.

The TRM-1 is an ideal monitor to know if a filter cartridge, resin cartridge or membrane is functioning effectively. Install the TRM-1 so you’ll always know how a water filtration or purification system is performing.

PARTS
TRM-1: Base Unit (LCD Display)
3 x 1/4” T-fittings (standard)
2 x 1.5V Batteries (pre-installed)

www.hmdigital.com
info@hmdigital.com

Designed in USA and Korea
Made in China

An ISO-9001 Certified Company

TRM-1: Base Unit (LCD Display)
3 x 1/4” T-fittings (standard)
2 x 1.5V Batteries (pre-installed)
**SPECIFICATIONS**

- **TDS Range:** 0-9990 ppm
- **Resolution:** 0.1 ppm
- **Accuracy:** +/-2%
- **Conversion Factor:** NaCl (avg. of 0.5)
- **Factory Calibration:** 442 ppm NaCl
- **Sensor Cable Length:** 24.5” (62.2 cm) (including sensor)
- **Power Source:** 2 x 1.5V batteries (model 357A)
- **Auto Shutoff:** After 10 minutes
- **Battery Life:** Approximately 2 years
- **Base Unit Dimensions:** 3 x 0.8 x 1.9 in (7.6 x 2 x 4.7 cm)
- **Base Unit Weight:** 2.8 oz (79.4 g) (including batteries)

**CARE AND MAINTENANCE**

Very little care is necessary for your TRM-1:

- Never touch the sensor pins, as oils or other substances may adversely affect the TDS measurement.
- To clean the sensor pins, use a soft, dry cloth to remove any debris or dust.
- Avoid leaving the TRM-1 in direct sunlight or extreme temperatures, as this can cause internal damage.
- If the readings are off from what they should be, replace the batteries or recalibrate the TRM-1.

Avoid removing the fittings from the sensors. Excessive removal and insertion of the fittings can damage the sensors and potentially cause leaks.

Frequently Asked Questions (FAQs)

1. What should the TDS readings be?
   - For drinking water and filter performance, lower the TDS level, the better. There is never a "right" or "wrong" number. For RO performance, calculate the percent rejection to determine performance levels. Contact the manufacturer of your filter system for recommended levels.
2. My TDS levels fluctuate. Is this normal?
   - Yes. Slight fluctuations are normal. A variety of factors affect the reading.
3. Does the TRM-1 have an alarm or programmable set point?
   - No. You will need to view the readings. Model GC-1, FM-1, FM-2 and others have alarms.
4. How will I know when the batteries need to be replaced?
   - If the display fades, the monitor does not power on, or the readings are incorrect, you may need to change the batteries.
5. Can I use the TRM-1 to monitor a water softener?
   - No. Water softeners do not remove TDS. Model FM-2 is suggested for softeners.
6. Where can I get more information on water quality?
   - Visit www.HMDGlobal.com

**INSTRUCTIONS**

The TRM-1 can be configured in a variety of ways, depending upon your needs. For example, if using the TRM-1 with an RO/DI setup, connect Line 1 (red) to the feed (tap) water, Line 2 (blue) after the RO system and Line 3 (green) after the DI system. If using a multi-stage RO system, connect Line 1 (red) to the feed water, Line 2 (blue) after the pre-filters and Line 3 (green) after the membrane. The TRM-1 can also be used for monitoring TDS levels in up to three different tanks/reservoirs.

**Installation**

To install the TRM-1 to an RO system and DI system:

1. Insert the white sensors fully into the bottom (stem) of the T-fitting.
2. Orient the sensor pins so that they are perpendicular to the direction of the T. The water should flow through both pins equally. (You should be able to see both pins of the T you look through the fitting branches.) See Illustration #1 below.
3. Unconnect the water source.
4. Snip the source (tap) water tube at a point between the source and the filter. Insert both ends of the tube into the top of the Line 1 (red) sensor’s T-fitting. See Illustration #2.
5. Snip the RO product water tube at a point between the membrane and DI system. Insert both ends of the tube into the top of the Line 2 (blue) sensor’s T-fitting.
6. Snip the DI water tube at a point after the DI system. Insert both ends of the tube into the top of the Line 3 (green) sensor’s T-fitting.
7. The TRM-1 monitor can be attached anywhere on or near the water system using the Velcro tape. Most commonly, the monitor is attached to the water filter system.
8. Recalibrate the water source. Your monitor is now ready for use.

**NOTE:** Consult a professional plumber for specific installation questions.

**USE**

1. Press the “POWER” button.
2. To display the TDS level of the feed (tap) water, slide the switch to LINE 1 (left position). To display the TDS level of the RO product water or second point, slide the switch to LINE 2 (center position). To display the TDS level of DI water, slide the switch to LINE 3 (right position).
3. The displayed TDS will be most accurate after approximately 10 seconds.
4. Determining filter effectiveness depends on your particular system. For an RO system, for example, compare the feed water TDS levels with the product water TDS.
5. If the “x10” icon appears, this means the TDS level is above 999 ppm. Therefore, multiply the reading by 10. For example, if the display shows 148 ppm with the “x10” icon, the actual TDS level is 1480 ppm. (If the “x10” icon does not appear, the reading on the display is the actual TDS level.) For most filtered water, you will not see the “x10” icon.
6. Turn off the unit. It will automatically shut off after 10 minutes.

**CALIBRATION**

Your monitor was factory calibrated to 342 ppm. This level is suitable for most tap water filtered water applications, so it is ready to use out of the box. However, you may need to recalibrate based on your needs, as well as from time-to-time to ensure best results. To calibrate:

- All three sensors must be calibrated together at the same time.

1. Purchase a certified calibration solution that is correct for your needs. The calibration solution must be made of NaCl (sodium chloride). HM Digital’s solutions are recommended.
2. Disconnect the T-fittings from their tubes. Do not remove the sensor from the T. Ensure the orientation of the sensor to the fitting is correct, as in Illustration #1. Snake any water out.
3. For better accuracy, calibrate to a flowing solution. If this is not possible, you can calibrate to a still solution. Turn on the monitor and place each T-fitting (with the sensors in it) into the calibration solution. You will get a reading. Ensure the fitting is completely filled with solution and there are no air bubbles. This step is critical for proper calibration.
4. If the reading on the monitor (for the sensor in the solution) does not match the solution, adjust the reading up or down by gently turning the plastic orange screw on the rear of the unit clockwise or counterclockwise to raise or lower the reading.
5. There is one calibration screw to calibrate all three sensors simultaneously. You only need to calibrate one sensor, and it does not matter which.
6. If calibrating to a still (not flowing) solution, calibrate to 3% above the level of the calibration solution. This will accommodate for the lack of flowing water, which the monitor is programmed for. For example, if the calibration solution is 342 ppm, adjust the screws until it reads 352 ppm. If you are calibrating to a flowing solution, calibrate to the level of the solution.
7. Your monitor is now calibrated. There is no need to do anything else.

**TROUBLESHOOTING**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential Solution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ERROR</strong> display (error)</td>
<td>1. The water is out of the monitor’s TDS range, 2. The sensor cable is loose or unplugged. Push the cable connector securely into the monitor.</td>
</tr>
<tr>
<td>Incorrect readings</td>
<td>1. Re-calibrate the monitor, 2. Change the batteries.</td>
</tr>
<tr>
<td>The reading on Line 1 is lower than Line 2 or Line 3</td>
<td>1. Check your connections. The sensors may be reversed.</td>
</tr>
</tbody>
</table>

*Push tubing straight in as far it can go.*

To remove, push in and pull the tubing out.