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.

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

HOW TO CALCULATE PERCENT REJECTION

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

Example: Tap TDS = 352 ppm and RO TDS = 18 ppm. Percent rejection = 94.9%.

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

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

TROUBLESHOOTING

Issue	Potential Solution(s)
Err display (error)	1. The water is out of the monitor's TDS range. 2. The sensor cable is unplugged. Open the back panel and connect the cable securely.
Incorrect readings	1. Re-calibrate the monitor. 2. Change the batteries.
Faded display	1. Change the batteries.
The "OUT" reading is higher than the "IN" reading	1. Check your connections. The sensors may have been reversed.

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 nor replaced.

To obtain warranty service, please contact 800.383.2777 or email 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 five years 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, fittings, and adhesives.

HMDigital.com
info@HMDigital.com

Designed in USA and Korea

An ISO-9001 Certified Company

COMMERCIAL DUAL INLINE TDS MONITOR

model DM-1

USER'S GUIDE

Measure the TDS levels of two different water lines, such as the tap water and filtered water, at any time.

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

Useful links for more information

More information on TDS:
HMDigital.com/what-is-tds

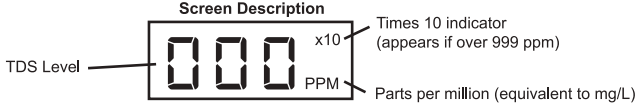
DM-1 page:
HMDigital.com/product/dm-1

VER2.1E.US.BK(W-US)

SPECIFICATIONS

TDS Range: 0~9990 ppm
Resolution: 0~999: 1 ppm
1000~9990: 10 ppm (indicated by a blinking 'x10' icon - multiply the reading by 10)
Accuracy: ±2% (of the reading)
Conversion Factor: NaCl (avg. of 0.5)
Factory Calibration: 342 ppm NaCl (digital calibration)
Sensor Cable Length: 24.5" (62.2 cm) (including sensor)
Power Source: 2 x 1.5V batteries (LR44)
Auto Shut-Off: After 10 minutes
Base Unit Dimensions: 3.0 x 0.8 x 1.9 in (7.6 x 2.0 x 4.7 cm)
Base Unit Weight: 2.8 oz (79.4 g) (including batteries)

Screen Description



Base Unit Weight: 7.9 oz (224.3 g) (including batteries)

CARE AND MAINTENANCE

Very little care is necessary for your DM-1.

- Never touch the sensor pins, as skin oils may adversely affect the TDS measurement.
- To clean the sensor pins, clean with rubbing alcohol and let air dry.
- Avoid removing the fittings, as doing this often may strip the plastic off the sensor and potentially cause a leak.
- If you notice the readings are off from what they should be, replace the batteries or re-calibrate.

→ ***Avoid removing the fittings from the sensors. Excessive removal and insertion of the fittings could ultimately scratch the sensor and potentially cause leakage.***

Frequently Asked Questions (FAQs)

1.What should the TDS readings be?
→ For drinking water and filter performance, the lower the TDS level, the better. There is never a "right" or 'Wrong" number. For filter 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 from day-to-day. A variety of factors affect the reading.
3.Does the DM-1 have an alarm or programmable set point?
→ No. You will need to view the readings. Models QC-1, PM-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 DM-1 to monitor a water softener?
→ No. Water softeners do not remove TDS. Models FM-1 or FM-2 are suggested for softeners.
6.Where can I get more information on water quality?
→Visit www.hmdigital.com

INSTRUCTIONS

The DM-1 can be configured in a variety of ways, depending upon your needs. Typically, the IN line (line 1) is connected to the source (tap) water, and the OUT line (line 2) is connected to the product (filtered) water. The DM-1 can also be configured with multiple systems, such as an RO/DI combination, as well as with HM Digital's Single Inline TDS Monitor (model SM-1).

INSTALLATION

To install the DM-1 to a water purification or filtration system:

1. Insert the white sensors fully into the bottom of the T-fittings.
2. Orient the sensor pins so that they are perpendicular to the direction of the T. The water should flow over both pins equally. (You should be able to see both pins of you look through the fitting.) See illustration #1 below.
3. Disconnect 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 IN line sensor's T-fitting. See illustration #2.
5. Snip the product (filtered) water tube at a point between the filter and a dispenser. Insert both ends of the tube into the top of the OUT line sensor's T-fitting. See illustration #2.
6. The DM-1 monitor can be attached anywhere on or near the water system using velcro tape.
7. Reconnect the water source. Your monitor is now ready for use.

NOTE: *Consult a professional plumber for specific bracket or connection questions.*

Illustration #1
To insert the sensor into the fitting

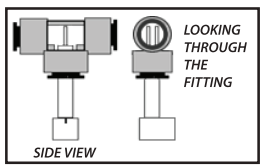
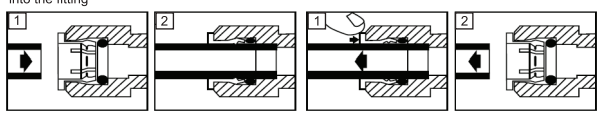


Illustration #2
To insert the tubing into the fitting



Push tubing straight in as far as it can go. To remove, push in small collet and pull the tubing out.

CHANGING THE BATTERIES

If the display is fading or the readings are incorrect, you may need to change the batteries.

1. To replace the batteries, unscrew the three metal screws (not the orange plastic screw) on the rear of the unit and remove the back panel.
2. Remove the batteries.
3. Replace both batteries with two fresh batteries (LR44). Ensure the polarity is correct.
4. Close the back panel and replace the screws. You will not need to recalibrate.

USAGE

1. Press the "POWER" button.
2. To display the TDS level of the feed (tap) water, slide the switch to the IN button. To display the TDS level of the product (filtered) water, slide the switch to the OUT button.
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 IN water TDS levels with the OUT water TDS.
5. If the "x10" icon appears, then the TDS level is above 999 ppm. Therefore, multiply the reading by 10. For example, if the display shows 143 ppm ***with*** the 'x10' icon, the actual TDS level is 1430 ppm. (If the 'x10' icon does not appear, the reading on the display is the actual TDS level.)
6. Turn off the unit. (It will automatically shut off after 10 minutes to conserve battery power).

CALIBRATION

Your monitor was factory calibrated to 342 ppm (NaCl). 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 re-calibrate based on your needs, as well as from time-to-time to ensure the best results.
To calibrate:

1. Connect the water tubes to the T-fitting as shown on the diagram below. The water tubes connected to the fitting must be 'IN' water (Before RO filter) NOT the product 'OUT' water. When calibrating, the TDS of water you are calibrating to must be over 10 ppm. Insert the sensor you wish to calibrate in the T-fitting. Ensure the orientation of the sensor to the fitting is correct, as shown in illustration #1.
2. Let the water flow in the tubes to allow the sensor to measure and calibrate.
3. Measure TDS of the water with a handheld TDS meter to determine the TDS of the water flowing in the tubes as shown in the diagram below. Make a note of the TDS reading as this will be the TDS value you will be calibrating your monitor. (illustration #3)
4. Turn on the Monitor.
5. slide the switch either to IN or OUT depending on the which sensor is inserted in the calibration solution. The sensor must be inserted in the T-fitting for accurate results.
adjust the reading up or down by gently turning the calibration screw on the rear of the unit clockwise or counterclockwise.
6. Separate calibration is NOT required for IN and OUT sensors

Illustration #3

