

SpotOn

SpotOn VWC SOIL MOISTURE METER

QUICK & ACCURATE SOIL MOISTURE,
EC, AND TEMPERATURE READINGS IN
A COMPACT AND DURABLE DESIGN

US PATENT PENDING



Spot On Soil VWC Moisture

PRODUCT MANUAL

Made In The USA 

INSTRUCTIONS | Spot On Soil VWC Moisture Meter



WARNING:

Use caution when probing into soil to avoid hitting buried electrical wires or other utilities.
Use caution when handling and transporting this meter since its sharp metal tip could cause damage to packaging, containers, or personal.
Always use the included tip cover when transporting the meter.

FEATURES:

- **Continuous readings for quick moisture testing (no button pressing required)**
- **Measures soil moisture, salinity (EC), and soil surface temperature (°F or °C)**
- **Includes both 2.375" and 1.5" probe rods**
- **Rubber mounted rods resist bending in dry or rocky soil**
- **Ultra high frequency (100 MHz) measuring circuit provides accurate moisture measurements in a variety of soil types and salinity levels**

SPECIFICATIONS:

Range:	0.0 - 100.0 % Volumetric Water Content 0.0 - 5.00 mS/cm Electrical Conductivity 16°F(-9°C) - 120°F(49°C) Temperature
Accuracy:	+/- 3% VWC +/- 0.1 mS/cm +/- 1°F(0.6°C)
Repeatability:	Less Than 0.5% Variation
Environmental:	32 - 122°F (0-50°C) Operating Range IP-64 Rated (Rain and Dust Proof)
Battery:	(3) AA/LR6 Alkaline Batteries (included) 300 Hrs. Continuous On-time Battery Life Meter Automatically Turns Off After 20 Minutes Of Inactivity
Size & Weight:	Meter: 14" (36cm)W x 2"(5cm) D x 35.8"(91cm)L 2.4lb (1.1kg) As Shipped: 4.5" (11.4cm)W x 4.5" (11.4cm) D x 36.5"(93cm)L 3.3lb(1.5kg)

1 YEAR WARRANTY

This product is warranted to be free from defects in materials or workmanship for one (1) year from the date of purchase

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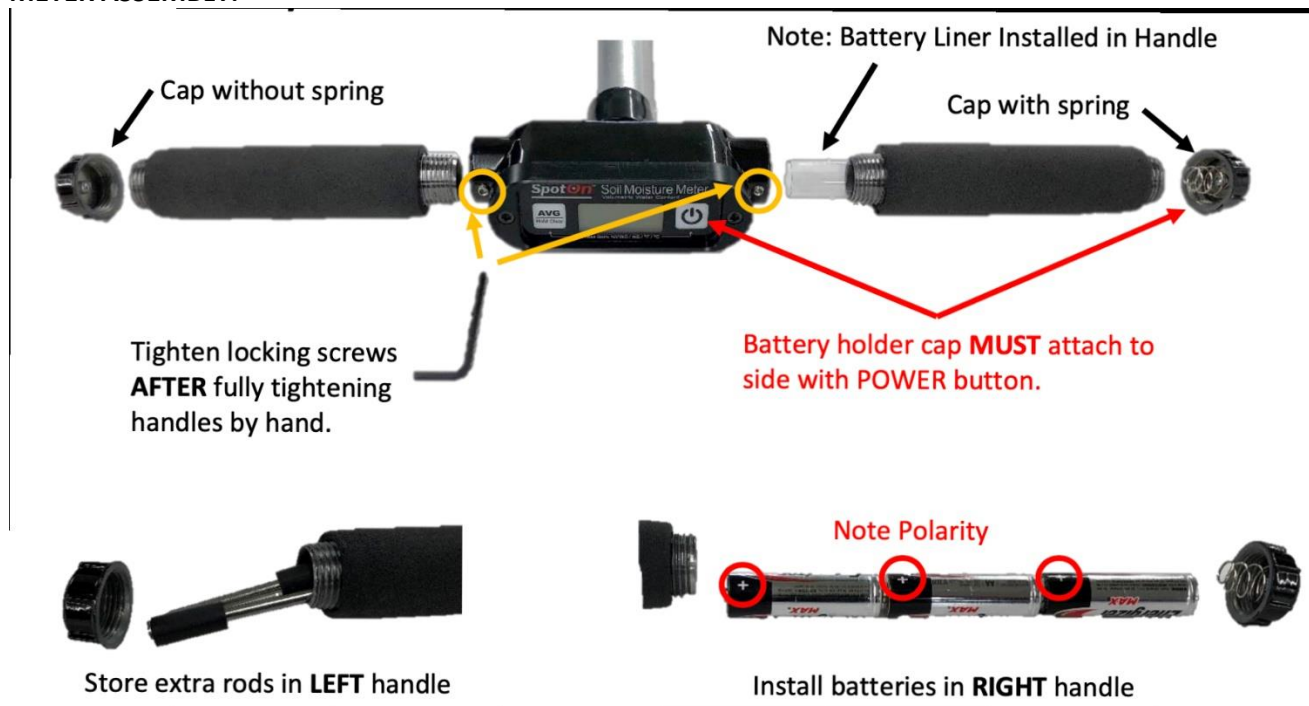
METER COMPONENTS:

- | | |
|----------------------------------|-----------------------------------|
| 1 Cap for Battery Compartment | 6 Sensor Head |
| 2 Cap for In-Handle Rod Storage | 7 Retaining Ring |
| 3 LCD Display | 8 Soil Surface Temperature Sensor |
| 4 Power Button | 9 VWC & EC Sensor Rods |
| 5 Average / Clear Average Button | |



Fig. 1

METER ASSEMBLY:



As pictured above: With the meter facing you, install the handle with Cap for Battery Compartment (1) of Fig. 1 by handle turning clockwise until as tight as possible by hand. Do the same for the handle with Cap for In-Handle Rod Storage (2) of Fig. 1. Once both handles are attached, use a Hex Key Wrench (included) to tighten the locking screws. Store extra rods in LEFT handle. Install (3) AA/LR6 Alkaline Batteries (included) in RIGHT handle.

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USE OF PRODUCT:



Turn on the meter by pressing POWER button (4) of Fig. 1. The display will first show the Rod Length (2.4”Rods), which are pre-installed in the unit. See Changing Rods if using 1.5” Rods. Next the display will show the battery life in %. Lastly, the display will show VWC or VWC + EC + Temp and is ready to take measurements.

Note: To switch the display between VWC only and VWC + EC + Temp (°F or °C), press the POWER and AVG buttons simultaneously. The meter will then continuously take new sensor readings and display updated values every second until turned off.



Average Function

To obtain an average for multiple probing, insert the rods into the ground and press the AVG button once a stable reading appears on the display. The meter will then display the new average value and the total number of readings included in this average. To redisplay the current average without changing its value hold the meter, with the rods in the air and press the AVG button.

Note: To clear the average, press and hold the AVG button for 4 seconds.

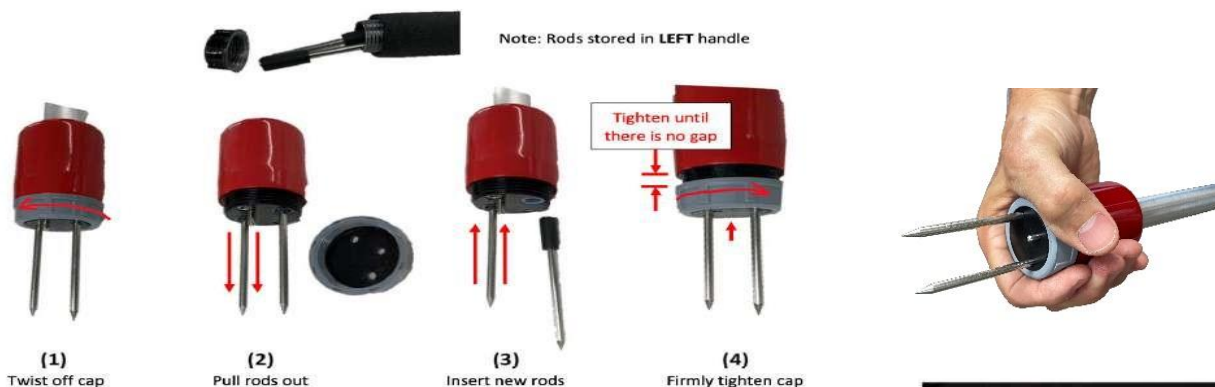


Changing the Batteries

The LCD will show “Replace Battery!” when it’s time to change the batteries. On the RIGHT handle, remove the Cap for Battery Compartment (1) of Fig. 1 by turning counterclockwise. Replace with (3) AA/LR6 Alkaline Batteries and tighten the cap. Each time the meter is turned on it will show % battery life left in the batteries. *Note: battery life % will only display correctly for Alkaline Batteries.*

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Changing the Rods



Once installed, adjust display to match new rod length. At Power On, the rod length will show on the display, press AVG button to switch between 2.4" or 1.5" rods. Note: This adjustment is only possible while the second line of the display shows "AVG to ↑↓"



Protective Rod Cover:



Correlating Readings

Remember that each soil is unique and readings from one type of soil will be different from another type of soil. The best way to find out your soil moisture readings is to take a Moisture Sensor reading at field capacity; this will tell you what the "Wet" readings are in your particular soil type. This is accomplished by saturating the soil with your irrigation water, letting it soak in and then taking a moisture reading. This will give you the "High" reading. You should also measure moisture in a dry area, and this will give you your "Low" reading threshold. By watering until the soil reached the middle of these two numbers will give you the best turfgrass health.

1. Readings on the scale are in VWC (Volumetric Water Content) percentages.
2. Normally, after irrigation or rain, the read out will indicate wet or saturated soil. This condition will change in about an hour, when dealing with normally draining soils.
3. To calibrate the readings on your area - Run your irrigation cycle for as long as you usually run during dry conditions. (If you do not have irrigation, test the area right after a soaking rain of at least one-half inch.) One hour after irrigation or rainfall, take soil moisture readings in the rootzone with the appropriate length probes. Record these readings.
4. These numbers are your baseline reading of your soil at field capacity. "Field capacity" means that the soil is holding all the water it can; after the gravitational water has drained from the top three inches of the soil profile.

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5. After field capacity readings have been recorded for each area with unique soils, you can use this range as your "Wet" moisture readings. You will never want to irrigate above these numbers as the soil will be saturated and turfgrass health will decline.

Soils and Readings

A soil in good tilth consists of 50% solids, 25% air spaces and 25% water. Rain or irrigation water will temporarily fill all the voids in the soil. Depending on the porosity of the soil or its capacity to hold water, good soils will drain in about an hour. This is called gravitational water, and, with gravity, it will move down into the soil profile. Normally, it will take about an hour for this gravitational water to move down after it is applied to turfgrass areas.

As the turfgrass plant uses the water held in the soil, which is at "field capacity", air begins to fill the voids occupied by the water, allowing the root system to take in oxygen. As water is used up in the "field capacity" range, it can be noted on the meter over time.

Learning to use your Spot- On Soil VWC Moisture Meter as a guide to irrigation practices will greatly reduce the guesswork in developing and managing quality turfgrass areas.

Different Soils and their Moisture Readings

The Spot-On Soil VWC Moisture Meter tells the amount of water in the air space that is in the soil. A one- to two-year-old USGA sand-based golf green or sand based athletic field that is saturated will show a very small amount of moisture because of the air space in the soil and its ability to drain the water quickly at field capacity. An area constructed from clay, soil, silt, or other native materials will show a much higher reading when saturated.

The main objective in using this tool is to be sure you calculate your field capacity for all areas of unlike construction. On Golf Courses, Greens, Tees, and Fairways will require three different ranges for wet, good, and dry readings. Athletic fields may have different soil characteristics if wear areas have been rebuilt or re-seeded with different soil types. Once these areas on your property are noted, they will not change much over time unless a total renovation or re-construction is undertaken.

Golf Courses, Tournaments and Sporting Events

The main thing to look for before tournament play or events is not to need an actual percentage reading of say 30% but to look for consistency. If all the greens surfaces or athletic field playing areas have the same percentage of soil moisture and they all have the same reading on a Turf-Tec Penetrometer or Impact Testing device, they will all respond to the ball impact and player interaction the same way. The key to playability is consistency from green to green or area to area on an athletic field with the relationship of soil moisture and compaction. If all sports field areas are also consistent, they will have the same footing and ball bounce. For sports fields shear strength is also an important factor to measure.

Meter Readings and Calibration

Each meter is factory calibrated with a 7-point calibration process that cannot be repeated in the field. Meter recalibration should not be needed since errors in readings are typically due to bent or worn rods. Replacing worn rods or straightening bent rods should restore the meter to "factory calibration" accuracy. As rods become worn during normal use, they become shorter in length and smaller in diameter. Both changes will affect the meter's accuracy, the remedy is replacing the rods not recalibrating the meter. Bent rods will cause the spacing between them to either be larger or smaller

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than that of parallel rods. Again, the remedy should be to straighten the rods, or if bent badly, to replace the rods, not meter recalibration.

Checking the Meter's Accuracy

Items needed:

1. Distilled water (at room temperature)
2. Quart size or larger plastic container

Testing should be done with both the meter and the distilled water at room temperature. With a hand on each handle hold the meter such that the sensor rods are suspended in the air about 6" above the ground. The meter should read 0.0% +/- 0.0% VWC in air.

Place the meter in distilled water at room temperature so that the entire length of the rods is submerged. Be sure to use at least a quart size non-metallic plastic container for this step making sure spikes are completely submerged in the water and not touching the bottom of the container.

It is not recommended to submerge more than about ¼" of the sensor head below the surface of the water. The meter with 2.4" rods should read 101.0% +/- 3.0% VWC in distilled water. The meter with 1.5" rods should read 103.0% +/- 3.0% VWC in distilled water. If this variation exceeds +/- 5% then it is recommended that the sensor rods be replaced

Turf-Tec International Terms of Sale and Warranty **LIMITED WARRANTY OF TURF-TEC INTERNATIONAL PRODUCTS**

Turfgrass Products Corporation - dba - Turf-Tec International ("Seller") warrants to the final purchaser, that all Turf-Tec International tools will be free from defects in material or workmanship for a period of one year from date of purchase. SELLER'S SOLE OBLIGATION AND YOUR EXCLUSIVE REMEDY under this Limited Warranty and, to the extent permitted by law, any warranty or condition implied by law, shall be the repair or replacement of parts, without charge, which are defective in material or workmanship, and which have not been misused, carelessly handled, or improperly repaired by persons other than Turf-Tec International. To make a claim under this Limited Warranty, you must return the complete tool, transportation prepaid, to Turf-Tec International after contacting Turf-Tec International and receiving a return authorization number. Please include a dated proof of purchase with your tool.

ANY IMPLIED WARRANTIES SHALL BE LIMITED IN DURATION TO ONE YEAR FROM DATE OF PURCHASE. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING BUT NOT LIMITED TO LIABILITY FOR LOSS OF PROFITS) ARISING FROM THE SALE OR USE OF THIS PRODUCT. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE IN THE U.S., PROVINCE TO PROVINCE IN CANADA AND FROM COUNTRY TO COUNTRY.

Return Policy

Turf-Tec International has been in business since 1976 and we pride ourselves in producing quality tools that last for years and years. We offer a 100% satisfaction guarantee on all our products and will gladly accept any return for a credit to be used at Turf-Tec International for future orders or a check refund may be issued. There is a 30% re-stocking fee for all returned merchandise whether an in-house credit or a refund is requested, and shipping charges will not be refunded. All returned merchandise must be new and in re-salable condition. Turf-Tec will only receive returns if a return authorization number is first obtained from Turf-Tec International. Again, all returned merchandise must be new and in re-salable condition and Turf-Tec does not pay return shipping fees.

Hold Harmless Agreement

The seller shall protect, defend, indemnify and hold the purchaser and their respective assigns and their attorneys, accountants, employees, officers and directors harmless from and against all losses, costs, liabilities, claims, damages and expenses of every kind and character, as incurred, resulting from or relating to or arising out of the inaccuracy of results, injury of user, injury of sports participant, turfgrass loss, warranty, covenant or any agreement made by the seller in this agreement.