

TECHNICAL BULLETIN NO. 20110512

May 12, 2011

SUBJECT **Checking Soil Moisture Readings on TDR Family of Meters**

PRODUCT FAMILY **TDR 100, 200, 300**

This bulletin describes a method to determine whether a TDR meter is still reading within the original factory specifications. There are two types of tests that can be performed. The first is with no rods attached, the second is with rods attached.

Test 1: Disconnect the rods from the probe block. Press the MODE button until the LCD is displaying the Period. This is the raw electronic reading in microseconds. With no rods connected, the meter should read 1920 ± 30 .

Test 2: Readings can be taken in three standard environments; air, distilled water, and playground sand saturated with distilled water. It is important that any troubleshooting be done with distilled water. We have found that readings taken in tap water can differ greatly from the expected results observed in distilled water. Distilled water can be found at commercial retail outlets for use with vaporizers and irons. Readings taken in air can be taken by simply holding the meter so the rods are completely surrounded by air. When readings are taken in water and saturated sand, the container should have a diameter of, at least, 3 inches (7.5cm) and should be tall enough so the rods can be completely immersed or inserted. When saturating the sand, it is best to fill the container about 1/3 full of water and then add sand. This ensures that there will be no trapped air bubbles that can be present if water is added to the top and stirred in. Finally, when doing the test, be sure that the correct rod length is selected.

Readings should be taken with the meter in "Stndrd VWC" mode. The meter should read VWC=0% in air. In saturated sand, it should read between 35% and 45%. The table below shows the approximate ranges of volumetric water content that are expected for the different rod lengths in distilled water.

Note: The meter does not read 100% in water because the soil moisture calibration equations were created to be most accurate in the volumetric water contents typically found in mineral soils.

This bulletin supercedes bulletins 20100514 and 20101014

Rod Length	Water
8 inches (20 cm)	60 - 65%
4.8 inches (12 cm)	70 - 75%
3 inches (7.5 cm)	75 - 80%
1.5 inches (3.8 cm)	65 - 70%