



METER

TEROS-54 SOIL MOISTURE-PROFILE PROBE

You need accurate soil moisture measurements from easily installed sensors without extensive excavation. Most profile probes require you to choose between ease of installation and removal, sensor accuracy, measurement volume, and durability. At METER, we were not willing to create a soil moisture profile probe unless it could meet all of these requirements. That is why we made the Teros-54.



There's the hard way, and then there's the right way

We designed the Teros-54 profile probe to make every step of your measurement process easier-without sacrificing accuracy or durability. Soil water content and temperature sensors are positioned at 15, 30, 45, and 60 cm depths, providing root zone measurements without requiring soil pits or cumbersome sensor retrieval at lower depths. You get the convenience of profile measurements combined with the research-grade accuracy you have come to expect from METER.

Get in. Get out. Get data.

Avoid the cost, hassle, and time of large drilling equipment and pilot tubes. Teros-54 installation only requires a simple 2 cm borehole for the robust quad-fin profile sensor to then be hammered into the soil. This creates better sensor/soil contact for more accurate readings. Removing the Teros-54 is made simple with the dedicated extraction tool, making this sensor ideal for annual crops that require sensors to be installed and removed multiple times throughout the year.

Using multiple individual sensors in a large sensor network can create a cord management nightmare, requiring an overabundance of wires and using up all the ports on your data logger. The Teros-54 alleviates this problem, connecting all the sensors to the ZL6 data logger via one wire while maintaining your ability to monitor individual sensors in ZENTRA Cloud. Best of all, the Teros-54 is plug and play, no programming or wiring necessary.



BILMAR BİLİMSEL ARAŞTIRMA VE MÜHENDİSLİK ANONİM ŞİRKETİ

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See the bigger picture

Other cylindrical profile probes have a minimal measurement volume, only allowing you to see what is happening in a small volume of soil. The quad-fin design of the TEROS-54 creates a large measurement volume than the typical soil moisture profile probe, providing a more holistic view of soil moisture status. More sensors per data logger combined with more soil measured with each probe means you can build a larger data pool with fewer resources. And with ZENTRA Cloud, you can see all your data remotely in real time from the comfort of your own desk.

Confidence is king

Since 2001 METER has been dedicated to producing highly accurate, easy-to-use soil moisture sensors, but we haven't offered a profile probe -until now. We made the bold decision that our profile probe had to compare to the quality and accuracy standards that environmental researchers have come to rely on from METER. With the TEROS 54, you can measure confidently, knowing your sensors are designed and constructed by scientists who understand the challenges you face and the importance of getting it right.

Features

- Multi-depth soil moisture profile probe measures water content and temperature
- Installs via a small borehole without the need of a pilot tube
- Hammers directly into the soil for direct soil contact
- All sensors can be removed at once with dedicated removal tool
- Easy plug-and-play operation
- See all your data remotely in real-time
- Ideal for annual crops and soil that requires sensors to be installed and removed seasonally
- Get more measurements per logger port
- Larger measurement volume
- Reduced labor during installation and removal
- Accurate research-grade soil moisture measurements
- Sensors provide profile measurements throughout and around most root zones
- Robust design means durability during installation and through operation in harsh conditions



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Specifications

MEASUREMENT SPECIFICATIONS

Volumetric water content (VWC)	RANGE Mineral soil calibration: 0.00-0.70 m ³ /m ³ Apparent dielectric permittivity (ϵ_a): 1-50 (soil range) 1 (air) to 80 (water) RESOLUTION 0.001 m ³ /m ³ ACCURACY Generic calibration: ± 0.05 m ³ /m ³ typical in mineral soils that have solution EC <8 dS/m Medium specific calibration: ± 0.02 -0.03 m ³ /m ³ (± 1 -2% VWC) in any porous medium Apparent dielectric permittivity (ϵ_a): 1-40 (soil range), $\pm 1 \epsilon_a$ (unitless) 40-80, 15% of measurement
Dielectric measurement frequency	70 MHz
Temperature	Range: -20 to 60°C Resolution: 0.03°C Accuracy: $\pm 0,35^\circ\text{C}$ from -20 to 0°C , $\pm 0.25^\circ\text{C}$ from 0 to +60°C

COMMUNICATION SPECIFICATIONS

Output	DDI serial or SDI-12 communication protocol 3-wire cable version 4-wire cable version RS-485 Modbus RTU and tensioLINK serial communications protocol 4-wire version
Temperature Data logger compatibility	Operating range: -40 to 60 °C METER ZL6 and EM60 data loggers or any data acquisition systems capable of 4.0-24.0 VDC power and serial interface with SDI-12 and/or RS-485 interface, Modbus RTU, or tensioLINK communication.

PHYSICAL SPECIFICATIONS

Dimensions	Diameter (Shaft): 6.0 cm Length: 75.0 cm Width (Head): 11.0 cm
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ELECTRICAL AND TIMING CHARACTERISTICS

Operating temperature range	Minimum: -20°C Maximum: 60°C
Cable length	5.0 m (standard * stereo plug and stripped and tinned wires) 75 m (maximum custom cable length) 1.5 m (M12 connector)
Connector types	3.5-mm stereo plug connector or stripped and tinned wires 4-pin M12 connector or stripped and tinned wires
Measurement duration	Minimum: 500 ms (4 depths) Maximum: 800 ms

COMPLIANCE	EM ISO/IEC 17050:2010 (CE Mark)
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