TEROS 11: ADVANCED SOIL MOISTURE SENSING

DESCRIPTION

TEROS 11 makes your life easier with a large volume of influence, reduced sensor-to-sensor variability, and a near-bulletproof form factor—which lasts up to 10 years in the field. These innovations, along with our well-published capacitance technology, an accuracy verification standard, and a blazing fast installation tool have combined to generate our most accurate, easy-to-use, highly durable—yet still economical—soil moisture sensor. In fact, we're so confident about the long life of our TEROS sensor line, we've increased our standard warranty from one to three years.

TEROS 11

FEATURES

- Increased volume of influence (1010 mL)
- Easy installation with borehole installation tool (minimizes air gaps for cleaner readings)
- Dependable, long-life sensor
- Reduced sensor-to-sensor variability
- 3-year long-life guarantee
- Check installation or troubleshoot with the ZSC Bluetooth sensor interface
- Repeatability can be checked with an accuracy verification standard
- Robust, epoxy body for tough field conditions
- Minimizes salinity and textural effects by using 70 MHz frequency capacitance technology
- Steel needles cut through the soil for better soil-sensor contact
- Easy-to-use SDI-12 communication for non-METER data loggers
- Ferrite core eliminates cable noise.

TEROS 11: ADVANCED SOIL MOISTURE SENSING

TEROS 11 combines METER's trademark 70 MHz circuitry with an extremely ruggedized epoxy fill and securely attached, sharpened stainless steel needles that easily slip into the soil and are resistant to salts, so you can worry less about sensor deterioration. Very low power consumption and a high resolution provide increased precision over a longer period of time.

TEROS 11 delivers the best volume of influence to sensor size on the market so you're less susceptible to soil variability errors. We've optimized the circuitry in this 9.4-cm sensor to deliver an incredible one-liter volume of influence (versus the 200 mL typical for most sensors).

SPECIFICATIONS

MEASUREMENT SPECIFICATIONS	
Volumetric water content (VWC)	**Range:** Mineral soil calibration: 0.00–0.70 m^3/m^3 Soilless media calibration: 0.0–1.0 m^3/m^3 Apparent dielectric permittivity (ε_a): 1 (air) to 80 (water) **NOTE: The VWC range is dependent on the media the sensor is calibrated to. A custom calibration will accommodate the necessary ranges for most substrates.** **Resolution:** 0.001 m^3/m^3. **Accuracy:** Generic calibration: ±0.03 m^3/m^3 typical in mineral soils that have solution electrical conductivity <8 dS/m Medium specific calibration: ±0.01–0.02 m^3/m^3 in any porous medium Apparent dielectric permittivity (ε_a): 1–40 (soil range) , ±1 ε_a (unitless) 40–80, 15% of measurement
Dielectric measurement frequency	70 MHz
Temperature	Range: −40 to 60 °C. Resolution: 0.1 °C. Accuracy: ±1 °C from −40 to 0 °C. ±0.5 °C from 0 to +60 °C **NOTE: Temperature measurement, for applicable sensors, may not be accurate if sensor is not fully immersed in the medium of interest, due to longer equilibration time.**
COMMUNICATION SPECIFICATIONS	
Output	DDI serial or SDI-12 communication protocol
Data logger compatibility	METER ZL6, EM60, and Em50 data loggers or any data acquisition system capable of 4.0- to 15-VDC power and serial or SDI-12 communication (see compatibility chart)
PHYSICAL SPECIFICATIONS	
Dimensions	Length: 9.4 cm (3.70 in). Width: 2.4 cm (0.95 in). Height: 7.5 cm (2.95 in)
Probe length	5.5 cm (2.17 in)
Cable length	5 m (standard). 75 m (maximum custom cable length) **NOTE: Contact Customer Support if a nonstandard cable length is needed.**
Connector types	3.5-mm stereo plug connector or stripped and tinned wires
ELECTRICAL AND TIMING CHARACTERISTICS	
Supply voltage (VCC) to GND	Minimum: 4.0 VDC. Typical: NA. Maximum: 15.0 VDC
Digital input voltage (logic high)	Minimum: 2.8 V. Typical: 3.6 V. Maximum: 3.9 V
Digital input voltage (logic low)	Minimum: –0.3 V. Typical: 0.0 V. Maximum: 0.8 V
Digital output voltage (logic high)	Minimum NA. Typical 3.6 V. Maximum NA
Power line slew rate	Minimum: 1.0 V/ms. Typical: NA. Maximum: NA
Current drain (during 25-ms measurement)	Minimum: 3.0 mA. Typical: 3.6 mA. Maximum: 16.0 mA
Current drain (while asleep)	Minimum: NA. Typical: 0.03 mA. Maximum: NA
Operating temperature range	Minimum –40 °C. Typical NA. Maximum +60 °C **NOTE: Sensors may be used at higher temperatures under certain conditions; contact Customer Support for assistance.**
Power up time (DDI serial)	Minimum: 80 ms. Typical: NA. Maximum: 100 ms
Power up time (SDI-12)	Minimum: NA. Typical: 245 ms. Maximum: NA
Measurement duration	Minimum: 25 ms. Typical: NA. Maximum: 150 ms

Contact info

Monitoring MENA

Insight into instrumentations

(962) 5353-2091

PO Box 1100 Salt

Post Code 19110 **JORDAN**

sales@monitoring-mena.com

www.monitoring-mena.com

This Instrument is manufactured by our principle company

METER Environment - USA