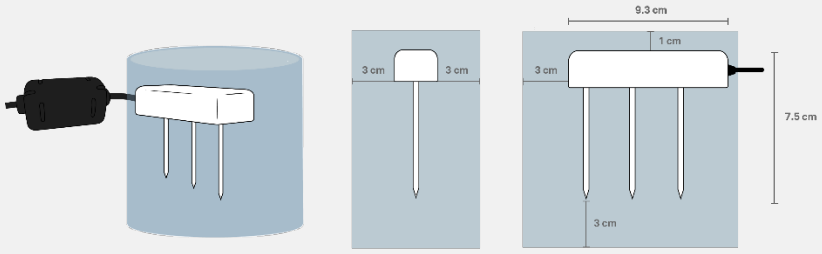
METER
ENVIRONMENT

TEROS-12 Advanced Soil Moisture Sensing



- Increased volume of influence (1010 mL)
- Easy installation (minimizes air gaps for cleaner readings)
- Electrical conductivity sensor included
- New fast electrical conductivity method for improved EC measurements
- Thermistor embedded in the center needle
- 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-read voltage output for various data loggers
- Ferrite core eliminates cable noise

The new **TEROS-12** sensor is more than just a sensor. It's a complete soil moisture system that treats the whole accuracy problem, rather than just one part of it, by eliminating common problems that cause uncertainty in the data—things like sensor-to-sensor variability, air gaps, or preferential flow. No other soil moisture system on the market addresses these issues. The TEROS-12 uses a completely new calibration procedure that maximizes accuracy and minimizes sensor-to-sensor variability,



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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) Resolution: 0.001 m^3/m^3 Accuracy: Generic calibration: ±0.03 m^3/m^3 (±3.00% VWC) typical in mineral soils that have solution EC <8 dS/m Medium specific calibration: ±0.01–0.02 m^3/m^3 (±1–2% VWC) 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: ±0.5 °C from −40 to 0 °C ±0.3 °C from 0 to +60 °C
Bulk electrical conductivity (EC_b)	Range: 0 to 20 dS/m (bulk) Resolution: 0.001 dS/m Accuracy: +/- (5% +0.01 dS/m) from 0 to 10 dS/m +/- 8% from 10 to 20 dS/m
Measurement volume	See comparison article
Output	DDI serial or SDI-12 communications 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)
Dimensions	Length: 9.4 cm (3.70 in) Width: 2.4 cm (0.95 in) Height: 7.5 cm (2.95 in)
Needle length	5.5 cm (2.17 in)
Cable length	5 m (standard) 75 m (maximum custom cable length)
Connector types	3.5-mm stereo plug connector or stripped and tinned wires
Supply voltage (VCC) to GND	Minimum: 4.0VDC Typical: NA Maximum: 15.0VDC
Digital input voltage (logic high)	Minimum: 2.8V Typical: 3.6V Maximum: 3.9V
Digital input voltage (logic low)	Minimum: –0.3V Typical: 0.0V Maximum: 0.8V
Digital output voltage (logic high)	Minimum NA Typical 3.6V Maximum NA
Power line slew rate	Minimum: 1.0 V/ms Typical: NA Maximum: NA
Operating temperature range	Minimum: –40°C Typical: NA Maximum: +60°C
Power up time (DDI serial)	Minimum: 80ms Typical: NA Maximum: 10 ms
Power up time (SDI-12)	Minimum: NA Typical: 245ms Maximum: NA
Measurement duration	Minimum: 25 ms Typical: NA Maximum: 50 ms