



TEROS 12 Advanced Soil Moisture and Temperature Sensor with Electrical Conductivity (EC)



The 9.4-cm Sensor that delivers 1 L. Volume Of Influence

For mineral soils, growing media and porous materials.

Overview

The new Teros 12 sensor is a complete soil moisture system that treats problems that cause uncertainty in the data. The Teros 12 sensor tackles problems like sensor-to-sensor variability, air gaps, or preferential flow and delivers and is the only soil moisture system on the market that addresses these issues.

The Teros 12 uses a new calibration procedure that maximizes accuracy and minimizes sensor-to-sensor variability (less than 1%), while keeping the Teros 12 cost reasonable. So you can be confident that every sensor you install is going to read exactly like the next one.

The Teros 12 delivers the best volume of influence to sensor size on the market. With an optimized circuitry, this 9.4-cm sensor delivers one-liter volume of influence while most sensors only deliver 200 mL. Most soil sensors that measure this much volume are larger in size (20 cm or longer) which make them difficult to install. The New Teros 12 has temperature sensor perfectly positioned inside the middle needle so the needles are robust, yet extremely sensitive to soil temperature change. These high-quality stainless steel needles slip easily into even hardened soils, and a durable epoxy fill means the sensor lasts up to 10 years in the field.

The new Teros 12 is the perfect solution to optimize the accuracy of the whole data set. It combines consistent, flawless installation, minimal sensor-to-sensor variability, and a large volume of influence to deliver performance, accuracy and reliability.

The Teros 12 uses a completely new calibration procedure that maximizes accuracy and minimizes sensor-to-sensor variability (less than 1%). 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 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.

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Specifications

Volumetric Water Content VWC

Mineral soil calibration	0.00–0.70 m ³ /m ³
Soilless media calibration	0.0–1.0 m ³ /m ³
Resolution	0.001 m ³ /m ³
Generic calibration	±0.03 m ³ /m ³ typical in mineral soils that have solution EC <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 › 1 (air) to 80 (water)

Temperature

Range	–40 to 60 °C
Resolution	0.1 °C
Accuracy	±1 °C

Bulk Electrical Conductivity (EC_b)

Range	0–10 dS/m (bulk)
Resolution	0.001 dS/m
Accuracy	±5% of measurement

Data Logger Compatibility

Data Logger Compatibility	*Campbell Scientific: CR10X, CR850, 1000, 3000, etc.
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Dimensions

Length	9.4 cm (3.70 in)
Width	2.4 cm (0.95 in)
Height	7.5 cm (2.95 in)

Cable Length

Cable Length	5 m (standard) 75 m (maximum custom cable length)
	Nonstandard cable length can also be provided.

Connector Types

Connector Types	Stripped and tinned wires
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Supply Voltage (VCC to GND)

Minimum	4.0 VDC
Typical	NA

Maximum	15.0 VDC
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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

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

Power-Up Time (SDI-12)

Minimum	NA
Typical	245 ms
Maximum	NA

Measurement Duration

Minimum	25 ms
Typical	NA
Maximum	50 ms

For comprehensive details, visit: www.campbellsci.ca/teros-12-



Campbell Scientific (Canada) Corp. | 14532 131 Avenue NW | Edmonton AB T5L 4X4 | 780.454.2505 | www.campbellsci.ca
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