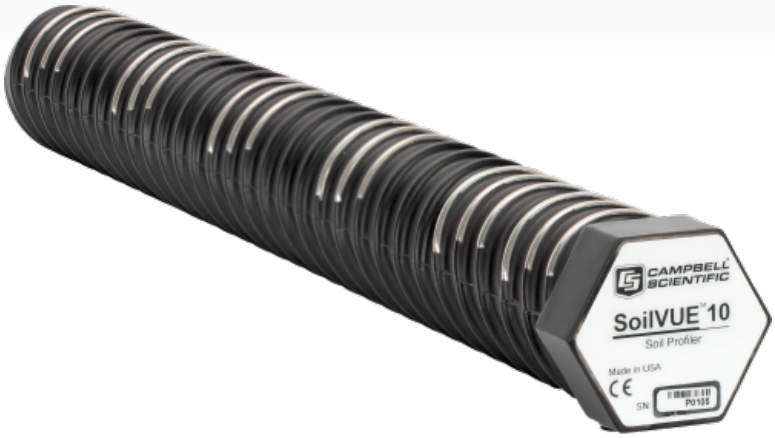
CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

SoilVUE10

TDR Soil Moisture Profile Sensor



Economical, Easy-to-Install, Excellent Soil Contact

Accurate TDR-based soil water content, electrical conductivity, and temperature measurements from multiple depths

Overview

The SoilVUE™10 is a soil water content profile sensor powered by Campbell TrueWave™TDR technology. This soil moisture, electrical conductivity, and temperature profile sensor was developed with environmental researchers and environmental monitoring networks in mind. The SoilVUE™10 represents several exciting advancements in in-situ soil measurement that should make this an extremely compelling option for anyone in these applications who needs to make multiple measurements in a profile.

Campbell Scientific's proprietary TrueWave™TDR technology combines a best-in-class rise time with an advanced waveform analysis technique to determine the true travel time of a high-frequency pulse. This process achieves a high-resolution, smooth signal for measurements that are defensible and can be universally compared with other TDR measurements. Not all TDR-based sensors perform equally well.

Benefits and Features

- Measures VWC, permittivity, EC, and temperature at six depths over 0.5 m or nine depths over 1.0 m using one sensor
- Quick and low-impact installation
- SDI-12 version 1.4 digital output that is compatible with most Campbell Scientific data loggers
- Designed for long-term outdoor operation

Detailed Description

The SoilVUE™10 consists of TDR circuitry connected to a series of six or nine helical wave guides that make up part of the overall threaded design. The threaded design with individual sensors built into the threads improves sensor contact with the soil to reduce potential error from air gaps. The TDR circuitry generates a short rise time electromagnetic pulse that is applied to the helical wave guides. The elapsed two-way travel time of the applied pulse is used to calculate the dielectric permittivity of the surrounding media and determine the volumetric water content using a mixing model.

The soil water content profile sensor can be installed in a hole made by a standard 5 cm (2 in.) hand auger. Excavation machinery or expensive custom tools are not necessary to install the sensor.

The included cable has an IP67 rated M12 connector that is detachable from the sensor for easy field replacement if the cable becomes damaged.

Specifications

Measurements Made	Volumetric water content, permittivity, electrical conductivity, and temperature
Maximum Installation Torque	54 N m (40 ft·lb)
Operating Voltage Range	9 to 36 Vdc
Diameter	› 5.2 cm (2.05 in.) without threads › 5.8 cm (2.3 in.) including threads
Length	0.55 m/1.05 m (21.5 in./41.2 in.) depending on the option ordered
Weight	1.9 kg/3.6 kg (4.2 lb/7.9 lb) depending on the option ordered

Current Drain

Active	~64 mA (@ 12 Vdc)
Quiescent	~1.5 mA (@ 12 Vdc)

Measurement Depths

0.5 m Option	5, 10, 20, 30, 40, and 50 cm (2, 4, 8, 12, 16, and 20 in.)
1 m Option	5, 10, 20, 30, 40, 50, 60, 75, and 100 cm (2, 4, 8, 12, 16, 20, 24, 30, and 40 in.)

Electrical Conductivity

Range	0 to 10 dS/m
Accuracy	› ±5% (full range) › ±2% (0 to 2.5 dS/m)

Relative Dielectric Permittivity

Range	1 to 80
Accuracy	±1 permittivity unit (between 4 and 42 permittivity)

Volumetric Water Content

Water Content Accuracy	±1.5% typical with most soils Soils with high organic matter (> 12% soil organic carbon) or high clay content (> 45% clay) may need a soil-specific calibration due to the dispersive nature of these materials.

Soil Temperature

Accuracy	± 0.15°C (between -30° and +40°C)

For comprehensive details, visit: www.campbellsci.com/soilvue10

© 2019 Campbell Scientific, Inc. | 05/06/2019