

# Customizable, Serviceable Probe

Water content profile with minimal soil disturbance



## Overview

The EnviroSCAN probe provides soil-water-content profiles for irrigation scheduling or other water movement systems. The measurement range is oven dry to saturation. The probes measure soil moisture at multiple depths and are easy to install. Tools

offered by Campbell Scientific allow the probes to be installed with minimal soil disturbance. EnviroSCAN is recommended for higher accuracy research applications, measurements deeper than 80 cm, or stony soils.

## Benefits and Features

- › Multiple sensors with flexible depth placement (at 10 cm increments)
- › Monitoring from shallow depths (< 10 cm) to deep installations (> 40 m)
- › Length of probe customized to suit the application (probe length adjustable in the field)
- › Up to 16 sensors on one probe
- › In-built probe orientation and depth settings to enhance sensor repeatability
- › Probe and sensors are readily accessible and serviceable without destroying the sites

## Technical Description

Around each sensor, the EnviroSCAN creates a high frequency electrical field that extends through the access tube into the soil. Electrical capacitance is then measured and soil water content is determined from those measurements.

Each water content sensor outputs an SDI-12 signal that our CR300, CR200(X)-series, CR6, CR800, CR850, CR1000, and CR3000 dataloggers can measure. This allows the probes to be integrated with a Campbell Scientific datalogger or weather station. Integrating the probes into our data acquisition systems allows the data to be telemetered back to a field station or remote computer.



## Ordering Information

### Network Link Interface

**ENVIROSCAN** EnviroSCAN Probe Assemblage with SDI-12 Interface; must choose probe length, number of click-on sensors, and seals (see below).

#### Probe Length Options (choose one)

- 05** 0.5 m probe that allows up to 5 click-on sensors (see below).
- 10** 1 m probe that allows up to 10 click-on sensors (see below).
- 15** 1.5 m probe that allows up to 15 click-on sensors (see below).
- 20** 2 m probe that allows up to 16 click-on sensors (see below).

#### Number of Water Content Sensors

- WCq** After the -WCq, enter the number of sensor you need. One sensor per measurement depth is required. The maximum number of sensors is 5, 10, 15, or 16, depending on the probe length (see above).

#### Seal Options (choose one)

- SS** Bottom stopper for slurry installations.
- EB** Plastic expandable bung that's recommended for standard installations.

#### Cutting Edges

- NC** No Cutting Edge for standard soils.
- BC** Blue Cutting Edge has a long shaft and is recommended for use in heavy clay soils.

#### Assembly

- NA** EnviroSCAN is shipped unassembled.
- EA** EnviroSCAN is assembled and tested by Campbell Scientific.

### Accessories and Software

- SENSDI12CBL-L** Datalogger to SDI-12 Interface Cable (required); enter cable length, in feet, after the -L.
- SEN06021** Programming Cable is required to connect the probe to a PC. The EnviroSCAN probe needs to be connected to a PC for normalization and setup.
- SEN06025** TTL Utility Software required for the normalization and setup of the EnviroSCAN probe.
- SEN07050** Installation Kit Part A (Auger). Includes an auger and other tools and accessories for boring a pilot hole
- SEN07150** Installation Kit Part B (Tripod). Includes a tripod and other tools and accessories to keep the auger in a stationary central position.
- SEN70060** Installation Normalization Container.
- SEN80090** 5 kg Bag of Kaolin Clay. Used in some installations of EnviroSCAN probes.
- SEN80125** Silica Gel, 25 g Bag, Qty 10. Used to maintain a non-condensing environment inside of the EnviroSCAN soil probe access tube.
- SEN80127** Ferrite Bead is a hollow cylinder that reduces electromagnetic noise when looped into probe cables. One per probe is recommended.

## Specifications

- › Maximum Sensors per Standard Probe: 16
- › Sensor Measuring Principle: high frequency capacitance
- › Output: SDI-12 version 1.2
- › Output Resolution: 16 bit
- › Water Content Reading Range: 0 to ~65%
- › Temperature Effects:  $\pm 3\%$  (5° to 35°C)
- › Time to Read One Sensor: 1.1 s
- › Sphere of Influence: 99% of the reading is taken within a 10 cm radius from the outside of the access tube

- › Sensor Diameter: 5.05 cm (2.0 in)
- › Access Tube Diameter: 5.65 cm (2.2 in)
- › Probe Length: 0.5, 1.0, 1.5, or 2.0 m (1.6, 3.3, 4.9, or 6.6 ft)
- › Operating Temperature Range: -20° to 75°C

### Current Consumption

- › Sleep: 250  $\mu$ A
- › Standby: 66 mA
- › Sampling: 100 mA

**NOTE:** The EnviroSCAN is manufactured by Sentek Technologies. Sentek has changed the name of their water-content profile probe from EnviroSMART to EnviroSCAN.



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August 17, 2016