



Reliable Soil Water Measurements

No maintenance required

Overview

The 253, manufactured by Watermark, is a solid-state, electrical-resistance sensing device with a granular matrix that estimates soil water potential from 0 to -200 kPa (typically,

wetter or irrigated soils). It connects to your data logger via an AM16/32-series multiplexer and is intended for applications where you will be monitoring a larger number of sensors.

Benefits and Features

- › Survives freeze-thaw cycles
- › Compatible with AM16/32-series multiplexers, allowing measurement of multiple sensors
- › Multiplexer connection prevents electrolysis from prematurely destroying the probe
- › Rugged, long-lasting sensor
- › Buffers salts in soil
- › Compatible with most Campbell Scientific data loggers

Detailed Description

When the amount of water in the soil surrounding the sensor changes, a difference in water potential between the soil and the sensor material is established. This gradient in potential causes a water flux between the two materials. For example, an irrigation or precipitation event results in movement of soil water into the 253 until equilibrium in water potential between the sensor and the soil occurs. An increase in the amount of water in the sensor reduces the electrical resistance between the sensor electrodes.

The data logger measures the resistance between electrodes, and then converts the resistance measurement to soil water potential by using calibration values supplied with the sensor.

The 253 consists of two concentric electrodes embedded in a reference matrix material. The matrix material is surrounded by a synthetic membrane for protection against deterioration. An internal gypsum tablet buffers against the salinity levels found in irrigated soils. The cable jacket is made of Santoprene rubber, which is resistant to temperature extremes, water, and UV degradation.

The 253's construction can allow the sensor (in some circumstances) to be left in the soil all year, eliminating the need to remove the sensor during fallow periods.

The 253 connects to a data logger via an AM16/32-series multiplexer. Because the multiplexer contacts close only



during measurement, electrical currents leading to premature

degradation of the 253 are eliminated.

Specifications

Measurement Range 0 to -200 kPa

Diameter 1.91 cm (0.75 in.)

Length 8.26 cm (3.25 in.)

Weight 360 g (0.8 lb)

For comprehensive details, visit: www.campbellsci.com/253-l 



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