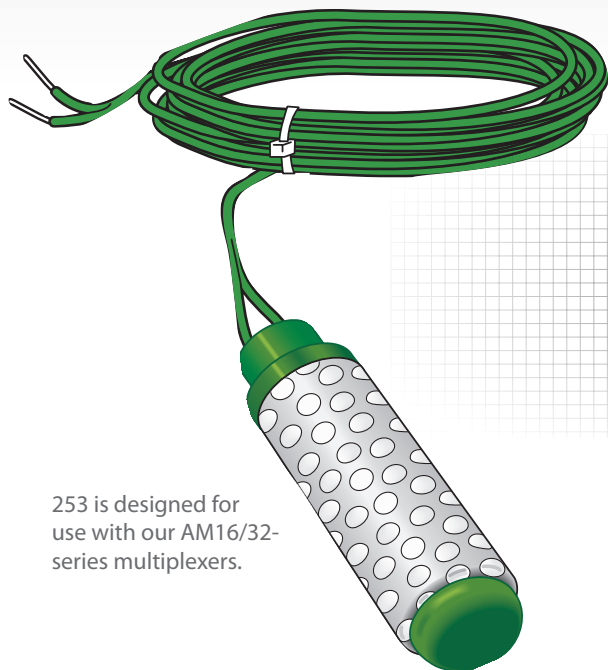




253 and 257

Soil Matrix Potential Blocks



253 is designed for use with our AM16/32-series multiplexers.

Reliable Soil Water Measurements

No maintenance required

Overview

The 253¹ and 257² are solid-state, electrical-resistance sensing device with a granular matrix that estimate soil water potential between 0 and -2 bars (typically wetter or irrigated soils).

The 253 needs to be connected to an AM16/32-series multiplexer, and is intended for applications where a larger number of sensors will be monitored. The 257 connect directly to our dataloggers.

Benefits and Features

- › Survives freeze-thaw cycles
- › Rugged, long-lasting sensors
- › Buffers salts in soil
- › Compatible with most Campbell Scientific dataloggers

253 Soil Moisture Block

- › Compatible with AM16/32-series multiplexers allowing measurement of multiple sensors
- › Multiplexer connection prevents electrolysis from prematurely destroying the probe

257 Soil Moisture Block

- › Contains blocking capacitors in its cable that minimizes galvanic degradation and measurement errors due to ground loops

Construction

The 253 and 257 consist 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.

¹Campbell Scientific's 253 is the Watermark 200 modified for use with our multiplexers.

²Campbell Scientific's 257 is the Watermark 200 modified for use with our dataloggers.

More info: 435.227.9000

campbellsci.com/soil-water-potential



Operation

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 or 257 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 datalogger measures the resistance between electrodes, and then converts the resistance measurement to soil water potential by using calibration values supplied with the sensor.

Ordering Information

Soil Matric Potential Block

253-L Watermark Soil Matric Potential Block for Multiplexer Use. Enter cable length (in feet) after the -L. Requires a 1 kohm resistor at the datalogger wiring panel to complete the measurement circuit (see below).

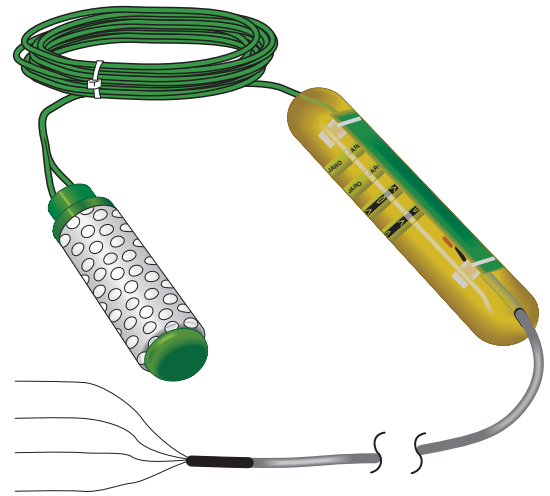
257-L Watermark Soil Matric Potential Block with blocking capacitors. Enter cable length (in feet) after the -L. Must choose a cable termination option (see below).

Cable Termination Options for the 257-L (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW** Cable terminates in connector for attachment to a prewired enclosure.

Completion Resistor for the 253-L

3041 1 kohm, 0.1% Resistor 1/8 W 10 ppm.



Campbell Scientific's 257 includes blocking capacitors in its cable to mitigate ground loops and galvanic degradation.

Specifications

- › 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)