

## Theta Probe Soil Moisture Sensor

The Theta Probe Soil Moisture Sensor measures soil moisture content with  $\pm 1\%$  precision.

It has excellent temperature stability and can be used in saline soils. It is suitable for use in hydrology, soil stability studies, soil water profiling,



pollution monitoring, water leakage detection from pipes and dams, ground truthing and forestry. It can be used in composting material where it can tolerate temperatures up to  $+70^{\circ}\text{C}$ .

The major use of the Theta Probe has been in agriculture to manage irrigation practices.

The round body of the Theta Probe makes it very easy to install using a 45mm to 50mm auger. Moisture is recorded by four stainless steel pins protruding from the end of the body permitting reliable readings in undisturbed soil. The area of measurement is within the cylinder of 4 cm diameter and 4 cm long, or approximately  $0.75\text{ cm}^3$  surrounding the central rod.

## Specifications

Description	Specification	Range and Notes
Accuracy after calibration for specific soil	$\pm 1\%$ vol from 0 to 40 deg C $\pm 2\%$ vol from 40 to 70 deg C	0 to 60 %vol
Accuracy for general soil	$\pm 5\%$ vol from 0 to 70 deg C	0 to 50 %vol
Salinity Error	Less than $\pm 0.1\%$ vol	Can be calibrated up to $2000\text{mS}\cdot\text{m}^{-1}$
Power Requirement	5 to 15V 15mA typical	1 second warm-up recommended 200ms min.
Output Signal	0 to 1V	Nominal 0 to 60 %vol
Sensing Volume	60mm x 30mm dia.	Sensing volume approx 55mm x 70mm diameter
Environmental Sealing	IP68 to 5 metres	Sensor buriable, sealed to IP68
Operating Range	-10 to $+70^{\circ}\text{C}$	Readings in frozen soil are not meaningful

For shallow rooted crops the sensor can be installed on its side or at a shallow angle.

The Theta Probe can be used with a range of MEA data loggers and hand held readers;

- TBug which accepts up to four Theta Probes
- Directly connect to an MEA Automatic Weather Station (AWS)
- Starlogger which accepts up to eight sensors.
- Prologger which accepts up to 16 sensors.
- Starlogger with an MEA2043 Sensor Field Station network which accepts up to 136 sensors.
- MEARadio for widely distributed, centrally recorded networks of sensors.
- HH2 handheld reader for manual readings including memory.
- MEA2240 TPReader for manual readings with display only.

The stainless steel rods are replaceable should there be a breakage. An insertion kit is recommended when the sensor is used for spot readings, particularly when used in hard or rocky soils.

The Theta Probe has a fixed cable which can be extended to a maximum of 100 metres.

The Theta Probe is widely used around the world with many thousands of sensors sold.