The **ML3 ThetaProbe** measures soil moisture and temperature with class-leading accuracy.

- Soil moisture with ± 1% accuracy
- Built-in temperature measurement
- Simple data logger or meter connection
- Extendable cable system
- Buriable – IP68

Exceptional performance

The ML3 ThetaProbe's class leading ± 1% accuracy, stability, build quality, and reliability have made it the preferred choice of thousands of researchers worldwide.

The ML3 is easy to use. Simply insert the probe into the soil, connect to your data logger or meter, provide 5-14 V DC at 18 mA and within seconds you can be accurately measuring soil moisture.

A built-in thermistor enables the ML3 to simultaneously measure soil temperature and soil moisture at depth (probe must be fully buried). ML3 cables and connectors are extendable, buriable and environmentally protected to IP68.

The salinity response of the ML3 has been characterised at EC values up to 2000 $mS.m^{-1}$. It also has a wide operating temperature range, with tests demonstrating that the ML3 can operate down to -40°C (non-flexing cables).

Installation

ThetaProbes are robust, buriable and maintenance-free. They can be inserted into augered holes or positioned in the wall of a trench (which is then carefully back-filled). Optional extension tubes assist placement and removal.

Data logging and readout

The ML3 can be logged by any Delta-T data logger, and many loggers from other manufacturers.

For portable applications the ML3 connects to the HH2 Moisture Meter - and these can be ordered together in convenient form as the **ThetaKit** - see page 9. (NB: the HH2 does not provide temperature indication from the ML3).

Applications

- Environmental research
- Sports turf and golf

For information on the **ML3 ThetaKit** See page 9

Feature	Description	Advantage
4-rod arrangement 	3 rods are arranged around a central rod. This creates a defined cylindrical zone of measurement, 60 mm long x approximately 30 mm diameter.	• Retains soil closer to central rod in case of drying and cracking (other designs, and particularly flat PCB sensors, don't do this) • Measurements can be made close to the soil surface
Replacement rods 	Made of 3 mm diameter, resilient, 304 austenitic stainless steel, with sharpened tips. The exposed rod length is 60 mm.	• Withstands repeated insertion in soil. Replaced at low cost if bent or damaged • Highly resistant to corrosion • Sharp, narrow rods minimise errors due to soil compaction by the rods
Compact cylindrical shape 	The ThetaProbe has a 40 mm diameter body, with threaded end. Extension tubes (0.5 and 1.0 m) screw onto this thread. Case sealed to IP68.	• Easy to insert and remove from augered holes • Rapid attachment of extension tubes • Handy size for portable use • Rugged and buriable to 5 m

Brief Specification (full spec on page 14)	
Water content	
Accuracy	± 0.01 $m^3.m^{-3}$
Range	0 to 0.5 $m^3.m^{-3}$
Temperature	
Accuracy	± 0.5°C, 0 to +40°C ± 0.75°C, -20 to +60°C [1]
Output	0 to 1.0 V differential
Power	5 to 14 V, 18 mA for 1 s
Sample Volume	~60 x 30 mm diameter
Size	158 x 40 mm diameter
Environmental	IP68, -40 to +70°C

Ordering Information	
ML3	ML3 ThetaProbe Sensor NB: Order cable separately.
ML3 ThetaKit	Includes ML3 ThetaProbe, SMSC/d-HH2 Cable, 4 spare rods, HH2 Meter, USB-RS232 adapter cable, insertion kit and case.
ML-RODS-3	Pack of 12 spare rods.
ML/INK 1	Insertion kit for pre-forming holes in hard soils.
See page 13 for cables and accessories	

[1] Figures apply to sensor only and exclude logger or cabling errors