

The SM300 measures soil moisture and temperature with research grade accuracy

- Soil moisture and temperature
- Dependable accuracy $\pm 2.5\%$
- Good temperature and salinity stability
- Easy data logger connection (0-1V)

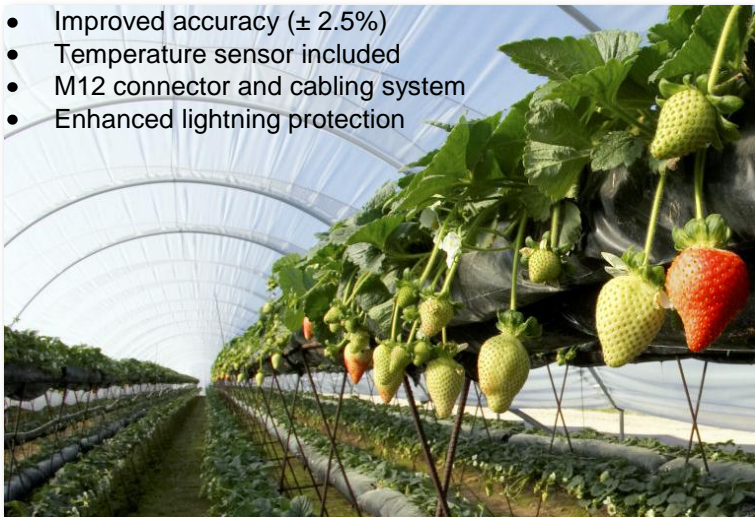
Research grade sensor

The market leading SM300 offers outstanding performance in normal and saline soil conditions, and is stable across wide ranges of temperature and salinity. Its construction uses industrial grade connectors and high specification materials throughout to produce a soil moisture sensor of outstanding quality. The built-in temperature sensor simplifies soil temperature measurement and achieves 0.5°C accuracy.

SM300 improvements

The SM300 incorporates the following improvements over the earlier SM200 design:

- Improved accuracy ($\pm 2.5\%$)
- Temperature sensor included
- M12 connector and cabling system
- Enhanced lightning protection



SM300

Soil Moisture Sensor

PRODUCT INFORMATION



Ease of use

- Versatile cabling solutions
- Easy installation at depth
- Minimal soil disturbance
- Compact – can be used in plant pots

The SM300 minimises soil disturbance, preserving the original soil structure around the measurement rods. It is easy to insert and install whether at the soil surface or at depth. The SM300's circular shape facilitates installation in augered holes – extension tubes are available.

The SM300 is a dual-purpose probe – it can be used both with the HH2 hand-held Moisture Meter for instant moisture readings, or left in situ for data logging of moisture and temperature.

Calibration

The SM300 is provided with general calibrations for mineral and organic soils. A two-point soil specific calibration can be performed for greater accuracy if required.

Applications

- Soil science
- Agriculture & Horticulture research
- Irrigation

SM300 Specifications

	SM300	Notes
Soil Moisture Content		
Accuracy	$\pm 0.025\text{m}^3.\text{m}^{-3}$ (2.5%)	Note [1]
Measurement range	Full accuracy over 0 to $0.5\text{m}^3.\text{m}^{-3}$	Measures full range up to $1.0\text{m}^3.\text{m}^{-3}$ with reduced accuracy
Salinity range	50 to $1000\text{mS}.\text{m}^{-1}$	Salinity errors $< 0.035\text{m}^3.\text{m}^{-3}$ from 0 to $0.4\text{m}^3.\text{m}^{-3}$
Temperature range	Full accuracy over 0 to 60°C	Moisture content readings in frozen soil are not meaningful
Output	0 to 1.0V differential	Corresponding to ~ 0 to $0.6\text{m}^3.\text{m}^{-3}$ nominal
Sample volume	$\sim 55 \times 70\text{mm}$ diameter	Sample volume extends to ~ 1 litre, but is weighted towards soil immediately surrounding the rods
Soil Temperature	SM300 must be fully buried for the sensor to accurately measure the temperature of the soil	
Accuracy	$\pm 0.5^\circ\text{C}$	Excludes cable length errors, see User Manual for details [2]
Measurement range	Full accuracy over 0 to 40°C	
Output	Resistance 5.8 to $28\text{k}\Omega$	10k precision thermistor
Power requirement	5 to 14V, $\sim 18\text{mA}$ for 1s	
Environmental	IP68	-20 to $+60^\circ\text{C}$ operating range
Dimensions	$143 \times 40\text{mm}$ diameter	See drawing below
Weight	0.1kg	Excluding cables
Sensor calibration	Sensors are fully interchangeable	Individual sensor calibrations not required
Logger / Meter compatibility	GP1, DL6, DL2e and HH2	HH2 does not record or display the soil temperature

[1] Accuracy figures are quoted at an expanded uncertainty coverage level of $k=2$ and calculated using standard Monte Carlo techniques.

[2] Maximum cable lengths: 100m for GP1 and DL6 data loggers, 100m for DL2e water content measurement, 25m for DL2e temperature.

Ordering Information

Soil moisture sensor type SM300 with built-in temperature sensor and fitted with an M12 IP68 connector.

Cable must be ordered separately.

Cable options:

SMS sensor cable type SMSC/sw-05 5m cable, M12 to bare wire, suitable for connection to a GP1 or DL6 data logger.

SMS sensor cable type SMSC/lw-05 5m cable, M12 to bare wire with 100mm flying lead, suitable for connection to a DL2e.

5m extension cable type EXT/5W-05 5m cable, M12 to M12.

10m extension cable type EXT/5W-10.

25m extension cable type EXT/5W-25.

The EXT/5W-xx cables can be connected together to create custom lengths (see note [2] above) then fitted to an SMSC/sw-05 or SMSC/lw-05 cable for data logger connection.

1.5m cable SMS to HH2 type SMSC/d-HH2 1.5m cable, M12 to 25-way D-socket, suitable for connection to an HH2.

Accessories:

0.5m extension tube type ML/EX50

1.0m extension tube type ML/EX100

45mm Spiral Auger type SM-AUG-100 for installing SM300s at depth, length 1.2m.



Other soil moisture sensors

The **ML2x** provides exceptionally high-accuracy soil moisture readings ($\pm 1\%$) within a well-defined soil volume.

The **PR2** is available in 4 and 6 sensor versions, enabling soil moisture profile readings to be taken down to 1m depth.

The **WET sensor** measures pore water EC as well as soil moisture and temperature directly within the growing media.

Delta-T can also supply a range of **tensiometers** including water-filled and dielectric models.

Data loggers / meters

Delta-T data loggers and accessories are compatible with the SM300 – please enquire about software compatibility and updates. The SM300 can be used as a portable moisture probe with the HH2 meter (the HH2 does not provide temperature indication from the SM300).

For these or other products, please request additional data sheets or see www.delta-t.co.uk.

