The **WET Sensor type WET-2** measures three vital soil properties: **W**ater content, **E**lectrical Conductivity (EC) and **T**emperature.

- Moisture and nutrient status in the root zone
- Rapid monitoring of growing conditions
- Calibrations for many soils and substrates

Rapid checks on growing conditions

The WET Sensor can easily be inserted into substrates, composts and most soils, enabling growers and researchers to make rapid checks and optimise the uniformity of growing conditions. Each reading takes less than 5 seconds and provides 3 of the most important indicators of root zone health: water content (%), pore water conductivity (ECp) and temperature (°C). The sensor is particularly useful in horticulture for monitoring and responding to variations when applying fertigation, CRF or organic treatments.

Pore water conductivity

The WET Sensor is able to calculate pore water conductivity (ECp) which is the EC of the water available to plant roots. The ECp calculation is derived from an approximate relationship between dielectric properties. This applies particularly well to WET Sensor readings, which are taken at the same frequency within the same defined region of soil/substrate. The approximation is valid in most soils and is particularly accurate in mineral wool and other artificial substrates media.

Horticultural media calibrations

The WET Sensor is supplied with default calibrations for generic mineral, organic, sand and clay soils. Special WET-GH substrate calibrations can be ordered as a set, for a variety of horticultural media including coir, peat-based potting mixes and greenhouse "mineral" soils. Alternatively, WET-ST calibrations can be ordered for mineral wool (vertical and horizontal measurement).

Applications

- Horticulture
- Agriculture
- Soil science

Data logging

The WET Sensor can be connected to the GP2 or GP1 Data Logger in order to monitor fluctuations in growing conditions over time. The smart control relay capability of the GP2 and GP1 are fully enabled for the WET Sensor, so the system may be configured to control water content and/or EC or temperature using powerful built-in control capabilities.

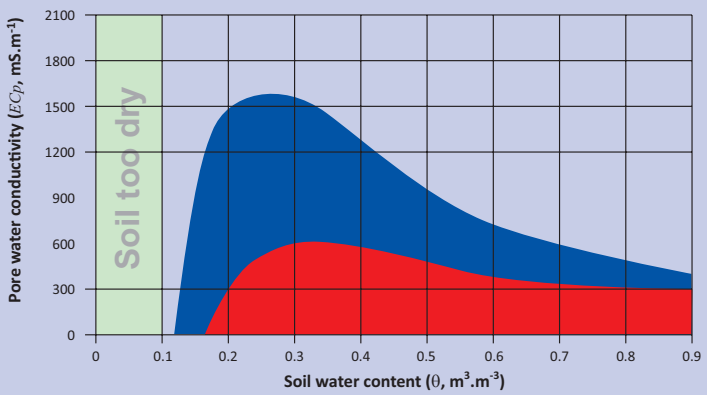
Ordering Information	
WET-2/d	Sensor with 1 m cable and 25-way D-socket for use with HH2.
WET-2/w-05	Sensor with 5 m cable terminating in bare wires for use with GP1 or GP2.

Brief Specification (full spec on page 15)	
Measured parameters	
Permittivity, ε'	1 to 80 ± 2.5 [1]
Bulk conductivity	0 to 300 mS.m^{-1} ± 10 (ECb)
Temperature	-5 to 50°C ± 1.5°C
Calculated parameters	
Volumetric Soil Moisture, θ	0 to 100% ± 3% [2]
Pore water conductivity	See graph below (ECp)
Other specifications	
Calibration	Individual sensor calibrations stored within sensor EEPROM
Output	Serial data (TTL)
Environmental	IP68, -40 to +70°C
Power	6 to 10 V, ~38 mA for 2.5 s
Dimensions	~120 x 45 x 13 mm
Rods	~68 mm long
Sample volume	~500 ml

[1] Permittivity is a measure of the dielectric properties of materials, e.g. soils and substrates.

[2] Soil moisture accuracy refers to errors after applying a soil-specific calibration, within 10°C of calibration temperature.

Pore water conductivity accuracy

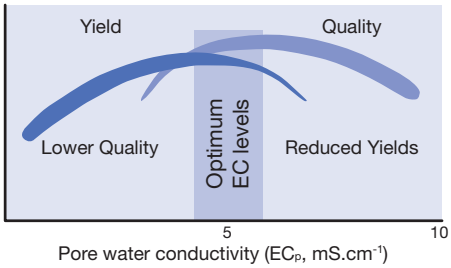


typical accuracy ± 5% reading, max errors ± 10% of reading or ± 10 mS.m^{-1}*

typical accuracy ± 10% reading, max errors ± 20% of reading or ± 20 mS.m^{-1}*

*(whichever is greater)

Yield and Quality of Tomatoes v ECp



WET Kit

For portable applications the WET Sensor is used with an HH2 Moisture Meter and is normally supplied as a complete kit - see Ordering Information.

Ordering Information			
WET-2-K1	WET Kit including WET-2/d, HH2 Moisture Meter, manuals and carrying case.		
WET-2-K4	As WET-2-K1 Kit plus WET-GH1 substrate calibration upgrade.		
Calibration sales codes (dependent on WET partnering equipment)			
Substrate calibration upgrades If additional horticultural substrate calibrations are required, they should be ordered at the time of purchase of the HH2, GP2 or GP1. Substrate calibrations are factory installed at Delta-T's premises.			
HH2	GP2	GP1	Substrate calibration upgrade
WET-GH-1	**WET-GH-1G2**	**WET-GH-1G**	Horticultural media including coir, peat-based potting mixes and greenhouse 'mineral' soils.
WET-ST-1	**WET-ST-1G2**	**WET-ST-1G**	Mineral wools (vertical and horizontal measurement).

Horticultural Applications

- Fertigation and hydroponics
- Soil salinity
- Container-grown shrubs and trees

Acknowledgements

WET Sensors have been developed in co-operation with:

PLANT RESEARCH INTERNATIONAL
WAGENINGEN UR

Plant Research International (formerly IMAG-BV), P.O. Box 16, 6700 AA Wageningen, The Netherlands.

Web site: www.pri.wur.nl

Designers of the WET Sensor & the ASIC which enables accurate measurement of permittivity and conductivity of the bulk soil or media.

SAINT-GOBAIN
Cultilene

Saint-Gobain Cultilène B.V. Zeusstraat 2, 5048 CA TILBURG, The Netherlands.

Web site: www.cultilene.com

Sponsors of research into horticultural media applications and suppliers of horticultural media calibrations.

Sensor Specifications

	Multi-parameter			Soil water potential
	WET Sensor 			**EQ3** 
	Volumetric water content	Pore water conductivity (ECp)	Temperature	Soil water potential (matric potential) and soil temperature
	± 0.03 $m^3.m^{-3}$ (3%)	See graph on page 6	**± 1.5°C**	**± 10 kPa over 0 to -100 kPa** 10% of reading over -100 to -1000 kPa
				± 0.5°C, 0 to 40°C for temp sensor **± 0.75°C**, -20 to +60°C for temp sensor
	Full accuracy over: **0 to 1.0 $m^3.m^{-3}$**	See graph on page 6	**0 to 50°C**	**0 to -1000 kPa** (-10bar)
	0 to 300 $mS.m^{-1}$			Suitable for all non-saline soils.
	Supplied with extended range calibrations which should be used for readings between 300 to 500 $mS.m^{-1}$			
	-5 to 50°C			**0 to 40°C**
	Serial TTL data providing permittivity, bulk conductivity and temperature, from which water content and pore water conductivity are calculated			**0-1.0 V** differential, non-linear. (Calibration data and graph supplied with each sensor)
				Resistance 5.8Ω to 28kΩ for temp sensor
	6 to 10 V, ~38 mA for 2.5 s			**5 to 14 V, ~18 mA for 1 s**
	IP68			**IP68**
	~500 ml			**N/A**
	Sample volume is weighted towards soil immediately surrounding the rods			
	Overall: **~120 x 45 x 13 mm** Rods: 68 mm x 3.0 mm dia Outer rods 68 mm x 3.0 mm dia Central rod 65 mm x 5.0 mm dia			**181 mm x 40.5 mm** diameter
	Weight: 0.1 kg			Weight: 0.3 kg (excl. cable)
	Sensor calibrations supplied in WET Sensor EEPROM			Individual sensor calibrations supplied
	Recalibration advised every 3 years (depending on use)			Recalibration advised every 2 years (depending on use)
	Generalised **Mineral**, **Organic**, **Sand** and **Clay** calibrations are supplied, specialist calibrations are available for horticultural substrates (see page 7)			No soil calibrations required
	Measures pore water conductivity, moisture content and temperature directly within soils and substrates. It has crucial applications in precision horticulture and soil science research.			Maintenance-free dielectric tensiometer with soil temperature measurement. Can be left installed even in frozen soils. Best results in dry soils. Readings are lower accuracy than water-filled tensiometers.