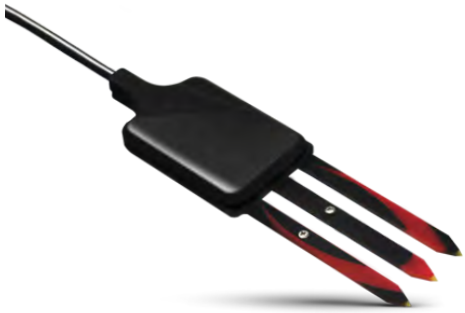
5TE Soil Moisture, Temperature, & Electrical Conductivity Sensor

SPECIFICATIONS	
subject to change without notice	
ACCURACY	
Apparent Dielectric Permittivity (Ɛa)	±1 Ɛa (unitless) 1-40 (soil range) ± 15% from 40-80 (soil range)
Soil Volumetric Water Content (VWC)	Using Topp equation: ± 0.03 m^3/m^3 (± 3% VWC) typical in mineral soils that have solution electrical conductivity < 10dS/m
	Using medium specific calibration, ± 0.01-0.02 m^3/m^3 (±1-2% VWC) in porous mediums
Electrical Conductivity (EC)	±10% from 0 to 7dS/m, user calibration required above 7dS/m
Temperature	± 1°C
RESOLUTION	
Ɛa	0.1Ɛa (unitless) from 1-20 <0.75Ɛa (unitless) from 20-80
VWC	0.0008 m^3/m^3 (0.08% VWC) from 0 to 50% VWC
EC	0.01dS/m from 0 to 7dS/m 0.05dS/m from 7 to 23.1dS/m
Temperature	0.1 °C
RANGE	
Ɛa	1 (air) to 80 (water)
EC	0-23 dS/m (bulk)
Temperature	-40 - 50°C
MEASUREMENT SPEED	150 ms (milliseconds)
SENSOR TYPE	
VWC	Frequency domain
EC	2 probe design
Temperature	Thermistor
OUTPUT	RS232 (TTL) or SDI-12
OPERATING ENVIRONMENT	-40°C to 50°C
POWER	3.6 - 15 VDC, 0.3 mA quiescent 10 mA during 150 ms measurement
CABLE LENGTH	5 m standard, Custom cable lengths available upon request
CABLE CONNECTOR TYPES	3.5 mm "stereo" plug, or stripped and tinned lead wires (3)
SENSOR DIMENSIONS	10 cm x 3.2 cm x 0.7 cm
DATA LOGGER COMPATIBILITY (NOT EXCLUSIVE)	Sutron Dataloggers: Xpert, XLite, 8310 Any dcp capable of 3.6-15V excitation & serial or SDI-12 communications`
ORDERING	
5TE	Soil Moisture, Temperature, & Electrical Conductivity Sensor
ACCESSORIES	Auger Kit, Cable Armor, Splice Kit



The 5TE is designed to measure the water content, electrical conductivity, and temperature of soil and growing media.

Using an oscillator running at 70 MHz, it measures the dielectric permittivity of soil to determine the water content. A thermistor in thermal contact with the sensor prongs provides the soil temperature, while the screws on the surface of the sensor form a two-sensor electrical array to measure electrical conductivity.

Applications

Fertigation Mgt
Irrigation Scheduling
Plant Disease Forecasting
Soil Respiration
Plant Ecology

Monitoring Salt Levels

In water-limited areas, monitoring salt levels can be as important as monitoring soil moisture. The 5TE allows you to measure salt levels through bulk electrical conductivity.

EC measurements require good contact between the stainless steel electrodes on the sensor and the soil. Due to large air spaces in potting soil/soilless media, the 5TE cannot be used accurately in potting soils or soilless substrates.

Engineered for Accuracy

The 5TE measures volumetric water content, temperature, and EC independantly. The sensor determines volumetric water content (VWC) by measuring the dielectric constant of the media using capacitance/frequency domain technology. It uses a 70 MHz frequency, minimizing salinity & textural effects, for extremely high accuracy in most soils. The 5TE measures temperature with an onboard thermistor & electrical conductivity using a stainless steel electrode array. VWC in mineral soils is calculated using the Topp equation. Other calibrations are provided on request. Temperature & electrical conductivity are factory calibrated for all soil types.