## Decagon 5TE Soil Moisture Sensor

Soil moisture, temperature, and electrical conductivity: The 5TE lets you monitor bulk electrical conductivity (EC), in addition to volumetric water content (VWC) and soil temperature. Monitoring salt levels can be as important as monitoring soil moisture in water-limited areas. The 5TE allows you to measure salt levels through bulk electrical conductivity.

### Accuracy
- **Apparent Dielectric Permittivity (ε_a):** ± 1 ε_a (unitless) from 1 - 40 (soil range), ± 15% from 40 – 80
- **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 < 10 dS/m
  Using medium specific calibration, ± 0.01 - 0.02 m^3/m^3 (± 1 - 2% VWC) in any porous medium: ± 10% from 0 to 7 dS/m, user calibration required above 7 dS/m ± 1°C
- **Electrical Conductivity (EC):** ± 10% from 0 to 7 dS/m, ± 1°C
- **Temperature:** ± 0.1 ε_a (unitless) from 1 - 20, < 0.75 ε_a (unitless) from 20 - 80
  0.0008 m^3/m^3 (0.08% VWC) from 0 to 50% VWC
  0.01 dS/m from 0 to 7 dS/m, 0.05 dS/m from 7 to 23.1 dS/m
  0.1°C

### Resolution
- **ε_a:**
  - VWC: 0.1 ε_a (unitless) from 1 - 20, < 0.75 ε_a (unitless) from 20 - 80
  - 0.0008 m^3/m^3 (0.08% VWC) from 0 to 50% VWC
  - 0.01 dS/m from 0 to 7 dS/m, 0.05 dS/m from 7 to 23.1 dS/m
  - 0.1°C
- **EC:** ± 10% from 0 to 7 dS/m, ± 1°C
- **Temperature:** ± 0.1°C

### Range
- **ε_a:**
  - VWC: 1 (air) to 80 (water)
  - 0 - 23 dS/m (bulk)
  - -40 - 50°C Calibration dependant; up to 0 - 57% VWC with polynomial equation
- **EC:**
- **Temperature:**

### Measurement Time
- 150 ms (milliseconds)

### Sensor Type
- **VWC:** Frequency domain
- **EC:** Two probe design
- **Temperature:** Thermistor

### Output
- RS232 (TTL), or SDI-12

### Operating Environment
- -40 - 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

### Sensor Dimensions
- 10 cm x 3.2 cm x 0.7 cm

### Part.no. ECH5TE
- Decagon Combi-Echo 5TE

### Interface
- Necessary Interface to connect this sensor with iMetos: ECH870E / ECH871E / ECH874E