SOIL MOISTURE CONE PENETROMETER

The volumetric percentage of water in soil (Soil Moisture) has become an important consideration in geotechnical and environmental design and is one of the most fundamental factors in influencing soil strength. The Soil Moisture Cone (SMC), provides real-time in-situ data logs of soil moisture and resistivity without sampling; also measuring the standard geotechnical parameters from the attached Piezocone.

The SMC takes advantage of the relationship between the soil dielectric constant and moisture, known as Topp's Equation. This relationship is not strongly influenced by soil type and resistivity if the dielectric measurement is made above a critical frequency of approximately 30MHz. The inner two electrode rings of the cone determine the soil's moisture content by measuring the frequency shift of a high frequency excitation signal as it passes through the soil near the surface of the module.

The outer two rings of the four electrodes are used to measure resistivity. An AC voltage signal of constant amplitude is applied across the rings. A voltage measurement, which is proportional to the current through the soil, is made across the sampling resistor.

SPECIFICATIONS

PCPT CONE	THIS IS THE SAME SPECIFICATION AS THE STANDARD PCPT CONE PLEASE REFER TO THE DIGITAL PIEZO CONE PENETROMETER DATASHEET
MOISTURE MEASUREMENT	> EXCITATION FREQUENCY 100Hz > ELECTRODE ARRAY 2 RING > CALIBRATION RANGE 0-100% SATURATION > RING SEPARATION 0.5CM
RESISTIVITY MEASUREMENT	> EXCITATION FREQUENCY 100Hz > ELECTRODE ARRAY 2 RING > CALIBRATION RINGS 1-10,000 ohm-m > RING SEPARATION 5.6CM
RESISTIVITY	> RING DIAMETER 2.54CM > RING AREA 10.13CM > SAMPLE RATE 1Hz

The SMC showing the standard Piezocone on the end and the 2 outer rings which measure resistivity and the two inner rings which measure the dielectric constant

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