Digital Radio-Isotope Cone Penetration Test system





Features

- Digital RI-CPT system is an electric cone penetration test (CPTU) that can measure the density distribution profile of subsurface soil mass by an on board 24bit ADC.
- It has lower noise and a simpler system than conventional analog RI-CPT, because entirely digital data is transferred by Control Area Network (CAN).
- Its density measurement can achieve much better precision than that of mechanical sampling.
- Digital RI-CPT system is applicable onshore and offshore.

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Introduction

Digital RI-CPT system can measure the conventional CPTU log (tip resistance(q_c), sleeve friction(f_s) and pore pressure(u)) together with the density distribution profile. The RI (Radio-Isotope) based technique (Nuclear method) is used to realize the continuous and virtually non-destructive detection of density in the subsurface soil mass. Digital RI-CPT's density measurement can achieve much better precision than that of mechanical sampling of the undisturbed specimen, thus provides us with the high-quality density distribution profiles not only in the clay strata but also in the sand deposit. Further, Digital RI-CPT system has lower noise and a simpler system than conventional analog RI-CPT system, because entirely digital data is transferred by Control Area Network (CAN).





Sample of Digital RI-CPT results





Below groundwater level (Sr=100%), the moisture content, dry density and void ratio can be calculated from the bulk density and soil particle density.



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1 Sensitive, fine grained 2.0rganic soil-peats 3.Clays: clay to silty clay 4.Silt mixtures: clayey silt to silty clay 5.Sand mixtures: silty sand to sandy silt 6.Sands: claen sand to silty sand 7.Gravely sand to sand 8.Very stiff fine grained

Specifications

Probe name	Electric CPTU cone					RI density probe
Model No.	SR-3EIP-DIG-DP1					SRD-1DP-DIG-DP1
Radiation source						Cesium137 ¹³⁷ Cs 3.7MBq
Sensor	Cone resistance $q_{\rm c}$	Sleeve friction $f_{\rm s}$	Pore pressure <i>u</i>	Inclinometer (3-axis acceleration sensor)	Temperature	Nal(TI) Scintillation counter
Range	30MPa	1,000kPa	1,000kPa	0 to180° from Vertical	0 to 50℃	Bulk density ρ _t 1.0 to 2.3g/cm ³
Dimensions	dia. 35.7mm(Friction cutter:dia. 48.6mm) Length 750mm (with direct joint adapter), 1,200mm (with RI density probe)					dia. 48.6mm length 1,100mm
Operating temperature	0 to 50°C					
Waterproof	IP68 (Water resistant 1MPa)					
Power Suply	DC 12V					

●The content of this leaflet is as of May 2018. ●Product specifications may be subject to change. ●Colors may differ slightly for printing.



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