



Geotech CPT(u)-probes

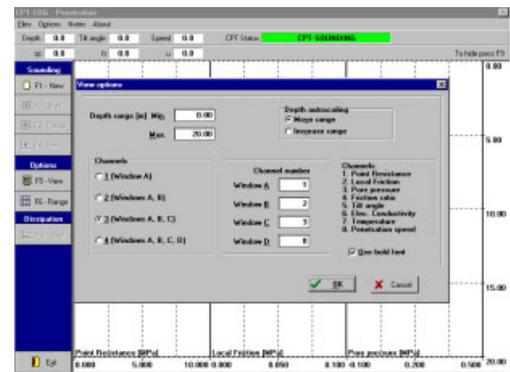


Above: Complete CPT-equipment from Geotech - probe, depth encoder, HC-system, interface box, laptop.

Left: Probes with 10 and 15 cm² section areas.

Right: CPT-LOG

*HC-system - Geotech's newly developed system for wireless data transmission.



Probes with 10 cm² or 15 cm² section areas.

Cordless CPT system with realtime data acquisition.

8 hours 18 bit back-up memory in cone available.

Measurement of point resistance, sleeve friction and dynamic pore pressure.

Tilt, temperature, electric conductivity and seismic as option.

Geotech manufactures since 1979 a unique CPT system. Measurement data is transmitted cordless through the rods to the surface. The probes are equipped with up to five sensors.

Ingenjorsfirman Geotech AB

THE LEADING EDGE SCANDINAVIAN MANUFACTURER OF GEOTECHNICAL EQUIPMENT

Rigs

Rig accessories

Sounding & sampling

In-situ testing

Data acquisition & software

Others

Geotech CPT-probe

The Geotech CPT(u) probes are equipped with individual sensors for point resistance (q_c), sleeve friction (f_s) and pore pressure (u). The cones can also be equipped with tilt and temperature and with adapters for electric conductivity or seismic CPT. The data measured by the sensors is digitised, multiplexed and encrypted with an error detecting code in the probe before it is forwarded to the newly developed HC-transmitter, sound transmitter or cable adapter for transmission to the surface. To back-up the data transmission, the cones can also be delivered with a back-up memory of 8 hours capacity, with 18 bits resolution on all channels.

All the three parameters point resistance, sleeve friction and dynamic pore pressure vary with the type of penetrated soil. In addition, the point resistance (q_c , in MPa, measured behind the cone) varies with the degree of stiffness. The sleeve friction (f_s , in kPa, measured along a sleeve on the probe) is an expression of the horizontal pressure building up during penetration of the probe, and varies with the type of soil and the degree of overconsolidation. The boundary between soil types is expressed by a modification in the sleeve friction/point resistance relation.

Clays are primarily identified by the dynamic pore pressure readings (u , in MPa, measured through a sintered pewter filter) which also give an indication of the undrained shear strength. The permeability of soils can be estimated by the dissipation time of the dynamic pore pressure. Extra available channels are temperature, electric conductivity and seismic.

The readings from the three channels are corrected for temperature drift by a temperature sensor and a processor in the electronic part of the probe. The probes have therefore a very low temperature sensitivity.

A tiltmeter can be delivered in the probe. During penetration, the deviation from the vertical of the probe can be monitored and the probe automatically stopped at a pre-set maximum tilt increment or point resistance with the programmable automatic electronic card (P.N. 41450).

Probe characteristics	Probe 10 cm ²	Probe 15 cm ²
Measurement channels		
Point resistance (q_c):	10, 50 or 100 MPa	10 or 50 MPa
Sleeve friction (f_s):	0,5 MPa	0,5 MPa
Dynamic pore pressure (u), option:	2,5 MPa	2,5 MPa
Tilt, option:	0 - 40°	0 - 40°
Temperature, option:	-10° to +50°C (t = 20 s)	-10° to +50°C (t = 20 s)
Electric conductivity, option as adapter:		0,001 - 10 S/m
Seismic, option as adapter:	Only with cable transmission	
Back-up memory, option:	8 hours, 18 bits resolution	
Dimensions:		
Cone:	60° apex angle	
Section area:	10 cm ²	15 cm ²
Friction surface:	150 cm ²	225 cm ²
Total length:	1000 mm	710 mm
Weight:	3,5 kg	5,5 kg
Power supply (autonomy):	6 alkaline batteries, type C	4 alkaline batteries, type C
Net area faktor, cone:	0,58	0,7
Net area faktor, sleeve friction:	0,014	0

Variables	TECHNICAL SPECIFICATIONS:		
	Point resistance (q_c)	Sleeve friction (f_s)	Dyn. pore pressure (u)
Resolution (12 bits):	0,04 % F.S.	0,05 % F.S.	0,04 % F.S.
Resolution (18 bits):	10 ⁻⁴ % F.S.	10 ⁻⁴ % F.S.	10 ⁻⁴ % F.S.
Temperature stability:	< 0,2 % F.S.	< 0,2 % F.S.	< 0,2 % F.S.
Non linearity:	< 0,1 % F.S.	< 0,5 % F.S.	< 3 % F.S.
Overload allowance:	25 %	50 %	25 %

ORDER REFERENCE:

P.N:	Description:	P.N:	Description:
41101	Probe 10 cm ² , 10 MPa, 3 channels, temp.comp	11903	HC-transmitter
41106	Probe 10 cm ² , 50 MPa, 3 channels, temp.comp	10541	HC-receiver
41110	Probe 10 cm ² , 100 MPa, 3 channels, temp.comp	07279	Djup encoder
10520	Probe 10 cm ² , ospec.range, 3 channels	10599	Interface box
10521	Compression probe 10 cm ² , 3 channels	10600	Cable, HC-receiver to interface box
08480	Probe 15 cm ² , 2 channels, temp.comp	10601	Cable, depth encoder to interface box
41180	Extra channel with tilt sensor	10602	Cable serial, interface box to PC
41450	Programmable automatic stop card		
08791	Electric conductivity sensor		Sound transmitter for Ø32 mm rods
41132	Temperature sensor	41205	Sound transmitter for Ø36 mm rods
08969	Back- up memory for 10 cm ²		

