

# GEO TECH CPT PROBES

Geotech offers two different CPT systems, the Classic and the newly developed Nova.

The Geotech CPT probes are equipped with individual sensors for point resistance ( $q_c$ ), sleeve friction ( $f_s$ ), pore pressure ( $u$ ). 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 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.

CPT Classic Probe used in Mount Nansen 2013 Site Investigation

CPT Classic Probe



CPT Nova Probe



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

The Nova probe is also equipped with a tilt sensor (option for Classic 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.

## TECHNICAL SPECIFICATIONS

	<u>Nova</u>	<u>Classic</u>
<b>Point resistance (<math>q_c</math>)</b>	20, 50, 100 MPa	10, 50, 100 MPa
-Accuracy	< 0.2% FS	< 0.4% FS
-Resolution	< 0.0025% FS	< 0.08% FS
-Net area factor, cone	0,82	0,58
<b>Sleeve friction (<math>f_s</math>)</b>	0.5 and 1 MPa	0.5 MPa
-Accuracy	< 0.2% FS	< 0.4% FS
-Resolution	< 0.0025% FS	< 0.08% FS
-Net area factor, sleeve friction	0.0	0.014
<b>Dynamic por pressure (<math>u</math>)</b>	1, 1.5 and 5 MPa	2.5 MPa
-Accuracy	< 0.4% FS	< 0.5% FS
-Resolution	< 0.0025% FS	< 0.08% FS
<b>Tilt sensor</b>	0-40 deg.	0-40 deg.
<b>Weigth</b>	~ 1.25 kg	~ 2,1 kg
<b>Length</b>	230 mm	470 mm

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