

# CPT Readout Device



## 2 CHANNEL READOUT DEVICE (CPT)

The Hogentogler hand-held electronic readout device facilitates manual recording of tip resistance and local friction data from electronic static cone penetrometers. Large 3-1/2 digit liquid crystal displays show stable readings directly in metric or English engineering units. Readings are taken at depth increments of 10 cm defined by a transducer mounted on a wheel that positively tracks the rod displacement. The display changes only when readings are taken and an audible tone indicates the availability of each new reading. The device is powered by a 12 or 24 volt automotive battery and provides all of the electronic support required by a Hogentogler two channel electronic cone. The electrical cable from the cone plugs directly into the readout device. The set consists of all support apparatus to connect directly to most CPT rigs. Cones, rods and cables are sold separately.

# Field Computer System E4FCS

## Hogentogler's Fourth Generation CPT Computer System



### **E4FCS (Enhanced Field Computer System)**

The E4FCS is a rugged, dedicated system that is built with a single purpose; to easily and accurately log cone penetrometer data. The epitome of portable, this system weighs only 15.2 pounds. A transreflective color display is direct sunlight readable. All CPT data is safely stored on a ruggedized, quick swap hard disk drive. Using Microsoft Windows XP Pro, the most stable Microsoft operating system available, the operator is working with a version of the most popular Graphical User Interface on the market, making the transition for a new operator quick and easy. All the Hogentogler applications use the Windows “look and feel” to enhance efficiency. Connections to the vehicle interface and vehicle sensors are modular and truly “plug and play”, making the job of installation a breeze.

The new Hogentogler digital cone is a market trendsetter. Wholly digital in nature, a fast microprocessor stores not only calibration information but also identification information. Plug this cone into the system and it will tell the data acquisition system it's “name”, what channels are installed, each channel capacity, the date of the last calibration and how many meters of work have been performed. Two A/D processors handle the task of taking strain, pressure, pitch, roll and acceleration measurements. The high resolution A/D is capable of measurements of 1/64,000th of full scale for strain and pressure. The high speed A/D handles the bandwidth intensive job of acceleration as well as pitch and roll. Throw in an ultra rugged RS485 serial interface and you have a system that will handle the worst conditions with ease.

# Field Computer System

## Hardware

- NEMA 12 / MIL-STD-810E rated magnesium enclosure allows unit to be transported and operated in demanding environments.
- Windows Compatible with 1.4GHz Intel Pentium M© mobile module processor with battery backed real time clock, 256Mb RAM (EDO DIMM), 256Kb cache on die.
- Intel Centrino© Wireless Support.
- PCI Local bus with one available slot for 3/4 length PCI card.
- Removable Ultra DMA 2.5" ruggedized HDD, 20GB, shock mounted in quick swap drive bay.
- Quick swap drive bay supports CD-ROM, FDD or Compact Flash drives. CD-ROM and 1.44MB floppy disk drive are supplied with each system.
- Two PCMCIA bays support one Type III device or two Type II devices.
- PS/2 Keyboard / Mouse interface.
- One RS-232 serial port.
- One Parallel printer port (EPP/ECP).
- One IrDA (infrared) port.
- One IEEE 1394 (FireWire) high speed port.
- One USB port.
- PCI audio support.
- Audio mic-in and line-out ports.
- External CRT port for 1600x1200 32 bit max. resolution. Simultaneous LCD / CRT support.
- Li-Ion primary battery.
- Industrial silicon rubber sealed full function keyboard.
- Touch sensitive control pad supports full mouse function.
- Sunlight readable color TFT LCD, 12.1 inch, 1024 x 768 pixels (XVGA).
- External AC/DC power supply with wide range input (95-250VAC) to allow operation from AC source. Direct 10-16VDC input supported.
- Hard shipping case supplied with each system.

## System Options

- PCI Bus Master Video Capture Card for use with Video Cone
- 60Gb ruggedized hard disk drive for video capture data storage
- Soft carry case.
- Optional Car Power Adaptor allows system to operate on 12-32VDC power.
- External serial GPS module.
- Bay 2 compact flash drive, 64 Mb with larger flash drives available as an option.
- High speed wireless cellular link for data transfer to office network.

## Software

- Windows XP Pro operating system provides a familiar operator interface that minimizes training and provides a fast and ultra stable platform for applications
- Interfaces with Hogentogler Geostar digital cone penetrometers. Reads identification and calibration data from cones on startup.
- Communicates with all digital cone channels (including seismic) via serial link
- CRC error checking prevents transmission of incorrect cone data.
- Versatile graphing capabilities. Can graph up to four channels vs. depth, seismic vs. time, and pressure vs. time.
- Displays current status of all channels.
- Supports optical shaft encoder for depth measurements down to 0.5cm increment.
- Includes cone and vehicle diagnostics for easy, rapid testing and troubleshooting.
- Automatic storage of all cone data during sounding. Soundings can be interrupted and resumed.
- Capable of logging precise location of sounding by way of GPS link.
- Displays X and Y inclination graphically.
- Logs, displays, edits and stores seismic shear wave velocity data.
- Supports in-field calibration of cone.
- All cone channel data can be stored in universal ASCII format for easy import to other applications such as gINT, EXCEL, etc.

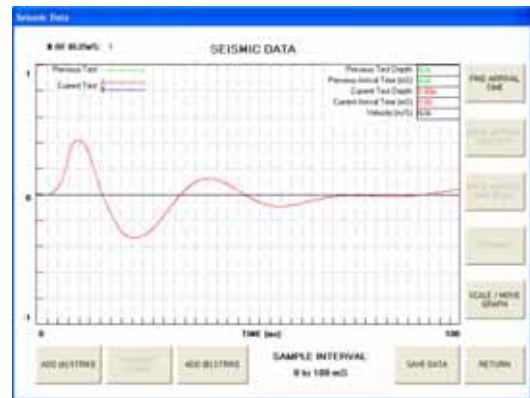
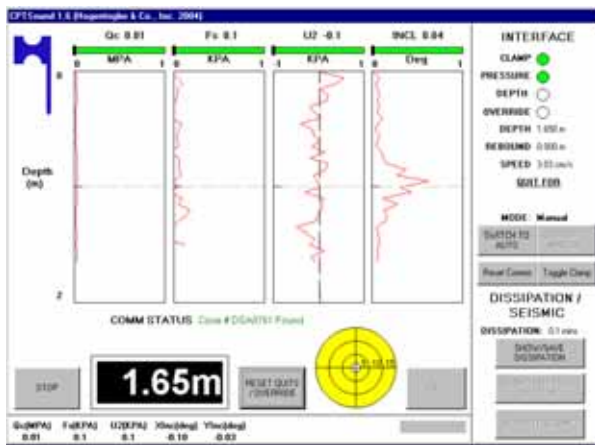
## Physical Specifications

- Size: 12 inch (W) x 9 inch (L) x 10 inch (H)
- All magnesium chassis construction, NEMA 12 / MIL-STD-810E
- Power requirements: 4.65 amperes @ 19VDC
- Operating environment: 0 - 45 deg. C
- Storage temperature range: -40 to 70 deg. C
- Weight: 15.5 pounds (7 kg)
- Shock: Operating - 15g, 11ms half sine wave. Non-operating - 30g, 11ms half sine wave.
- Altitude: Operating - 15,000 feet. Non-operating - 40,000 feet.
- Regulation: FCC part 15, Subpart B, Class B, UL, CUL, TUV, CE.

# Software: Data Acquisition CPT Sound

Hogentogler’s program for the acquisition of cone data is **CPTSound** and is included with the E4FCS data acquisition computer. CPTSound is an easy to use yet powerful program. A simple graphical user interface (GUI) allows an operator

discarding those that may have been incorrectly performed. The risks of incorrect data being recorded is thereby minimized.



to quickly ascertain the status of all cone channels and the interface circuit. The current status of the cone channels is listed at the bottom of the screen in user selected engineering units. In addition, up to four graphs can be displayed. The status of the truck interface circuit is shown on the right side of the screen, with depth, speed and rod rebound.

CPTSound minimizes risks to the operator and the equipment. A large depth indicator and a graphical bubble level showing the inclination allows the operator to place the computer in a safe place during the sounding. Potential channel quit conditions are highlighted in red when they arise, along with a visible warning. If a solenoid is installed, the program will dump the hydraulic pressure and pause the test. Operators, therefore, can spend more time performing the test and less time monitoring the data acquisition.

Compared to previous programs, CPTSound makes performing soundings simple. Cone channels can be displayed in many different units, depending on local engineering custom. Test setup is simplified by guiding the operator through predetermined setup steps. GPS coordinates can be imported into the program using a compatible GPS receiver.

CPTSound also makes seismic testing simple. Multiple strikes can be recorded and displayed. Operators have the option of comparing strikes and



# Software: Data Aquisition Coneplot

Coneplot is Hogentogler's CPT data presentation program. Using Coneplot, plots can be generated quickly and easily. In addition, data can be output in tabular form for use in spreadsheets or commercially available

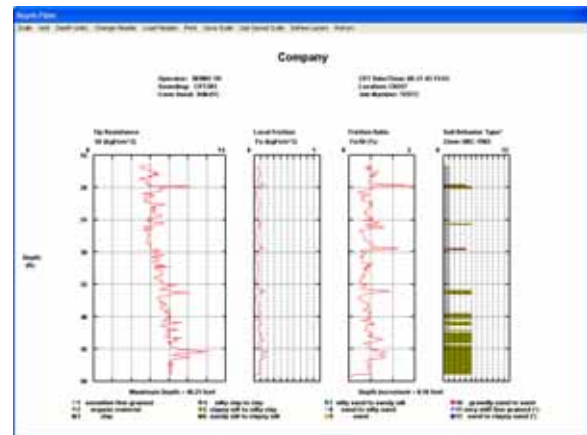


geotechnical project software.

CPT soundings can be plotted quickly after the test. Coneplot's easy to use GUI enables a user to generate plots with a minimum of learning. When a file is loaded, all of the recorded channels are displayed along with calculated channels. Recorded channels include tip resistance, sleeve friction, pore pressure, inclination, resistivity and temperature. Calculated channels include friction ratio, pore pressure ratio, SPT N correlation and soil behavior type. Channels can be plotted in any order and scaled to any size. Plots can be printed out or saved graphically using software such as Adobe Acrobat.

In addition to plotting soundings, Coneplot can plot seismic waves. Up to 60 seismic waves can be plotted using the software. Seismic wave arrival times can be selected and average velocities

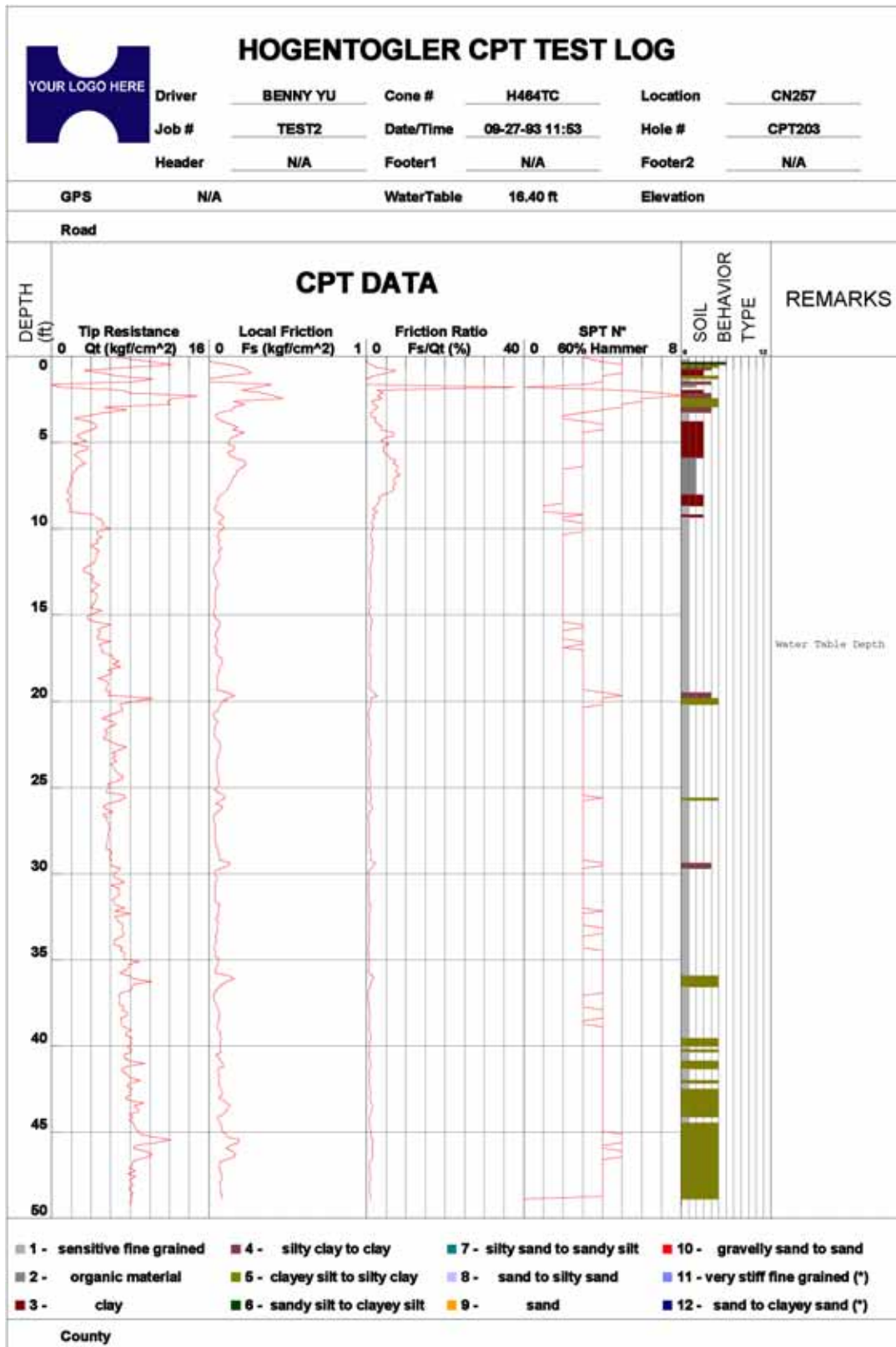
calculated. The velocities can be exported to a file and then imported into the sounding plot.



Plots can be customized with user defined headers. In addition, customer logos or client logos can be placed on the graph.

Coneplot is bundled with the Hogentogler E4FCS computer system. In addition, Coneplot is available for download on Hogentogler's website. Therefore, Hogentogler customers have the choice of generating plots to send to their clients or sending raw data files to their clients who can then generate their own plots.

# ConePlot Data Output



# Soil Behaviour Type

