KT-10 S/C Magnetic Susceptibility/Conductivity Meter

Terraplus is pleased to introduce the KT-10 S/C Magnetic Susceptibility/Conductivity Meter; a handheld instrument that simultaneously measures the magnetic susceptibility and conductivity of rock samples or drill cores. The KT-10 S/C provides users with accurate measurements in addition to a host of capabilities that include the ability to input depth correlation information, the flexibility to measure in either SI or CGS and S/m or Ω·m units for magnetic susceptibility and conductivity, respectively, and a large memory. The KT-10 S/C also comes with Bluetooth wireless communication, a data management/visualization software for the PC and the GeoVision Android app.

Major Benefits

• Three Instruments in One
The KT-10 S/C is a three-in-one instrument that can be used in three different configurations:
  - Magnetic susceptibility only (like a standard KT-10 v2)
  - Absolute Conductivity only (like a KT-10 C)
  - Magnetic susceptibility and conductivity simultaneously

• Wide Range Absolute Conductivity Meter
The KT-10 S/C has been calibrated using a multi-point algorithm to ensure accurate measurements between inductive and galvanic methods. It can measure conductivities from 1 to 100,000 S/m, while maintaining a sensitivity of 1 S/m.

• High Magnetic Susceptibility Sensitivity
The KT-10 S/C has a maximum sensitivity of 1 x 10⁻⁶ SI Units on smooth surfaces for magnetic susceptibility measurements.

• Depth Correlation
The KT-10 S/C allows the user to input information to correlate every core measurement to its depth. The user can enter information such as borehole I.D., box number, the number of rows in a box, start and end depths, as well as depth intervals. In the Scanner mode, depth intervals can be recorded with the push of a button. All readings between depth intervals are interpolated into the data for reference.

• Measure in SI or CGS and S/m or Ω·m Units
The KT-10 S/C allows users to obtain magnetic susceptibility measurements in either SI or CGS units; while conductivity measurements can be in either S/m or Ω·m units.

• GeoVision Android App for Real Time Profiling
The KT-10 S/C includes the GeoVision App to display real time scanner profiles on Android operated smart phones and tablets. Real time animated graphical outputs are displayed on the smart phone’s screen while scanning. The application can also be used as a KT-10 S/C memory data browser to display field measurements/records, allowing the user to pan and zoom on the scanner graph. Additional text notes can be added to the current or previously stored data with an Android smart phone or tablet. Android phone or tablet is not included with the GeoVision App.
Additional Benefits

• **Increased Memory**
The KT-10 S/C has a 4 GB memory that can store up to 4,000 total records. Users can take up to 4,000 scanner measurements with up to 480 data points per record, or 4,000 discrete measurements with 120 seconds of voice notes per reading. Discrete and scanner records can be combined to total 4,000.

• **Quality Control (QC) Parameters**
The KT-10 S/C provides operators with the ability to assess data quality. Along with the measurement results, an operator can obtain data averages and standard deviation values in measure mode or data averages and maximum values in scanner mode.

• **Uneven Surface Measurements**
The KT-10 S/C can be used with a pin (for magnetic susceptibility only) for uneven surface measurement, or without a pin when applied on a flat surface. It also automatically corrects and displays the true magnetic susceptibility.

• **Flexible PC Interface**
The KT-10 S/C includes GeoView, a multi-platform software which allows the operator to download and visualize the data. GeoView can also play back the voice notes stored along side the readings, change the KT-10 S/C’s settings, transfer the data to a spreadsheet and view or export GPS paths into a Google Earth compatible format.

• **Variable Audio Capability**
When used in the **Scan Mode**, the KT-10 S/C speaker allows the operator to monitor the variations in the magnetic susceptibility or conductivity measurements with a fluctuating audio sound, which is relative to the intensity of the reading. The voice recorder also allows for the recording and replaying of voice messages through the instrument’s speaker.

• **USB Data Transfer**
The KT-10 S/C uses USB communication standards as its default mode of communication. This allows for the fast transfer of measurements and digital voice streams from the unit to a PC. The USB can also be used for firmware upgrades and parameter settings.

• **Bluetooth Connectivity**
The KT-10 S/C comes standard with Bluetooth connectivity. This gives operators the ability to download the meter’s data wirelessly and connect to Bluetooth enabled GPS units to store GPS coordinates along with the readings. One can also pair the KT-10 S/C with the Android operated smart phone or tablet to obtain a real time scanner profile with the GeoVision App.

• **Large LCD Display**
The KT-10 S/C is equipped with a high contrast LCD display which serves as the interface for operating the instrument. The LCD also displays the magnetic susceptibility measurements, icons and graphical menus which are used to interactively navigate the KT-10 S/C’s different functions.

• **Rugged and Reliable**
The KT-10 S/C meets IP65 standards. It is therefore protected against dust and provides additional protection in rain or conditions with high humidity.
GeoView PC Interface Software:

- **Data Organization**

GeoView is a multi-platform software that allows users to organize their KT-10 S/C data by date and serial number. It also facilitates the transfer of data from the KT-10 S/C to a personal database for further correlation and interpretation. GeoView is compatible with both Windows and Linux operating systems.

As presented below, averaged readings are grouped together with records (containing date, time, value, voice notes and optional GPS positions) in one convenient location. Users can also add new column headers to enter additional information specific to the data collection.

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<th>Time</th>
<th>Kappa/Conc.</th>
<th>Average susc. +/- std</th>
<th>Sigma/Conc.</th>
<th>Average cond. +/- std</th>
<th>Information</th>
<th>Voice...</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Altitude</th>
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<tr>
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- **Data Visualization**

Numerical display allows for the quick review of field data. Graphical displays make it easier for data interpretation of the scanner data.

As shown below, the scanned data is displayed in a graphical mode. The use of markers can assist operators to orient the readings to a physical location.
KT-10 S/C Options:

- **Upgrade to a KT-10 Plus S/C**
  The KT-10 S/C can be remotely unlocked, via the GeoView software, to include all of the benefits of the KT-10 Plus S/C allowing it to measure iron ore samples up to 10 SI units. With this extended range and pre-installed calibration curve, it is possible to obtain the concentration estimate of iron ore in real time from the display.

- **Magnetic Susceptibility Calibration Pad**
  A magnetic susceptibility standard is now available as an option for the KT-10 S/C. The standard is manufactured from a suitable Mn-Zn Ferrite compacted with mudstone. Its purpose is to confirm that the KT-10 S/C is operating properly or, to recalibrate the instrument.

  Nominal susceptibility will vary between standards.

  | Typically | 34 x 10^{-3} SI |
  | Diameter  | 145 mm |
  | Height    | 70mm |
  | Density   | 2.2g/cm^3 |
  | Weight    | 2.65kg |

- **Conductivity Reference Pads**
  Three reference pads with different conductivity ranges (low, medium and high) are available for measurement verfication. Although there are three different ranges, each pad has a number of common parameters:

  - High homogeneity of conductive elements
  - Only diamagnetic material used eliminating magnetic susceptibility influence
  - Use of a sealing compound to block transfer of humidity
  - Optimal pad dimensions to reduce size effect
  - Smooth surface to optimize contact and ensure high accuracy of readings

  The low range pads are made of semi solid gels, while the middle and high range pads are of a proprietary mixture of ceramics. Each pad has been tested independently using different methods for measuring conductivity (AC and DC bridges plus impedance bridges).
## SPECIFICATIONS

| Sensitivities: | Susceptibility: $1 \times 10^{-6}$ SI Unit  
|                | Conductivity: 1 S/m  |
| Measurement Range: | Susceptibility: $0.001 \times 10^{-3}$ to $1,999.99 \times 10^{-3}$ SI Units  
|                | Conductivity: 1 to 100,000 S/m  |
| Operating Frequency: | 10 kHz  |
| Measurement Frequency: | 20 readings per second (in Scan mode, 5 readings averaged together and 4 readings /second stored).  |
| Display: | High contrast LCD graphic display with 104 x 88 pixels.  |
| Memory: | **4 GB: 4,000 Total Records Stored**  
|        | * 4,000 scanner measurements with up to 480 data points per record (total of 1,920,000 individual data points).  
|        | or  
|        | * 4,000 discrete measurements with 120 seconds of voice notes per reading.  
|        | Discrete and scanner records can be combined.  |
| Control: | One button with up / down functionality.  |
| Data Input/Output: | USB and Bluetooth (GPS/phone pairing).  |
| Power Supply: | 2 ‘AA’ batteries (alkaline or rechargeable).  |
| Battery Life: | Up to 3,000 measurements without voice recorder (with alkaline batteries).  |
| Operating Temperature: | -20 °C to 60 °C  |
| Dimensions: | 200mm x 57mm X 30mm  |
| Coil Diameter: | 65 mm with a 45 degree angle.  |
| Weight: | 0.30 kg  |
| GeoView PC Software | Supports all Windows 32 or 64 bit operating systems  |
| GeoVision App | Android operating system (OS) must be version 2.3.3 or higher.  |

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### Standard Configuration

A standard KT-10 S/C system is supplied with:
- KT-10 S/C console and wrist strap
- Two Pins
- **The GeoVision App for Android smartphones**
- Two rechargeable AA batteries and charger
- Car Charger for batteries
- USB cable
- CD with GeoView data transfer software
- Operations manual and a quick start guide
- Carrying pouch with foam insert
- Rugged shipping case

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*Specifications subject to change without notice #30-11-12*