

KT-20 3F-32 MAGNETIC SUSCEPTIBILITY AND CONDUCTIVITY SYSTEM

FOR SHALLOW EXPLORATION APPLICATIONS

Agriculture · Archaeology · Environmental Investigations

The KT-20 is a modular portable instrument that can measure a number of properties of a geological sample, core or soil, including magnetic susceptibility and conductivity. With the 3F-32 large diameter sensor, the KT-20 can be used for shallow applications as researchers are able to measure the earth's subsurface. Applications for the 3F-32 sensor include agriculture, archaeology, and environmental investigations.

The 3F-32 sensor features three frequencies (1-10-100 kHz) that have been carefully selected to provide certain benefits for magnetic susceptibility and conductivity measurements. The three frequencies also enable the 3F-32 sensor to provide sounding capabilities in favourable soil conditions. The 3F-32 sensor is equipped with a telescopic pole and arm support enabling users to easily and comfortably take measurements while standing or walking.

The KT-20 with 3F-32 sensor is an ideal instrument for field research. It can take a single measurement at a specific location, or continuously collect data to map an entire area. A GPS receiver is integrated into the KT-20 console to provide location coordinates with the data. It also has a built-in high resolution digital camera to visually document any sample of interest. In addition, data from the KT-20 can be exported into third-party mapping software programs.



Benefits:

Modular Magnetic Susceptibility and/or Conductivity System

The KT-20 3F-32 is modular, meaning it is available as either a dedicated magnetic susceptibility or conductivity measuring system, or as a combined system that can measure both properties simultaneously. Dedicated systems can be upgraded at a later date via a firmware upgrade that is available through the internet.

Measurements with Three (3) Separate Frequencies

When KT-20 users take measurements with the 3F-32 Sensor, they are able to collect readings from three frequencies (1-10-100 kHz). With a combined system, the user can obtain six different readings for every measurement point.

Different Depth Capabilities for Each of the Three Frequencies

One advantage of using three frequencies is that each frequency allows the user to obtain measurements from different depths. For those using the combined magnetic susceptibility/ conductivity system, the user is able to read two data points at three different depths or for each frequency.

Benefits (continued):

Soil/Material Discrimination with Each Frequency and Measurement

Different soil or material structures generate distinct results for each of the three frequencies. These different frequency results provide users with parameters to analyze the soil's or material's internal structures, including the size of conductive particles. Measuring both magnetic susceptibility and conductivity using three different frequencies opens the space for future material and structure analysis.

Advanced Zero Drift Compensation

One of the greatest limitations of magnetic susceptibility and conductivity measuring instruments is drift over time and temperature variations. The KT-20 includes an advanced zero drift compensation algorithm that monitors slow drifts and temperature variations, and applies a correction to the data.

Better Data Resolution

Users can simultaneously measure both magnetic susceptibility and conductivity as fast as 10 times per second, per frequency. This allows users to obtain higher data density and better spatial resolution. Users have the option of selecting two different sampling rates: 4 readings per second, or 10 times per second.

High Precision Contour Mapping

Due to the ability for the KT-20 3F-32 to collect more data, users can create highly precise contour maps using mapping software programs, such as Surfer. External GPS units can be interfaced with KT-20 3F-32 to improve GPS accuracy.



Additional Benefits:

- High sensitivity for magnetic susceptibility (1×10^{-6} SI units) and conductivity (0.05 S/m) measurements.
- Telescopic pole with arm support to comfortably operate the system.
- Single point and continuous measurement options. Data profiles are presented in real-time during continuous measurements.
- Integrated GPS to record location coordinates.
- Built-in Digital Camera to visually document samples.
- Transflective Colour Display that works in any lighting situation.
- Can be used with a range of additional KT-20 sensors to measure the magnetic susceptibility, conductivity, chargeability and resistivity of artifacts and samples.



3F-32 Large Diameter Sensor Specifications

Sensor Diameter:	32 cm		
Sensor Weight:	2.0 kg		
Measurement Frequency:	- 4 Readings per second in stationary mode - 10 Readings per second in scan mode		
Operating Frequencies:	<u>1 kHz</u>	<u>10 kHz</u>	<u>100 kHz</u>
Magnetic Susceptibility Sensitivity:	1×10^{-5} SI	1×10^{-6} SI	1×10^{-5} SI
Conductivity Sensitivity:	1 S/m	0.1 S/m	0.05 S/m
Magnetic Susceptibility Measurement Range:	0.01×10^{-3} to 1999.99×10^{-3} SI	0.001×10^{-3} to 1999.99×10^{-3} SI	0.01×10^{-3} to 1999.99×10^{-3} SI
Conductivity Measurement Range:	1 to 10,000 S/m	0.1 to 10,000 S/m	0.05 to 10,000 S/m



3F-32 Sensor with Telescopic Pole, Control Handle and KT-20 Console



3F-32 Sensor Transportation Case

KT-20 Hardware Specifications

Weight:	0.6 kg (2.6 kg with telescopic pole and 3F-32 Sensor)
Size:	260 x 72 x 60 mm
Memory:	4 GB
Data Input/Output:	USB and Bluetooth
Power Supply:	2 x Li-Ion Rechargeable Batteries
Operating Temperature:	-20°C to 60°C
Display Dimensions:	76 x 47 mm
Display Resolution:	400 x 240 pixels
Rating:	IP65
Internal GPS Accuracy:	2.0 m
Internal GPS Receiver Satellite Accessibility:	SBAS (WAAS, EGNOS, MSAS)
Built-in Camera:	2 Mega Pixels

Specifications are subject to change without notice (June 6, 2017)