



KT-20 MAGNETIC SUSCEPTIBILITY AND CONDUCTIVITY METER



KT-20 S/C Scan Mode



3F-32 Large Diameter Sensor



Pin for 10 kHz Single-Frequency Sensor



Outcrop Measurements

The KT-20 is a handheld instrument capable of measuring the magnetic susceptibility, conductivity or density of a sample. Its modular design provides users the ability to employ different sensors that are of an optimal frequency for either magnetic susceptibility or conductivity measurements. The sensors are available in circular and rectangular designs and can easily be interchanged, allowing the KT-20 to measure smaller or larger sized samples or cores. Density measurements can also be obtained from the KT-20 providing more information about the sample. A picture, audio note, text note and GPS coordinates can also be added to the measurement to increase the amount of information one can attach to each record to improving archiving.

Benefits:

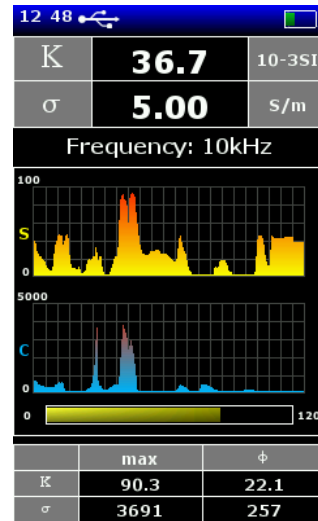
- **Three models** to choose from: dedicated magnetic susceptibility meter, dedicated conductivity meter, or combined magnetic susceptibility/conductivity meter.
- **Interchangeable dual- and single-frequency sensors** in circular and rectangular designs.
- **High Sensitivity** for magnetic susceptibility (1×10^{-7} SI) and conductivity (0.1 S/m).
- **Density measurements** using the KT-20 with the accessories provided with the system.
- **IP/Resistivity Sensor and 3F-32 Triple-Frequency Large Diameter Sensor** will become available in late 2015.
- **Data profiles** displayed in real-time while scanning.
- **Built-in high-resolution camera** to capture pictures of samples.





Additional benefits include:

- Integrated GPS to record location coordinates.
- Review data records directly on the display.
- Split and full core corrections for standard drill rod diameters (AQ, BQ, HQ, NQ and PQ) and non-standard sizes (2.4 to 12 cm).
- Input core box information to correlate measurement results to their appropriate depths.
- Data running average and standard deviation values displayed during individual measurements.
- Built-in microphone and speaker.
- Upgrades and support available via the internet.



KT-20 S/C Data Profile

Applications:

- Mineral exploration
- Core analysis
- Oil and gas exploration
- Environmental investigations
- Agricultural research
- Archaeology

Standard System Includes:

- (1) KT-20 Console
- (2) Rechargeable Li-Ion Batteries with Charger
- (1) Accessories for Density Measurements
- (1) USB Cable
- (1) Operations Manual with Quick Start Guide
- (1) Rugged Transportation Case



KT-20 Standard System

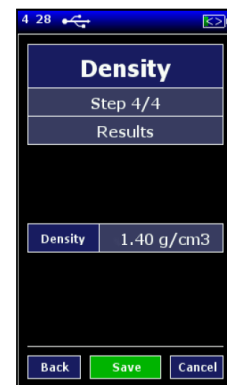
Density Measurements



Density Measurement:
Sample in Air



Density Measurement:
Sample Submerged in Water



Density Measurement Results



Sensors

- Five sensors are available in dual and single frequencies to provide certain benefits for either magnetic susceptibility or conductivity measurements.
- State-of-the-art design enables sensors to be easily interchanged.
- Circular and rectangular sensor designs available to adapt the KT-20 to large and small sized samples (note: 10 kHz single-frequency sensor is only available in a circular design).
- 10 kHz single-frequency sensor includes a pin for measuring rough or uneven surfaces.
- Each KT-20 model requires one sensor for operation. Multiple sensors can be purchased with the KT-20 or added afterwards.
- IP/Resistivity Sensor and 3F-32 Triple-Frequency Large Diameter Sensor will become available in late 2015.



KT-20 Dual-Frequency Sensors Available in Circular and Rectangular Designs

1 / 10 kHz Dual-Frequency Sensor		
Operating Frequencies:	1 kHz	10 kHz
Magnetic Susceptibility Sensitivity:	1 x 10 ⁻⁵ SI	1 x 10 ⁻⁶ SI
Conductivity Sensitivity:	13 S/m	1 S/m
Magnetic Susceptibility Measurement Range:	0.01 x 10 ⁻³ to 1999.99 x 10 ⁻³ SI	0.001 x 10 ⁻³ to 1999.99 x 10 ⁻³ SI
- Extended Range (Plus Option):	0.01 x 10 ⁻³ to 9999.99 x 10 ⁻³ SI	0.001 x 10 ⁻³ to 9999.99 x 10 ⁻³ SI
Conductivity Measurement Range:	13 to 100,000 S/m	1 to 100,000 S/m
- Extended Range (Cx Option):	13 to 200,000 S/m	1 to 200,000 S/m
Benefits:	<ul style="list-style-type: none"> • Reduces the influence of a sample's conductive properties on magnetic susceptibility measurements. • Linear conductivity measurements 	<ul style="list-style-type: none"> • Provides a sensitivity of 1 x 10⁻⁶ SI for magnetic susceptibility.
Sensor Designs:	Rectangular or Circular	

10 / 100 kHz Dual-Frequency Sensor		
Operating Frequencies:	10 kHz	100 kHz
Magnetic Susceptibility Sensitivity:	1 x 10 ⁻⁶ SI	-
Conductivity Sensitivity:	1 S/m	0.1 S/m
Magnetic Susceptibility Measurement Range:	0.001 x 10 ⁻³ to 1999.99 x 10 ⁻³ SI	-
- Extended Range (Plus Option):	0.001 x 10 ⁻³ to 9999.99 x 10 ⁻³ SI	-
Conductivity Measurement Range:	1 to 100,000 S/m	0.1 to 15,000 S/m
- Extended Range (Cx Option):	1 to 200,000 S/m	-
Benefits:	<ul style="list-style-type: none"> • Provides a sensitivity of 1 x 10⁻⁶ SI for magnetic susceptibility. 	<ul style="list-style-type: none"> • Provides a sensitivity of 0.1 S/m for conductivity measurements.
Sensor Designs:	Rectangular or Circular	

Sensor section continues on the following page...



Sensors

10 kHz Single-Frequency Sensor		
	Without Pin	With Pin
Operating Frequency:	10 kHz	10 kHz
Magnetic Susceptibility Sensitivity:	1×10^{-7} SI	1×10^{-6} SI
Conductivity Sensitivity:	1 S/m	10 S/m
Magnetic Susceptibility Measurement Range:	0.0001×10^{-3} to 1999.99×10^{-3} SI	0.001×10^{-3} to 1999.99×10^{-3} SI
- Extended Range (Plus Option):	0.0001×10^{-3} to 9999.99×10^{-3} SI	0.001×10^{-3} to 9999.99×10^{-3} SI
Conductivity Measurement Range:	1 to 100,000 S/m	10 to 100,000 S/m
- Extended Range (Cx Option):	1 to 200,000 S/m	10 to 200,000 S/m
Benefits:	<ul style="list-style-type: none"> Provides high sensitivity (1×10^{-7}) for magnetic susceptibility measurements. 	<ul style="list-style-type: none"> Pin enables sensor to measure samples with rough or uneven surfaces
Sensor Design:	Circular Only	

Induced Polarization (IP)/Resistivity Sensor *	
Measuring Method:	Time Domain IP (TDIP)
Electrode System:	Galvanic
TDIP Number of Windows:	20
- Optional Full Waveform:	300
Transmitter TDIP:	
- Signal Waveform:	ON+, OFF, ON-, OFF
- Pulse Duration:	0.5, 1, 2, 4 and 8 seconds
- Voltage:	+/- 15 V
- Current:	Maximum 1 mA (for samples with a resistivity of 15 k Ω)
Receiver:	
- Voltage Resolution:	10 μ V
- Current Resolution:	100 μ V

* Available in late 2015

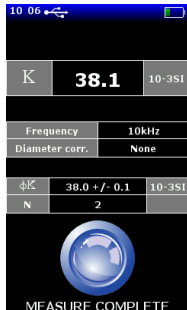
3F-32 Large Diameter Sensor *			
Operatin	1 kHz	10 kHz	100
Magnetic	1×10^{-5} SI	1×10^{-6} SI	-
Conducti	13 S/m	1 S/m	0.1
-	0.01×10^{-3} to 1999.99×10^{-3} SI	0.001×10^{-3} to 1999.99×10^{-3} SI	-
-	13 – 100,000 S/m	1 – 100,000 S/m	0.1 –
-	13 – 200,000 S/m	1 – 200,000 S/m	0.1 –

* Available in late 2015



KT-20 MODELS

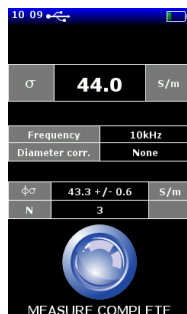
KT-20 MAGNETIC SUSCEPTIBILITY METER



KT-20 Measurement Screen

- Maximum Sensitivity: 10^{-7} (using 10 kHz single-frequency sensor without pin)
- Maximum Range: 2 SI units
- “Plus” upgrade for iron ore (optional):
 - Increase measurement range to 10 SI units
 - Iron ore concentration estimates (%) directly from the display based on calibration curve for magnetite

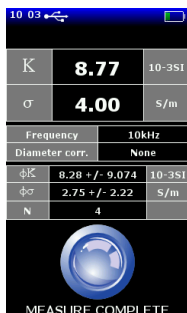
KT-20 C CONDUCTIVITY METER



KT-20 C Measurement Screen

- Maximum Sensitivity: 0.1 S/m (using 100 kHz dual-frequency sensor without pin)
- Measurement Range: 0.1 to 15,000 S/m (using 100 kHz dual-frequency sensor)
1.0 to 100,000 S/m (using 10 kHz frequency)
- Absolute Conductivity Meter, calibrated using multi-point algorithm
- “Cx” upgrade to increase measurement range to 200,000 S/m (optional)
 - Note: Cx option is only available with 1 kHz and 10 kHz frequencies.

KT-20 S/C MAGNETIC SUSCEPTIBILITY/CONDUCTIVITY METER



KT-20 S/C Measurement Screen

- Maximum Sensitivity:
 - Magnetic susceptibility: 10^{-7} (using 10 kHz single-frequency sensor without pin)
 - Conductivity: 0.1 S/m (using 100 kHz dual-frequency sensor)
- Measurement range:
 - Magnetic susceptibility: 2 SI units
 - Conductivity: 0.1 to 15,000 S/m (using 100 kHz dual-frequency sensor)
1.0 to 100,000 S/m (using 10 kHz frequency)
- Absolute Conductivity Meter, calibrated using multi-point algorithm
- “Plus” upgrade for iron ore (optional):
 - Increase measurement range to 10 SI units
 - Iron ore concentration estimates (%) directly from the display based on calibration curve for magnetite
- “Cx” upgrade to increase measurement range to 200,000 S/m (optional)
 - Note: Cx option is only available with 1 kHz and 10 kHz frequencies.

OPTIONS



• Additional Sensors:

Five sensors are currently available for the KT-20. Each KT-20 model requires one sensor for operation. Multiple sensors can be purchased with the KT-20 or added afterwards. An IP/Resistivity Sensor and 3F-32 Triple-Frequency Large Diameter (32 cm) Sensor (pictured right) will become available in late 2015.

• Instrument Upgrades:

• “Plus” Option for Magnetic Susceptibility Measurements:

- i. Increase measurement range to 10 SI units.
- ii. Iron ore concentration estimates (%) directly from the display based on a calibration curve for magnetite.

• “Cx” Option for Conductivity Measurements:

- i. Increase range to 200,000 S/m (only available for 1 kHz and 10 kHz frequencies)

• Bar Code Scanner:

Upgrade the KT-20 to enable the built-in high resolution camera to read bar codes to improve archiving (available in late 2015).

• KT-20 Carrying Pouch:

A carrying pouch is available to store and protect the KT-20 and one sensor while they are not in use.



3F-32 Large Diameter Sensor



KT-20 Carrying Pouch

PADS

• Magnetic Susceptibility Calibration Pads

Two calibration pads with low or high susceptibility values are available to verify the KT-20’s magnetic susceptibility measurements. These calibration pads can also be used to recalibrate the magnetic susceptibility readings.

	Low	High
Approximate Nominal Susceptibility Values <i>(values will vary between pads)</i>	34×10^{-3} SI Units	2500×10^{-3} SI Units
Diameter:	145 mm	145 mm
Height:	70 mm	70 mm
Weight:	2.65 kg	2.65 kg
Colour	Orange	Blue



Magnetic Susceptibility Calibration Pads

• Conductivity Reference Pads

Three reference pads are available to verify the KT-20’s conductivity measurements. These reference pads are available with low, medium or high conductivity values. Each pad has been independently tested using different methods for measuring conductivity (AC, DC and impedance bridges).

	Low	Medium	High
Approximate Nominal Conductivity Values <i>(values will vary between pads)</i>	9 S/m	700 S/m	85,000 S/m
Diameter	152 mm	128 mm	152 mm
Height	50 mm	50 mm	50 mm
Weight	1.2 kg	1.0 kg	1.8 kg
Colour	Red	Yellow	Green



Conductivity Reference Pads



KT-20

Radiation Detection Systems

KT-20 S/C

SPECIFICATIONS

1/10 kHz Dual-Frequency Sensor				
		Magnetic Susceptibility	Conductivity	Density
Sensitivity		1 x 10 ⁻⁶ SI Units (10 kHz)	1 S/m (10 kHz)	1.0 g
Measurement Range	Standard	0.001x10 ⁻³ to 1,999.99 X 10 ⁻³	1.0 to 100,000 S/m (10 kHz)	
	Extended (<i>Plus or Cx</i>)	0.001x10 ⁻³ to 9999.999 x10 ⁻³	1.0 to 200,000 S/m (10 kHz)	

10/100 kHz Dual-Frequency Sensor				
		Magnetic Susceptibility	Conductivity	Density
Sensitivity		1 x 10 ⁻⁶ SI Units (10 kHz)	0.1 S/m (100 kHz)	1.0 g
Measurement Range	Standard	0.001x10 ⁻³ to 1,999.99 X 10 ⁻³ (10 kHz)	0.1 to 15,000 S/m (100 kHz)	
	Extended (<i>Plus or Cx</i>)	0.001x10 ⁻³ to 9999.999 x10 ⁻³ (10 kHz)	1.0 to 200,000 S/m (10 kHz)	

10 kHz Single-Frequency Sensor				
		Magnetic Susceptibility	Conductivity	Density
Sensitivity		1 x 10 ⁻⁷ SI Units (without pin)	1 S/m (without pin)	1.0 g
Measurement Range	Standard	0.0001x10 ⁻³ to 1,999.99 X 10 ⁻³	1.0 to 100,000 S/m	
	Extended (<i>Plus or Cx</i>)	0.0001x10 ⁻³ to 9999.999 x10 ⁻³	1.0 to 200,000 S/m	

Hardware Specifications	
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
Circular Sensor Dimensions:	66 mm
Rectangular Sensor Dimensions:	66 (L) x 40 (W) mm
Rating:	IP65
Maximum Sample Weight for Density	1.0 kg
Size:	260 x 72 x 60 mm
Weight:	0.60 kg
Internal GPS Accuracy:	2.0m
Internal GPS Receiver Satellite Accessibility:	SBAS (WAAS, EGNOS, MSAS)
Built-in Camera :	2 Mega Pixels

Specifications are subject to change without notice (22-07-15)