

### KT-20 MAGNETIC SUSCEPTIBILITY AND CONDUCTIVITY METER

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. 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.

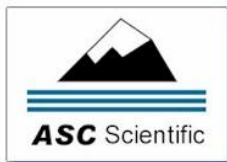


KT-20 S/C Scan Mode

#### Benefits:

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

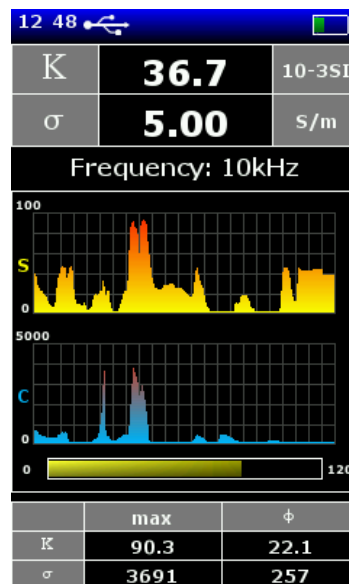




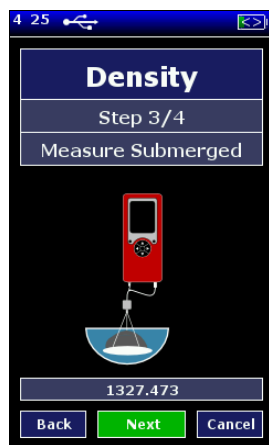
## KT-20 Magnetic Susceptibility & Conductivity Meters

### 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



Density Measurement



Virtual Keyboard

### Applications include:

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

### 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).
- Each KT-20 model requires one sensor for operation. Multiple sensors can be purchased with the KT-20 or added afterwards.



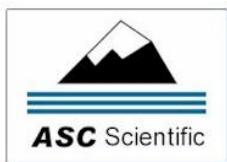
#### 1 / 10 kHz Dual-Frequency Sensor

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

#### 10 / 100 kHz Dual-Frequency Sensor

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

Sensor section continues on the following page...



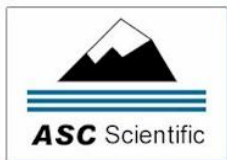
## KT-20 Magnetic Susceptibility & Conductivity Meters

### Sensors

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

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

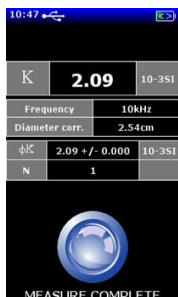
\* Available in the fall of 2015



## KT-20 Magnetic Susceptibility & Conductivity Meters

### KT-20 MODELS

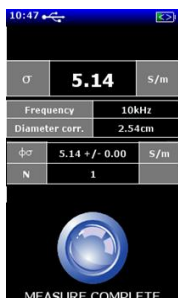
#### KT-20 MAGNETIC SUSCEPTIBILITY METER



KT-20 Measurement Screen

- Maximum Sensitivity:  $10^{-7}$  (using 10 kHz single-frequency sensor without pin)
- Maximum Range: 2 SI units
- Includes choice of any one KT-20 sensor
- “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

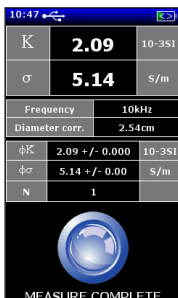
#### KT-20 C CONDUCTIVITY METER



KT-20 C Measurement Screen

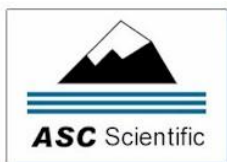
- Maximum Sensitivity: 0.1 S/m (using 100 kHz dual-frequency sensor without pin)
- Measurement Range: 0.1 to 15,000 S/m (using 100 kHz dual-frequency sensor)  
1.0 to 100,000 S/m (using 10 kHz frequency)
- Absolute Conductivity Meter, calibrated using multi-point algorithm
- Includes choice of one 1/10 kHz or 10/100 kHz dual-frequency sensor (in circular or rectangular design).
- “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
- Includes choice of any one KT-20 sensor
- “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.



## KT-20 Magnetic Susceptibility & Conductivity Meters

### 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.

- Instrument Upgrades:**

- **“Plus”** Option for Magnetic Susceptibility Measurements:

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

- **“Cx”** Option for Conductivity Measurements:

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



### 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 (values will vary between pads)	$34 \times 10^{-3}$ SI Units	$2500 \times 10^{-3}$ 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

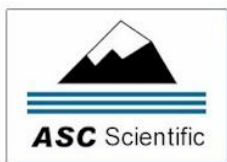
- Conductivity Reference Pads**

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

	Low	Medium	High
Approximate Nominal Conductivity Values (values will vary between pads)	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 Magnetic Susceptibility & Conductivity Meters

### SPECIFICATIONS

1/10 kHz Dual-Frequency Sensor				
		Magnetic Susceptibility	Conductivity	Density
Sensitivity		$1 \times 10^{-6}$ SI Units with 10 kHz	1 S/m (10 kHz)	1.0 g
Measurement Range	Standard	$0.001 \times 10^{-3}$ to $1,999.99 \times 10^{-3}$	1.0 to 100,000 S/m (10 kHz)	
	Extended ( <i>Plus or Cx</i> )	$0.001 \times 10^{-3}$ to $9999.999 \times 10^{-3}$	1.0 to 200,000 S/m (10 kHz)	

10/100 kHz Dual-Frequency Sensor				
		Magnetic Susceptibility	Conductivity	Density
Sensitivity		$1 \times 10^{-6}$ SI Units with 10 kHz	0.1 S/m (100 kHz)	1.0 g
Measurement Range	Standard	$0.001 \times 10^{-3}$ to $1,999.99 \times 10^{-3}$ (10 kHz)	0.1 to 15,000 S/m (100 kHz)	
	Extended ( <i>Plus or Cx</i> )	$0.001 \times 10^{-3}$ to $9999.999 \times 10^{-3}$ (10 kHz)	1.0 to 200,000 S/m (10 kHz)	

10 kHz Single-Frequency Sensor				
		Magnetic Susceptibility	Conductivity	Density
Sensitivity		$1 \times 10^{-7}$ SI Units (without pin)	1 S/m (without pin)	1.0 g
Measurement Range	Standard	$0.0001 \times 10^{-3}$ to $1,999.99 \times 10^{-3}$	1.0 to 100,000 S/m	
	Extended ( <i>Plus or Cx</i> )	$0.0001 \times 10^{-3}$ to $9999.999 \times 10^{-3}$	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 Measurements:	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