AGI Advanced Geosciences, Inc.

MINISTING™

EARTH RESISTIVITY & IP METER

SMALL, BUT MIGHTY

The MiniSting ™ R1 is a high-powered, induced polarization (IP) and electrical resistivity instrument used for testing grounding grids, soil resistivity testing for corrosion protection design, and more. This single-channel tool is expertly engineered for manual resistivity jobs. Ease of use, low cost, and high accuracy make it ideal for low-manpower explorations and training demonstrations.

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FEATURES

High-Powered & Lightweight
This high-powered, lightweight tool has a built-in rechargeable NiMH battery—you can get a day's worth of manual surveying from one charge. The system includes a battery charger.

An easy-to-use, menu-driven system
Recorded data is saved in the internal memory—and at a convenient time—downloaded to a computer for further processing. Our utility software, The Administrator, is included with the MiniSting™ as well as a serial download cable with a USB adapter. The Administrator software is used for data download.

Rugged construction
Whether you're working in the swamp or the desert, the MiniSting™ is versatile enough to withstand harsh climates and provide accurate data.

Versatile
The MiniSting™ reports in feet or meter: For example, the Wenner 4-pin method is typically specified for Wenner spacing in feet, but the reporting is required in Ohm Centimeter. Simply set the MiniSting™ for feet before surveying, and switch to meter after the survey before you download the data. Then move the decimal point two steps to the right to get Ohm Centimeter. This instrument can be configured in several ways depending on what you are measuring.

Pairs seamlessly with AGI tools for immediate results
For example, you can get more from your data when you pair the MiniSting™ with the EarthImager™ 1D—in addition to empirical calculations, you'll also get modeled calculations that represent true resistivity, layer thickness, and depth to each layer so you can use your results and immediately take next steps with certainty.

PREPROGRAMMED ARRAYS

The MiniSting™ is preprogrammed in manual measurement mode for the following arrays:

+ Wenner
+ Schlumberger
+ Dipole-Dipole

+ Pole-Dipole
+ Pole-Pole
+ Mise-A-La-Masse

+ Self-Potential (SP)
+ Resistance
+ Azimuthal

MINISTING™ USE CASES:

The MiniSting™ geophysical instrument is recommended for vertical electrical sounding (VES), profiling, the IEEE fall-off-potential (FOP) method, and the four-pin Wenner soil test (ASTM G57) for soil resistivity.

It is versatile enough for both water and earth uses, including:

+ Groundwater Investigation
+ Cathodic Protection Design

+ Grounding Studies
+ Soil Tests

MiniSting™ Technical Specification

MiniSting™ R1 IP, MEMORY EARTH RESISTIVITY & IP METER	
Item	**Description**
Measurement modes	Apparent resistivity, resistance, voltage (SP), induced polarization (IP), battery voltage
Measurement range	400 kΩ to 0.1 milliΩ (resistance), 0-500 V full scale voltage auto-ranging.
Measuring resolution	Max 30 nV, depends on voltage level
Screen resolution	4 digits in engineering notation
Output current	1-2-5-10-20-50-100-200-500 mA.
Output voltage	The user can switch between high and low voltage limit for the transmitter (800 Vp-p or 320 Vp-p voltage limit). Actual electrode voltage depends on transmitted current and ground resistivity.
Input gain ranging	Automatic, always uses full dynamic range of receiver.
Input impedance	>20 MΩ
Input voltage	Max 500 V
SP compensation	Automatic cancellation of SP voltages during resistivity measurement. Constant and linearly varying SP cancels completely.
Type of IP measurement	Time domain chargeabilitiy (M), six time slots measured and stored in memory
IP current transmission	ON+, OFF, ON-, OFF
IP time cycles	1 s, 2 s, 4 s and 8 s
Measure cycles	Running average of measurement displayed after each cycle. Automatic cycle stop when reading errors fall below user set limit or user set max cycles are done.
Cycle time	Basic measure time is 1.2, 3.6, 7.2 or 14.4 s as selected by user via keyboard. auto ranging and commutation adds about 1.4 s.
Signal processing	Continuous averaging after each complete cycle. Noise errors calculated and displayed as percentage of reading. Reading displayed as resistance ($\Delta V/I$) and apparent resistivity (Ωm). Resistivity is calculated using user entered electrode array coordinates.
Noise suppression	Better than 100 dB at f>20 Hz Better than 120 dB at power line frequencies (16 2/3, 20, 50 and 60 Hz).
Total accuracy	Better than 1% of reading in most cases (lab measurements). Field measurement accuracy depends on ground noise and resistivity. Instrument will calculate and display running estimate of measuring accuracy.
System calibration	Calibration is done digitally by the microprocessor based on correction values stored in memory.
Supported configurations	Resistance, Schlumberger, Wenner, dipole-dipole, pole-dipole, pole-pole, azimuthal, mise-a-la-masse, SP (absolute) and SP (gradient).
Data storage	Full resolution reading average and error are stored along with user entered coordinates and time of day for each measurement. Storage is effected automatically.
Memory capacity	More than 3000 measuring points can be stored in internal memory.
Data transmission	RS-232C channel included to dump data from instrument to PC on user command.
User controls	20 key tactile, weather proof keyboard with numeric entry keys and function keys. On/off switch Measure button, integrated within main keyboard. LCD night light switch (push to light).
Display	Alphanumeric LCD display (4 lines x 20 characters) with night light.
Connectors	4 banana plug, pole screws for current and potential electrodes. 3-pole KPT connector for external power, 10-pole KPT connector for RS-232C and synchronization connections.
Power supply	12V, 4.5 Ah NiMH built-in rechargeable battery. External power connector on front panel, the instrument automatically selects external battery if present.
Operating time	Depends on conditions, internal circuitry in auto mode adjusts current to save energy. At 20 mA output current and 10 kΩ electrode resistance more than 2000 cycles are available from a fully charged battery pack.
Battery charger	Dual stage charger with switchable input (115/230 V AC @ 50/60 cycles)
Weight	6.6 kg (14.5 lb.)
Dimensions	Width 255 mm (10"), length 255 mm (10") and height 123 mm (5").