



Applications and features:

- The MiniSting is a memory earth resistivity/IP meter used for vertical electrical sounding and profiling using four electrodes and manual cables.
- The instrument has a built-in rechargeable battery designed to last for a full days surveying.
- The instrument calculates and presents apparent resistivity and chargeability.
- The built-in memory can store up to 3000 measurements.
- The instrument is delivered with user manual, battery charger, utility software and data transfer cable.
- Supported electrode configurations are; resistance, Schlumberger, Wenner, dipole-dipole, pole-dipole, pole-pole, azimuthal, mise-a-la-masse, SP (absolute) and SP (gradient).
- The instrument is also used for the fall-off-potential method for ground impedance measurements and the Wenner four pin method.

MiniSting™ R1 IP, MEMORY EARTH RESISTIVITY & IP METER

TECHNICAL SPECIFICATION

Measurement modes	Apparent resistivity, resistance, voltage (SP), induced polarization (IP), battery voltage
Measurement range	400 k Ω to 0.1 milli Ω (resistance) 0-500 V full scale voltage autoranging.
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 M Ω
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 chargeability (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 k Ω 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").

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