



Applications:

- The MiniSting is a memory earth resistivity/IP meter used for vertical electrical sounding and profiling using manual cables or used with the patented (pat. 6,404,203) Swift dual mode automatic multi-electrode system for resistivity & IP imaging surveys.
- The MiniSting/Swift system can be programmed by the user to perform any type of resistivity survey.
- The MiniSting has automatic computation of resistivity and chargeability.
- The MiniSting has internal memory for data storage.
- The instrument is delivered with user manual, battery charger, utility software and data transfer cable.
- The Swift accessory is especially valuable when performing resistivity imaging where large amounts of data are automatically recorded and stored in the instrument memory.
- The MiniSting/Swift system is used for resistivity and IP imaging in applications such as groundwater & mineral exploration, geotechnical investigations, horizontal drilling, mapping of pollution plumes, cavity detection, archeological and environmental work etc.

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 to 0.1 milli (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.
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 (V/I) and apparent resistivity (m). 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 3,000 measuring points can be stored in internal memory.
Data transmission	RS-232C channel included to dump data from instrument to PC on user command.
Automatic multi-electrodes	The MiniSting is designed to run dipole-dipole surveys completely automatic with the optional Swift Dual Mode Automatic Multi-electrode system (patent 6,404,203). The MiniSting/Swift can run any other array (Schlumberger, Wenner etc.) by using special user programmed command files. These files are created in an MS DOS type computer and downloaded to the MiniSting RAM memory and are later recalled and run in the field. Therefore, there is no need for a fragile computer in the field.
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 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.) including battery.
Dimensions	Width 255 mm (10"), length 255 mm (10") and height 123 mm (5").

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