Memory Earth Resistivity/IP Meter

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.

Applications:

- 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 is 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, archaeological 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 kΩ to 0.1 milliΩ (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 MΩ

Input voltage
Max 500 V

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, 2, 4, 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 (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, 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.

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.

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").

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