IRIS INSTRUMENTS

SYSCAL R1 Plus

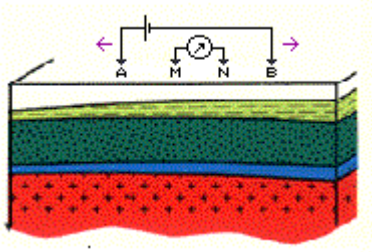
RESISTIVITY METER FOR MEDIUM-DEPTH EXPLORATION

- **Compact, easy to use**
- **Measurement of electrical resistivity & chargeability (IP)**
- **2 simultaneous reception channels**
- **Outputs : 600 V - 200 W - 2.5 A**

APPLICATIONS

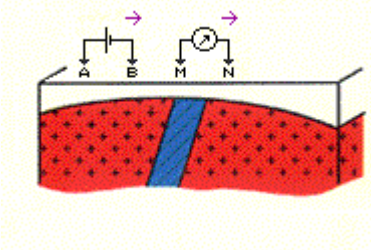
- Geological mapping (depth-to-bedrock determination, localization of weathered zones clay/gravel determination…)
- Civil engineering
- Groundwater exploration and environmental studies (pollution monitoring, salinity control…

Resistivity sounding



Variation of resistivity with depth

Resistivity profiling



Lateral variation of resistivity

MAIN FEATURES

- Power source, transmitter and receiver in a single unit
- Fully automatic measurement controlled by a micro-processor:
  automatic self-potential correction, automatic ranging, digital stacking, error display in case of procedure troubles
- Display of noise level before measurement
- Measurement and display of ground resistance, current, voltage, self potential and standard deviation
- Computation of the apparent resistivity for the various electrode arrays: Schlumberger & Wenner (sounding or profiling), Dipole-Dipole, Gradient…
- Measurement and display of the chargeability (IP) through up to 20 predefined windows
- Multi-electrode mode for use with the automatic switching system
- Storage of data in the internal memory (44 800 readings)
- Possibility of data storage on external SD card: 7 000 000 readings (option)
- Communication port for serial or USB data transfer
- Emergency Push button for security

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SYSCAL R1 Plus

- **COMPACTNESS**

- Total weight of the unit including the internal battery : 11 kg
- Data storage in the instrument (no need for a computer in the field)
- 7.2 Ah internal battery with several field days autonomy, allowing at least 1000 readings of 10 s each for 200 V voltage and 2 kΩ resistance.

- **ACCURACY**

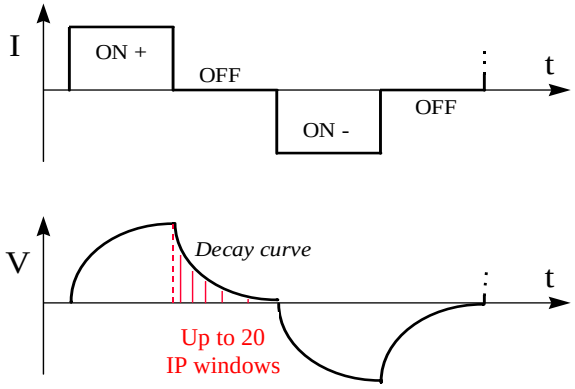
- Noise monitoring before injection
- SP compensation including linear drift
- Digital stacking for noise reduction
- 1 µV resolution after stacking
- Standard deviation computation

- **RELIABILITY**

- Weather proof
- Wide operational temperature range from –20°Cto +70°C
- Shock resistant fiber-glass case

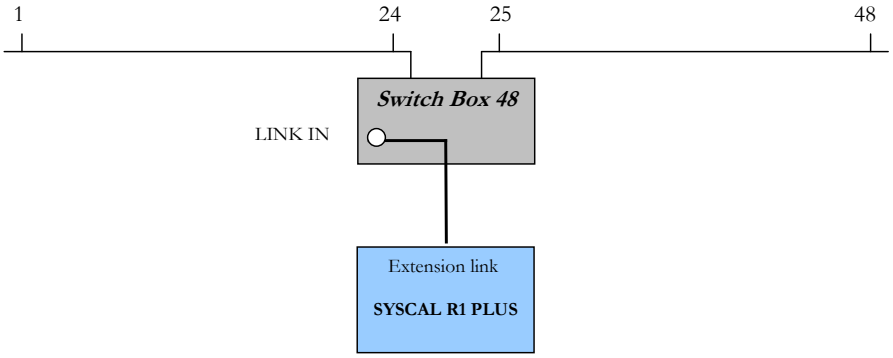
IP MODE

This mode allows to measure the chargeability of the underground:



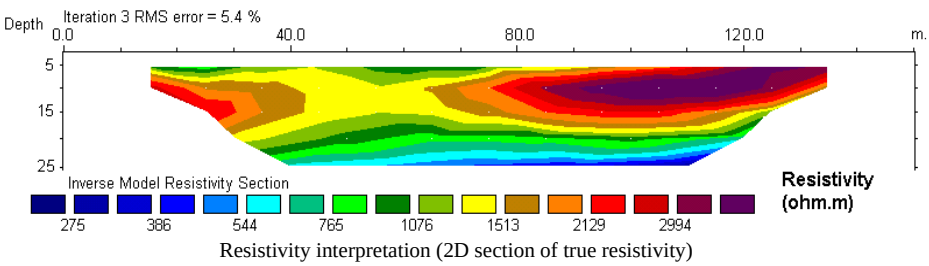
MULTI-ELECTRODE MODE

The SYSCAL R1 Plus can be connected to an external switching box (Switch Plus or Switch Pro (up to 192 nodes driving)) for multi-electrode imaging



INTERPRETATION SOFTWARE

- For 1D Vertical Electrical Soundings (sounding curve): IX1D or WINSEV for resistivity and IP
- For 2D data acquisition (pseudo-section): TOMOLab, RES2DINV or X2IPI for resistivity and IP
- For 3D data acquisition: ERTLab or RES3DINV for resistivity and IP



Resistivity interpretation (2D section of true resistivity)

SPECIFICATIONS

TRANSMITTER

- Maximum output power: 200 W
- Automatic fitting of the current and voltage output values:
  Maximum output voltage: 600 V
  Maximum output current: 2500 mA
- Output current specifications
  Resolution: 10 µA
  Accuracy: Standard 0.3%
  Max 1% from –20°C to 70°C
- Waveforms: choice of [ON+, ON-] or [ON+, OFF, ON-, OFF] (for IP measurements), with a selectable pulse duration (0.25, 0.5, 1, 2, 4 or 8s)

RECEIVER

- 2 simultaneous reception channels
- Input impedance: 100 MΩ
- Input overvoltage protection
- Input voltage range: -15 V to +15 V
- Automatic SP bucking (± 10 V) with linear drift correction
- 50/60 Hz power line rejection
- Voltage measurement specifications:
  Resolution: 1 µV after stacking
  Accuracy: Standard 0.3%
  Max 1% from –20°C to 70°C
- Continuous digital stacking up to 255 stacks
- Chargeability accuracy: 1% of value for input voltage higher than 10 mV

GENERAL

- LCD display with 4 lines of 20 characters
- Power supply (battery):
  Internal 12 V / 7.2 Ah rechargeable
  External 12 V
- Operating temperature range: -20°C to 70°C
- Storage temperature: -40°C to 80°C
- Dimensions: 31x21x31 cm
- Weight: 11 kg (including battery)

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