

# IRIS INSTRUMENTS



## SYSCAL R1 Plus

**RESISTIVITY METER**

**FOR MEDIUM-DEPTH**

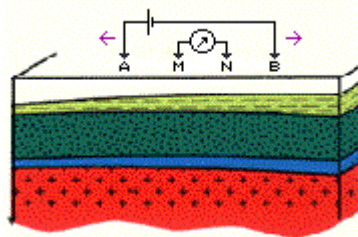
**EXPLORATION**

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

### APPLICATIONS

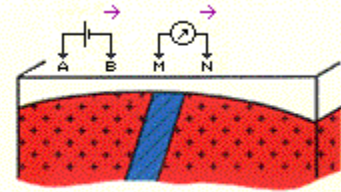
- Geological mapping (depth-to-bedrock determination, localization of weathered zones clay/gravel determination...)
- Civil engineering
- Groundwater exploration and environmental studies (pollution monitoring, salinity control...)

#### 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 k $\Omega$  resistance.

## ● ACCURACY

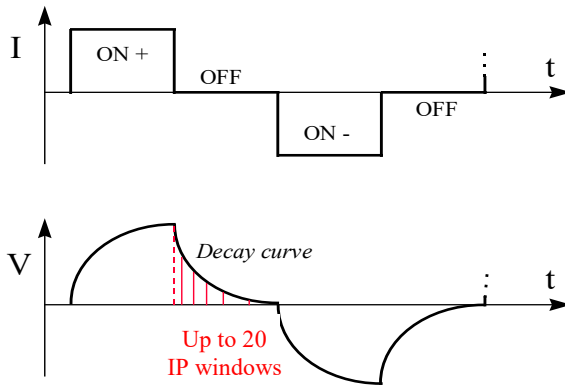
- Noise monitoring before injection
- SP compensation including linear drift
- Digital stacking for noise reduction
- 1  $\mu$ V resolution after stacking
- Standard deviation computation

## ● RELIABILITY

- Weather proof
- Wide operational temperature range from  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- Shock resistant fiber-glass case

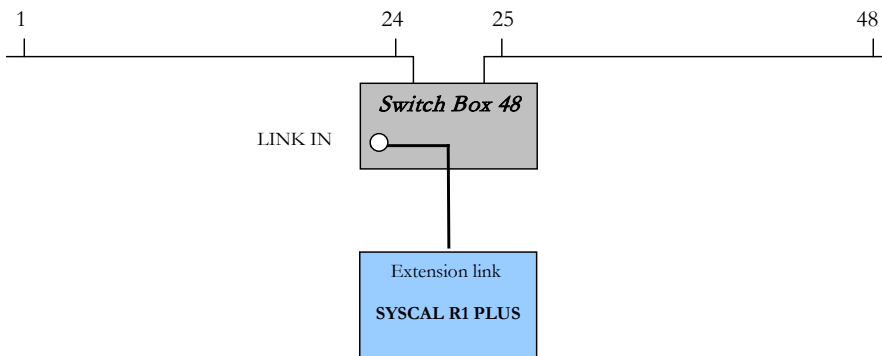
## IP MODE

This mode allows to measure the chargeability of the underground:



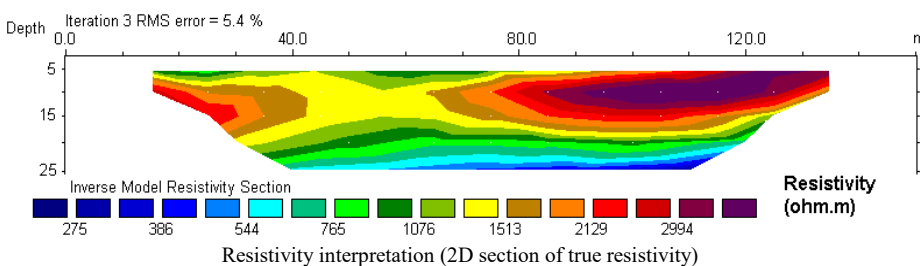
## MULTI-ELECTRODE MODE

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



## 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  $\mu$ A  
Accuracy: Standard 0.2%  
Max 1% from  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$
- 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 M $\Omega$
- Input overvoltage protection
- Input voltage range:  $-15\text{ V}$  to  $+15\text{ V}$
- Automatic SP bucking ( $\pm 10\text{ V}$ ) with linear drift correction
- 50/60 Hz power line rejection
- Voltage measurement specifications:  
Resolution: 1  $\mu$ V after stacking  
Accuracy: Standard 0.2%  
Max 1% from  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$
- 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:  $-20^{\circ}\text{C}$  to  $70^{\circ}\text{C}$
- Storage temperature:  $-40^{\circ}\text{C}$  to  $80^{\circ}\text{C}$
- Dimensions: 31x21x31 cm
- Weight: 11 kg (including battery)