

## SYSCAL R2



SYSCAL R2 unit

RESISTIVITY AND IP SYSTEM

FOR SOUNDING AND

PROFILING ACQUISITION

- **Powerful system**
- **800 V – 2.5 A**
- **Easy to use / Accurate**

The SYSCAL R2 unit is a high-power system designed for DC electrical surveys applied to groundwater exploration, environmental studies, civil engineering, structural geology investigation and mineral exploration.

**Powerful:** The SYSCAL R2 uses an external DC source for energizing the ground (800 V maximum output voltage):

- 250 W DC/DC converter supplied by a 12V battery
- 1200 W AC/DC converter supplied by a standard motor generator

**Automatic:** The SYSCAL R2 is controlled by a microprocessor for:

- automatic Self-Potential compensation
- automatic gain ranging for both current and voltage measurements
- automatic digital stacking to enhance the signal-to-noise ratio and to optimize the acquisition time.

**Easy to use:** The SYSCAL R2 computes and displays the apparent resistivity automatically for the most common electrode arrays (Schlumberger and Wenner sounding and profiling – gradient – dipole-dipole ...)

**Induced Polarization measurement:** The SYSCAL R2 measures and displays the apparent chargeability (Induced Polarization parameter) through up to four chargeability programmable windows.

Its Induced Polarization parameter completes the information given by the classical DC electrical parameter (resistivity).

**Accuracy:** The SYSCAL R2 features:

- a noise monitoring system for pre-injection control, consisting of a DC digital voltmeter function.
- a line check/ground resistance measurement which permits to check that the electrodes are properly connected to the resistivity-meter.
- a low-pass analog filter, which reduces the effect of higher frequency natural and cultural noises (50-60 Hz).
- a resolution after stacking of 1 $\mu$ V allowing to measure some low-amplitude signals ; the standard deviation is displayed to give an indication of the noise level during the measurement.

**Reliability:** The SYSCAL R2 has been designed to operate in a large range of field conditions:

- high-latitude cold countries
- dusty and hot desert areas
- high-humidity tropical forests

Its field-conditioning specifications include:

- a shock and vibration resistant fiber-glass case
- a large operating temperature range (-20°C to +70°C)
- a weather-proof design for operation up to 100% humidity

# SYSCAL R2

## POWER SOURCES:

SYSCAL R2 has to be powered by an external DC source, which can be:

### • A 250 W DC/DC converter supplied by a 12 V battery:

Ranges: 100 V – 2.50 A max.  
200 V – 1.25 A max.  
400 V – 0.62 A max.  
800 V – 0.31 A max.

Dimensions: 31 x 21 x 21 cm.

Weight: 5 kg



### • A 1200 W AC/DC converter supplied by a 220 V (or 110 V in option) motor generator:

Ranges: 50 V – 1.5 A max.  
100 V – 1.5 A max.  
200 V – 1.5 A max.  
400 V – 1.5 A max.  
800 V – 1.5 A max.

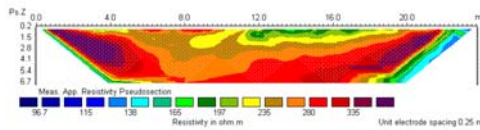
Dimensions: 43 x 29 x 32 cm.

Weight: 25 kg



## MULTINODE:

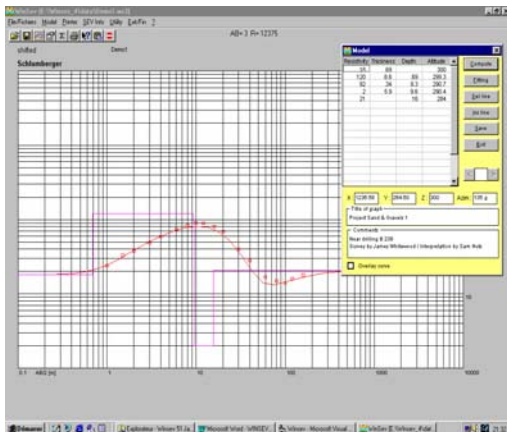
Multi-Electrode accessory for an automatic switching of the electrodes. This allows to realize some high acquisition speed profiling. A Multinode box is able to drive up to 16 electrodes ; several boxes can be connected together to extend the number of electrodes.



Resistivity section

## DATA MANAGING:

Thanks to the PROSYS software, one can visualize the results and process the data (filtering, topography insertion...). Then, one can export the data to a "txt" file or to a 1D/ 2D or 3D interpretation software to obtain the model of the ground.



Interpretation of an electrical resistivity sounding

## TRANSMITTER SPECIFICATIONS

- Maximum output voltage: 800 V (1600 V peak to peak)
- Maximum output current 2.5 A supplied by an external DC source (DC/DC or AC/DC converter).
- Output current specifications:
  - Resolution: 10  $\mu$ A
  - Accuracy: standard 0,3 % - max. 1% from -20°C to +70
- Output current waveform:
  - Frequency domain [ON+, ON-] for resistivity.
  - Time domain [ON+, OFF, ON-, OFF] for resistivity and chargeability.
  - Pulse duration (ON time) programmable from 0.25 to 10 s, with preset values of 0.5 s - 1 s or 2 s
- Thermal circuit breaker for overheating protection.

## RECEIVER SPECIFICATIONS

- Input impedance: 10 Mohms min.
- Input over voltage protection.
- Input voltage range:
  - Standard: -5 V to +5 V
  - With a Multi-electrode system: -10 V to +10V
- Automatic SP bucking
- 50 Hz and 60 Hz power line rejection.
- Ground resistance measurement: from 0.1 to 1000 k $\Omega$ .
- Voltage measurement specifications:
  - Resolution: 1  $\mu$ V after stacking.
  - Accuracy: standard 0,3 % - max. 1 % from -20°C to +70°C.
- Chargeability measurement specifications:
  - Resolution: 0.1 mV/V.
  - Accuracy: 1 % of displayed value for a voltage greater than 10 mV.
- Continuous digital stacking up to 250 stacks.

## GENERAL SPECIFICATIONS

- LCD display of 2 lines of 20 characters.
- Weather-resistant case.
- Dimensions: 31 x 21 x 21 cm.
- Weight: 6 kg including dry cells.
- Power supply:
  - Internal six 1.5 V D size dry cells (over 300 hours operation autonomy at 20°C) and
  - External DC source for ground energization (DC/DC or AC/DC converter).
- Operating temperature range: -20°C to +70°C (-40°C to +70°C in option).
- Storage temperature: -40°C to +80°C.

## SOUNDING ACCESSORIES

Set of standard accessories for a classical electrical sounding:

- 10 stainless-steel electrodes (60 cm length)
- 2 reels with 350 m wire
- 2 reels with 100 m wire
- 12 cord clips for electrode-reel connections.

