

# IRIS INSTRUMENTS

## SYSCAL R1 PLUS *Switch-48*

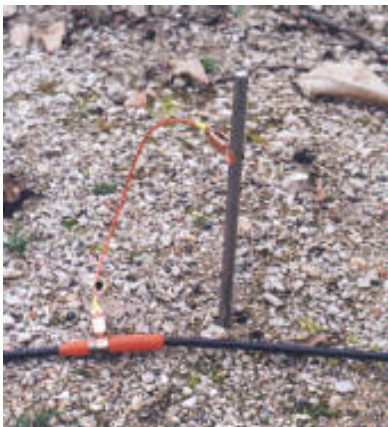


### RESISTIVITY IMAGING

### FOR ENVIRONMENTAL

### APPLICATIONS

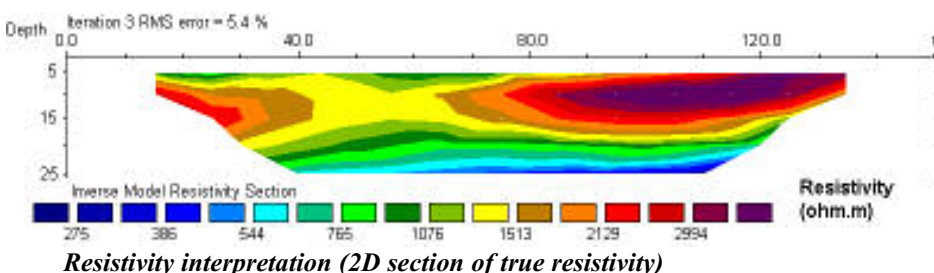
- Compact yet powerful
- **600 V - 175 W – 2.5 A**
- Automatic ranging
- Automatic switching



SYSCAL R1 PLUS *Switch-48* is a new **all-in-one multinode resistivity imaging** system. It features an internal switching board for 48 electrodes and an internal 175 W power source. The output current is automatically adjusted (automatic ranging) to optimise the input voltage values and ensure the best measurement quality. The system is designed to automatically perform pre-defined sets of resistivity measurements with roll-along capability. Two strings of cable with 24 electrode take-out each are connected on the back of the resistivity meter. Made of heavy duty seismic cable, these strings are available with standard 5 or 10 m electrode spacings. Customized cables may also be assembled for special arrays or non-standard applications.

Compact, easy-to-use and field proof, the SYSCAL R1 PLUS *Switch-48* measures both resistivity and chargeability (IP). It is ideal for environmental and civil engineering applications such as pollution monitoring and mapping, salinity control, depth-to-rock determination and weathered bedrock mapping. It can also be used for shallow groundwater exploration (depth and thickness of aquifers).

With the SYSCAL R1 PLUS *Switch-48* resistivity surveys can be performed very efficiently with one operator only.



The well-known reliability and accuracy of the SYSCAL range of resistivity meters will also mean extra value both for the contractor and the results end-user.

### IRIS Instruments

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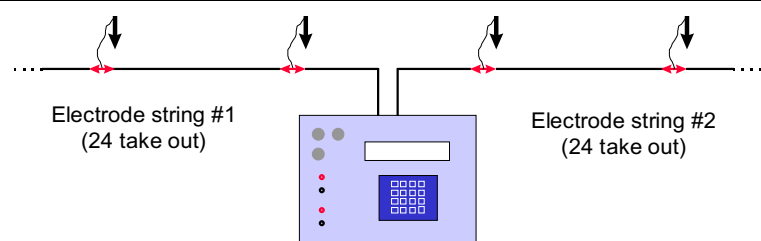


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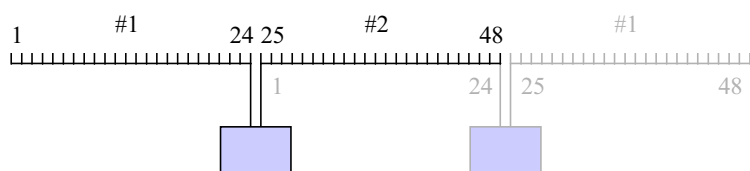
## RESISTIVITY IMAGING

- **Aim:** imaging the underground geological structures through surface electrical measurements
- **Principle:** transmitting a current  $I$  through two electrodes and measuring a voltage  $V$  with two other electrodes
- **Apparent resistivity:**  $\rho = K \cdot V/I$ ,  $K$  depending on the electrode separation
- **Resistivity pseudo-section:** contoured plot of the apparent resistivity data, using the electrode distance as a pseudo-depth parameter
- **True resistivity section:** contoured plot of the resistivity distribution obtained through the inversion of the measured data (using a non linear parameter fitting scheme)
- **Applications:** environmental studies, groundwater investigation, civil engineering, archaeology...

## FIELD LAY-OUT



Preset arrays (Wenner, dipole,...) or customized arrays are uploaded through the user-friendly ELECTRE (version 2) PC software. The roll-along capability is implemented.



## ACCURACY

- Automatic SP compensation including linear drift
- Digital stacking for noise reduction
- Standard deviation computation
- Noise may be monitored before injection

## DATA INTERPRETATION SOFTWARE

- RES2DINV or RESIX-2DI (PC), for pseudo-section inversion to true resistivity (and IP) 2D section.
- RES3DINV (PC), for inversion to true resistivity (and IP) 3D data

## OUTPUT CURRENT SPECIFICATIONS

- Automatic ranging (microprocessor controlled)
- Intensity: up to 2500 mA
- Voltage: up to 600V (1200V peak to peak)
- Power: up to 175 W
- Selectable cycle time of 0.5, 1 or 2 s programmable from 0.25 to 10 s.
- Current measurement precision: 0,5% typical.

## INPUT VOLTAGE SPECIFICATIONS

- Measuring process: automatic ranging and calibration
- Input impedance : 20 M $\Omega$  minimum.
- Input voltage protection up to 1000V, range from -5 V to +5 V.
- Power line rejection
- Voltage measurement precision: 0.5% typical
- Noise reduction: continuous stacking selectable from 1 to 255 stacks.
- SP compensation through automatic linear drift correction.
- Resistivity accuracy: 0,5% typical
- Induced polarization (chargeability) measured over four predefined windows.
- Chargeability accuracy: 1% of measured value for input voltage higher than 10 mV.

## GENERAL SPECIFICATIONS

- Weather proof
- Shock resistant fiber-glass case
- Operating temperature: -20 to +70 °C
- Dimensions: 31 x 23 x 35 cm. Weight: 11 kg
- Internal memory for 2700 readings
- Power supply: two internal rechargeable 12V, 7 Ah battery ; optional external 12V backup car battery for transmitter power
- Autonomy with internal battery: several thousands of readings
- Weight of a 24 take-out string on a reel: 22 kg each (for 5m spacing)



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