

IRIS INSTRUMENTS

SYSCAL R1 PLUS *Switch-48*



RESISTIVITY IMAGING

FOR ENVIRONMENTAL

APPLICATIONS

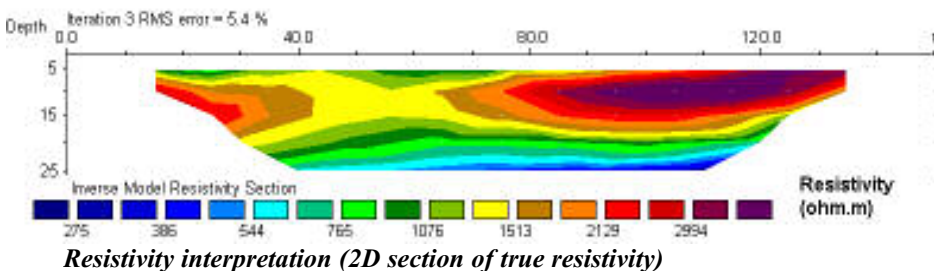
- **Compact yet powerful**
- **600 V - 200 W – 2.5 A**
- **Automatic ranging**
- **Automatic switching**



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 200W 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 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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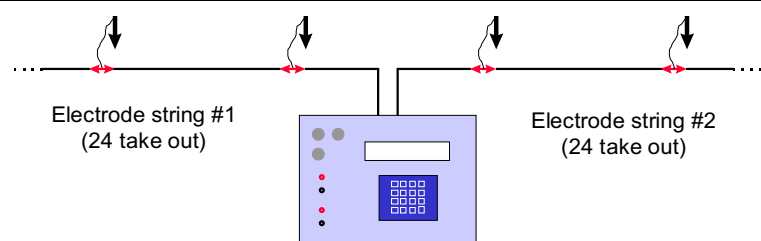


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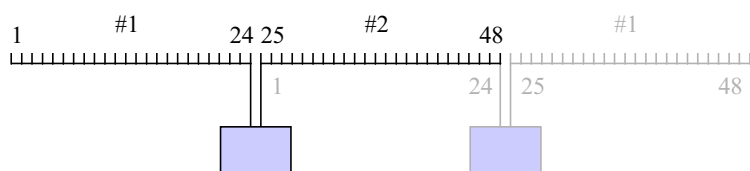
RESISTIVITY IMAGING

- **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 200 W
- Selectable cycle time of 0.25, 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 Ω 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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