MULTI ELECTRODE SOLUTION

IGIS Multielectrode solution (MES)

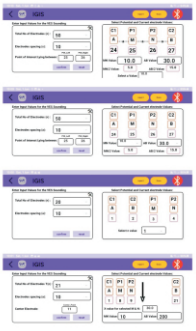
Among all the geophysical methods, electrical resistivity techniques are proved to be very useful in several hydrogeological investigations and groundwater resource exploration. These electrical resistivity measurements are also useful in identifying subsurface metallic and non-metallic minerals like sulphides, graphite etc. as the most of the rocks conduct electricity by the flow of electrons rather than electrolytic processes. The electrical method is also efficient and important in environmental geotechnical investigations, rainwater harvesting, artificial recharge models and landslides studies.

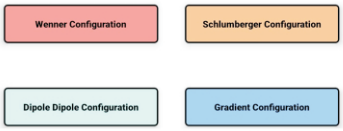
The multi-electrode method is popularly used for making the measurements in faster mode with high accuracy of 2D structures. The apparent resistivity pseudo sections obtained with such a technique are processed and interpreted by an inversion software which gives true resistivity and depth values for the anomalies detected along the profile or contour map or a colour image. The multi-electrode resistivity technique comprises of multi-core cable (6 core) with takeouts (12, 24, 48, 60,120) as electrodes plugged into the ground at a fixed spacing, every 10m for instance.

MES control unit acts as an interface to the instrument of different models like (SSR-MP-ATS/SSRMP1/SSR-MPDT) and the relays located at each electrode ensures the switching of those electrodes according to a sequence of readings predefined /configured /stored in the internal memory of the MES control unit. The various combinations of transmitting (A, B) and receiving (M, N) pairs of electrodes construct the mixed sounding /profiling section, with a maximum investigation depth which mainly depends on the total length of the cable. Example for Schlumberger method 60 electrodes with 10m length total AB-600m where AB/2=300m Depth 200m, for 120 electrodes with 10m length total AB=1200m where AB/2=600m Depth =400m.

The 2D resistivity Images obtained with(C)-multi-electrode technique are used for studying the shallow subsurface structure located at a few tens of metres down to about one hundred metres depth. The images which are obtained (apparent resistivity pseudo sections) are processed by 3rd party software's for both 2d inversion and 3d images which gives interpreted resistivity and depth values for the anomalies detected.

NOTE: The instrument is not the part of supply.





The advancement of technology and microprocess based applications have transformed the technology to shift to multi electrode topology allowing to spread a network of electrodes stretching for deeper depths with an automatically switching application of these electrodes acquiring profiling data. This technique, called Resistivity Imaging or Electrical Resistivity Tomography (ERT), finds applications in the environment, groundwater and geo technical investigations. The images which are obtained (apparent resistivity pseudo sections) are processed by multiple 3rd party software's which gives interpreted resistivity and depth values for the anomalies detected along the profile.

The multi-electrode resistivity technique consists in using a 6-core cable with as 60 /120 of electrodes plugged into the ground at a fixed spacing, every 10m for instance. In the resistivity meter is connected to a MES control unit which is further connected to the relay switching connectors connected to the electrodes which ensure the switching of those electrodes according to a sequence of readings pre-defined and configured /stored in the internal memory of the MES control unit. The various combinations of transmitting (A,B) and receiving (M,N) pairs of electrodes construct the mixed sounding / profiling section, with a maximum investigation depth which mainly depends on the total length of the cable.

Example for Schlumberger method

60 electrodes with 10m length total AB=600m where AB/2=300m Depth =200m

120 electrodes wit 10m length total AB=1200m where AB/2=600m Depth =400m

The MES control unit is acting as a bridge to our IGIS Make instruments namely SSR-MP1/ SSR-MPDT /SSR-MP-ATS to get configured / respond to any methodology like Schlumberger, Wenner , Dipole-Dipole and gradient and further get connected to the electrodes spread across the straight line.

Specifications are likely to change with R&D.
IGIS also makes custom-build resistivity meters to individual specifications.
IGIS Instruments carry one-year guarantee against manufactring defects.

Manufactured by:

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