StrataGem EH-4 High-Resolution Electrical Conductivity Imaging





The StrataGem EH-4 uses the magnetotelluric (MT) method to measure subsurface conductivity. The MT method is based on the fact that, at a given frequency, the ratio of the of the magnetic field to the electric field (or impedance) is constant for a constant resisitivity. Natural signals, most commonly from distant lightning strikes, cause MT currents to flow in the ground. The resulting fields can be measured to determine this ratio.

Unfortunately, natural signals are not always available at the time, frequency, or amplitude needed. StrataGem's hybrid source technique helps to overcome this problem. The natural field is augmented by manmade signals in the 1 – 70k Hz range, where natural signals are weak. This allows shallower exploration than conventional MT but deeper than that of conventional active EM techniques.

The operator selects the frequency bands and the number of time series "stacks" for data acquisition. Typical data acquisition time per station is 10 minutes. The StrataGem can then be picked up and moved to a new station, a process requiring 15–20 minutes. This translates into about six stations per hour, with each station being a complete sounding. Depth of imaging depends on the resisitivity and the lowest frequency for which there are reliable data, but depths of 500m can be expected with standard sensors.

FEATURES & BENEFITS

- Fully integrated, easy-to-use system All hardware and software ready to go out-of-the-box.
- **Rapid setup and data acquisition** Full sounding to 500 meters in 10 minutes and 15 minute setup time.
- Real-time, in-field display and print out of qualitycontrol and MT data parameters – See, evaluate, and enhance data quality in the field.
- Resistivity mapping from 10 m to 1,000 m in a single setup – Perfect tool for high-resolution resistivity mapping for minerals and groundwater exploration, engineering and geotechnical site evaluation, academic research.
- Simple to setup, rapid data acquisition, in-field display of MT parameters The best tool for teaching MT, AMT, and CSAMT concepts in an academic setting.



SPECIFICATIONS StrataGem EH-4 High-Resolution Electrical Conductivity Imaging

ANALOG COMPONENTS

Operating Principle: Natural and controlled-source tensor MT.

Transmitter: Model TxIM2 with vertical loop antennas (2).

Transmitter Frequency Range: 1 kHz to 70 kHz.

Antenna size: 4m2

Analog Front End: Model AFE-EH4 for analog signal conditioning. Couples two electric and two magnetic channels to the digital recording system.

AFE (system) Bandwidth: 10 Hz to 92 kHz.

Power requirement: 12 VDC.

Electric Sensors: Model BE-26 stainless with 26 m cables (4 cables total, two per channel).

Magnetic Sensors: Model G100k coils (2) with 10m cables. 10 Hz to 100 kHz.

DIGITAL RECORDING SYSTEM

Channels: 4.

A/D: 18-bit.

Bandwidth: DC to 96 kHz.

DSP: 32-bit float.

Display: LCD.

Printer: 4" thermal.

Power: 12 VDC.

Operating Temperature: 0° C to 50° C.

OPTIONS

Electric Sensors: Model BE-50 stainless with 50 m cables (4 cables total, two per channel).

Magnetic Sensors: Model G20k coils (2) with 10m cables. 0.1 Hz to 20 kHz.



Specifications subject to change without notic that a General (0417)

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