

LEMI

A KMS Technologies company

Laboratory for ElectroMagnetic Innovation



LEMI-417M Long-period Magnetotelluric Station

LEMI-417M digital seven-component magnetotelluric station (MTS) (three magnetic +



four electric channels) is intended for the measurement of natural magnetic and electric field components and their variations in laboratory and field conditions. The magnetometer is produced on the base of flux-gate sensor, all three components of which are implemented in the same thermostable housing. The electrometer has four channels with high input resistance and offset compensation, which can operate with any type of measuring electrodes. The electronic unit allows acquisition, processing and storage of data about magnetic and electric fields

variations in internal memory and their transmission to the computer via RS-232 (or RS - 422) interface. Built-in GPS receiver provides satellite synchronization of the internal clock and the coordinates of the MTS location. MTS operation algorithm allows organizing both autonomous and synchronous operation of a set of the MTS installed at the studied area. Several sensor options, e.g., tilt compensated sensor, for observatory and laboratory use with leveling facility, hermetically sealed sensor etc. may be selected. We are flexible to modify the MTS parameters to your needs.

Innovative Aspect and Main Advantages

Its major advantages are very low temporal drift and high accuracy of measurements, what makes it especially efficient for deep sounding application. LEMI-417M is high sensitive device, which has unique low power consumption – 1W at the maintenance of main technical characteristics at the level of the best world standards. The station has waterproof housing and can autonomously operate during 6 months and longer in wide temperature range.

Areas of Application

LEMI-417M is used for deep sounding of the Earth's crust and the determination of vertical resistivity profile parameters down to 400 km with the purpose of mineral prospecting and search of earthquake precursors.

Technical Specifications

Magnetic field measurement range for each component	± 68000 nT
Resolution	10 pT
Noise level at (0.03—0.3) Hz frequency band	<15 pT rms
Long term zero drift	< ± 5 nT/year
Temperature drift	< 0.2 nT/°C
Transformation factor linearity error	< 0.01%
Components orthogonality error (without calibration)	< 30 min of arc
Electric voltage total measurement range	± 600 mV
Resolution	0.07 μ V
Input resistance	10 GOhm
Sample rate	1 per s
Samples averaging (by PC software)	2,5,10,15,20,30,60
Compact Flash CARD volume (FAT16)	≤ 2 GB
Operating temperature range	minus 20 to +50 °C
Power supply source	10-18 V
Power consumption	< 1.2 W
Weight of electronic unit with magnetic sensor	2.7 kg
Length of connecting cable between magnetic sensor and electronic unit	10 m *
Length of connecting cable between GPS antenna and electronic unit	3 m *
Optional: Cu-CuSO ₄ electrodes (matched pairs). * - other values possible to realize on demand.	