

LEMI-017 Autonomous Meteomagnetic Station

LEMI-017 digital seven component Meteomagnetic Station (MMS) (three magnetic + 2 tilt + atmospheric pressure + temperature channels) is intended for the measurement of natural magnetic field components and their variations in laboratory and field



conditions, atmospheric pressure and air temperature. Its major advantages are very low power consumption, temporal drift and high accuracy of measurements, what makes it especially efficient for long term monitoring. The magnetometer is produced on the base of flux-gate sensor, all three components of which are implemented in the same thermostable housing. The pressure meter is based on precise tensoresistive sensor produced by industry. The temperature meter is made on the base of thermoresistor. The electronic unit allows acquisition, processing and storage of data

about all parameters variations to the internal FLASH memory and their transmission to the computer via RS-232 interface. Built-in GPS receiver provides satellite synchronization of the internal clock and the coordinates of the MMS location. MMS operation algorithm allows organizing both autonomous and synchronous operation of a set of the MMS installed at the studied area.

Innovative Aspect and Main Advantages

Its major advantages are very low temporal drift and high accuracy of measurements, what makes it especially efficient for long term monitoring. LEMI-017 provides simultaneously measurements of 3 magnetic field components, atmospheric pressure, temperature and flux-gate sensor tilts with high resolution and allows one to determine a correlation of these parameters. The station does not require the precise flux-gate sensor orientation.

Areas of Application

LEMI-017 can be used as the equipment of autonomous weather stations, which is able to register data during 512 days with the purpose of magnetic field, atmospheric pressure and temperature correlation study.

Product Specifications

Three component magnetometer	
Magnetic field measurement range for each component	± 68000 nT
Noise level at flat part of frequency response.	< 8 pT _{rms}
Frequency band	(DC-0.3) Hz
Temperature non-stability	< 0.2 nT/°C
Long-term non-stability	$< \pm 5$ nT/year
Magnetic sensors non-orthogonality error less than	< 30 min of arc
Pressure meter	
Atmospheric pressure measurement range	300-1200 mbar
Temperature meter`	
Temperature measurement range	(-40...+70) °C
Temperature measurement error	0.1 °C
Two component tilt meter	
Tilt measurement range	± 15 arc degrees
Tilt measurement error	± 0.01 arc degrees
Other	
Sample rate	1 samples per second
CompactFLASH Card memory capacity (FAT16)	≤ 2 GB
Power consumption less than	0.8 W
Length of connecting cable between magnetic sensor and electronic unit	10 m
Length of connecting cable between GPS antenna and electronic unit	3 m

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