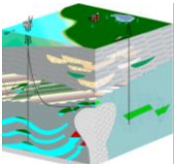




LEMI-036
Inter-magnet 1-second standard
flux-gate magnetometer



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LEMI-036



LEMI-036 Product picture

Fluxgate magnetometer (FGM) LEMI-036 was specially developed for the super-sensitive measurements of 3 components of Earth magnetic field induction and their variations in accordance with the new 1-second INTERMAGNET standard. The signals with periods from 1 to 100.000 seconds and more may be collected with a reasonable error. In order to realize this design, the major attention was paid to such principal FGM characteristics and parameters as frequency response and sampling synchronization accuracy as well as thermal and temporal stability and noise level.

To fulfil such mutually contradictory requirements as a speed of response and deep suppression of industrial noise, the specific combination of analog and digital filters was realized in this instrument. The magnetic sensor of flux-gate type, which mainly determines magnetometer stability and noise level, was manufactured with high-tech glass-ceramics having close to zero thermal expansion factor using well-proved technology, which implements recent findings in the excitation circuit construction and operation mode. Using best available voltage references and passive components provides excellent stability of the FGM electronics. This FGM can be installed into empty boreholes with a diameter 0.2 m and more. The fluxgate sensor is fixed at the suspended platform in order to automatically keep the horizontal level. The instrument operates with an external computer, which controls magnetometer operation and stores acquired data. Communication between a computer and LEMI-036 is provided by the RS-422 digital interface. The instrument has GPS receiver for data sampling synchronization and FGM location coordinates determination.

Product features

- **High resolution and precision**
- **Low noise level**
- **Guaranteed low time shift of the acquired data**
- **Low temperature offset**
- **Convenience of installation and service**
- **Automatic operation control**
- **Satellite synchronization**
- **RS - 422 output**
- **IAGA2002 formatted 1-sec and 1-min data**
- **Deep suppression of the power mains interference**
- **3 years operational guarantee**

Product specifications

Measured range of magnetic field variations (with analogue outputs available)	± 4000 nT
Automated offset compensation band along each magnetic component	± 70000 nT
Resolution along each component:	
in the 1-second and 1-minute data files	0.01 nT
in the 0.1-second file	0.001 nT
Temperature drift	< 0.5 nT/°C
Frequency band	DC-3.5 Hz
Output noise in frequency band (0.01 – 1) Hz	< 0.01 nT rms
Magnetic sensor components orthogonality	< 30 min of arc
Range of sensor tilt compensation	< 8 deg of arc
Sampling rate	
at the magnetometer digital output	10 per second
after PC software digital filtration	1 per second
	1 per minute
Error of synchronization with UTC time	< 10 ms
Digital output	RS 422
Analogue outputs	Single-ended, ± 4V
GPS timing and co-ordinates determination	
Operating temperature range	Minus 5 to +40°C
Power supply	12⁺³-.2 V
Power consumption	<4 W
Physical dimensions	
sensor	Ø160x360 mm
electronic unit	402x160x91 mm
Weight:	
Sensor with cable	6.9 kg
Electronic unit with power supply/interface test cable	3.9 kg
GPS antenna with test cable and support	0.8 kg
Cables:	
Sensor cable	up to 50 m