KMS Technologies
Innovating Solutions

# LEMI Sensors:

## Fluxgate magnetometer LEMI-025

## Product description

Fluxgate magnetometer (FGM) LEMI-025 was developed for the super sensitive measurements of 3 components of Earth magnetic field induction and their variations in accordance with new 1-second INTERMAGNET standard. The signals with periods from 1 to 100.000 seconds and more may be collected with 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 speed of response and deep suppression of industrial noise, the specific combination of analogue 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. Three types of the sensor construction are possible (optional selection, see Figures). Using best available voltage references and passive components provides excellent stability of the FGM electronics.

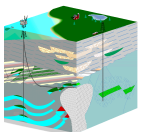

**Figure 1:** LEMI-025 system with sensor in various options. The suspended option is shown on the right

## Product applications

This FGM is intended for operation in the geomagnetic observatory conditions and in normal operatio mode requires external PC for storing the acquired data. For this purpose, FGM includes RS-232 digit interface. It is also possible to accumulate data into an embedded removable Compact FLASH memor card up to 2 GB volume. This mode of operation is recommended as a temporary one only. The instrument has GPS receiver for data sampling synchronization and FGM location co-ordinates determination.

**KMS Technologies**

KJT Enterprises Inc.
11999 Katy Freeway, Suite 200
Houston, TX, 77079
USA
Tel: +713.532.8144
Fax: +832.204.8418
Email:
info@KMSTechnologies.com
www.KMSTechnologies.com

# Product specifications

| | |
|---|---|
| Measured range of magnetic field variations | ± 3000 nT |
| Automated offset compensation band along each magnetic component | ± 65000 nT |
| Resolution along each component:<br>at the display<br>in the 1-second and 1-minute data files<br>in the 0.1-second file and Flash card data | <br>0.1 nT<br>0.01 nT<br>0.001 nT |
| Temperature drift | <0.2 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 |
| Sampling rate<br>at the magnetometer digital output and FLASH card<br>after PC software digital filtration | <br>10 per second<br>1 per second<br>1 per minute |
| Error of synchronization with UTC time | < 10 ms |
| Volume of the removable Compact FLASH memory card | 2 GB |
| Digital output | RS 232 |
| **GPS timing and co-ordinates determination** | |
| Operating temperature range | Minus 5 to +40°C |
| Power supply | $12^{+3}_{-2}$ V |
| Power consumption | <4 W |
| Weight:<br>Sensor (observatory type) with 10 m cable<br>electronic unit with cables<br>GPS antenna with 15 m cable | <br>3.3 kg<br>3.8 kg<br>0.7 kg |

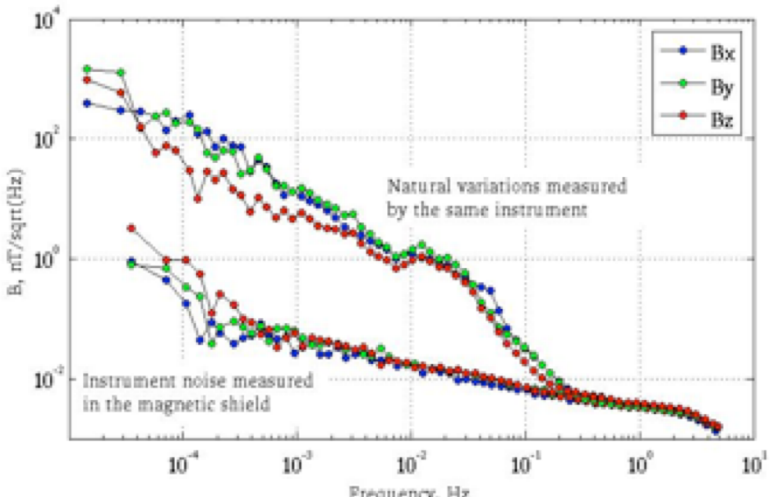


**Figure 2:** LEMI-025 noise plot example.