



DIGITAL MAGNETOMETER FOR MICROSATELLITES LEMI-020

Main features:

- **World-smallest volume compensated fluxgate sensor**
- **Low non-orthogonality and noise, high resolution and precision**
- **Small overall size and weight and low power consumption**
- **Versatile digitally programmable parameters and interface**



LEMI-020 digital vector flux-gate magnetometer (FGM) for onboard measurement of Earth's magnetic field and its variations is based on a customized flux-gate sensor with volume magnetic field compensation. Using of volume compensation in the 20 mm³ sensor cube provides high geometrical stability of the axes and highly improved performances.

The magnetometer is produced for embedding into the microsatellite structure and consists of two units - sensor and electronics unit. The majority of electronics is combined in a Field Programmable Gate Array (FPGA). It provides full processing (determined by digital correlation algorithm) of amplified and digitized fluxgate sensor output signal and feedback signal and forms FGM output data. Such digital design together with internal nonvolatile 512 MB flash memory makes the instrument very flexible, reduces power consumption and provides convenient possibilities for customization of the operation modes.

MAIN TECHNICAL PARAMETERS

Measuring ranges of total magnetic field (other ranges on demand)	± 64 000 nT
Frequency range	DC...100 Hz
Sample rate of measurements (other values on demand)	250 Hz
Noise level at 1 Hz	< 25 pT/√Hz
Resolution (programmable, on demand)	16...20 bits
Components initial orthogonality	< 20 min of arc
Operating temperature range	minus 40... + 60° C
Power supply voltage	5 ± 0.25 V
Power consumption	< 0.4 W
Weight: sensor	< 25 g
electronic unit PCB	< 40 g
Dimensions: sensor	20 x 20 x 21 mm
electronic unit PCB	65 x 65 x 10 mm