

Overview

The Magson standard tri-axial fluxgate magnetometers are offered in single or dual sensor configuration. They feature a serial data and command interface to connect to the customer's data handling system. The integrated flash memory allow data logging and mobile operations. Optional sensors such as tilt meters further enhance the measurement capabilities. An external GPS receiver can provide accurate position determination and time-synchronization. Each device is tailored to comply with the customer's technical requirement specifications. Instrument control software including USB adapter is supplied on request.

Applications

- Mobile applications with weight and space limitations
- Drones and airships for magnetic explorations

Sensor

The magnetic field is measured by a vector compensated ringcore fluxgate sensor. The sensor consists of two crossed ringcores, three pick-up coils and a tri-axial Helmholtz coil system for field feedback. The noise level of the ringcores is in less than $15\text{pT}/\sqrt{\text{Hz}}$ @ 1Hz. The field sensitive ringcores are kept by the feedback system always in zero field. This vector compensation allows the measurement of all three components of the magnetic field vector in the center of the sensor. The stability of the offsets depends on the individual characteristics of the ringcores, however scale values and non-orthogonality depends on stability of the feedback coil system only. The isotropic design and the usage of material with very similar expansion coefficients ensures an extremely high axis stability (alteration $< 0.02^\circ$ total), the possibility to use the sensor in a very large temperature range (-100°C to +200°C) and a scale value which depends very linearly on the expansion coefficient of the feedback system (17.5ppm/°C +/- 1.5ppm/°C).

Construction: Self-supporting Helmholtz coil system

Oriantation: X, Y, Z

Size: H: 40mm,

Cover Ø: 50mm,
Socket Ø: 67mm

Weight: 105g

Cable length: Up to 20m

Noise: < $15\text{pT}/\sqrt{\text{Hz}}$
(typical $10\text{pT}/\sqrt{\text{Hz}}$) at 1 Hz

Long-term stability: < $10\text{nT}/\text{year}$



Electronics

- Measurement of 3 or 6 magnetic field components (Measurement range $\pm 65000nT$)
- Measurement of electronics and sensor temperature
- Optional: measurement of inclination (2 axis each sensor)
- Magnetometer control and data output via serial interface
- Data recording on internal flash memory
- Software for magnetometer control and data visualisation

Type:

MFG-1S

Electronics for one fluxgate sensor

MFG-2S

Electronics for two fluxgate sensors



Box Dimensions [mm]:

161 x 63 x 33

170 x 105 x 33

Box Weight [g]:

206

395

Supply voltage [V]:

4.5-9, 9-18 or 18-36

Power [W]:

0,8

1,5

Range:

$\pm 65\,000nT$ (can be adjusted)

Resolution:

7.7486 pT

Interface:

RS422 , 615384 Baud

Sampling Rate:

Selectable 1Hz, 10Hz, 50Hz, 100Hz

Logging Memory:

0.5 or 1 GByte Flash

Option:

- 2-Axis Inclinometer with $\pm 90^\circ$
- Mini GPS Receiver
- USB to RS422 Adapter
- Transport case