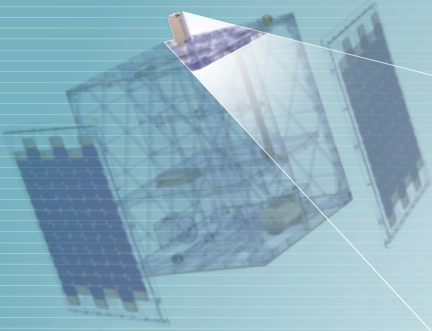


MAGNETOMETER



PERFORMANCE

NMRM-001-485

FUNCTIONAL CHARACTERISTICS

Orthogonality	better than +/- 1 degree
Measurement range	- 60,000 nT to +60,000 nT
Resolution	8 nT
Update rate	up to 10 Hz
Noise density	< 8 nT rms/Hz @1Hz

PHYSICAL CHARACTERISTICS

Dimensions	69mm x 45mm x 20mm
Mass	67 g
Power	550 mW

ENVIRONMENTAL CHARACTERISTICS

Thermal (operational)	-25°C to +70°C
Vibration (qualification)	14g RMS
Radiation (TID)	10 krad total dose (component level)

INTERFACES

Power supply	+5 V DC
Data	RS485
Connector	9-pin Female Micro-D
Mechanical	4off M3

CONFIGURATION MANAGEMENT: Specifications are subject to change. Please refer to latest version.

MAGNETOMETER



FEATURES

- Small size and low mass
- Flexible interface options
- Radiation tolerant COTS
- Supplied with calibration matrix

APPLICATIONS

- Can be used for the calculation of magnetorquer rods control torque levels
- Attitude determination sensor when used with an IGRF reference model
- Angular rate determination sensor by comparing successive measurements

QUALIFICATION

Developed in collaboration with the Space and Atmospheric Physics Group of Imperial College London; the sensor head first flew on the CINEMA mission and then as an integrated unit in July 2014. Since then the NewSpace magnetometer has had four further flights and is base-lined for three further missions.

UTILITY

The design of the tri-axial magnetometer uses Anisotropic Magneto-Resistive (AMR) sensors which are co-located with offset compensating circuitry. The offset compensating circuitry nulls the characteristic offset voltage of the AMR sensor and enhances the sensors performance. The sensor provides x-, y- and z-axis magnetic field component measurements, as well as a sensor temperature measurement which is used for the temperature compensation of the magnetic field measurement.

Ideally mounted outside the spacecraft at the end of a rigid boom the NewSpace Systems magnetometer includes low noise, precision processing and analogue-to-digital conversion circuitry; all of which improves the linearity and reduces the drift sensitivity of the sensor head. The integrated processing circuitry and sensor head provides the mission an accurate and stable magnetic field measurement at low power consumption. The power requirement is a regulated 5 V DC supply while the measured x-, y- and z-axis magnetic field components are available as 0-5 V analogue outputs or optionally on a digital serial interface.