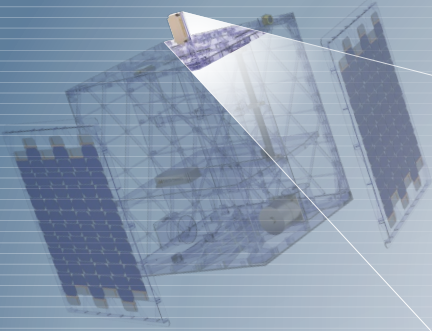


MAGNETOMETER



PERFORMANCE

NMRM-Bn25o485

FUNCTIONAL CHARACTERISTICS

Orthogonality	<+/- 1 degree
Measurement range	- 60,000 nT to +60,000 nT
Resolution	<8 nT
Update rate	<18 Hz
Noise density	<16 nT rms/Hz @ 1 Hz

PHYSICAL CHARACTERISTICS

Dimensions	99 mm x 43 mm x 17 mm
Mass	85 g
Power	<750 mW

ENVIRONMENTAL CHARACTERISTICS

Thermal (acceptance)	-25 °C to +70 °C
Mechanical Tests (qualification)	17.25 g _{RMS} (random), 26.25g (sin), 1280g shock
Radiation (TID) (qualification)	10 krad (component level)

INTERFACES

Power supply	+5 V _{DC}
Data	RS-485
Connector	9-pin Female Micro-D

ACCEPTANCE TESTING: All FM parts undergo random vibration (10 rms) as well as thermal cycling (four cycle ambient pressure) to five degrees beyond operational thermal specifications. However, NewSpace can perform additional environmental testing if required by a client.

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 as an integrated unit in July 2014. Since then, 50 of these units have been delivered to a variety of international missions and constellation programmes. As such, this unit is TRL 9 with extensive in-orbit heritage.

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 on a digital serial interface.