

The NSS tri-axial magnetometer utilises 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, which enhances the sensors performance. The sensor provides x-, y- and z-axes 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, this product includes low noise, precision processing and analogue-to-digital conversion circuitry which improves its linearity and reduces the drift sensitivity of the sensor head. The integrated processing circuitry and sensor head provides the mission with 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-axes magnetic field components are available on a digital serial interface.

| PERFORMANCE                       | PEGASUS-1<br>[NMRM-Bn25o485] |
|-----------------------------------|------------------------------|
| <b>FUNCTIONAL CHARACTERISTICS</b> |                              |
| <b>Orthogonality</b>              | <+/- 1 degree                |
| <b>Measurement range</b>          | - 60,000 nT to +60,000 nT    |
| <b>Resolution</b>                 | <8 nT                        |
| <b>Update rate</b>                | <25 Hz                       |
| <b>Noise density</b>              | <16 nT rms/Hz @ 1 Hz         |
| <b>PHYSICAL CHARACTERISTICS</b>   |                              |
| <b>Dimensions</b>                 | 99 mm x 43 mm x 17 mm        |
| <b>Mass</b>                       | 85 g                         |
| <b>Power</b>                      | <750 mW                      |

# ENVIRONMENTAL CHARACTERISTICS

|                                  |  |
|----------------------------------|--|
| Thermal (acceptance)             | 25 °C to +70 °C                              |
| Mechanical Tests (Qualification) | 21.06 gRMS (random), 25g (sine), 2000g shock |
| Radiation (TID) (Qualification)  | 10 krad (component level)                    |

# INTERFACES

|              |                      |
|--------------|----------------------|
| Power supply | +5 VDC               |
| Data         | RS-485               |
| Connector    | 9-pin Female Micro-D |
| Mechanical   | 4off M3              |

**ACCEPTANCE TESTING:** All FM parts undergo random vibration (10 grms) as well as thermal cycling (four cycles at 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 the latest version.

## FEATURES

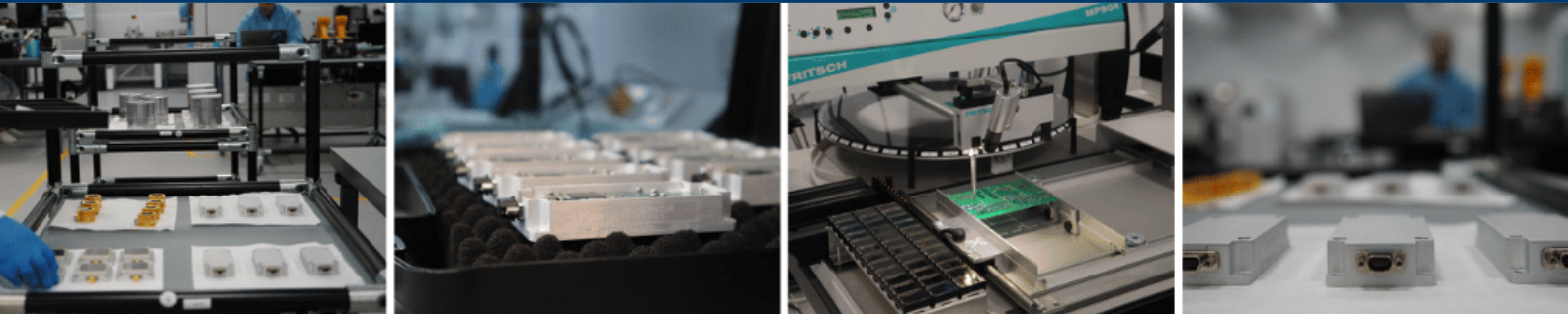
- Small size and low mass
- Radiation tolerant COTS
- Supplied with calibration matrix
- Simple to interface

## 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

The NewSpace Systems (NSS) magnetometer is TRL 9 with significant in-orbit heritage. 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, >190 units have been delivered to a variety of international missions and constellation programmes. To date, this product is baselined on 5 constellation programmes.



South Africa | United States | United Kingdom | New Zealand

mark@newspacesystems.com  
www.newspacesystems.com