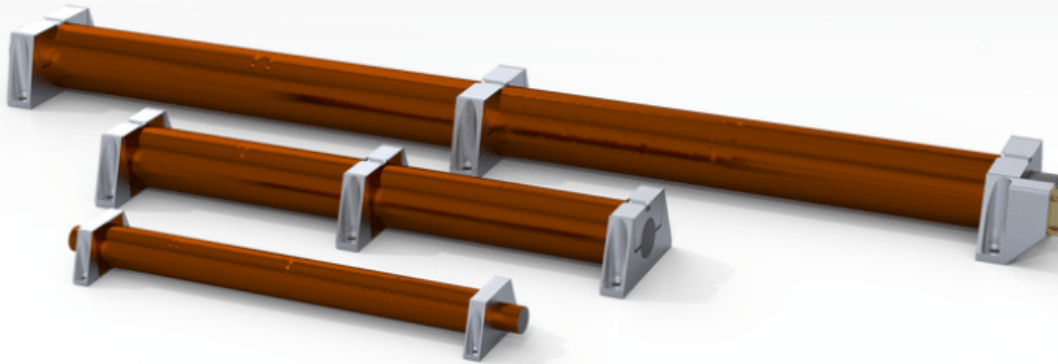




TAURUS MAGNETORQUER RODS



Magnetorquers rods are a method of controlling the attitude of a spacecraft either directly, by interacting with the local Earth's magnetic field or, more usually, in combination with reaction wheels. This secondary method allows for the dumping of excess momentum in the reaction wheels without the need for a complex propulsion system. The NSS magnetorquer rods use a magnetic alloy rod which produces an amplification effect over an air-cored magnetorquer. This allows a system that utilises less power and is less susceptible to magnetic torque variations due to temperature. Each rod is typically bifilar wound for redundancy, or the windings can be activated together to increase the torque produced. While drive circuits for the rods can be supplied if required, they typically run directly between a switched power output and the on-board power control system.

PERFORMANCE

TAURUS Magnetorquer Rods (NMTR-X-Custom)

FUNCTIONAL CHARACTERISTICS

Magnetic moment (nominal)	0.1Am ² -400Am ²
Linearity (across operating range)	±5%
Residual moment	<0.01 Am ²

PHYSICAL CHARACTERISTICS

Dimensions (Length mm)	70 mm - 770 mm
Mounting feet	2-3 feet [dependent on length]
Mass	26g - 10,000g
Power (nominal)	0.1W - 10W

ENVIRONMENTAL CHARACTERISTICS

Thermal (acceptance)	-20 °C to +70 °C [Dependent on Rod]
Mechanical Tests (Qualification)	21.06gRMS (random)

INTERFACES

Power supply	5VDC - 28VDC
Connector	Molex Pico-Lock (4-pin) Harwin Gecko Male (6-way) Axon Microstrip 4-Pin Positronic D-Sub 9-pin Glenair Micro-D 9-Pin
Mechanical	2 Socket Head Cap Screws per mounting foot

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

- High moment for low power
- Small size and low mass
- Very small residual magnetic moment
- Adaptable for size, moment and power to meet optimal system requirements
- Redundant windings available
- Simple interface

APPLICATIONS

- Active damping for spin-stabilised, momentum-biased and gravity-gradient-controlled satellites
- Momentum dumping of reaction wheels in three-axis stabilised spacecraft
- Simple magnetic stabilisation

QUALIFICATION

The NewSpace Systems (NSS) magnetorquer rod designs are TRL 9 with extensive in-orbit heritage. First flown in 2014, since then NSS has become one of the largest magnetorquer rod manufacturers globally having delivered >3,500 rods to a variety of international missions and constellation programmes; all with differing performance requirements. To date, the NSS magnetorquer rods are baselined on >10 constellation programmes.



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