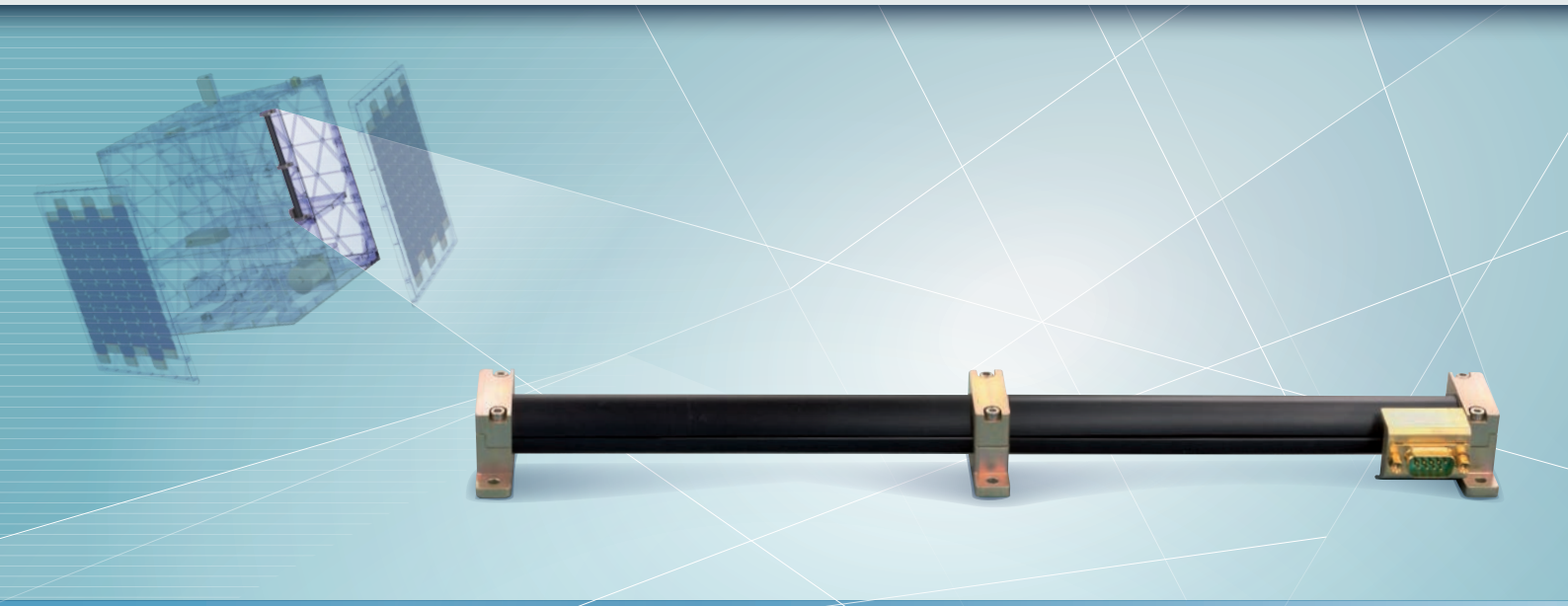
MAGNETORQUER ROD



PERFORMANCE

	Magnetorquer Rod
FUNCTIONAL CHARACTERISTICS	
Magnetic moment	From 1Am^2 up to 100Am^2
Linearity	± 5% across operating design range
Residual moment	< 0.1Am^2
PHYSICAL CHARACTERISTICS	
Length	8cm to 60cm available
Mounting feet	2, 3 or 4 depending on length
Mass	Approx. 55g/cm length (12mm core)
Power	1W
ENVIRONMENTAL CHARACTERISTICS	
Thermal (operational)	-35˚C to +75˚C
Vibration (qualification)	14g rms
Radiation (TID)	>100krad
INTERFACES	
Power supply	5 Volt
Connector	9-way D-type male (micro-D on smaller rods)
Mechanical	Dual pins per winding and redundant winding options available

ACCEPTANCE TESTING: *All 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.*

NEWSPACE SYSTEMS

MAGNETORQUER ROD

FEATURES

- High torque for low power
- Small size and low mass
- Adaptable for size, torque and power to meet optimal system requirements
- Redundant windings

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' magnetorquer rods comes from flight heritage on the SaudiSat-4 and DX-1 Missions. More than forty rods are in production or have been delivered for other missions with upcoming launches

UTILITY

Magnetorquers offer 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 NewSpace magnetorquer rods use a magnetic alloy rod which produces an amplification effect over an air cored magnetorquer. This allows a system that uses 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.

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