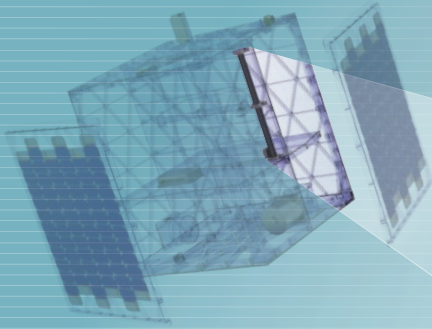


MAGNETORQUER ROD



PERFORMANCE

	NCTR-M002	NCTR-M012	NMTR-X [Custom]
FUNCTIONAL CHARACTERISTICS			
Magnetic moment	0.2 Am ²	1.19 Am ²	From 1 Am ² up to 100 Am ²
Linearity (across operating range)	<± 5%	<± 5%	<± 5%
Residual moment	<0.005 Am ²	<0.005 Am ²	<0.5 at 100 Am ²
PHYSICAL CHARACTERISTICS			
Dimensions (l x w x h)	70 mm x Ø10 mm	94 mm x 15 mm x 13 mm	8 cm up to 60 cm
Mounting feet	none	2	2, 3 or 4 depending on length
Mass	<30 g	<50 g	Approx. 30 g/cm length (12mm core)
Power	<200 mW from 5 V supply	<800 mW nominal @ 5 V	1 W, typical (customisable)
ENVIRONMENTAL CHARACTERISTICS			
Thermal (operational)	-20 °C to +60 °C	-20 °C to +60 °C	-25 °C to +70 °C
Vibration (qualification)	14 g _{RMS} (random)	14 g _{RMS} (random)	14 g _{RMS} (random)
Radiation (TID)	n.a.	n.a.	n.a.
INTERFACES			
Power supply	5 V _{DC}	5 V _{DC}	5 V _{DC} - 28 V _{DC}
Data	n.a.	n.a.	n.a.
Connector	Wires solder direct to PCB pads	Molex Pico-Lock	9-way D-type male (micro-D on smaller rods)
Mechanical	Tied directly to PCB	4 x M2 Socket Head Cap Screws	Dual pins per winding and redundant winding options available

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

MAGNETORQUER ROD



FEATURES

- High moment for low power
- Small size and low mass
- Very little 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 larger NSS magnetorquer rods were first flown in 2014 on the SaudiSat-4 and DX-1 missions. Since then, this product line has been delivered to a large number of international missions, all with differing performance requirements. To date, more than one hundred and fifty CubeSat rods have also been delivered.

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 Systems (NSS) 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.