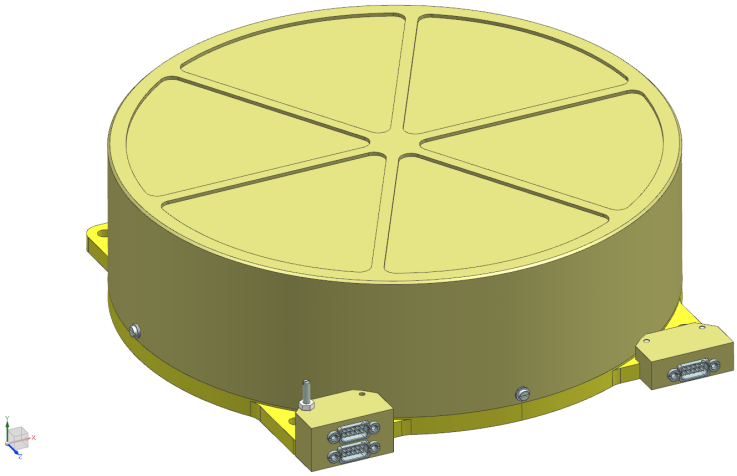
NEWSPACE SYSTEMS

10Nms Reaction Wheel



Reaction wheels provide satellites with control torques by means of momentum exchange between the satellite body and the rotating wheel. Multiple wheels are typically used to provide full 3-axis control.

The 10NmS reaction wheel has a high torque (more than 0.2Nm) and angular momentum storage capacity (more than 10Nms), making them ideal for agile medium to large microsatellites requiring accurate pointing.

The wheel features integrated control electronics with an industry standard digital interface through which all command and telemetry information is transferred. The wheels may be operated independently in current or speed control modes.

Features

- High wheel torque
- High wheel momentum capacity
- High accuracy speed control
- Simple digital interface to satellite bus

Applications

- High performance 3-axis torque and momentum exchange actuators for agile small satellites
- Momentum Bias
- Control for accurate pointing of imagers

Qualification

The qualification of the 10Nms Reaction Wheel is part of the development of the South African EO-Sat1 mission.

Specifications

Functional Characteristics
Max wheel torque: 210 mNm
Max wheel angular momentum: 10.6 Nms (@ 5000 rpm and 80mNm)
Speed range: -5000 to +5000 rpm
Rotor moment of inertia: 0.02 $kg.m^2$
Speed control accuracy: 0.6 rpm
Physical Characteristics
Dimensions: diameter: 235mm, height: 71mm
Mass: <5kg
Current consumption: 0.8W idle, <2W @1000rpm
Environmental Characteristics
Operating temperature –20 to +60C
15g rms random vibration (Qualification levels)
10krad total dose (component level)
Interfaces
Power supply: 28V unregulated
Data: RS422 / CAN
Connectors: 3 off micro-D (DMM-10 pin Nicomatic) for power and redundant comms

Contact information

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