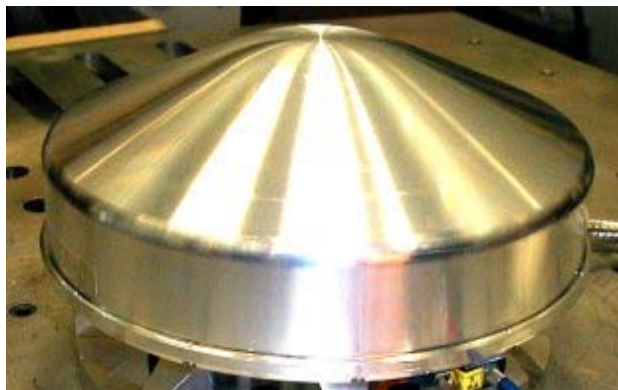


Small Satellite Reaction Wheel

Smallwheel 200SP

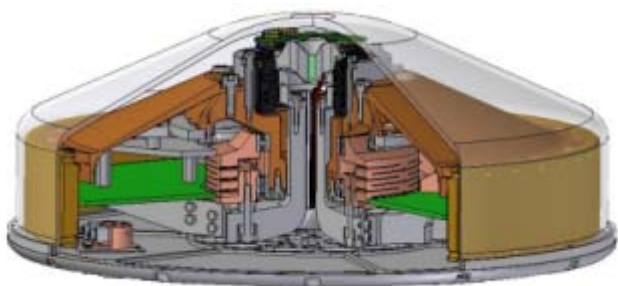
Applications

- Three-Axis Control Systems
- Momentum Bias Systems
- Agile Missions
- LEO and GEO Spacecraft



Smallwheel 200SP

The Smallwheel 200SP is designed for 3-axis control systems and may be run in torque control or speed control modes. Several wheels can be configured to provide a highly agile attitude control solution for Earth Observation missions.



Smallwheel 200SP Internal

Features

- Flight heritage
- Integrated electronics controller
- Manufactured to ECSS standards
- High momentum/mass ratio
- Can be run in torque or speed control modes
- Used as a momentum or reaction wheel
- Full torque available across speed range
- 7.5 year design life

Options

- Various surface finishes
- Controller firmware updates

Interfaces

- RS485 Bus
- RS422

Heritage (launch date)

- Heritage Bearing Assembly
- Space rated motor and electronics
- Giove-A (2005)
- NigeriaSat-2 (2011)
- Vniem (2011)

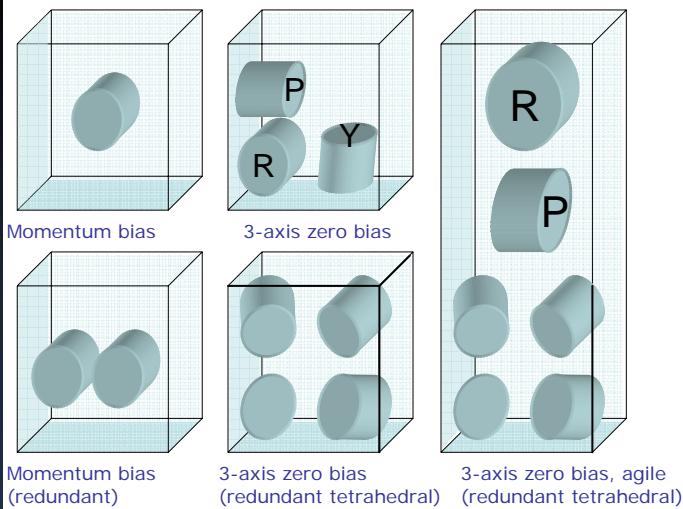
Key Specifications

- Max Torque 200mNm
- Angular momentum up to 12 Nms
- Up to 5000 rpm
- 28V unregulated supply
- Mass 5.2kg, 240mm dia. X 90mm height
- Power 16.3W (typ.) @ 5000rpm



Small Satellite Reaction Wheel

Smallwheel 200SP



Smallwheel Configurations

Wheel Momentum	12 Nms (max)
Wheel Torque	200 mNm (max) @ 28V
Wheel MOI	0.023 kgm ²
Wheel Speed	±5000 rpm
Speed resolution	±0.4 rpm
Speed control	0.6 rpm (rms)
Motor Torque Constant	0.043 Nm/A
Update rate	5 Hz (typ)
Drive Motor Type	3-Phase Brushless DC
Motor Drive Method	4-Quadrant PWM Current Loop
Mass	5.2 kg
Dimension	240 mm Diameter x 90 mm Height
Power	24-32 V supply 3.3 W (0rpm) @ 28V 16.3 W (5000rpm) @ 28V 145 W (Max) Accl. @ 28V
Operating Temperature	-20 to 50 °C
Random Vibration	15 g _{rms} all axis
Radiation Tolerance	100 kRad (Si)

SSTL is ISO9001:2008 certified

Subsystems are manufacture to:

- ECSS Q-ST-70-08C
- ECSS Q-ST-70-38C
- All work overseen by ESA-trained assembly staff

Standard Delivery Service Includes

- compliance testing
- vibration test
- thermal cycling
- user manual
- test results
- export license and shipping
- thermal vacuum testing available
- unit can be supplied prior to environmental testing

Surrey Satellite Technology Limited

SSTL has launched over 34 satellites gaining almost 200 years in-orbit experience. SSTL draws on its world-class expertise in both small satellite platform technology and high and medium resolution optical instruments. SSTL provides complete turn-key system solutions; spacecraft, ground station, launch, operations and image processing.

SSTL is unique in the space industry; able to design, manufacture and integrate multiple satellites in-house.

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