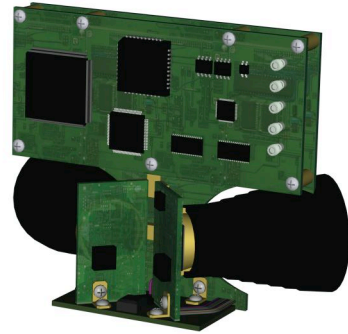


Nanosatellite Sensor Suite (NSS) Integrated Sensor Package

SPEC's Nanosatellite Sensor Suite combines MEMs, GPS and imaging sensors into a hardened, compact, low power, single module that supplies attitude and position data for navigation and control of small platforms and payloads.



By optimizing synergy between sensors, strengths of each sensor can be used to compensate for individual sensor weaknesses. The result is a high speed, quick lockdown, ultra high accuracy suite made up of a large number of miniature sensors. This sensor suite provides small platforms a known orientation, rate and position in an extremely compact, lightweight, and low power module.

The NSS combines a high-speed MEMS based inertial package with a GPS, earth referenced sensor and star tracker subsystem. This combination allows control of inherently fast maneuvering small satellite sized payloads by using the high speed MEMS inertial package. The earth reference and star tracker suite provide for zero drift and a high pointing accuracy capability thus allowing numerous payload options.

The high speed MEMS inertial package is based on SPEC's 6 DOF angular acceleration data recorder. This unit uses a three dimensional array of 9 surface mount MEMS accelerometers to detect high to medium speed maneuvers. Proprietary software compensates for sensor error sources, resulting in high data accuracy.

The earth referenced sensor suite consists of surface mount 3D magnetic field sensor, and 3D GPS receiver. The GPS receiver gives absolute position to less than 1 meter, and velocity to 0.06 m/s. The magnetic field sensor gives angular position perpendicular to the earth, to 0.3% accuracy and sets up the star tracker to minimize search/computational load.

The star tracker subsystem provides a final, highly accurate attitude in inertial angular coordinates.

The use of two star tracking sensors allows a choice of the field of view with the least interference from sun reflections and objects in the field. This maximizes the diversity of sensing orientations with little increase in complexity.

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Specifications:

The NSS is either directly applicable or easily adapted to the following:

- Autonomous land or air vehicle guidance
- Guided parafoil delivery systems
- Nanosat and smallsat guidance and control
- Payload control during deployment

NSS Specifications:	
Imaging Sensor	CMOS Digital Imager
Total Power	Less than 300mW
Systems Size	3.5" X 4.0" X 1.1"
Weight	0.50 #
Angle Accuracy	.012° pointing direction
Direction	.006° sensor direction
Position Accuracy	1 m
Velocity Accuracy	0.06m/s

Features:

- Modular architecture allows NSS to be adapted to different platforms and missions
- Can be used in a self contained module or “distributed” sensor configuration
- Contains a combination of high and low bandwidth, zero drift sensors
- Accommodates a variety of payload interfaces
- Small footprint (3.5”x4.0”x1.1”) is ideal for nanosat and small sat applications

About SPEC:

- *SPEC is a veteran-owned small business, a National Tibbetts Award winner and ISO 9001 certified.*
- *Facilities are approved for SECRET storage, data processing and assembly.*
- *Staff has SECRET and TOP SECRET security clearances.*

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