

Geo-iNAV™

Inertial Navigation Products

Geo-iNAV™ is an affordable, fully-integrated GPS-aided inertial navigation system. Geo-iNAV is offered in six configurations designed to meet a wide range of inertial navigation application requirements. Configurations are available for both commercial and military applications:

Geo-iNAV Commercial
Designed for civilian navigation applications

Geo-iNAV SAASM
Designed for navigation applications that have a military SAASM GPS requirement



Commercial Configuration



Geo-iNAV Features

- Centimeter-Level position accuracy (dual-frequency RTK config.)
- Precise Instantaneous Network (PIN) positioning based on Geodetics' Epoch-by-Epoch® technology
- Tight coupling with Geodetics' GKF Extended Kalman Filter
- Full post-processing capability using Geo-PostProcessing tools
- Support for tactical grade and low-cost MEMS IMU's
- Support for a variety of IMU interfaces including AMRAAM and SDLC
- Support for low, medium and high-dynamic platforms
- In-motion dynamic alignment
- Mil-Spec ruggedization
- Optional internal wireless data-link with TDMA capability
- Small footprint (without external IMU)
- Light weight

Geo-iNAV Applications

- UAV and UGV navigation and tracking
- High-Dynamic aircraft navigation and tracking
- Robotic control
- Mapping
- Gas and oil exploration
- Agriculture
- Transportation (safety and maintenance)
- Construction and structural management

Geo-iNAV configurations can be customized to satisfy the most demanding inertial navigation accuracy and performance requirements

Geo-iNAV Standard



Geo-iNAV Mid-Grade



Geo-iNAV Advanced



Geo-iNAV Configurations

Combined GPS/IMU ¹	GPS Processing	IMU
Geo-iNAV Standard	L1 Standalone	Consumer Grade MEMS
Geo-iNAV Mid-Grade	L1/L2 RTK	High-End MEMS
Geo-iNAV Advanced	L1/L2 RTK	Tactical Grade

Geo-iNAV GPS Accuracy

GPS Options	GPS Processing	Horizontal Accuracy ²	Vertical Accuracy ²
Commercial	L1 Standalone	~1.5 m	~2.5 m
	L1/L2 RTK	~5 cm	~10 cm
SAASM	L1/L2 Standalone	~1.0 m	~2 m
	L1/L2 RTK	~5 cm	~10 cm

Geo-iNAV IMU Accuracy

IMU Options	Update Rate (Hz)	Roll/Pitch Accuracy (degrees) ²	Heading Accuracy (degrees) ²
Consumer Grade MEMS	Up to 1000	±1	±2
High-End MEMS	100	±0.5	±0.2
Tactical Grade	Up to 200	±0.01	±0.05

¹ All three Geo-iNAV versions are available with commercial or SAASM receivers

² Accuracy is dependent upon GPS satellite system performance, ionospheric conditions, GPS blockage and other factors



SAASM Configuration



SAASM Configuration with External IMU

Technical Specifications

Common Specifications

Power

- 10 - 30 VDC @ 2 Amps minimum

Real-Time Data Output

- TSPI solutions up to 10 Hz available via Ethernet, RS232 or optional internal wireless data-link

Data Recording/Logging

- Full TSPI solutions (position, velocity, attitude)
- Raw GPS and IMU data (for post processing)
- Full diagnostics

Wireless Communications Options

- Internal TDMA data-link (various frequencies available)
- Support for external data link via Ethernet or Serial

IMU Support

- Honeywell HG1900
- Honeywell HG1700 Ring Laser Gyro
- Honeywell HG9900 Navigation Grade
- Litton LN200
- Support for both AMRAAM and SDLC formats
- Consumer grade MEMS sensors
- KVH
- Additional IMU's available upon request

RTK Algorithm

- Precise Instantaneous Network (PIN) Positioning with Geodetics' Epoch-by-Epoch® technology

Safety and Diagnostics

- Internal safety and monitoring systems
- Internal BIT with operator notification

Temperature

- Operating: -40°F to +185°F (-40°C to +85°C)
- Storage: -67°F to +185°F (-55°C to +85°C)

Commercial Configurations

Size, Weight and Construction

- 27 cubic inches (Internal IMU for Standard and Mid Grade configurations, IMU external for Advanced configuration)
- 20 oz
- MIL-810E Environmental compliant
- MIL-461 EMI and RFI compliant

Interfaces

- External power connector
- TNC GPS antenna connector
- SMA RF connector for optional internal data link
- 1 Ethernet data port
- 3 RS232 serial ports
- 1PPS output
- IMU connector for external mid-grade & advanced configurations
- 4 status LEDs

GPS Frequency Tracking

- L1
- L1/L2

SAASM Configurations

Size, Weight and Construction

- 7.1 x 5.66 x 2.13 – 85.6 cubic inches (Internal IMU for standard and mid-grade configurations; External IMU for advanced configuration)
- 28.7 oz
- MIL-810E Environmental compliant
- MIL-461 EMI and RFI compliant

Interfaces

- External power connector
- TNC GPS antenna connector
- SMA RF connector for optional internal data link
- 1 Ethernet data port
- 3 RS232 serial ports
- 1PPS output
- IMU connector for external mid-grade & advanced configurations
- 4 status LEDs
- SAASM Keyload connector
- SAASM Zeroize button

GPS Frequency Tracking

- L1/L2 (P/Y code)

Key Loading

- DS101 and DS102