GEODETICS INCORPORATED | Precision in Motion.

Geo-iNAV® Advanced
GPS/INS Navigation System

- **Accurate**
- **Reliable**
- **Flexible**

Geo-iNAV® Advanced is a fully-integrated GPS-aided inertial navigation system that utilizes a high-stability Fiber Optic Gyro IMU to provide a high-performance navigation solution. Geo-iNAV® Advanced is offered in several configurations designed to meet a wide range of requirements, and is available for both commercial and military applications:

Geo-iNAV® Advanced Commercial: Designed for civilian navigation applications (no ITAR restrictions)
Geo-iNAV® Advanced SAASM: Designed for applications that have a military SAASM GPS requirement

Geo-iNAV® Advanced Features

- Built-in support for many commonly used IMU's[1] (see supported Plug & Play IMU's in the IMU Specifications)
- Centimeter-level position accuracy (dual-frequency RTK configuration)
- GPS Processing with Precise Instantaneous Network positioning based on Geodetics' Epoch-by-Epoch® technology
- Loose and Tight-coupling with Geodetics' Extended Kalman Filter
- Full post-processing support with Geo-PostProcessing tools
- Support for high-dynamic platforms
- In-motion dynamic alignment
- Mil-spec ruggedization
- Optional TDMA wireless data-link

Geo-iNAV® Advanced Applications

- Manned / Unmanned aircraft navigation and control
- Military & defense security
- Naval SUV
- Marine applications
- Mobile mapping systems & photogrammetry
- Terrestrial navigation

[1]Accuracy is dependent on IMU model installed

Geo-iNAV® Advanced
Product Configuration Options

Geo-iNAV® Advanced GPS Options

GPS Options	Processing Options	Typical Position, Velocity, Acceleration, Attitude Accuracy (RMS)[1]		
		Horizontal , Vertical Pos.	Velocity , Acceleration	Roll, Pitch / Heading
Commercial	L1 Standalone	1.5 m , 2.5 m	0.1 m/s , 0.1 m/s²	0.05° / 0.1°
	L1/L2 RTK	5 cm , 10 cm	0.02 m/s , 0.02 m/s²	0.01° / 0.05°
SAASM	L1/L2 Standalone	1.0 m , 2.0 m	0.1 m/s , 0.1 m/s²	0.05° / 0.1°
	L1/L2 RTK	5 cm ,10 cm	0.02 m/s , 0.02 m/s²	0.01° / 0.05°

Geo-iNAV® Advanced IMU Technical Specifications

Parameter	KVH 1725	KVH 1750	KVH 1775 Heading Reference System
Gyroscope Dynamic Range	±490°/sec.	±490°/sec.	±490°/sec.
Gyroscope Bias In-Run Stability (1σ)	0.1°/hr.	0.05°/hr.	0.05°/hr.
Gyroscope Angle Random Walk (1σ)	≤0.017°/√hr.	≤0.012°/√hr.	≤0.012°/√hr.
Accelerometer Dynamic Range	±10 g	±10 g	±10 g
Accelerometer Bias In-Run Stability (1σ)	≤ 0.1 mg	≤ 0.05 mg	≤ 0.05 mg
Accelerometer Velocity Random Walk (1σ)	0.15(m/sec)/√hr.	0.07(m/sec)/√hr.	0.07(m/sec)/√hr.
ITAR Restricted Plug & Play IMU's Supported – Honeywell HG9900, HG1700, HG1900, Litton LN200			

Maximum Drift of the Navigation Solution (Position, Velocity, Attitude) after GPS Outages

Outage	Position (Horizontal , Vertical)	Velocity (Horizontal , Vertical)	Attitude (Roll, Pitch / Heading)
30 seconds	1.5 m , 1.0 m	0.04 m/s , 0.05 m/s	0.01° / 0.02 °
60 seconds	3.0 m , 2.0 m	0.1 m/s , 0.1 m/s	0.02° / 0.07°

Geo-iNAV® Advanced Technical Specifications

Parameter	Commercial Configurations	SAASM Configurations
Size / Weight / Power	33.8 in³ (4.73x3.95x1.81) / 20 oz. / 10 – 30 VDC @ 2 Amps min. (not including external IMU)	
Environmental	MIL-810E, MIL-461 Compliant	
Temperature Range	Specified: -20°C to +60°C	Operating: -40°C to +70°C
Interfaces	External power connector, TNC GPS antenna connector, 1 Ethernet data port, 3 RS-232 serial ports, 1PPS output, 4 status LEDs.	External power connector, TNC GPS antenna connector, 1 Ethernet data port, 3 RS-232 serial ports, 1PPS output, 4 status LEDs, SAASM Keyload Connector, SAASM Zeroize button.
Real-Time Data Output	Navigation solutions at 100 Hz. available via Ethernet, RS-232 or optional wireless data-link.	
Data Recording/Logging	Navigation solutions (position, velocity, attitude), raw GPS & IMU data (for post-processing).	
Wireless Communications	Optional TDMA data-link (various frequencies available), Point-to-Point mode available.	
GPS Frequency Tracking	L1 & L1/L2	L1 & L2 (P/Y Code)
Key Loading	N/A	DS-101
Safety & Diagnostics	Internal safety and monitoring systems. Internal BIT with operator notification.	

[1]Accuracy is dependent on GPS satellite system performance, ionospheric conditions, satellite visibility, data-link and other factors.