



## Geo-RelNAV™ Relative Navigation System

**GEO-RELNAV® IS A UNIQUE GPS/IMU BASED NAVIGATION SYSTEM THAT PROVIDES RELATIVE NAVIGATION INFORMATION BETWEEN MOVING PLATFORMS.**

The relative navigation information computed by Geo-RelNAV includes relative position, relative velocity (closure rate), and relative orientation.

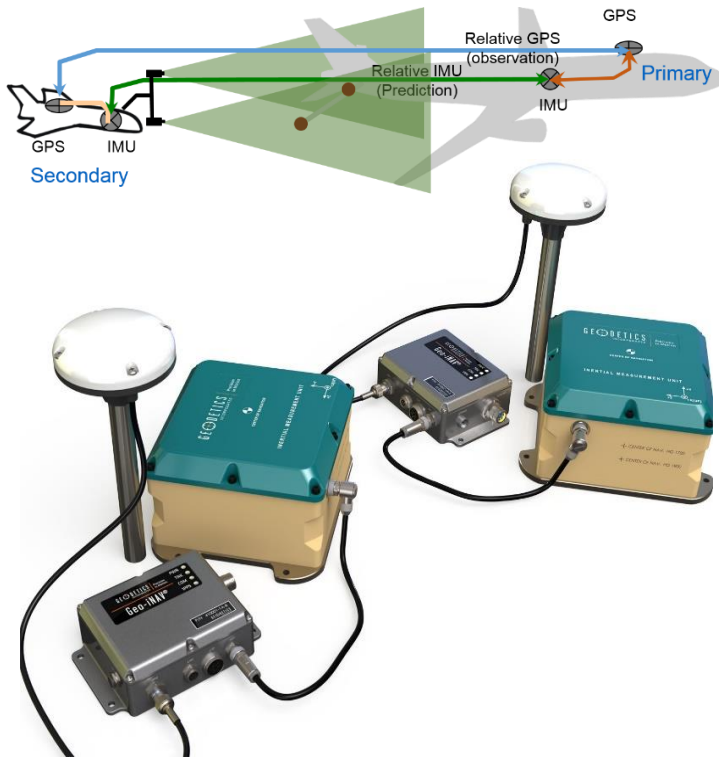
The system natively provides relative navigation solutions in different non-inertial reference frames, including body-frame, local navigation frame (wander-azimuth) and earth-fixed frame, as well as transferring the solution to arbitrary points of interest on the platforms.

### Key Features

- Minimized sensor size and weight to meet payload restrictions
- Available with different classes of IMU's to support a wide range of application requirements
- On-board data logging of all sensor raw and navigation solution data
- The relative navigation can be provided between one leader and multiple followers
- Aerial refueling applications: Probe-Drogue and Boom system
- The system can be upgraded to vision-aided navigation for operations in GPS-denied conditions

### Applications

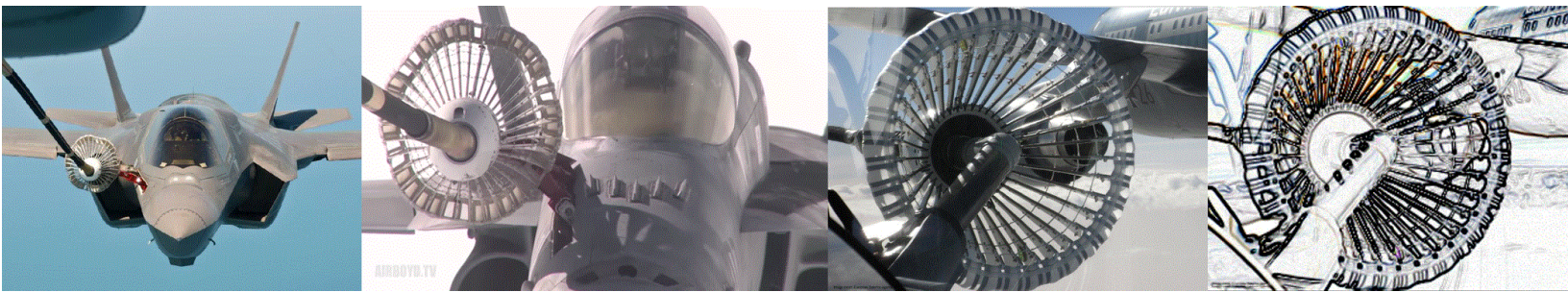
- Autonomous Aerial Refueling
- Autonomous Landing Systems
- Autonomous Platooning (V2V – Vehicle to Vehicle)
- Sense & Avoid
- UxV Collision Avoidance and Swarming
- UxV Leader/Follower Formations
- Situational Awareness



## Relative Navigation Accuracy \*

Relative Navigation Components		RMS
Relative Position [m]	$\Delta X$	0.25
	$\Delta Y$	0.25
	$\Delta Z$	0.25
Relative Velocity [m/s]	$\Delta V_x$	0.1
	$\Delta V_y$	0.1
	$\Delta V_z$	0.1
Relative Attitude [degrees]	Yaw	0.5
	Pitch	0.25
	Roll	0.25

\*Accuracy is dependent on GPS satellite system performance, ionospheric conditions, satellite visibility, data-link and other factors



## Technical Specifications

Parameter	Commercial Configurations
Size / Weight / Power (w/o IMU)	33.8 in <sup>3</sup> (3.95×3.05×2.06) / 14.4 oz. / 10 – 30 VDC @ 2 Amps min.
Environmental	MIL-810E, MIL-461 Compliant
Temperature Range	Specified: -20°C to +65°C   Operating: -40°C to +70°C
Interfaces	External power connector, TNC GPS antenna connectors, 1 Ethernet data port, 3 RS-232 serial ports, 1PPS output, 4 status LEDs.
Real-Time Data Output	Navigation solutions at up-to 125 Hz. available via Ethernet or RS-232
Data Recording/Logging	Relative navigation solutions, absolute navigation solutions, raw GPS, IMU