



## NAVHUB™-100 NAVIGATION SYSTEM

# ADVANCED, ASSURED PNT FOR GROUND PLATFORMS

## Mission-specific navigation in a small, light, rugged form

At Collins Aerospace, we have deep expertise in providing position, velocity and timing (PVT) for military surface mobility. We leveraged that experience to design our NavHub™-100 navigation system. It specifically meets the needs of ground platforms in their fast-moving, demanding combat environments. NavHub-100 also provides the navigational capabilities, interfaces and upgrade paths that support these platforms for future technical upgrades.

Employing our next-generation position, navigation and timing (PNT) technology, NavHub-100 offers an integrated navigational solution based on our modernized GPS product lines and variety of optional sensors. Our NavHub-100 solution brings heightened protection levels against the

evolving GPS threats that warfighters are facing on the battlefield today.

New benefits from Collins Aerospace include Military Code (M-Code) capability and improved levels of reliability through patented Modernized Signal Tracking (MST) that enhances GPS integrity.

These capabilities generate and distribute an assured PNT solution that will maintain the integrity of positioning and timing during operations in GPS-contested environments. They enable vehicles to select a navigation device that meets the mission-specific needs of particular customers. These needs can range from low-intensity operations to high jamming and spoofing threats and GPS-denied combat environments.



## KEY FEATURES AND BENEFITS

- Provides a high-assurance, accurate navigation solution across GPS threat environments
- Implements modernized signal tracking to ensure GPS integrity
- Supports Defense Advanced GPS Receiver (DAGR) standard interfaces
- Provides M-Code security
- Offers L1 and L2 GPS signal reception
- Extends performance in a jamming environment
- Easily integrates with DAGR form factor and legacy connectors

NavHub-100 is the navigational solution that generates and distributes Assured Position, Navigation and Timing (APNT) information to all systems on board the platform through one device. Additional protection comes with the ground-based Collins MSAS-100 multisensor antenna system anti-jam antenna, providing superior immunity in the most severe GPS-challenged environments.

NavHub-100's flexibility provides a single device solution that can be adapted, enhanced, updated and supported throughout the life of the host platform. This approach simplifies design, manufacture, logistics, accounting and long-term support. It provides the user with a solution to all platform needs through one device, fitted with selected sensors, which can be upgraded throughout the life of the vehicle.

Housed in a small, lightweight and rugged chassis, NavHub-100 provides all the needed interfaces to enable further navigational augmentation through the integration of additional external sensors (such as IMUs, magnetic sensors or odometers). This can enhance performance and provide assured PNT in GPS-challenged and -denied environments.

To reduce vehicle system (MSAS-100, optional) changes, we implemented a smart, two line-replaceable-unit (LRU) system that cleanly replaces the existing navigation system in the vehicle for easier upgrade and sustainability.

## PHYSICAL CHARACTERISTICS

Size/volume	(6.5 in. L x 4.125 W in. x 2.375 in. H)
Weight	<2.1 lbs
Power (vehicle operating)	9 VDC to 32 VDC <10 W
Temperature (operating)	-40° C to 70° C

## SPECIFICATIONS

### Anti-jamming performance\*

- Better than 41 dB J/S while tracking (state 5)
- Better than 54 dB J/S (state 3)

\*Additional information can be provided in a classified forum

## SPECIFICATIONS (CONT.)

### Interfaces

- Four DAGR emulators compliant with IS-GPS-153
- SINCGARS output
- Victory data bus 1.6.2 compatible
- UTC 1PPS Out
- ASPN-capable expansion Ethernet port and scalable architecture to support future sensors such as AltNav, GNSS and visual odometry
- Ethernet maintenance port for reprogramming and test data collection
- DS-101 key loading
- Direct RS-232 connection to GPS M-Code receiver
- Direct 1PPS input to GPS M-Code receiver for time transfer and hot start
- Zeroize input discrete

### System characteristics

- GPS/INS navigator
- Advanced integrity algorithms (OSIRIS and SENTRI) to provide an assured solution
- Ground-aided navigation for GPS-denied conditions (less than 2% distance traveled)
- External wheel sensor input for velocity aiding during GPS outage
- Precision time frequency estimation for computing sub-nanosecond time accuracy
- Internal OCXO time reference for maintaining time accuracy
- Disciplined 10 MHz output clock for precision time applications
- Designed to integrate with high capability anti-jam systems such as MSAS-100
- Four DAGR emulators compliant with IS-GPS-153 to allow for easy integration with existing fielded systems
- External barometric pressure input for altitude aiding over RS-232
- Web interface to provide easy access to configuration using any laptop
- Victory data bus 1.6.2 compliant in order to facilitate integration on Victory-capable vehicles

Specifications subject to change without notice.



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