



## Navigate with confidence.

For military surface mobility, Rockwell Collins' global navigation satellite system (GNSS) equipment is unsurpassed. The NavHub™ GNSS navigation system has been designed specifically to meet the fast-moving, demanding combat environments experienced by both ground and maritime platforms and to provide the navigational capabilities, interfaces and upgrade path necessary to support these platforms during modern operations.

Employing Rockwell Collins' next-generation GNSS technology, NavHub will offer a variety of navigational solutions based upon both current and next-generation Rockwell Collins GNSS product lines. Currently, the system is based upon Rockwell Collins' Selective Availability Anti-Spoofing Module (SAASM) based GPS receivers, which are compliant with the U.S. Global Positioning Systems Directorate GB-GRAM standard. In addition, our SAASM receivers include:

- > Simultaneous L1 and L2 dual-frequency GPS signal reception
- > 12 channels L1/L2 all-in-view navigation

- > Extended capabilities in a jamming environment
  - 54 dB while tracking
  - 41 dB Direct Y acquisition
- > Next-generation security architecture provided by the key data processor
- > Unclassified-when-keyed operation
- > 24 channel Pseudo Range, Delta Range and Carrier Phase software available (optional)
- > Black-key capable for Over-The-Air-Rekeying (OTAR), when available
- > Upgrade path to M-Code, Galileo and other GNSS solutions
- > Road map: Future upgrade to a Hybrid Navigation Solution with integrated IMU

NavHub provides mission-specific, tailorable solutions for vehicle, maritime or weapon system applications. Its proven design meets desired GNSS, mission and platform connectivity needs and supports the projected life of the host platform.

The system includes two receiver card slots, enabling users to select from a variety of GNSS solutions. These can be tailored to meet user requirements through the installation of one or two GNSS receivers – either from the Rockwell Collins product lines or from third-party

providers. The receivers provide the following capabilities:

- > GPS SAASM (P(Y) Code)
- > GPS Open Service (C/A Code)
- > GNSS Multi-Constellation, Open service\*
- > GPS M-Code\*
- > Galileo PRS\*
- > GPS M-Code/Galileo PRS\*

These capabilities enable vehicle and maritime platform OEMs to select a navigation device that meets the needs of particular customers from either an export point of view, a national GNSS mandate (Galileo PRS, GLONASS or M-Code) or a mission-specific point of view (such as low-intensity peacekeeping operations, through to high jamming threat combat environments). The system'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 GNSS devices, which can be upgraded throughout the life of the vehicle.

NavHub provides all interfaces necessary to enable further navigational augmentation through the integration of additional external sensors (such as IMUs, magnetic sensors or odometers) to enhance performance and to provide assured PNT in GNSS-challenged and -denied environments.

The system also supports both DGPS and RTK operations where necessary and is able to host specific software to meet these requirements.\*\* Designed with advanced interfaces for modern military vehicles, NavHub is an ideal solution for legacy vehicle upgrade programs as well as new advanced combat vehicle, maritime or weapons platforms.

#### KEY FEATURES AND BENEFITS

- > Ingress protection rating of IP67
- > Calculated mean time between failures (MTBF) greater than 15,000 hours
- > Improved EMI/EMC, fully compliant with military vehicle environmental standards
- > Supports PLGR and DAGR standard interfaces via two Mil-C-26482 connectors
- > Third connector supports enhanced features and input/output interfaces
- > 12-channel, continuous satellite tracking all-in-view operation, with expansion to multiple-channel GNSS
- > SAASM security (expansion to M-Code)
- > Simultaneous L1 and L2 dual-frequency GPS signal reception
- > Improved performance due to aggressive acquisition/reacquisition strategies, typical cold start without time, position or almanac in less than 110 seconds from complete OFF
- > Extended performance in a jamming environment (e.g., 41 dB while tracking and 24 dB during initial acquisition)
- > Area navigation with waypoint storage (999 waypoints; 15 routes)
- > User setup of units, datums and coordinate systems
- > Receiver Autonomous Integrity Monitoring (RAIM)

#### PHYSICAL CHARACTERISTICS

Size/volume	235 mm x 94.6 mm x 105 mm (7.28 in x 3.72 in x 2.64 in) (L x W x H)
Weight	<1.7 kg
Power	Vehicle operating 9 VDC to 32 VDC <10 W
Temperature storage	-46° C to 71° C
Operating	-40° C to 60° C
Humidity	20° C to 49° C (85% to 95%)
Altitude	-400 m to 3500 m

#### SYSTEM PERFORMANCE\*\*

Antenna	L1/L2 active and L1/L2 AJ Ae (CRPA)
Acquisition time probability	>95% TTFF <90 sec (warm), TTFF <100 sec (cold)
Datums	233 predefined; six user defined
Coordinate system	28 predefined
Storage capacity	999 waypoints; 15 reversible routes

*Specifications subject to change without notice.*

#### HARDWARE/CONNECTOR INTERFACES

Power connector	(1x) Mil-DTL-26482 series 1, shell size 8
Data connectors	(4x) Mil-DTL-26482 series 1, shell size 14
Antenna connector	HUBER+SUHNER 24TNC-50-2-27
Crypto key input connector	(1x) PT07GS14-19S
Integrated mounting plate	

#### SIGNAL INTERFACES

- > All input/output signals galvanic isolated
- > One Ethernet interface
- > Web Interface over Ethernet for simplified command and control via use of a web browser
- > One CAN-Bus interface
- > One USB 2.0 interface
- > Five independent galvanic isolated RS232
- > Five independent galvanic isolated RS422
- > DS-101/DS-102 key loading
- > 1PPS input (ref. ICD-GPS-153)
- > 1PPS and 10PPS output (ref. ICD-GPS-153)
- > HAVE QUICK (SS-110990 and ICD-GPS-060)
- > RTCM 194-93/SC 104 differential GPS correction data input
- > Odometer Interface compliant to ISO 16844

#### DATA COMPATIBILITY

- > Currently ICD-GPS-153 and NMEA-0183 data input/output
- > Future upgrade to other GNSS data formats (e.g., Galileo PRS-out, PTTI, etc.)

#### UNIT STATUS

Status (Vehicle Power Good, Zeroise, Active and Crypto Fill Complete) available via four-digit, seven-segment display, push buttons and LEDs on unit

#### ANTENNA

NavHub provides an output voltage of 5 VDC for active external antennae (current: <60 mA) at the antenna (an optional second antenna is also available)

*\*Future capability*

*\*\*Dependent upon type of receiver(s) installed*

#### Building trust every day.

Rockwell Collins delivers innovative aviation and high-integrity solutions that transform commercial and government customers' futures worldwide. Backed by a global network of service and support, we are deeply committed to putting our solutions to work for you, whenever and wherever you need us. In this way, working together, we build trust. Every day.

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