BAE SYSTEMS

NavStorm™-M GPS Receiver

Battlespace accuracy

Trusted military GPS for ruggedized applications

In today's unpredictable battlespace, launching weapons safely and accurately is critical to mission success.

NavStorm-M is the premier ruggedized integrated GPS and spatial anti-jamming system in the combat-proven family of BAE Systems' weapons receivers.

Leveraging more than 45 years of military GPS experience and breakthrough technical expertise in anti-jamming and high-g microelectronics, BAE Systems provides you with a g-hardened GPS receiver for your military needs.

NavStorm-M is a 32-channel, dual-frequency, all-in-view receiver used as a stand-alone system or integrated with an Inertial Navigation System (INS). Powered by state-of-the- art technology, NavStorm-M provides enhanced direct-M and direct-Y acquisitions, built-in digital beamforming for high-jamming immunity, and fast initial acquisition.

Key features

- NavStorm-M contains a security-certified Common GPS Module (CGM) that provides improved cybersecurity and enhanced crypto key handling (SGMP)
- Blue Force Electronic Attack (BFEA) compatibility
- 32 channels with all-in-view, dual-frequency (L1/L2) track, and navigation allows
  the best and strongest signals to be identified and utilized
- Fully integrated digital anti-jamming electronics with up to five RF inputs (>92 dB J/S while tracking)**
- Layered protection approach using beamforming, anti-spoofing, and resiliency software assurance modification provides the highest level of integrity to PNT
- Fast direct-Y and direct-M code acquisition allows NavStorm to quickly obtain and legitimize signals

Delivers precise GPS navigation

Small size, high accuracy

Small in size yet highly reliable and accurate, the NavStorm-M is specifically designed to meet the tight size, weight, power, and cost (SWaP-C) requirements of UAS/loitering munitions, hypersonic platforms, and other weapons – especially in gun-hardened applications.

The NavStorm-M delivers precise GPS navigation either as a stand-alone system or when integrated with an INS.

Precise

This integrated receiver offers full Precise Positioning Service (PPS) accuracy and its simultaneous L1/L2 operation provides real-time ionosphere corrections for further accuracy enhancements.

Its primary communication interface is a high-speed RS-422 serial port. The integrated anti-jamming solution utilizes digital nulling and beamforming functionality for improved jamming immunity. Additionally, this system has been provisioned for an Ultra Tight Coupling (UTC) unit interface option that improves both anti-jamming performance and navigation accuracy.

System characteristics

Receiver	L1 frequency, M, P or Y or C/A code* L2 frequency, M, P or Y code* M-Code Increment 1 architecture Field-reprogrammable software
Dynamics	>10 g acceleration
TTFM	<10 seconds (conditions apply)
Time accuracy	<±100 nanoseconds RMS
Position accuracy	<3 m CEP* <2 m typical with aiding* Up to 25 Hz PVT solution update rate 1 Hz pseudo range, delta range update rate
Velocity accuracy	<0.07 m/sec RMS typical
Crypto key	Serial port, SKL CYZ-10, SKL AN/PYQ-10

Physical characteristics

Power	<19.0 W (depending on RF configuration)
Weight	9.7 oz (275 g)
Size	2.8 D x 1.1 in. H (71.12 x 27.94 mm)
Temperature range	-45°C to +85°C (operating) -54°C to +85°C (storage)
Shock	Up to 20,000 g

Growth path

Scalable RF design and field-programmable software eases maintenance, provides a growth path, and reduces life-cycle cost for use in ever-changing threat environments.

BAE Systems utilizes common critical components, processes, and manufacturing lines that deliver over 100,000 GPS receivers per year.

Reliability

- Comprehensive built-in-test
- Supports data hold (up to 8 minutes)
- Field clock recalibration for extended storage
- Designed for 20 year storage life

Interfaces

- 2 up to 5 RF antenna inputs (L1/L2)
- Primary power, auxiliary power
- Serial host control – RS-422
- Host controlled Ultra Tight Coupling (UTC) – Reserved for Future Implementation
- DS-101 – RS-485
- 1/10 PPS CPS or UTC
- Discretes for GPS programming
- Cold and warm key loading and key zeroization

* Export of Precise Positioning Service (PPS) units is authorized for GPS Memorandum of Understanding countries only. PPS security modules must be obtained through Foreign Military Sales (FMS) procurement.

** AJ performance dependent on various threat and platform conditions

For more information contact:
BAE Systems

P. O. Box 868
Nashua, New Hampshire 03061-0868
W: baesystems.com/gps

Cleared for open publication on 7/23
Approved for public release: unlimited distribution.
Not export controlled per ES-NSS-071823-0236