Naval GPS Systems (Navfix)

Military and differential GPS solutions to provide the primary location and timing information for a platform's navigation, communications and combat systems.

Navfix uses both the Standard Positioning Service (SPS) and encrypted Precise Positioning Service (PPS). Its Rockwell Collins MPE-S Type ii Receiver incorporates a Selective Availability Anti-Spoofing Module (SAASM), providing robust navigation warfare capabilities. The system has also been designed to be agnostic to the GPS receiver so that any ICD-GPS-153-compatible receiver could be used.

Navfix is in service across the majority of the Royal Navy's surface and sub-surface platforms. It will also be installed across the Royal Navy's future fleet.

FRONT VIEW

Key Features

- ICD-GPS-153 compliant SAASM based military GPS receiver
- EMC compliant to Def Stan 59-411 (Above Decks)
- Battery back-up
- Compliant to environmental conditions Def Stan 00-035
- Interfaces to ships sensors (Gyro, SINS, log, synchros, etc.)
- Interface to Precise Timing and Frequency Equipment (PTFE)
- Lever arm corrections based on antenna offset from the platform's datum
- NMEA & NEC Messages/RS232/RS422 output interfaces
- 10 programmable ethernet ports for network connectivity
- 5.7" LCD colour sunlight readable display and tactile keyboard
- IMO compliant
- Compatible with standard analog Fixed Reception Pattern Antenna (FRPA) and Controlled Reception Pattern Antenna (CRPA)

Optional Upgrades

- DGPS Corrections to provide sub-metre accuracy
- M-code receiver (when available)
- Enhanced anti-jamming performance using a digital Controlled Recept ion Pattern Antenna (CRPA)

Technical Specifications

Connectivity

Outputs	20 x RS-232/RS-422 Serial Ports 10 x Ethernet 2 x STANAG 4156 (NATO SINS) 2 x 1PPS Out2 x 1PPM Out 2 x Havequick 2 x BCD 1 x Time Mark
Serial Output Message Formats	50/100/200 baud
Aiding Inputs	2 x Synchro (Log, Heading) 2 x STANAG 4156 (NATO SINS) 1 x RS-422 SDDS 1 x RS-422 RTCM 194-93/SC104 Differential GPS Correction Data 1 x 1PPS In 1 x 5MHZ In 1 x Crypto (DS-102)
Aiding Message Formats	PDM2/3/4/5, PIDS, Synchro 36, 48, 64, 72, 96 kn/rev

Compliance

EMC	DEF STAN 59-411, IEC 60945
Environmental	DEF STAN 00-035, IEC 60945
Cooling	EN 61108 IMO Compliant
Shock	DEF STAN 08-120 (NES 814), BR8470 100% Grade D

Performance

Frequency	L1/L2 dual frequency tracking (C/A, P(Y) Code)
Acquisition Times	< 10 sec (hot start), (probability > 95%) < 70 sec (warm start), (probability > 95%)
Positioning Accuracy	DGPS: < 4m (NATO 95%) WAGE: < 8m (NATO 95%) PPS: < 21m (NATO 95%) (< 3m typical)
Velocity Accuracy	0.4 m/sec steady rate (3D 95%
GPS Time Accuracy	< 100 nanoseconds (typical)

System

Dimensions (H x W x D)	258 x 342 x 388 mm
Weight	21.1 kg
Power Consumption	< 50W
Operating Temperature	-15° to +55° C
Battery Backup	3 hours with all interfaces followed by 3 hours standalone
Security	CESG accredited for all platform classes GPS receiver unclassified when keyed Receiver zeroise and system sanitise function