

Naval GPS Systems



Drumgrange can supply a range of military GPS and differential GPS solutions for naval applications providing accurate location and timing information for the platform's navigation, communications and combat systems using both the Standard Positioning Service (SPS) and encrypted Precise Positioning Service (PPS).



The latest naval GPS solution (Navfix) will be installed across the majority of the Royal Navy's surface and sub-surface platforms to provide the primary source for positioning and timing information. The system uses a Rockwell Collins MPE-S Type II Receiver which incorporates a Selective Availability Anti-Spoofing Module (SAASM) to provide robust navigation warfare capabilities. The system has been designed to be agnostic to the GPS receiver so that any ICD-GPS-I53 compatible receiver could be used.

Navfix Key Features

- ICD-GPS-I53 compliant SAASM based military GPS receiver
- EMC compliant to Def Stan 59-411 (Above Decks)
- Battery back-up
- Compliant to environmental conditions Def Stan 00-35
- 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)

The System is upgradable to include:

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



Technical Specification

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)

Connectivity

Outputs:	20 x RS-232/RS-422 Serial Ports 10 x Ethernet 2 x STANAG 4156 (NATO SINS) 2 x I PPS Out 2 x I PPM Out 2 x Havequick 2 x BCD 1 x Time Mark
Serial Output Message Formats:	NMEA, NEC, Legacy
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 I PPS 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

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

Compliance

EMC Compliance:	DEF STAN 59-411, IEC 60945
Environmental:	DEF STAN 00-35, IEC 60945
IMO Compliance:	EN 61108 IMO Compliant
Shock:	DEF STAN 08-120 (NES 814), BR8470 100% Grade D

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