

ANS | 510-M

NAVAL INERTIAL NAVIGATION SYSTEM

#Navigation



1 NM/4 HR PERFORMANCE WITHOUT GPS
IN MOTION ALIGNMENT WITH GPS OR LOGSPEED
EMBEDDED GPS



aselsan

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NAVAL INERTIAL NAVIGATION SYSTEM

ANS 510-M is a navigation grade naval inertial navigation system with embedded GPS receiver and Log speed interface. It is a small, low-cost, mass-producible system that will support a broad spectrum of marine platforms. ANS 510-M is designed for stabilization of shipboard sensors, such as radars, EO/IR trackers and to serve as a main/back up ship's gyrocompass.

ANS 510-M supplies linear acceleration, linear and angular velocity, position, attitude and heading to the host vehicle systems continuously. ANS 510-M provides a hybrid (inertial + GPS) navigation solution, inertial only navigation solution and a GPS only navigation solution simultaneously. ANS 510-M is an open architecture and hardware/software flexible unit which can be adapted to various naval platforms.

ANS 510-M consists of strapdown inertial measurement unit, system processor unit, power supply unit, Embedded GPS (SAASM/SPS) Receiver (EGR) and chassis. EGR is capable of tracking space vehicles simultaneously and transmitting the line-of-sight (LOS), position and velocity information to the system processor. The system processor combines the GPS data with the inertial data from IMU in a tightly coupled mechanization using Kalman filter. ANS 510-M is capable of using either SAASM compliant GPS receiver or commercial SPS GPS receiver as embedded GPS receiver.

ANS 510-M is also capable of using external Log Speed data to complement hybrid and inertial only navigation solutions. The tightly coupled, embedded INS / GPS(SAASM/SPS) and integrated Log Speed mechanization of ANS 510-M provides improved performance for surface naval platforms. ANS 510-M also has capability to operate with an external GPS(SAASM/SPS) receiver. In case of external GPS, system processor combines the GPS data with the inertial data in a loosely coupled mechanization.

System Functions

- Hybrid, Free Inertial, GPS Only Navigation Solution
- Position Update
- Alignment Progress Status
- GPS Lever Arm Correction
- Start-Up BIT, Periodic BIT
- Field Programmable Software



System Operational Modes

- Initialization
- Alignment
 - Dock Gyro Compass (GC) Alignment
 - In Motion Alignment with GPS
 - In Motion Alignment with Log Speed
- Navigation
 - Hybrid Navigation (HNAV)
 - Inertial Navigation (INAV)
- Initiated Built In Test (IBIT)

System Interfaces

- 28 VDC Power Input
- RS422 Asynchronous Serial Interfaces
- Test Port Serial Interface, User Port Serial Interface
- Spare Serial Ports
- External GPS Interface
- Have Quick and 1PPS Interface
- KYK-13 Interface
- Active and Passive RF Antenna Interface
- Discrete Interfaces

Navigation Performance

Positioning and Pointing Accuracy	Inertial	Inertial + Log Speed	Inertial + GPS + Log Speed
Position (CEP)	≤1 nm/hr	≤ 1 nm/4 hr	≤10 m
Heading (azimuth) (RMS)	≤1 mils	≤1 mils	≤1 mils
Roll and Pitch (RMS)	≤0.5 mils	≤0.5 mils	≤0.5 mils

Alignment Modes and Durations

Dock Gyrocompass Alignment Mode	GPS (SPS/SAASM) In-Motion Alignment Mode	Log Speed In-Motion Alignment Mode
15 min	15 min	30 min

Environmental Conditions

- MIL-STD-810 Compliant

Electromagnetic Conditions

- MIL-STD-461

Dimensions and Weight

- ~ 26cm x 19cm x 15cm (including connectors)
- < 6.2 kg (with GPS receiver installed)

Specifications are subject to change without any notice. | All tolerances are within ±10%.

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