



C-MAN

Computerized Maritime Navigation System

Turn Key System Solution for shipboard Integrated Navigation and inertial Data Distribution.

Data Computation and data distribution to all shipboard sub-systems of all directions motion sensing, attitude and position.

Interface to Command & Control, Weapons, Electro Optical Directors, Radar Antennas and other ship's inertial data users.

High Accuracy, High Reliability inertial sensor with embedded GPS, accurate positioning.

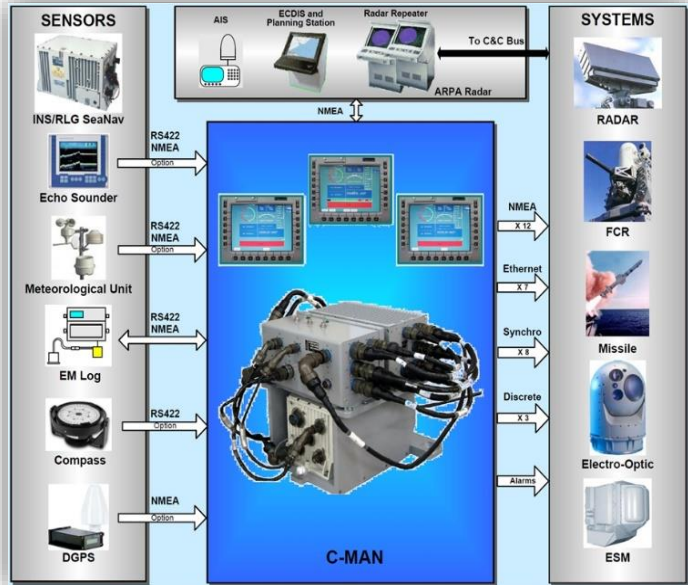
System Redundancy

- Designed for full redundancy, Navigation Computer and multiple sensors redundancy architecture.
- Multiple outputs of digital signals and synchro to support full system redundancy.

Flexibility and Modularity

- Modular architecture allowing the use of any combination of sensors (INS/GPS, EM/Doppler Log, Echo sounder, Meteorological sensors, etc.)
- From basic low cost small vessels single sensor system, to high-end large surface vessels and advanced Extended Performance (EP) Lowest Drift submarines applications.
- Multiple outputs – supporting modern digital format sub-systems as well as analog/synchro shipboard systems.

Advanced Processing utilizing Kalman Filters optimized for naval navigation data, incorporates accurate compensation and data filtering taking into account latency and utilizing unique prediction algorithm considering the characteristics of naval vessels.



SNS

Ship Navigation System

The SNS is the core of Astronautics distributed architecture design, based on Navigation Computers (NC) and multiple Data Distribution Units (DDUs). Each DDU provides RS422 digital outputs (NMEA) and Ethernet LANs.

NC and DDU architecture

The NC and DDU are based on state of the art powerful processor for real time computation.

Main features:

- Digital and discrete data collection from navigation sensors and distribution to navigation and inertial data sub-system customers.
- Calculation of navigation parameters.
- Navigation system control, fault detection and alarm.
- Data transfer via internal ethernet network.
- Data fusion of several sensors.
- Build in GPS anti spoofing
- Automatic input priority data: selects for each output, the best input source at any given time.

MCDU/MDU

Main Control and Display Unit/Main Display Unit

19" Panel PC with LED backlite and touch screen. The MCDU controls the C-MAN and presents all the System Navigation Data and system BIT status with sound alert capability. The MDU is same unit without control capabilities.

FOR MORE INFORMATION ON THIS OR ANY OF OUR OTHER PRODUCTS/SYSTEMS PLEASE CONTACT:
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SEANAV INS/GPS

Integrated MRLG INS/GPS navigation sensors system



The main sensor of the navigation system is the SEANAV, the INS - Inertial Navigation System senses the ship's angular rates, linear accelerations and provides outputs of heading, pitch, roll and position.

Features:

- Monolithic RLG (MRLG) - Unique design and special production technique, applied for compact reliable and accurate three axes RLG in single rigid block for maximum stability and durability, features Inherent inter axis alignment and thermal/dynamic stability.
- Improved sailing control performance due to single dither axis.
- Compact design and improved performance for half the volume of single path RLG of same path-length.
- Embedded GPS.

Mass production and extensive accumulated operating hours on various platforms.

C-MAN System Characteristics

Navigation Data Generation & Distribution

The following navigation data items are generated and distributed by the C-MAN:

- ❖ Heading
- ❖ Attitude (Roll, Pitch)
- ❖ Heading, Roll, & Pitch rates
- ❖ Position (Latitude, Longitude)
- ❖ Ship's Velocity (relative to sea bottom) and speed (relative to water mass)
- ❖ Accelerations
- ❖ Water depth
- ❖ Wind speed and direction (Absolute and Relative)
- ❖ Barometric Pressure
- ❖ Relative Humidity
- ❖ Air temperature

Typical Outputs

- RS 422 NMEA Format.
- LANs/Ethernet RJ45 or Fiber Optic.
- Discrettes
- Other formats can be supported per each specific customer

Navigation Data Accuracy

Data Item:	KN-5053 (*)
Position (EM/Doppler Log aided):	1 NMI/10 hours TRMS
Heading:	2 arc-minutes/cosine lat
Roll/Pitch:	0.9 arc-minutes
Velocity:	0.05 m/s

(*) EP - Extended Performance for 24 hrs are available per specific requirements.

Reliability

The C-MAN designed to contain both components and materials to ensure maximum MTBF. The Reliability performance achieved through careful components selection.

Military Environmental Conditions

Full compatibility

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