



Fiber Optic 3D Inertial Navigation System with Embedded GPS/GNSS



TACNAV[®] 3D

Fiber Optic Inertial Nav System



Now featuring
EMCORE's exclusive
Photonic Integrated Chip



emcore[®]

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Integrated Navigation & Pointing for the Digital Battlefield

Introducing TACNAV 3D Inertial Navigation System

The fiber optic gyro-based TACNAV 3D Inertial Navigation System provides full three-dimensional navigation and an embedded GNSS and EMCORE's exclusive Photonic Integrated Chip (PIC) technology. Its modular tactical design and flexible architecture allow it to function as either a standalone inertial navigation solution or as the core of an expandable, multi-functional battlefield management system.

TACNAV 3D is the newest of EMCORE's inertial navigation systems and has built upon the success of the battle-proven EMCORE TACNAV family of products. TACNAV 3D incorporates EMCORE's breakthrough 1750 IMU which combines 3 axes of EMCORE's compact high accuracy DSP-1750 Fiber Optic Gyro (FOG), with 3 axes of high performance MEMs accelerometers.

Ideal Navigation and Pointing Solution for the Digital Battlefield

Providing extremely accurate heading, dead reckoning navigation, and orientation, TACNAV 3D delivers 100% situational awareness in GNSS-denied environments with greater accuracy at a lower cost than competing navigational systems.

Easily Integrates with Battlefield Management Systems (BMS)

TACNAV 3D provides reliable vehicle position, making it a vital component for effective battlefield management. Compact and lightweight, TACNAV 3D is designed for the close confines of turreted and non-turreted vehicles. With its compact size, low weight and low power consumption, it is the ideal navigation and pointing solution for the digital battlefield.

Built-in Communications Option

TACNAV 3D is fitted with an Iridium[®] transceiver to transmit and receive vehicle position, waypoint, and target location to or from a command center or

other vehicles. In addition, TACNAV 3D can receive messages from the BMS to pass on to the command center via the Iridium short duration burst message function. TACNAV 3D can also receive and transmit Ethernet and CANbus signals, and RS-422.



EMCORE's TACNAV 3D is a perfect solution for both turreted and non-turreted vehicles.



Key Features & Attributes

- Compact full 3-dimensional navigation
- 100% situational awareness with or without GPS/GNSS
- Modular design for expandability
- Embedded GNSS
- Multiple interfaces for ease of integration
- Ethernet connectivity
- CANbus
- Integrates with a variety of military GPS systems
- Built-in two-way Iridium satellite communications for messaging and secure position reporting

Applications

Navigation for:

- Light armored vehicles
- Wheeled or tracked armored vehicles
- Medium and heavy combat vehicles
- Main battle tanks



EMCORE's TACNAV 3D has multiple independent CANbus, Ethernet, and RS-422 interfaces.

Easily Interfaces with:

- External GPS (in place of internal)
- Battlefield Management Systems (BMS)
- Laser Rangefinders (LRF)
- Laser Warning Receiver Systems (LWRS)
- Turret Angle Encoders
- Integrated Turret Data Systems
- EMCORE Universal Multilingual Display(s)
 - Night vision capable



Commander's Display Configuration



Driver's Display Configuration



148.6 mm x 203.2 mm x 101.6 mm
(5.85" wx 8" x 4") (h x w x d)



PIC INSIDE

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Technical Specifications

General Performance

Positional Accuracy:

With GNSS:	2-3 meters RMS
Without GNSS:	±0.2% distance traveled

Heading Accuracy (dynamic):

GNSS Align Heading:	0.05° RMS
Without GNSS:	±0.20°

Start-up: Stores location at shutdown

Location Format: User Selectable: Over 200 grids and datums available

Warm-up Time: 20 seconds

Pitch and Roll Accuracy (dynamic): 0.05°

Latitude Capability: Latitude independent with GNSS

GNSS: Supports GPS, GLONASS (Beidou and Galileo optional)

TACNAV products are controlled by the Arms Export Control Act (Title 22, USC Sec 2751 et seq.) and the International Traffic in Arms Regulations, ITAR, 22 CFR 120-130, and may not be exported from the United States or disclosed to a foreign person in the United States except as authorized by those regulations.

Interfaces

CANbus: J1939, CANopen

Serial: RS-422

Ethernet: UDP, TCP-IP

Physical

Input Voltage: +28 VDC (18-36 VDC)
MIL-STD-1275

Power Consumption: 15 watts

Dimensions: 148.6 mm (h) x 203.2 mm (w) x 101.6 mm (d) (5.85" x 8" x 4")
measurements include flanges

Weight: 3.2 kg (7 lbs)

Environmental

Temperature: MIL-STD-810G Operating:
-32°C to +65°C
(-26°F to 149°F)

Altitude: 15,000 meters (50,000 feet)

Environment: MIL-STD-810G – Humidity, Salt Fog, Sand, Dust & Fungus

Shock: MIL-STD-810G

EMI/RFI: MIL-STD-461F
Class A3, digital equipment

Vibration: MIL-STD-810G

MTBF: 45,264 hours