



DATASHEET | JANUARY 2024

A New Era in Navigation



### Applications

#### Artillery Survey to Mark:

- Survey Control Point (SCP) Position; Used to Initialize Weapon Systems
- Orienting Line (OL) Position and Azimuth; Used to Initialize and Align Artillery Assets

### Key Performance Features

- High-Precision Common Survey Enables Efficient Mass Fires
- Common Architecture and Components (MLRS, HIMARS, Firefinder, Paladin and Long-Range Air Surveillance Radar)
- Embedded Selective Availability Anti-Spoofing Module (SAASM)
- Impervious to jamming (inertial mode)
- Resistant to Jamming (GPS-aided mode)
- Navigation Aids (compass rose and digital maps)
- In-Vehicle and Offset Survey
- Combat-Proven
- Embedded Built-In Test (BIT)
- High-Reliability MTBF, Low Mean Time to Repair (MTTR)
- No Periodic Calibration Required

### Inertial Surveying System

#### When You Need Precision, You Need IPADS-G

EMCORE's Improved Position and Azimuth Determining System with GPS (IPADS-G) is an inertial surveying system developed to meet today's demanding U.S. Army and Marine Corps survey needs. Survey operations functionality, navigational accuracy, transportability, survivability and affordability requirements drove the system design.

EMCORE's IPADS-G provides significant enhancements for today's Army and Marine Corps survey teams. While meeting PADS accuracy and environmental requirements, IPADS-G offers a proven, reliable, lightweight, off-the-shelf solution developed around four main components.

- Compact Position/Navigation Unit (CPNU)
- Control and Display Unit (CDU)
- Battery and Charger Unit (BCU)
- Porro Prism Assembly (PPA)

All components are housed in a robust frame that allows for easy component access and stability, while facilitating a ready two-person live transfer between vehicles.



Use of U.S. DoD visual information does not imply or constitute DoD endorsement.

Specifications

Performance		Characteristics		Compact Position/Navigation Unit (CPNU)
4th-Order Accuracy		Weight	137 lb., 62 kg (Standard configuration)  68 lb., 31 kg (Optional configuration using DRU-H-R, smaller/lighter CDU, and Li-Ion Batteries)	<p>The CPNU, a three-axis strap-down inertial navigation system of ring laser gyros and high-grade accelerometers, is the core component of IPADS-G. It is the compact version of our proven navigation system used on the Multiple Launch Rocket System (MLRS) and High-Mobility Artillery Rocket System (HIMARS) programs.</p> <p>An embedded SAASM GPS receiver is provided in the CPNU</p>
Orienting Line Azimuth	0.4 mil PE, (Probable Error), 0° to 65° N/S latitude 0.6 mil PE, 65° to 75° N/S latitude	Dimensions	24.75 in. L x 15.75 in. W x 16.125 in. H (Standard configuration) 62.87 cm L x 40.01 cm W x 40.96 cm H  16.9 in. L x 8.9 in. W x 10.8 in. H (Optional configuration using DRU-H-R, smaller/lighter CDU, and Li-Ion Batteries) 43.0 cm L x 22.5 cm W x 27.5 cm H	
Horizontal	4 m CEP (Circular Error Probable)	Power	5.36 A @ 28 VDC (150 W)	
Vertical	2 m PE 5-min. ZUPT (Zero Velocity Update) Within 75 km radius of update point	Voltage Options	9 to 36 VDC or 85 to 270 VAC	<p><b>Control And Display Unit (CDU)</b></p> <p>The CDU is a ruggedized tablet computer featuring an Intel Dual Core i7 @ 1.7 GHz, Windows® 10, 16 GB Main RAM, Two 480 GB Solid-State Drives (SSD), and a 10.4- inch XGA touch-screen color display.</p> <p><b>Porro Prism Assembly (PPA)</b></p> <p>The PPA in conjunction with customer-supplied Theodolite, provides 24-meter offset survey capability. This allows surveying locations that are inaccessible by vehicle. Offset distance may be extended using optional accessories such as a handheld laser rangefinder mounted on existing manual Theodolite or using automated total stations.</p>
5th-Order Accuracy		Interfaces	- One 10/100-BaseT Ethernet (Reprogramming port) - One optional/unused RS-232 port - One optional/unused RS-422 port - Six optional/unused USB 2.0 ports	
Orienting Line Azimuth	0.4 mil PE, 0° to 65° N/S latitude 0.6 mil PE, 65° to 75° N/S latitude	Optional Interfaces	<b>For GPS</b> - GPS Antenna RF Input - Cryptographic key fill data port - One RS-422 Asynchronous data port for external Defense Advanced GPS Receiver (DAGR)	
Horizontal	7 m CEP	Environments	- Nuclear, Biological & Chemical (NBC) survivability - EMI/EMC-compliant (MIL-STD-461E/464A) - MIL-STD-810F-compliant - MIL-STD-1275D power input	<p><b>Battery And Charger Unit (BCU)</b></p> <p>The BCU uses a standard U.S. Army NSN 6130-01- 493-6643 Sealed-Lead Acid (SLA) battery. The BCU is based on the ABPAC.DC/ BT-TR-1 Transceiver Power Unit (TPU) that is currently fielded by the U.S. military. The unit allows for worldwide input of 9 to 36 VDC / 85 to 270 VAC, 47 to 440 Hz, single-phase power inputs and provides power and charge status indicators.</p>
Vertical	3 m PE 10-min. ZUPT Within 75 km radius of update point			
GPS-Aided Accuracy				
Orienting Line Azimuth	0.4 mil PE, 0° to 65° N/S latitude 0.6 mil PE, 65° to 75° N/S latitude			
Horizontal	4 m CEP			
Vertical	2 m PE No ZUPT necessary			
Initialization Time				
Static Align	10 min. 0° to 65° N/S latitude 20 min., 65° to 75° N/S latitude			
Hot Start Align	5 min., 0° to 65° N/S latitude 10 min., 65° to 75° N/S latitude			
Moving Base Align	15 min			

Notes

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