IPADS

Improved Position and Azimuth Determining System

emcore



DATASHEET | JANUARY 2024



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)
- 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

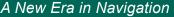
When You Need Precision. You Need IPADS

EMCORE's Improved Position and Azimuth Determining System (IPADS) 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 provides significant enhancements for today's Army and Marine Corps survey teams. While meeting PADS accuracy and environmental requirements, IPADS offers a proven, reliable, lightweight, off-theshelf 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.





Specifications

Performance		Characteristics	
4th-Order Accuracy		Weight	135 lb., 61 kg (Standard configuration)
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		66 lb., 30 kg (Optional configuration using DRU-H-R, smaller/lighter CDU, and Li-Ion Batteries)
Horizontal	4 m CEP (Circular Error Probable)	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
Vertical	2 m PE 5-min. ZUPT (Zero Velocity Update) Within 75 km radius of update point		
5th-Order Accuracy			(Optional configuration using DRU-H-R,
Orienting Line Azimuth	0.4 mil PE, 0° to 65° N/S latitude 0.6 mil PE, 65° to 75° N/S latitude		smaller/lighter CDU, and Li-Ion Batteries) 43.0 cm L x 22.5 cm W x 27.5 cm H
Horizontal	7 m CEP	Power Steady-State Voltage Options	5.36 A @ 28 VDC (150 W) 9 to 36 VDC or 85 to 270 VAC
Vertical	3 m PE 10-min. ZUPT Within 75 km radius of update point		
		Interfaces	- One 10/100-BaseT Ethernet (Reprogramming port)
Initialization Time			- One optional/unused RS-232 port - One optional/unused RS-422 port
Static Align	10 min. 0° to 65° N/S latitude		- Six optional/unused USB 2.0 ports
	20 min., 65° to 75° N/S latitude	Environments	- Nuclear, Biological & Chemical (NBC) survivability - EMI/EMC-compliant (MIL-STD-461E/464A) - MIL-STD-810F-compliant - MIL-STD-1275D power input
Hot Start Align	5 min., 0° to 65° N/S latitude 10 min., 65° to 75° N/S latitude		

Compact Position/Navigation Unit (CPNU)

The CPNU, a three-axis strap-down inertial navigation system of ring laser gyros and highgrade accelerometers, is the core component of IPADS. 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.

Control And Display Unit (CDU)

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.

Porro Prism Assembly (PPA)

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.

Battery And Charger Unit (BCU)

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.

Notes

This information has been released into the public domain in accordance with the International Traffic in Arms Regulation (ITAR) 22 CFR 120.11(a)(7)

For More Information

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