



DATASHEET | JULY 2022

Transforming Navigation



Applications

- Multiple Launch Rocket System (MLRS)
- High-Mobility Artillery Rocket System (HIMARS)
- Pointing and Position Location

Key Performance Features

- High-Performance RLG-34 Ring Laser Gyros
- Common Architecture and Components (Paladin, PIM, Firefinder, IPADS)
- Embedded 12-channel Selective Availability Anti-Spoofing Module (SAASM)
- Impervious to Jamming (inertial mode)
- Resistant to Jamming (GPS-aided mode)
- Combat-Proven
- Embedded Built-In Test (BIT)
- High Reliability MTBF, Low Mean Time to Repair (MTTR)
- No Periodic Calibration Required

High-Precision Pointing and Position Location System

EMCORE's Position & Navigation Unit (PNU) and Universal Position and Navigation Unit (UPNU) continue their record of excellence in providing the Multiple Launch Rocket System (MLRS) and High-Mobility Artillery Rocket System (HIMARS) programs with the highest performance, reliability, quality, pointing and position location system capability. Equipped with more than 30 years of direct experience in aiming and navigating these launchers, EMCORE is under contract to deliver the Universal Position / Navigation Unit (UPNU) on HIMARS.

The Improved Fire Control System (IFCS) PNU / Universal Fire Control System (UFCS) UPNU family represents a true state-of-the-art system approach. Its design features permit ready adaptation and/or optimization to any current or future weapon system or sensor requiring precision pointing and positioning. The PNU / UPNU family was conceived and designed to provide significant growth capability in performance and functionality, assuring its ability to meet the U.S. Army's future needs.

The PNU / UPNU and its variants point the way for the future direction of the land navigation systems. Utilizing advanced sensors, electronics, software and aiding (GPS and odometer), the PNU / UPNU family delivers precisely what the Army of tomorrow needs — a system designed to remain operationally effective and affordable to support well into the future.



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

Specifications

Performance	
Pointing Accuracy	0.3 + 0.25 secant (latitude) mil Probable Error (PE)
Initialization Time	
Static Align	5 minutes
Accelerated Align	2 minutes
Dynamic Align	15 minutes
Roll/Elevation Accuracy	0.17 mil PE, 0.25 mil RMS
Position Accuracy	
GPS-Aided	10 m Horizontal Circular Error Probable (HCEP), 10 m Vertical PE (VPE) No Zero Velocity Updates (ZUPTs) necessary
Odometer-Aided	10 m HCEP, 10 m VPE For $\leq 40 \text{ km} \times \cos(\text{latitude})$ Distance Traveled (DT) with 10 minute ZUPTs 0.05% x DT x secant (latitude) m HCEP, 0.05% x DT x secant (latitude) m VPE for $> 40 \text{ km} \times \cos(\text{latitude})$ DT with 10 minute ZUPTs 10 m HCEP, 10 m VPE for $\leq 6.7 \text{ km}$ DT with no ZUPTs 0.15% x DT m HCEP, 0.15% x DT m VPE for $> 6.7 \text{ km}$ distance traveled with no ZUPTs
Characteristics	
Weight	74 lb., 34 kg
Dimensions	24.2 in. L x 10.51 in. W x 11.06 in. H 61.5 cm x 26.7 cm x 28.1 cm
Power	90 W, 16 to 36 VDC
Temperature Range Operating	-32 °C to +60 °C
Temperature Range Non-Operating	-34 °C to +71 °C
Shock	100 g (damped sine)
Environmental	- Initial Nuclear Weapons Effects (INWE) survivability - Nuclear, Biological & Chemical (NBC) survivability - EMI / EMC-compliant (MIL-STD-461E / 464A) - MIL-STD-810F-compliant - MIL-STD-1275D power input
Interfaces	- RS-232 - Two Odometer/Vehicle Motion Sensor (VMS) pulse inputs - Two GPS RF outputs (for Weapons / Rockets / Missiles) - Two One-Pulse-Per-Second (1PPS) outputs, per ICD GPS 060 (for Weapons / Rockets / Missiles) - Precise Time and Time Interval (PTTI), per ICD GPS 060 - 10 / 100 Base-T Ethernet data port - Vehicle Motion Sensor (VMS) - GPS Antenna RF Input - Cryptographic Key Fill Port



More than 1,500 PNUs / UPNUs Fielded and Forward Deployed

Dimensions/Scale



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)(6).

For More Information

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