

LN-270 Pointing, Locating, Navigation and Stabilization System INS/GPS (EGI)

The LN-270 is the smallest, lightest, lowest power and most reliable Pointing, Locating, Navigation and Stabilization system in its class, with unsurpassed geo-location and velocity accuracy. It is a highly adaptable non-dithered solution with the lowest Angle Random Walk (ARW) of any land navigation system in its class.

Description

Northrop Grumman's LN-270 is a ruggedized package integrated for land navigation and artillery environments. It can be used as a precision navigator and pointing/stabilization system for ground-based and marine military applications.

The LN-270 is a fully integrated, non-dithered land navigator with options for an embedded 12/24 channel, All-In-View, Selective Availability/Anti-Spoofing Module (SAASM), P(Y) code and future Standard Positioning Service (SPS) and M-Code GPS. The tightly coupled GPS inertial design provides superior navigation performance relative to other embedded INS/GPS units. The non-dithered, low noise fiber-

optic gyro (FOG) technology eliminates self-induced acceleration and velocity noise in the inertial sensor, creating exceptional pointing performance and increasing sensor accuracy over current dithered navigation devices.

Interface Options

The LN-270 is currently equipped with RS-422 and RS-485 interfaces, with growth including Victory Architecture (Ethernet) and MIL-STD-1553B. The LN-270 supports an ICD-GPS-153 interface for military applications that require use of Defense Advanced GPS Receiver (DAGR-M) or other external GPS units. The LN-270 is integrated with a vehicle motion sensor (VMS).

Applications

The LN-270 is a tightly coupled, integrated digital INS/GPS that provides superior performance for pointing, navigation and geo-location of manned and unmanned vehicles and sensors. It is also capable of a moving alignment. The LN-270 provides unsurpassed pointing and navigation performance in GPS-challenged areas and is integrated with static as well as

rotational radar systems, sensors and platforms, resulting in the most accurate target location performance.

Advantages

The LN-270 FOG employs one of our most modern technologies and includes three independent navigation solutions: blended INS/GPS, INS-only and GPS-only. The non-dithered, low noise FOG technology eliminates self-induced acceleration and decreases velocity noise as observed in Ring Laser Gyro technologies. The system is lightweight, low power, low cost, and highly reliable — over 68,000 hours mean time between failures (MTBF). The LN-270 is available in 0.4, 0.8, 1.0 and 2.0 mil pointing accuracy performance.

DGPS Options

The LN-270 has been integrated with the Starfire[™] and OmniStar[™] differential GPS solution and achieved sub-centimeter navigation accuracy.

Growth

The LN-270 is available with an integrated high anti-jam GPS subsystem and can integrate with M-Code GPS or SPS GPS.







Performance			
	Inertial/Odometer	GPS-Aided	
Position	0.25 % — 1% DT (>4 km) (Horizontal), 0.067% — 1% DT (>10 km) (Vertical)	<10m (32.8 ft.) CEP	
Pointing	<1.0 – 5.0 mil	<1.0 – 5.0 mil	
Pitch, Roll (rms)	<0.3 – 1.0 mil	<0.3 – 1.0 mil	
Alignment Time	15 min (gyrocompass), 30 sec (stored heading), no fixed interval <10 min TTFF (cold start)		
ZUPTS Operating Modes	Gyrocompass align; stored heading align; Shoot-on-the-Move; odometer; position fix	Moving base alignment; aided navigation	

Characteristics		
Power	MIL-STD-1275A, 25W – 30W (digital)	
Dimensions (max)	Length: 10.19 in. (25.88 cm) Width: 7.64 in. (19.41 cm) Height: 5.49 in. (13.94 cm)	
Weight	12.7 lb (5.8 kg)	
Temperature	-54°C (-65.20°F) to +71°C (159.80°F) (+95°C (203°F) intermittent) passive	
Shock, Vibration	MIL-PRF-71 185	
Gunfire, Acoustic	MIL-STD-810	
Angular Rates and Accelerations	1,000°/sec; 1,500°/sec2, 13g/sec	
MTBF	>68,000 hours	
Maintainability	Full Built In Test (BIT); no intermediate maintenance required; no special tooling or test equipment required	

Features		
Position	UTM or Geodetic	
Heading	True, magnetic (no external reference required), UTM grid	
Velocity	3-axis	
Acceleration	3-axis	
Attitude	Roll, pitch, yaw; unlimited mounting	
Angular Rates and Accelerations	3-axis linear and angular output	
RS-422, RS-485, ARINC-429	Standard (multiple digital formats)	
HAVE QUICK, Precise Time and Time Interval (PTTI)	Standard	
Independent Inertial and GPS Data	Standard; GPS MIL-STD-1553B data per SS-US-200, SSAM	
Key Loading	Standard GPS loaders, data bus (application approval required)	



