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.

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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)

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