

LCR-100N

INERTIAL HYBRID NAVIGATOR



The LCR-100N INERTIAL HYBRID NAVIGATOR is the next logical step in the evolution of the Northrop Grumman LITEF LCR-100 product line. This product exploits over two decades of Fiber Optic Gyro (FOG) and Micro-Electromechanical (MEMS) sensor success, and uses satellite navigation technology (GNSS) to provide a backup navigator of the first order.

FEATURES AND BENEFITS

- IRS type performance with Gyrocompassing (North Finding) capability per ARINC 704A
- Hybrid Navigation: With this function the unit blends the GNSS and inertial data to provide a blended hybrid output, maintaining aerial navigation, even with the loss of the satellite data. The GNSS data are used to calibrate the inertial sensors in-flight in real time.
- Coasting Performance provides Backup Navigation in the event of GNSS unavailability
- Real time assessment of Actual Navigation Performance (ANP)

The INERTIAL HYBRID NAVIGATOR IMU is comprised of a three axis FOG gyro and a triad MEMS accelerometer which are used to operate two independent platforms simultaneously: Pure Inertial and Hybrid (Inertial and GNSS).

Performance Monitoring for ANP

A critical requirement in the aerial navigation environment is the monitoring and reporting of the aircraft's

“Actual Performance” as compared to the “Required Performance”. The LCR-100N continuously estimates the actual inertial navigation performance (HFOM) and the predicted HFOM which indicates the predicted position drift in the case GNSS would be lost.

YOUR SYSTEM FOR TODAY AND TOMORROW ...

The outstanding features of the INERTIAL HYBRID NAVIGATOR help reduce your total cost of ownership. This results from its small size, low weight, reduced power consumption, an unlimited attitude range, high navigation accuracy over its entire operating spectrum and gyrocompassing. It is designed to be fully compatible in form and fit with the standard, well proven LCR-100 AHRS system.

With the INERTIAL HYBRID NAVIGATOR operators can achieve performance levels identified in FAA Advisory Circulars AC90-100A, US Terminal and En Route RNAV Operations, AC90-101, Approval Guidelines for RNP Procedures and EASA AMC 20-26. This provides great value in the future NextGen and SESAR initiatives.

RELIABILITY, MAINTAINABILITY, AVAILABILITY, PLUS PERFORMANCE

The LCR-100N INERTIAL HYBRID NAVIGATOR offers outstanding reliability that results from its high performance, low-cost fiber optic technology and its low 26 watt power consumption. The rated MTBF of the LCR-100N INERTIAL HYBRID NAVIGATOR with no forced cooling exceeds 15,000 hours.

TECHNICAL DATA LCR-100N

INERTIAL HYBRID NAVIGATOR

SPECIFICATIONS	
Dimensions	278 x 102 x 128 mm
Weight	2.7 kg
Volume	3.6 l
Power 28 VDC	26 W
MTBF	>15,000 hours (no scheduled maintenance)
PERFORMANCE (95%)	
Pitch / Roll	0.1 deg
True Heading	1.0 deg Typical 0.5 deg
Alignment Time	3 to 10 min (Gyrocompassing)
Inertial Position	2 nm/15 min
Hybrid Position	GNSS accuracy
Accuracy Coasting (HFOM) after loss of GNSS	0.1 nm/3 min, 0.3 nm/6 min, 0.5 nm/8 min, 1.0 nm/12 min, 4.0 nm/30 min
Hybrid Velocity	0.5 kts
Angular Rates	0.02 deg/s or 0.5%
Acceleration	5 mg or 0.5%
Acceleration Range	±10 g
INTERFACES	
8 ARINC 429 Output	6 x Inertial / Hybrid, 2 x GNSS (optional)
6 ARINC 429 Input	Air Data, FMS, GNSS
RS-232	Test and Maintenance
Discretes	17 x SGS / 6 x SAV
Installation Data Module (Aircraft related data)	Misalignment Correction, GNSS antenna lever arms, Center of gravity lever arm, MagVar Model
Magnetic Sensor Interface	
CERTIFICATIONS	
ETSO / TSO	C3d, C4c, C5e, C5f, C6d
Software	DO-178 B Level A
Hardware	DO-254 Level A
Environmental	DO-160 E

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