

ISA-100

INERTIAL SENSOR ASSEMBLY



Northrop Grumman LITEF is a world leading company with 60 years of experience in inertial systems technology.

With the ISA-100 Northrop Grumman LITEF provides a flexible 3 gyro/3 accelerometer axis Inertial Sensor Assembly for a wide range of applications.

The ISA-100 consists of three Fiber Optic Gyros (FOG), one B-290 accelerometer triad and a processor module. This sensor assembly has been matured in navigation systems.

FEATURES

- Easy set up for operation
- Data output fully compensated for temperature and misalignment
- HDLC digital interface, asynchronous UART
- Extensive Built-In-Test features
- Low weight
- Small size
- Low power consumption
- Low life cycle costs

TYPICAL APPLICATIONS

- Platform and antenna stabilization
- Navigation systems
- Photogrammetry
- Geodesy
- Aerial survey

TECHNICAL DATA ISA-100

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RATE SENSOR PARAMETERS		
Measurement Range	± 610 °/s	
Bias		
- Repeatability (1 σ) (Turn-on to Turn-on)	≤ 0.1 °/h	
- Instability (Allan Variance, const. Temperature)	≤ 0.05 °/h	
- Stability over Temperature Range (1 σ)	≥ 0.15 °/h	
Scale Factor		
- Repeatability (1 σ) (Turn-on to Turn-on)	≤ 100 ppm	
- Error over Temperature Range (1 σ)	≤ 200 ppm	
- Non-linearity (1 σ)	≤ 100 ppm	
Angle Random Walk (max) (Allan Variance)	≤ 0.012 °/√h	
ACCELEROMETER PARAMETERS		
Measurement Range	± 20 g	± 40 g
Bias		
- Repeatability (1 σ) (Turn-on to Turn-on)	≤ 200 μg	≤ 250 μg
- Instability (Allan Variance, const. Temperature)	≤ 100 μg	≤ 200 μg
- Stability over Temperature Range (1 σ)	≤ 300 μg	≤ 500 μg
Scale Factor		
- Repeatability (1 σ) (Turn-on to Turn-on)	≤ 100 μg	≤ 100 μg
- Error over Temperature Range (1 σ)	≤ 300 μg	≤ 500 μg
- Non-linearity (1 σ)	≤ 100 μg	≤ 100 μg
Velocity Random Walk (max) (Allan Variance)	≤ 100 μg /√h	≤ 100 μg /√h
SYSTEM PARAMETERS		
Mass	≤ 2 kg / ≤ 4.4 lb	
Dimensions (excluding mounting flanges and connector)	≤ 100 x 130 x 125 mm ³ ≤ 3.9 x 5.1 x 4.9 inch ³	
Volume	≤ 1.6 liters / ≤ 98 inch ³	
Supply Voltage	+ 3.3 V, ± 5.25 V, ± 15 V	
Power Consumption	max 16 Watt, ≤ 10 W typical	
Interface	serial interface with RS-422 levels, either synchronous with HDLC protocol + SYNC-Pulse or asynchronous (UART) + SYNC-Pulse	
Data Update Rate	50 Hz ... 1024 Hz	
Built-In-Test	Power Up BIT, Continuous BIT	
System Bandwidth (3 dB)	≥ 400 Hz	
Input Axis Misalignment (max)	≤ 0.5 mrad	
Temperature range	Operating: - 40 °C ... + 71 °C	
Random Vibration (DO-160F Cat. SC)		
- operating	4.1 grms, 10 Hz ... 2000 Hz	
- specified Performance	2.0 grms, 10 Hz ... 2000 Hz	
Shock	6.0 g; 20 ms halfsine (operational)	

FOR MORE INFORMATION,
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