µIMU-IC

MICRO INERTIAL MEASUREMENT UNIT

Northrop Grumman LITEF is a world leading company with 60 years of experience in Inertial Systems Technology. With its new generation MEMS (Micro Electro Mechanical Systems) technology sensors, LITEF continues to design high accuracy Inertial Measurement Units (IMUs) to meet current and future requirements.

MEMS sensor design at LITEF started in the early nineties with the B-290, a full silicon accelerometer. This accelerometer has been qualified in systems for attitude heading reference, stabilization and guidance.

LITEF's extensive experience with its IMUs, based on Fiber Optic Gyros and the MEMS Accelerometer Triad B-290, was the basis of the MEMS IMU design, resulting in the following advantages for the user:

- Integrated, sealed and self contained unit (3 MEMS rate sensors, 3 MEMS linear accelerometers, electronics, power supply and housing)
- Standard digital interfaces
- Output of fully compensated data (e.g. temperature and misalignment)
- Extensive Built-in-Test features
- Small size, low weight, low power consumption
- Low Life Cycle cost

TYPICAL APPLICATIONS

- Attitude Heading Reference Systems
- Flight control and guidance systems, e.g. for UAVs
- Stabilization of antennas, cameras and other instruments on moving platforms
- Precision farming

TECHNICAL DATA µIMU-IC

MICRO INERTIAL MEASUREMENT UNIT

	µIMU-IC-SP	µIMU-IC-HP
RATE SENSOR PARAMETERS		
Measurement Range	± 499 °/s	
Bias In Run Stability (1 σ) (*)	≤ 6 °/h	≤ 3 °/h
Bias Repeatability (residual, RMS)	≤ 10 °/h	≤ 4 °/h
Angular Random Walk	≤ 0.3 °/√h	≤ 0.15 °/√h
Scale Factor Error (RMS)	≤ 1400 ppm	≤ 1000 ppm
Axis Misalignment (RMS)	≤ 0.5 mrad	
LINEAR ACCELERATION PARAMETERS		
Measurement Range	± 15 g	
Bias Repeatability (residual, RMS)	≤ 3 mg	≤ 1.5 mg
Velocity Random Walk	≤ 0.25 mg /√h	≤ 0.07 mg /√h
Scale Factor Error (RMS)	≤ 1500 ppm	≤ 1000 ppm
Axis Misalignment (RMS)	≤ 0.5 mrad	
SYSTEM PARAMETERS		
Mass	0.68 kg; 1.5 lb	
Dimensions	ø 85 mm x H 60 mm, ø 3.35 inch x H 2.36 inch	
Volume	340 cm^3, 20.7 $inch^3$	
Supply Voltage	+ 5 VDC	
Power Consumption	< 8 W	
Interface	RS 422, HDLC	
Data Rate	50 to 1024 Hz	
Built in Test (BIT)	Power up BIT, Continuous BIT	
Acoustic noise level	140 dB	
Random vibration level [10 ... 2000 Hz] - operational - survival	 4.1 g_{RMS} 11.7 g_{RMS}	
Shock, operational	20 g / 11 ms / 3 axes	
Temperature - operating - sotrage	 - 45 °C to + 70 °C - 55 °C to + 71 °C	

(*) Implying Allan Variance under constant temperature conditions and cluster time 24 h.

FOR MORE INFORMATION,
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