arazim

µIMU®- HG

Hi-G near-Tactical-Grade Inertial Measurement Unit

The µIMU®-HG is an extension to the µIMU® family providing additional Hi-G measurement capability (up to 250g) to support high dynamics applications. Modern battlefield applications dictates growing need for sensors & systems to withstand high maneuvering missions.

The µIMU®-HG is the 4th generation of advanced Inertial Measurement Unit which is in use more than a decade now, compromising 3-axis Gyro, 3-axis low-g accelerometer & hi-g accelerometers to deliver optimal performance where size, cost & performance (SWaP-C) are of prime concern.

Customers can use it simultaneously and/or switch between low-g & hi-g in-order to ensure that the most optimal performance will be used under any maneuver profile.

The µIMU®-HG utilizes the most advanced available MEMS-based sensor and deploys multiple-redundancy technology approach which ensures not only fail-safe performance but considerable improved performance, these make the µIMU®-HG extremely cost-effective and serious candidate for many Hi-G expendable applications.

Each unit of the µIMU®-HG is factory calibrated for Bias, Cross-Axis, non-Linearity, Scale-Factor & g-sensitivity over full-Temp range.

The ultra-miniature size of the µIMU®-HG unit with 1"x1" (25 x 25 mm) dimension along with its performance & low-cost makes it a serious candidate for many dynamic, Hi-G profile applications, from simple control tasks and up to digital gyro-compensated tilt measurement in high dynamic environments.

Main Features

- Low & High G-Range Accelerometers
- Hi-G up to 250g
- near Tactical-Grade sensors
  Gyro < 2°/hr,
  Accelerometer < 20µg
- Up to 2000 Hz update rate
- Fully Calibrated Inertial sensors
- Wide Input Voltage Range
- Ultra-Miniature, Low-Power
- ITAR-Free

Applications

- Smart Ammunition
- Loitering Ammunition
- Interceptors platforms
- Short-Range Missiles
- Precision-Guided Munition

Parameter	Accelerometers (Low-G)	Accelerometers (Hi-G)	Gyroscopes	Notes
Measurement Range	±32 g	±128 g	± 2000 °/sec	Other Ranges available
Bandwidth (-3 dB)	250 Hz	250 Hz	250 Hz	
Data Rate	1000 Hz	1000 Hz	1000 Hz	
Bias In run stability (AV, 1σ) repeatability (ToTo, rms) Instability (over Temp) 1-year repeatability (1σ)	 < 0.05 mg < 5 mg 5 mg 5 mg	 < 1 mg < 100 mg 200 mg 250 mg	 < 2 °/Hr 20 °/Hr 75 °/Hr < 50 °/Hr	
Scale Factor accuracy (over Temp) 1-year repeatability (1σ) Non Linearity (1σ, FS)	 1000 ppm 600 ppm < 1000 ppm	 2000 ppm 2000 ppm < 1000 ppm	 < 1000 ppm < 1000 ppm < 500 ppm	
Random Walk	0.05 m/sec/√Hr	6 m/sec/√Hr	0.15 °/√Hr	
Axis Alignment (1σ)	1 mRad	1 mRad	1 mRad	
Non-orthogonality (1σ)	0.2 mRad	0.2 mRad	0.2 mRad	
VRE (Vibration Rectification Error)	400 µg/g²	1000 µg/g²	< 1 °/Hr/g²	
Communication				
Output signals	Acceleration, Angular Rates (conning & sculling), ToV, Temp			
Data update rates	1000 Hz			
Strat-up time	< 20 msec			
Full Accuracy Data (Warm-up time)	< 100 msec			
Electrical				
Supply Voltage	5 to 32 VDC			
Power Consumption	< 40mA @ 5V			
Output Interface	RS232			
GPIO	PPS Input (3.3 VDC) TOV output (3.3 VDC)			
Mechanical				
Size	25 x 25 x 8 mm			
Weight	< 20 gram (no cable)			
Connector	1m cable , Fly Leads			other options available
Environmental				
Mechanical shock	500g, 3 msec, half sine			
Vibration	8 grms, 20-2000 Hz			
Operating Temp.	-40°C ÷ +85°C			
Altitude	70,000 feet			
Humidity	up to 95 %			
MTBF	200,000 Hours (GM@65®C, operational)			

ver1.May 2026

** Specification subject to change without notice*

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