Inertial Measurement Unit
IMU 42 Family

Kearfott
a subsidiary of Astronautics

Small, Lightweight, High-Performance IMUs

The Kearfott Inertial Measurement Unit (IMU) 42 family employs the latest closed-loop fiber optic gyro (FOG) and linear accelerometer technology. It is a small, lightweight, high-performance, strap-down IMU, and just like our navigation grade Ring Laser Gyro-based IMUs, the IMU 42 is suited for navigation, line-of-sight stabilization and flight control applications. It is available in multiple configurations to meet different price and performance requirements.

Kearfott's FOG IMUs have 15 years of combat-proven experience in a variety of operational applications, including rocket systems, accurate munitions, payloads, UAVs, and civilian aircraft protection systems.

Features & Benefits

- Extended Performance Option: 0.1°/hr.
- ARW: 0.02 – 0.008°/rt. hr.
- Scalable Bias: 0.5 – 0.1°/hr.
- Improved LOS Stabilization
- Reduced Jitter
- Improved CEP

IMU 42 Product Specifications

System Characteristics		
Size	27.46 in^3 (450 cm^3)	
Weight	1.85 lbs (0.84 kg)	
Power	15 W	
Operational Ranges		
Temperature	-49° to 160°F (-45° to 71°C)	
Temperature Gradient	5.4°F/min (3°C/min)	
Input/Output Power Input	±15, 5 VDC	
Interface	SDLC, RS-422	
Data Rates (Hz)	100 to 4800 Hz	
Sync	External or Internal	
Performance Characteristics	*IMU 42*	*IMU 42-XP*
Gyro Bias Stability	<0.5°/hr	<0.1°/hr
Gyro Angular Random Walk	0.02°/√hr	0.008°/√hr
Gyro Scale Factor	<150 PPM	<150 PPM
Gyro Dynamic Range	±2000°/sec	±1000°/sec
Accelerometer Bias	<300 µg	<300 µg
Accelerometer Threshold	10 µg	10 µg
Accelerometer Scale Factor	300 PPM	300 PPM
Accelerometer VRE	50 µg/g^2	50 µg/g^2
Accelerometer Range *(Additional Ranges Available)*	±30	±30

Optional Features	*IMU 42-A*	*IMU 42-B*	*IMU 42-C*	*IMU 42-D*	*IMU 42-E*
Navigation Message Rates	100 Hz	400 Hz	1200 Hz	360 Hz	200 Hz
Control Message Rates	600 Hz	N/A	N/A	3600Hz	4800Hz
Accelerometer Range	±30g	±50g	±60g	±30g	±4.6g
Gyro Range	1000°/sec	1500°/sec	2000°/sec	2000°/sec	Nav=162°/sec Ctrl= 200°/sec

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