

LandMark™ 40 IMU

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Next Generation Low Noise MEMS IMU



$0.002^\circ/\text{sec}/\sqrt{\text{Hz}} \sim 0.085^\circ/\text{Hour}$

- Ultra Low Noise MEMS IMU
- Form, Fit and Function with LandMark™ 10 and 20 IMU's
- Low Gyro Noise $0.002^\circ/\text{sec}/\sqrt{\text{Hz}}$ ($100^\circ/\text{s}$)
- Low Accel Noise $0.035\text{mg}/\sqrt{\text{Hz}}$ (2g)
- In-Run Gyro Bias $6^\circ/\text{hour}$ 1σ
- Rugged Environmentally Sealed Packaging & MILSPEC Connector
- Fully Temperature Compensated Bias and Scale Factor
- Compensated Misalignment $<1/2 \text{ mrad}$ and g-Sensitivity $<0.01^\circ/\text{sec}/\text{g}$ 1σ
- External Sync Input (1kHz or 1pps)
- Low Power $<430 \text{ mW}$ Typical
- Low Voltage $+3.3\text{V}$ (single sided power)
- Light Weight 103 grams
- Small Size $< 72\text{cm}^3/4.4\text{in}^3$
- Wide Sensor Bandwidth 200 Hz
- Bandwidth Filtering Capability
- RS485 Data Rate 500 Hz (user selectable)
- Internal Vibration Isolation
- Precision Alignment
- Internal Temperature Sensors

Export Classification:
Commerce ECCN7A994 (NLR)



Applications

Airborne Platform Stabilization
Antenna Stabilization & Pointing
EO/IR Stabilization
LIDAR Stabilization
Navigation
Flight Testing
Racing Yacht Marine Compass

**Next Generation Low Noise MEMS
IMU with Small Size & Low Power**

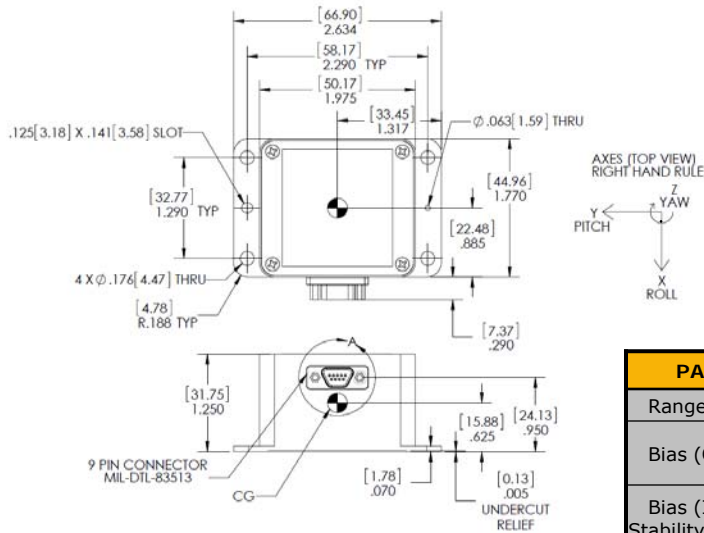


Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS

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LandMark™ 40 IMU
 LMRK40IMU-100-02-100 or -10
 LMRK40IMU-300-02-100 or -10

Mating Connector: M83513/01-AN

Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Analog/Digital Input (0V to 5V)
5	+3.1V to +5.5V Max Input Power
6	External Sync Input (1kHz or 1pps)
7	+5V Regulator Out
8	Signal Ground
9	Self Test

Note: Any unused inputs (Pins 4, 6, 9) must be connected to signal ground (Pin 8).

Outputs	Serial Sequence at 200Hz
1	Roll Gyro (X)
2	Pitch Gyro (Y)
3	Yaw Gyro (Z)
4	X Accelerometer
5	Y Accelerometer
6	Z Accelerometer
7	Temperature ± 0.5° C typical

Specification

PARAMETER	RATE AXES	ACCEL AXES	
Range	±100°/sec ±300°/sec	±2 g's	±10 g's
Bias (Over Temp.)	<0.03°/sec <i>1σ</i>	< 0.5mg <i>1σ</i>	< 1.0mg <i>1σ</i>
Bias (In Run Stability)	6°/hour 8°/hour <i>1 σ</i>	0.035mg <i>1σ</i>	0.08mg <i>1σ</i>
Scale Factor Error %	≤0.1% (over temperature) <i>1σ</i>		
Sensor Resolution	0.001°/sec	0.02mg	0.06mg
Angle Random Walk	0.002° /sec/√Hz 0.0035° /sec/√Hz <i>1σ</i>	0.035mg /√Hz <i>1σ</i>	0.13mg /√Hz <i>1σ</i>
Alignment	<0.5 mrad <i>1σ</i>		
G-Sensitivity	<0.01°/sec/g <i>1σ</i>		
Self Test On	N/A	Δ 1.5 ±0.5g	Δ 0.3 ±0.2g
	Logic 1 = 3V to 5V at Pin 9		
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +85°C		
Update Rate	500 Hz, 200 Hz, 100 Hz, or 10 Hz (user selectable)		
Temp Sensors	Internal Temperature Sensors		
Start-up Time	< 0.3 sec at 200 Hz		
Input Power	+3.1V to +5.5V Max. Input (single sided)		
Power Consumption	430 mW at 3.3V Typical 450 mW at 3.3V Maximum		
Size	U.S.: 1.97 x 1.77 x 1.25 = 4.4 in ³ Metric: 5 x 4.5 x 3.2 = 72 cm ³		
Weight	≤ 103 grams		
Mounting	4ea No.8 or M4 Screws		
Shock	500g's ½ sine 1 msec powered		
Vibration	6gRMS (20Hz to 2KHz ~ 10g accelerometers)		
MTBF	53,869 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)		

Specification subject to change without notice



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