

LandMark™ 10 IMU



- **Low Cost & Rugged IMU**
- **Vertical Gyro Option Available**
Pitch & Roll Angles $\pm 0.25^\circ$
- **Low Gyro Noise** $< 0.012^\circ/\text{sec}/\sqrt{\text{Hz}}$ 1σ
- **Low Accel Noise** $< 0.07\text{mg}/\sqrt{\text{Hz}}$ 1σ
- **In Run Gyro Bias** $25^\circ/\text{hour}$ 1σ
- **Fully Temperature Compensated Bias and Scale Factor**
- **Compensated Misalignment** 1mrad and **g-Sensitivity** $< 0.03^\circ/\text{sec}/g$ 1σ
- **Low Power** $< 440\text{mW}$ watt typical
- **Low Voltage** $+3.1$ to $+5.5\text{V}$ (single sided)
- **Light Weight** < 105 grams
- **Small Size** $< 72\text{cm}^3/4.4\text{in}^3$
- **RS485 Output** to 500 Hz (user selectable)
- **Bandwidth Filtering Capability**
- **External Sync Input** (1 kHz or 1pps)
- **Internal Vibration Isolation**
- **Precision Alignment**
- **3 Internal Temperature Sensors**
- **Self Test**
- **Shock Resistant**

**Low Noise & Excellent Bias
Rugged Economy Class IMU**

Export Classification: Commerce ECCN7A994

The economy class LandMark™ 10 IMU is a substantially improved upgrade employing our latest low noise gyro technology for improved bias and with improved environmental sealing and MIL-SPEC connector. It provides internally temperature compensated RS485 output of delta velocity and delta theta. As an option the

IMU is available as a 'Vertical Gyro' with pitch and roll angle outputs. The LandMark™ 10 IMU is ideal for applications requiring **low cost**, ultra low power consumption, rugged packaging, small size, light weight and no inherent wear out modes for long life. The signature feature of the

IMU is the performance, which is optimized with **fully temperature compensated bias and scale factor, compensated misalignment and g-sensitivity**. The unit is highly durable and employs an FEA designed internal vibration isolator that can withstand environmental vibration and shock typically associated with commercial aircraft requirements. LandMark™ IMU's include built-in firmware to accept external velocity as well as an external sync input 1 kHz (or 1pps indication). This IMU is well suited for low cost navigation, platform and antenna stabilization, general aviation as well as laboratory use. The unit is ideal where low gyro noise, excellent modeled performance coupled with small size, low power, light weight and low cost are desired for MEMS IMU applications.

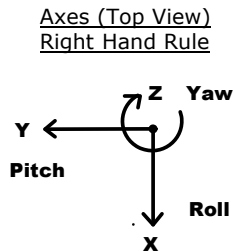
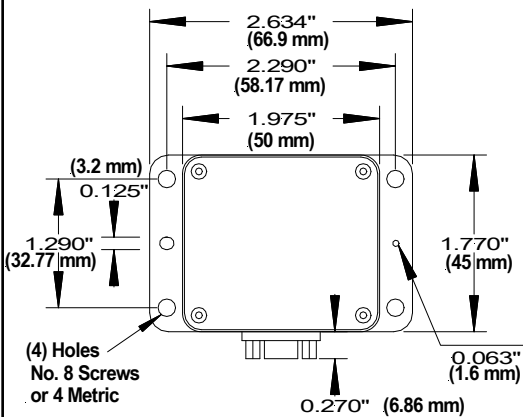


Gladiator Technologies
High Performance Inertial MEMS

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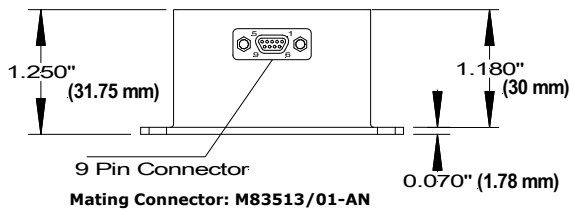
Rev.13July26
SN: 512

LandMark™ 10 IMU



LandMark™ 10 IMU
LMRK10IMU-075-02-200 or -10
LMRK10IMU-150-02-200 or -10
LMRK10IMU-300-02-200 or -10

Specification



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 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

PARAMETER	RATE AXES			ACCEL AXES	
Range	±75°/sec	±150°/sec	±300°/sec	±2 g's	±10 g's
Bias (Over Temp.)	<0.1°/sec 1σ			<3mg	<5mg
Bias (In Run Stability)	25°/hour 1σ			0.1mg 1σ	0.25mg 1σ
Scale Factor Error %	≤0.2% (over temperature) 1σ				
Sensor Resolution	0.007°/sec			0.035mg	0.25mg
Angle Random Walk	0.012° /sec/√Hz 1σ			0.07mg /√Hz 1σ	0.15mg /√Hz 1σ
Alignment	1 mrad 1σ				
G-Sensitivity	<0.03°/sec/g 1σ				
Self Test On	Δ 50 ± 25°/sec			Δ1.5g ±0.5g	Δ0.6g ±0.4g
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	3 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	440 mW at 3.3V Typical 500 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	≤ 105 grams				
Mounting	4ea No.8 or M4 Screws				
Shock	500g's ½ sine 30 msec powered				
Vibration	6gRMS (20Hz to 2kHz ~ 10g accelerometers)				
MTBF	55,279 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)				

Specification subject to change without notice

* Contact Factory to Order VG Option



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