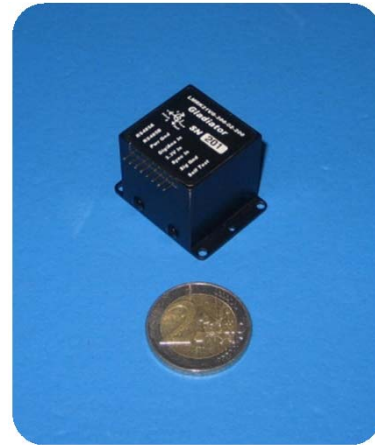


## LandMark™ 21 IMU



- **NON-ITAR Very Low Noise MEMS IMU 1" Cube**
- **Vertical Gyro Option Available**
- **Light Weight 28 grams**
- **Low Gyro Noise 0.004°/sec/√Hz (100°/sec)**
- **Low Accel Noise 0.25mg/√Hz**
- **In-Run Gyro Bias 8°/hour 1  $\sigma$**
- **Rugged Environmentally Sealed Packaging**
- **Fully Temperature Compensated Bias and Scale Factor**
- **Compensated Misalignment 1mrad and g-Sensitivity <0.02°/sec/g typical**
- **External Sync Input (1kHz or 1pps)**
- **Low Power <300 mW Typical**
- **Low Voltage +3.3V (single sided power)**
- **Small Size < 16.4cm<sup>3</sup>/1.0in<sup>3</sup>**
- **Wide Sensor Bandwidth 200 Hz**
- **Bandwidth Filtering Capability**
- **RS485 Data Rate to 1kHz (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

**Ultra Small Size, Light Weight, Low Power and Low Noise MEMS**



**Gladiator Technologies**  
Division of LKD Aerospace  
High Performance Inertial MEMS



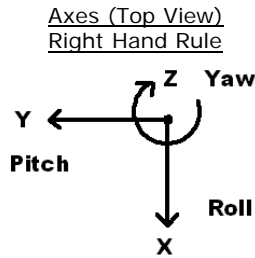
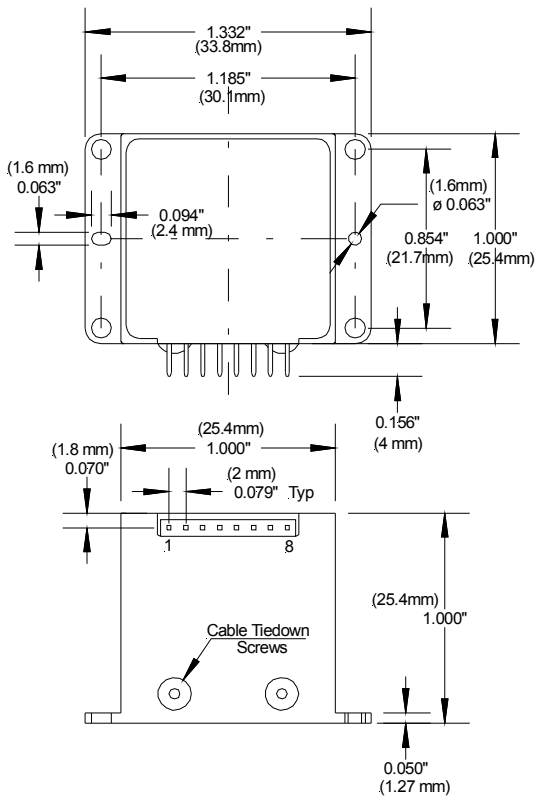
Rev. 15Apr01  
SN: 510

# LandMark™ 21 IMU

## LandMark™ 21 IMU

LMRK21 IMU-100-06-300 or -10  
LMRK21 IMU-300-06-300 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	<b>+3.1V to +5.5V Max Input Power</b>
6	External Sync Input (1kHz or 1pps)
7	Signal Ground
8	Self Test In

Note: Any unused inputs (Pins 4, 6, 8) must be connected to signal ground (Pin 7).

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	±100°/sec	±300°/sec	±6 g's
Bias (Over Temp.)	< 0.05°/sec 1σ		< 2mg 1σ	
Bias (In Run Stability)	8°/hour 1σ		0.1mg 1σ	
Scale Factor Error %	≤0.1% (over temperature) 1σ			
Sensor Resolution	0.002°/sec		0.1mg	
Angle Random Walk	0.004° /sec/√Hz 1σ	0.005° /sec/√Hz 1σ	0.19mg /√Hz 1σ	
Alignment	1mrad 1σ			
G-Sensitivity	< 0.02°/sec/g 1σ			
Self Test On	NA		Δ 0.6 ±0.3g	
	Logic 1 = 3V to 5V at Pin 8			
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +85°C			
Update Rate	1kHz, 500 Hz, 200 Hz, 100 Hz, or 10 Hz (selectable)			
Temp Sensors	Internal Temperature Sensors			
Start-up Time	< 0.3 sec at 200 Hz			
Input Power	<b>+3.1V to +5.5V Max. Input (single sided)</b>			
Power Consumption	300 mW at 3.3V Typical 450 mW at 5V Maximum			
Size	U.S.:	1.0 x 1.0 x 1.0 = 1.0 in <sup>3</sup>		
	Metric:	2.54 x 2.54 x 2.54 = 16.4 cm <sup>3</sup>		
Weight	28 grams			
Mounting	4ea No.2-56 Screws			
Shock	500g's ½ sine 1 msec powered			
Vibration	6gRMS (20Hz to 2KHz ~ 10g accelerometers)			
MTBF	124,334 hrs (per MIL-STD-217F, Notice 2 and ANSI/VITA 51.1-2008 with environment: ARW at 55°C Ambient)			

Specification subject to change without notice



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