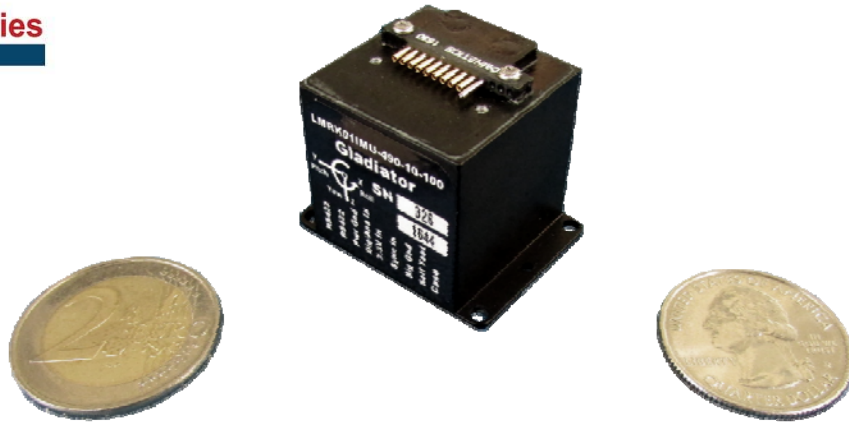




Gladiator Technologies
Division of LKD Aerospace
Low Noise Inertial MEMS



QMS & CERTS

AS9100C
ISO9001:2008

Cage Code: 47L11
Division of
LKD Aerospace
SAM Registered
JCP certified

LandMark™ 01 IMU

Low Cost Small 1" Cube MEMS IMU

Low Noise Inertial MEMS Rugged Low Cost Sensors & Systems

Automated Testing

Comprehensive ERP
Environmental Test Lab:

- Shock
- Vibration
- Temperature Calibration
- G-Sensitivity
- Axis Alignment
- Centrifuge
- GPS Simulation

Products:

Gyros
Accelerometers
IMU
VG
AHRS
VG/GPS
GPS/AHRS
INS/GPS

- NON-ITAR MEMS IMU
- Small 16.4cm³/1.0in³ Cube IMU
- Low Gyro Noise 0.003°/sec/√Hz
- Low Accel Noise 0.09mg/√Hz
- Wide Sensor Bandwidth 250 Hz
- In-Run Gyro Bias 5°/hour 1σ
- Bias Over Temperature ≤0.05°/sec 1σ
- Compensated Misalignment ≤½ mrad 1σ
- G-Sensitivity ≤0.001°/sec/g 2
- Full Temperature Compensation (Bias & SF)
- RS422/485 Serial Data to 2.5kHz (selectable)
- External Sync Input (5kHz)
- Ultra Low Power < 195 mW typical
- Low Voltage +3.8V to +5.5V
- Light Weight ≤ 32 grams

Applications

Platform Stabilization
Antenna Stabilization
Antenna Pointing
EO/IR Stabilization
LIDAR Stabilization
Low Cost Navigation
Flight Testing

Export Classification:
Commerce
ECCN7A994 (NLR)



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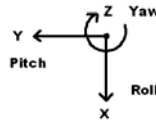
LandMark™ 01 IMU

RS422/RS485 Configuration (-100)

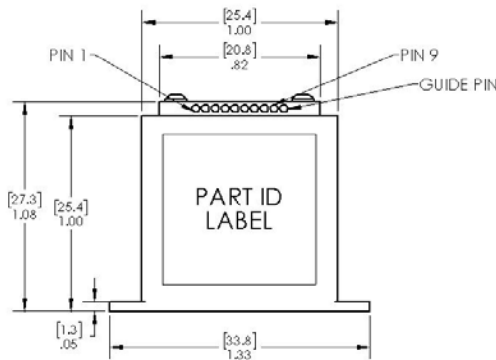
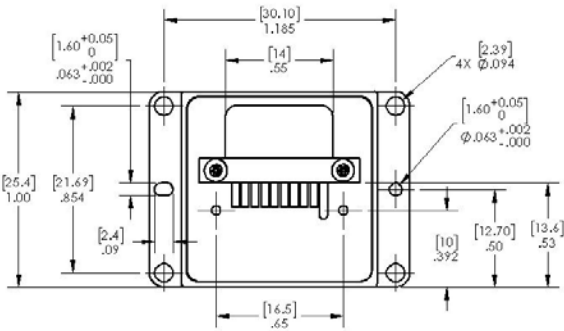
LandMark™ 01 IMU

LMRK01IMU-490-15-100
LMRK01IMU-490-15-200

Axes (Top View)
Right Hand Rule



Specification



Pin No.	Assignment
1	RS-422/485 A (+) (Twisted Pair)
2	RS-422/485 B (-) (Twisted Pair)
3	Power Ground (Twist with Power)
4	Analog/Digital Input (0V to 3.6V)
5	+3.8V to 5.5V Max Input Power
6	External Sync Input (5kHz)
7	NC
8	Signal Ground
9	Self Test In (3.3V = 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 $\pm 0.5^\circ\text{C}$ typical

PARAMETER	RATE AXES	ACCEL AXES
Range	$\pm 490^\circ/\text{sec}$	$\pm 15\text{ g's}$
ARW / VRW	$0.003^\circ/\text{sec}/\sqrt{\text{Hz}}\ 1\sigma$	$0.09\text{mg}/\sqrt{\text{Hz}}\ 1\sigma$
Bias In-Run Stability	$5^\circ/\text{hour}\ 1\sigma$	$45\mu\text{g}\ 1\sigma$
Bias Over Temp.	$< 0.05^\circ/\text{sec}\ 1\sigma$	$< 1\text{mg}\ 1\sigma$
Scale Factor Error %	$\leq 0.05\%$ (over temperature) 1σ	
Scale Factor Non-Linearity % of Full Scale	0.1 %	
Sensor Resolution	$0.0014^\circ/\text{sec}$	0.05mg
Alignment	$0.5\text{ mrad}\ 1\sigma$	
G-Sensitivity / g^2	$< 0.001^\circ/\text{sec}/\text{g}\ 1\sigma$	$1\text{mg}/\text{g}^2\ 1\sigma$
Self Test On	$\Delta 45\pm 5^\circ/\text{s}\ \text{X \& Y}$	$\Delta 0.3$
	$\Delta 0\pm 5^\circ/\text{s}\ \text{Z}$	$\pm 0.15\text{g}$
	Logic 1 = 3.3V at Pin 8	
Temp Range	Operating: -40°C to $+85^\circ\text{C}$ Non-Operating: -55°C to $+85^\circ\text{C}$	
RS422/RS485 Data Rate	2.5kHz (user selectable) -100 model	
CAN bus	1MHz -200 model	
Start-up Time	$< 0.3\text{ sec}$	
Input Power	+3.8V to +5.5V Max Single Sided	
Power Consumption	195 mW at 5V Typical 245 mW at 5V Maximum	
Size	U.S.: $1.0 \times 1.0 \times 1.0 = 1.0\text{ in}^3$ Metric: $2.54 \times 2.54 \times 2.54 = 16.4\text{ cm}^3$	
Weight	$\leq 32\text{ grams}$	
Mounting	4ea No.2-56 Screws	
Shock	$500\text{g's}\ \frac{1}{2}\text{ sine}\ 1\text{ msec}$	
Vibration	6gRMS (20Hz to 2KHz ~ 15g accelerometers)	
MTBF	93,636 hrs (per MIL-STD-217F, Notice 2 and ANSI/VITA 51.1-2008 with environment: ACI at 40°C Ambient)	

Specification subject to change without notice



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Rev. 17May25
SN: 400