

## LandMark™ 30 Vertical Gyro (VG)



- Low Noise & High Performance Silicon MEMS Digital Vertical Gyro
- Vertical Gyro (No Magnetometers)  
*Pitch & Roll Angles  $\pm 0.25^\circ$  typical*
- Low Gyro Noise  $0.003^\circ/\text{sec}/\sqrt{\text{Hz}}$
- Low Accel Noise  $0.04\text{mg}/\sqrt{\text{Hz}}$
- In-Run Gyro Bias  $8^\circ/\text{hour } 1\sigma$
- Fully Temperature Compensated Bias and Scale Factor
- Compensated Misalignment  $1\text{mrad}$  and g-Sensitivity  $<0.01^\circ/\text{sec}/g$  typical
- Input Power  $+6V$  to  $+36V$  (single sided)
- Light Weight 388 grams
- Small Size  $< 321\text{cm}^3/19.6\text{in}^3$
- RS485 Data Rate 100 Hz (user selectable)
- Wide Sensor Bandwidth 500 Hz
- Bandwidth Filtering Capability
- External Sync (1 kHz or 1 pps)
- Precision Alignment
- Shock Resistant 500g's
- 6 Internal Temperature Sensors
- Self Test & No Wearout Modes

Export Classification:  
Commerce ECCN7A994 (NLR)



### Applications

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

**High Performance MEMS VG with  
Low Noise & Low Bias Performance**

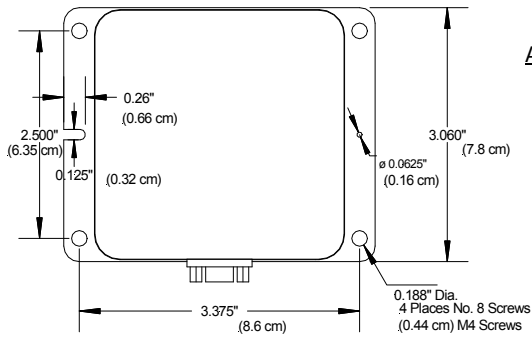


**Gladiator Technologies**  
Division of LKD Aerospace  
High Performance Inertial MEMS

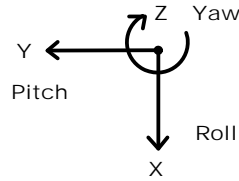
Gladiator Technologies Division  
LKD Aerospace, Inc  
8020 Bracken Place SE  
Snoqualmie, WA 98065 USA

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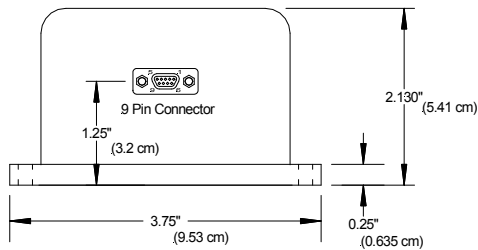
Axes (Top View) Right Hand Rule



## Standard LandMark™ 30 VG

LMRK30VG-100-02-100 or -06 or -10  
 LMRK30VG-175-02-100 or -06 or -10  
 LMRK30VG-300-02-100 or -06 or -10

## Specification



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	<b>+6.0V to +36V Input Power</b>
6	External Sync Input (1kHz)
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 100Hz
1, 2, 3	Gyros: Roll (X), Pitch (Y), Yaw (Z)
4, 5, 6	Accelerometers: (X), (Y), (Z)
7	IMU Temperature
8, 9, 10	No Magnetometers: (X), (Y), (Z)
11	No Pressure
12, 13, 14	Angles: Roll, Pitch, Zero Yaw
15, 16, 17	AC Velocities: (X), (Y) & Vertical Velocity: (Z)
18, 19, 20	No Altitude, Temp, Forward Velocity (As Input)

User to provide either analog or external velocity for velocity functions to be enabled (pin 4).

PARAMETER	LandMark™ 30 VG					
	RATE AXES			ACCEL AXES		
Range	±100°/sec	±175°/sec	±300°/sec	±2 g's	±6 g's	±10 g's
Bias (Over Temp.)	<0.03°/sec 2σ			<0.5mg	<0.8mg 1σ	<1.0mg
Bias (In Run Stability)	8°/hour 2σ			0.02mg	0.06mg 1σ	0.08mg
Scale Factor Error %	≤ 0.08% (over temperature) 1σ					
Resolution ≤	0.002°/sec	0.0025°/sec	0.003°/sec	0.02mg	0.05mg	0.06mg
Angle Random Walk	0.003°	0.005° /sec/√Hz 1σ	0.006°	0.04mg/ √Hz	0.1mg/ √Hz	0.12mg/ √Hz
Pitch & Roll	± 0.25° typical					
Alignment	1mrad typical					
G-Sensitivity	<0.01°/sec/g typical					
Self Test On	Δ 8°/s ± 4 °/s	Δ 8°/s ± 4 °/s	Δ 8°/s ± 4 °/s	Δ 1.5 ±0.5g	Δ 0.3 ±0.2g	Δ 0.3 ±0.2g
	Logic 1 = 3V to 5V at Pin 10					
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +100°C					
Update Rate	100 Hz (user selectable)					
Temp Sensors	6 Internal Temperature Sensors					
Start-up Time	< 0.65 sec AHR5 200 Hz Spec Mode					
Input Power	<b>+6.0V to +36V Max. Input (single sided)</b>					
Power Consumption	2200mW at +12V typical 2350 mW at +12V maximum					
Size	U.S.:	3.0 x 3.06 x 2.13 = 19.6 in <sup>4</sup>				
	Metric:	7.62 x 7.8 x 5.4 = 321cm <sup>4</sup>				
Weight	388 grams					
Mounting	4ea No.8 or M4 Screws					
Shock	500g's ½ sine 1 msec powered					
Vibration	6 gRMS (20Hz - 2KHz ~ 10g accelerometers)					
MTBF	No inherent wear out modes for long life.					

Specification subject to change without notice



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