LandMark™ 20 Vertical Gyro (VG)

- *Low Noise* Silicon MEMS Vertical Gyro
  Pitch & Roll Angles ±0.25° stationary (No Mags)
- Low Gyro Noise *0.01°/sec/√Hz (75°/sec)*
- Low Accel Noise *0.05mg/√Hz (2g)*
- In-Run Gyro Bias *15°/hour 1σ*
- Velocity Input Port *(Analog or Digital)*
- *Rugged* Environmentally Sealed Packaging & MILSPEC Connector
- Fully Temperature Compensated Bias and Scale Factor
- Compensated Misalignment *1mrad* and g-Sensitivity *<0.02°/sec/g 1σ*
- External Sync Input *(1kHz or 1pps)*
- Low Power *<400 mWatt typical*
- Low Voltage *+3.3V (single sided power)*
- Light Weight *105 grams*
- Small Size *< 72cm³/4.4in³*
- Bandwidth Filtering Capability
- RS485 Data Rate *100 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

Very Low Noise & Excellent Bias Rugged Vertical Gyro

Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS

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

Rev. 15April16
SN: 150

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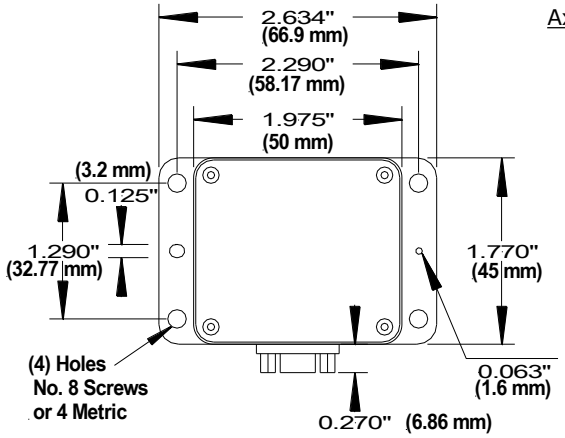
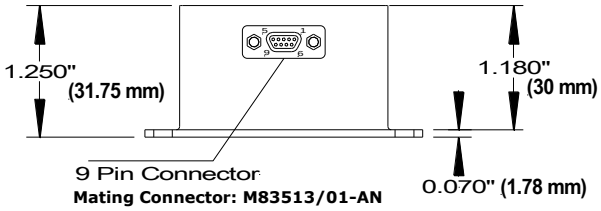
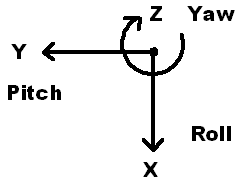




Axes (Top View) Right Hand Rule



LandMark™ VG
LMRK20VG-075-**02**-100 or -**10**
LMRK20VG-150-**02**-100 or -**10**
LMRK20VG-300-**02**-100 or -**10**

Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Analog/Digital Input (0V to 5V)
5	+3.3V ± 0.2V Input Power
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).

Specification

PARAMETER	RATE AXES			ACCEL AXES	
Range	±75°/sec	±150°/sec	±300°/sec	±2 g's	±10 g's
Bias (Over Temp.)	<0.05°/sec *typical*			< 1.0mg *1 σ*	< 1.5mg
Bias (In Run Stability)	15°/hour *1 σ*			0.02mg *1 σ*	0.1mg
Scale Factor Error %	≤0.1% *(over temperature)*				
Resolution	0.005°/sec			0.025mg	0.08mg
Angle Random Walk *(Typical)*	0.01°/ /sec/√Hz *1 σ*			0.05mg/ /√Hz *1 σ*	0.16mg/
Pitch & Roll Angles	± 0.25° *typical*				
Alignment	1mrad *typical*				
G-Sensitivity	<0.02°/sec/g *typical*				
Self Test On	Δ 50 ± 25°/sec			Δ 1.5 ±0.5g	Δ 0.3 ±0.2g
	Logic 1 = 3V to 5V at Pin 9 *(open = off)*				
Temp Range Operating: Non-Operating:	-40°C to +85°C -55°C to +85°C				
Pitch & Roll	± 0.25° *typical*				
Update Rate	100 Hz *(user selectable)*				
Temp Sensors	Internal Temperature Sensors				
Start-up Time	< 0.65 sec *AHRS 200 Hz Spec Mode*				
Input Power	**+3.1V to 5.5V Max. Input (*single sided*)**				
Power Consumption	400 mW at 3.3V *typical* 450 mW at 3.3V *maximum*				
Size U.S.: Metric:	1.97 x 1.77 x 1.25 = 4.4 in³ 5 x 4.5 x 3.2 = 72 cm³				
Weight	105 grams				
Mounting	4ea No.8 or M4 Screws				
Shock	500g's ½ sine 1 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

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