

LandMark™ 21 Vertical Gyro (VG)



- **Very Low Noise MEMS 1" Cube VG**
- **Light Weight** 28 grams
- **Low Noise Gyros** 0.004°/s/√Hz (100°/sec)
- **Low Noise Accels** 0.25mg/√Hz (6g)
- **In-Run Gyro Bias** 10°/hour 1 σ
- **Pitch/Roll Angles** $\pm 0.25^\circ$ typical
- **Rugged Environmentally Sealed Packaging**
- **Fully Temperature Compensated Bias and Scale Factor**
- **Compensated Misalignment** 1mrad and **g-Sensitivity** <0.02°/sec/g 1 σ
- **External Sync Input** (1kHz or 1pps)
- **Low Power** <330 mW Typical
- **Low Voltage** +3.3V (single sided power)
- **Small Size** < 16.4cm³/1.0in³
- **Wide Sensor Bandwidth** 200 Hz
- **Bandwidth Filtering Capability**
- **RS485 Data Rate** 100 Hz
- **Internal Vibration Isolation**
- **Precision Alignment**
- **Internal Temperature Sensors**

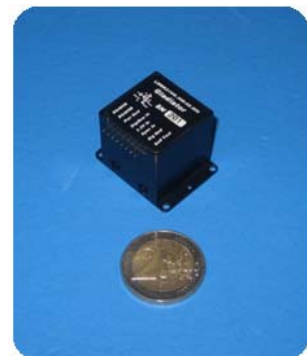
Ultra Small Size, Light Weight, Low Power Vertical Gyro

Export Classification: Commerce ECCN7A994

The exceptionally small size, light weight, low power and very low noise LandMark™ 21 VG is a 1 cubic inch VG outputting pitch & roll angles. The unit offers application versatility for users with challenging packaging and weight requirements yet provides outstanding performance enabled by our low noise gyros and accelerometers.

In addition to the small size and very light weight, other **signature features** include **low noise gyros and accels**, which enable precision measurement with excellent bias in-run and bias over temperature performance. The VG's performance is optimized with **fully temperature compensated bias and scale factor and 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™ VG's include built-in firmware to accept external velocity as well as an external sync input 1 kHz (or 1pps indication). The unit is well suited for the harsh environments of commercial automotive and motorcycle testing, motorsports racing, commercial aircraft and marine applications that require very light weight, small size and low power. Various packaging and range options available (contact factory).



Gladiator Technologies



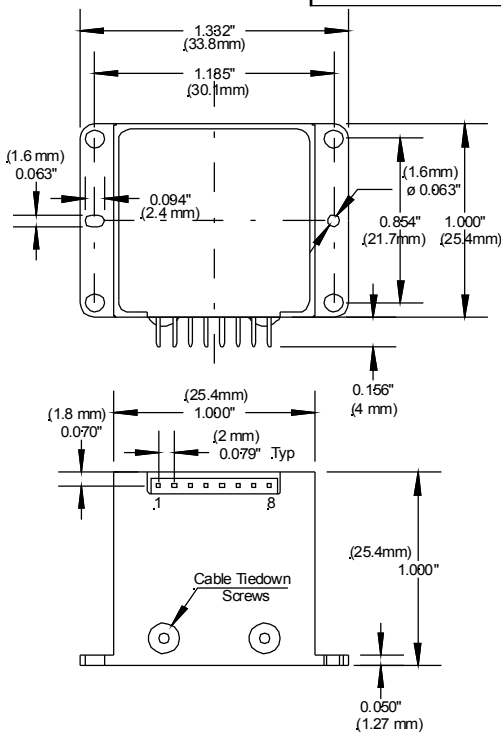
High Performance Inertial MEMS

Gladiator Technologies, Inc.

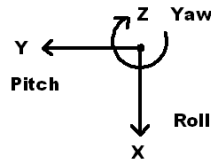
8022 Bracken Place SE
Snoqualmie, WA 98065 USA
Tel: 425.396.0829 Fax: 425.396.1129
Email: sales@gladiatortechnologies.com
Web: www.gladiatortechnologies.com

Rev. 12Oct08
SN: 300

LandMark™ 21 Vertical Gyro (VG)



Axes (Top View)
Right Hand Rule



LandMark™ 21 Vertical Gyro

LMRK21VG-100-06-300 or -10
LMRK21VG-300-06-300 or -10

Specification

PARAMETER	RATE AXES		ACCEL AXES	
Range	±100°/sec	±300°/sec	±6 g's	±10 g's
Bias (Over Temp.)	<0.05°/sec 1σ		< 2mg 1σ	
Bias (In Run Stability)	10°/hour 1σ		0.1mg 1σ	
Scale Factor Error %	≤0.1% (over temperature) 1σ			
Resolution	0.01°/sec		0.12mg	
Angle Random Walk	0.004° /sec/√Hz 1σ	0.006° /sec/√Hz 1σ	0.25mg /√Hz 1σ	
Pitch & Roll Angles	± 0.25° stationary			
Alignment	1mrad 1σ			
G-Sensitivity	<0.02°/sec/g 1σ			
Self Test On	N/A		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	100 Hz			
Temp Sensors	Internal Temperature Sensors			
Start-up Time	< 0.65 sec at 200 Hz			
Input Power	+3.1V to +5.5V Max. Input (single sided)			
Power Consumption	330 mW at 3.3V Typical 350 mW at 3.3V Maximum			
Size	U.S.:	1.0 x 1.0 x 1.0 = 1.0 in ³		
	Metric:	2.54 x 2.54 x 2.54 = 16.4 cm ³		
Weight	28 grams			
Mounting	4ea No.2-56 Screws			
Shock	500g's ½ sine 30 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)			

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	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 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 subject to change without notice



Gladiator Technologies
High Performance Inertial MEMS

Gladiator Technologies, Inc.

8022 Bracken Place SE
Snoqualmie, WA 98065 USA
Tel: 425.396.0829 Fax: 425.396.1129
Email: sales@gladiatortechnologies.com
Web: www.gladiatortechnologies.com

Rev. 12Oct08
SN: 300