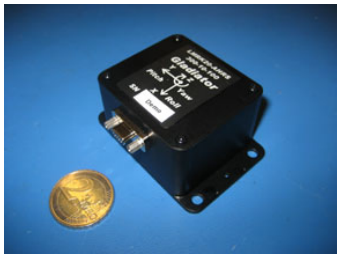
LandMark™ 20 Vertical Gyro (VG) *"LN Series"*

- ***Low Noise*** **Silicon MEMS Vertical Gyro**
- ***Rugged*** **Environmentally Sealed Packaging & MILSPEC Connector**
- **Vertical Gyro** *(No Magnetometers)*
  Pitch & Roll Angles ±0.25° typical
- **Low Gyro Noise** *0.01°/sec/√Hz (150°/sec)*
- **Low Accel Noise** *0.05mg/ √Hz*
- **In-Run Gyro Bias** *15°/hour 1 σ*
- **Velocity Input Port** *(Analog or Digital)*
- **Fully Temperature Compensated Bias and Scale Factor**
- **Compensated Misalignment and g-Sensitivity** *<0.02°/sec/g typical*
- **Low Power** *<1/2 Watt typical*
- **Low Voltage** *+3.3V (single sided power)*
- **Light Weight** *102 grams*
- **Small Size** *< 72cm³/4.4in³*
- **Wide Sensor Bandwidth** *500 Hz*
- **Bandwidth Filtering Capability**
- **External Sync Input** *(1kHz or 1pps)*
- **RS485 Data Rate** *100 Hz (user selectable)*
- **Vibration Isolation & Precision Align.**
- **Internal Temperature Sensors**

Very Low Noise & Excellent Bias Rugged Vertical Gyro

Export Classification: Commerce ECCN7A994

The all new LandMark™ 20 VG *"LN Series"* is a small mid-performance vertical gyro with remarkable performance. The unit features low noise gyros and accelerometers with improved over temperature bias performance as well as ruggedized environmentally sealed packaging and a MILSPEC connector. Velocity input is built-in with 2 formats, analog 0 to 5V or digital pulse counts supplied by the customer.



The LandMark™ 20 VG *"LN Series"* is ideal for applications demanding excellent performance coupled with challenging environmental requirements at low cost. In addition to low noise gyros and accelerometers the unit features ultra low power consumption, small size, light weight, long life MTBF and enhanced packaging with improved environmental-sealing and EMI protection. The signature feature of the LandMark™ 20 VG *"LN Series"* is the **low noise gyros and accelerometers,** which enable precision measurement and improved in-run and bias over temperature as well as reduced jitter on the attitude indicator display. The VG's performance is optimized with **fully temperature compensated bias and scale factor and compensated misalignment and g-sensitivity.** The unit is well suited for the harsh environments of commercial automotive and motorcycle testing, motorsports racing, commercial aircraft and sea applications that require both low cost and high performance as well as rugged durability. Custom ranges available (consult factory).

QMS
AS9100 Rev B &
ISO 9001:2000
Cert# FM 509639

Gladiator Technologies, Inc.

Rev. Aug1610
SN: 150

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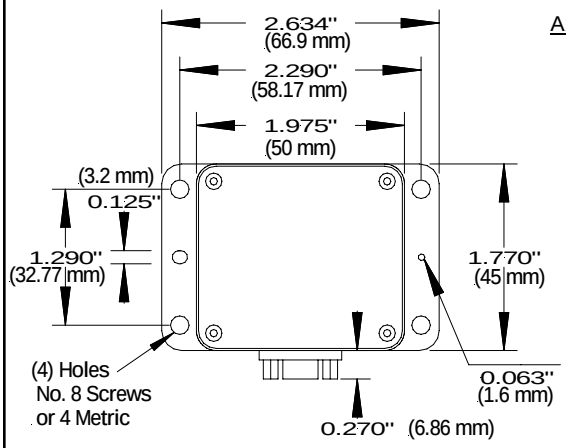
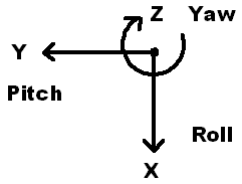
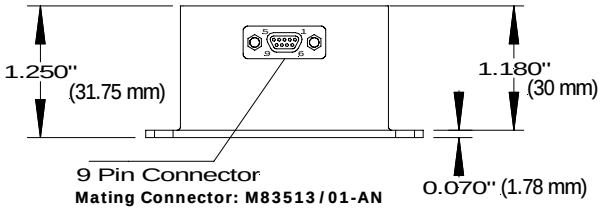


Axes (Top View) Right Hand Rule



LandMark™ VG LN Series
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

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)

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*			< 0.5mg *typical*	< 1.5mg *typical*
Bias (In Run Stability)	15°/hour *1 σ*			0.02mg *typical*	0.1mg *typical*
Scale Factor Error %	≤0.1% *(over temperature)*				
Resolution	0.01°/sec			0.1mg	0.5mg
Angle Random Walk *(Typical)*	0.01°/ sec/√Hz	0.011°/ sec/√Hz	0.012°/ sec/√Hz	0.05mg/ √Hz	0.16mg/ √Hz
Pitch & Roll Angles	± 0.25° *typical*				
Alignment	1mrad *typical*				
G-Sensitivity	<0.02°/sec/g *typical*				
Self Test On	Δ 50 ± 25°/sec			Δ 0.2 ±0.1g	Δ 1.25 ±0.75g
	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	< 1 sec *AHRS 200 Hz Spec Mode*				
Input Power	+3.1V to 4.2V Max. Input *(single sided)*				
Power Consumption	430 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 in^3 5 x 4.5 x 3.2 = 72 cm^3				
Weight	102 grams				
Mounting	4ea No.8 or M4 Screws				
Shock	500g's ½ sine 30 msec powered				
Vibration	6gRMS *(20Hz to 2KHz ~ 10g accelerometers)*				
MTBF	53,869 hrs *(per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)*				

Specification subject to change without notice

Gladiator Technologies, Inc.

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

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