

LandMark™ 40 VG



- **Ultra Low Noise MEMS VG**
- **Form, Fit and Function with LandMark™ 10 and 20 VG's**
- **Low Gyro Noise** 0.002°/sec/√Hz (100°/s)
- **Low Accel Noise** 0.04mg/√Hz (2g)
- **In-Run Gyro Bias** 6%/hour 1 σ
- **Pitch & Roll Angles** $\pm 0.25^\circ$ stationary 1 σ
- **Rugged Environmentally Sealed Packaging & MILSPEC Connector**
- **Fully Temperature Compensated Bias and Scale Factor**
- **Compensated Misalignment 1mrad and g-Sensitivity** <0.01 %/sec/g typical
- **External Sync Input** (1kHz or 1pps)
- **Low Power** <430 mW Typical
- **Low Voltage** +3.3V (single sided power)
- **Light Weight** 103 grams
- **Small Size** < 72cm³/4.4in³
- **Wide Sensor Bandwidth** 200 Hz
- **Bandwidth Filtering Capability**
- **RS485 Data Rate** 100 Hz (user selectable)
- **Internal Vibration Isolation**
- **Precision Alignment**
- **User Supplied Velocity Input**

Next Generation Low Noise MEMS
VG with Small Size & Low Power

Export Classification: Commerce ECCN7A994

The LandMark™ 40 VG is the next generation of our 4.4in³ family of VG's and is form, fit and function interchangeable with our popular LandMark™ 10 and 20 VG's, enabling existing users an easy upgrade option to superior performance. The unit features ultra low noise gyros and accelerometers with exceptional bias in-run and bias over temperature performance in a small, light weight and ruggedized environmentally sealed enclosure with MILSPEC connector. Proven performance in a multitude of applications by its predecessor LandMark™ 10 and 20 VG's, this next generation VG features low power consumption, small size, light weight, long life MTBF and a proven internal vibration isolator for rugged durability. The **signature feature** of this VG is the **very low noise gyros**, enabling precision measurement for demanding stabilization applications. 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. LandMark™ VG's also include built-in firmware to accept external velocity as well as an internal sync input 1 kHz (or 1pps indication). The unit is well suited for the harsh environments of aircraft, land and sea stabilization applications. Other standard ranges available (consult factory).

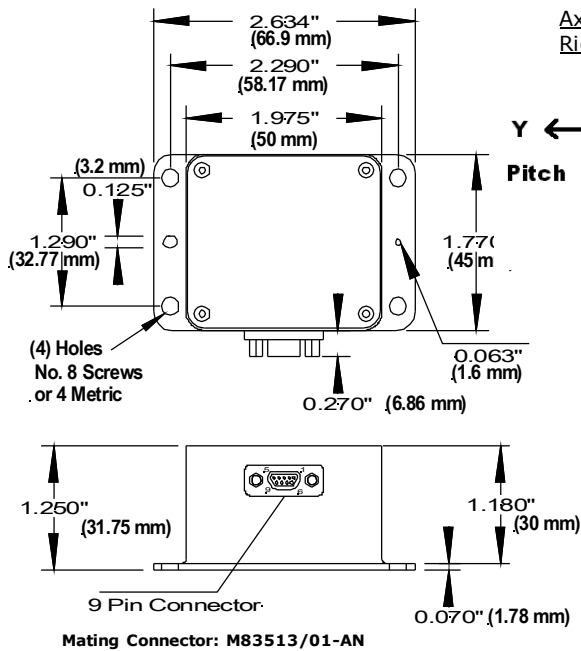


Gladiator Technologies
High Performance Inertial MEMS

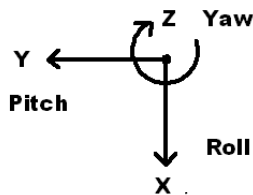
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LandMark™ 40 VG



Axes (Top View)
Right Hand Rule



LandMark™ 40 VG

LMRK40VG-075-02-100 or -10
 LMRK40VG-100-02-100 or -10
 LMRK40VG-300-02-100 or -10

Specification

PARAMETER	RATE AXES		ACCEL AXES	
Range	±100°/sec	±300°/sec	±2 g's	±10 g's
Bias (Over Temp.)	<0.1°/sec 1 σ	<0.15°/sec	< 0.5mg 1 σ	< 1.5mg
Bias (In Run Stability)	6°/hour 1 σ		0.02mg 1 σ	0.08mg
Scale Factor Error %	≤0.1% (over temperature)			
Sensor Resolution	0.001°/sec		0.02mg	0.06mg
Angle Random Walk	0.002° /sec√Hz 1 σ	0.004°	0.04mg /√Hz 1 σ	0.12mg
Alignment	1mrad 1 σ			
G-Sensitivity	<0.01°/sec/g 1 σ			
Self Test On	N/A	Δ 1.5 ±0.5g	Δ 0.3g ± 0.2g	
Temp Range	Logic 1 = 3V to 5V at Pin 9 (open = off)			
Operating:	-40°C to +85°C			
Non-Operating:	-55°C to +85°C			
Pitch & Roll	± 0.25° stationary 1 σ			
Update Rate	100 Hz (full VG mode)			
Temp Sensors	Internal Temperature Sensors			
Start-up Time	< 0.65 sec			
Input Power	+3.1V to 5.5V Max. Input (single sided)			
Power Consumption	430 mW at 3.3V typical 450 mW at 3.3V maximum			
Size	U.S.:	1.97 x 1.77 x 1.25 = 4.4 in ³		
	Metric:	5 x 4.5 x 3.2 = 72 cm ³		
Weight	≤ 103 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)			

Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Analog/Digital Velocity Input (0V to 5V)
5	+3.1V to +5.5V Input Power
6	External Sync Input (1kHz or 1pps)
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 (No Yaw)
15, 16, 17	AC Velocities: (X), (Y) & (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



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