

LandMark™ 50 Vertical Gyro (VG)



- High Performance NON-ITAR Commercial MEMS Vertical Gyro
 - Pitch & Roll Angles $\pm 0.1^\circ$ typical (No Magnetometers)
 - *Built-in* Firmware for Turning Error Correction (External Velocity Input Req.)
 - Ultra Low Gyro Noise $0.0009^\circ/\text{sec}/\sqrt{\text{Hz}}$
 - Low Accel Noise $0.02\text{mg}/\sqrt{\text{Hz}}$ (2g)
 - In-Run Gyro Bias $1^\circ/\text{hour}$ 1σ
 - Fully Temperature Compensated Bias and Scale Factor -40°C to $+85^\circ\text{C}$
 - Compensated Misalignment $\frac{1}{2}$ mrad
 - G-Sensitivity $< 0.002^\circ/\text{sec}/\text{g}$ typical
 - Input Power $+6\text{V}$ to $+36\text{V}$ (single sided)
 - Light Weight 450 grams
 - Small Size $< 321\text{cm}^3/19.6\text{in}^3$
 - RS422/ RS485 Data Rate 100 Hz (4KHz internal sampling)
 - Wide Sensor Bandwidth 200 Hz
 - Bandwidth Filtering Capability
 - External Sync (1 kHz or 1 pps)
 - Precision Alignment
 - Shock Resistant 500g's
 - Internal Temperature Sensors
 - Self Test
 - MTBF 37,100 Hours
- Export Classification:
Commerce ECCN7A994 (NLR)



Applications

- Platform Stabilization
- EO/IR Stabilization
- Antenna Stabilization & Pointing
- Railway Motion Monitoring
- Flight Control
- Navigation
- Automotive Testing
- Laboratory Use

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



Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS



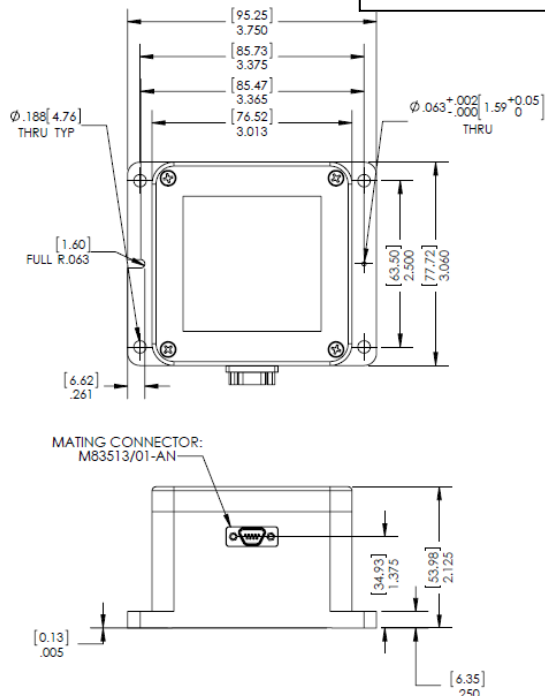
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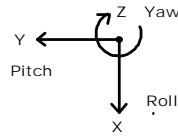
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SN: 600

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**Axes (Top View)
Right Hand Rule**



LandMark™ 50 VG

LMRK50VG-075-02-100 or -06 or -10
LMRK50VG-100-02-100 or -06 or -10
LMRK50VG-175-02-100 or -06 or -10
LMRK50VG-300-02-100 or -06 or -10

Specification

| PARAMETER | LandMark™ 50 VG | | | | | |
|-------------------------|---------------------------------------------------------------------------------------------------|---------------------------|-------------|----------------|-----------------------|------------------|
| | RATE AXES | | | ACCEL AXES | | |
| Range | ±100°/sec | ±175°/sec | ±325°/sec | ±2 g's | ±6 g's | ±10 g's |
| Bias (In Run Stability) | 1°/hr | 1.5°/hr 1σ | 2°/hr | 0.02mg | 0.04mg 1σ | 0.05mg |
| Angle Random Walk | 0.0009° | 0.0025° /sec/√Hz 1σ | 0.003° | 0.02 | 0.065 mg/√Hz 1σ | 0.07 |
| Bias (Over Temp.) | <0.01°/sec | <0.02°/sec 1σ | <0.02°/sec | <1.0mg | <1.3mg 1σ | <1.5mg |
| Scale Factor Error % | ≤0.06% (over temperature) | | | | | |
| Non-Linearity % of FS | <0.1 | | <0.5 | <2 | <0.025 | <0.05 |
| Sensor Resolution | 0.0005°/sec | 0.0012°/sec | 0.0015°/sec | 0.02mg | 0.05mg | 0.06mg |
| Pitch & Roll | < ± 0.1° typical | | | | | |
| Alignment | 0.5 mrad 1σ | | | | | |
| G-Sensitivity | <0.002°/sec/g 1σ | | | | | |
| Self Test On | N/A | | | Δ 1.0 ±0.5g | Δ 0.35 ±0.25g | Δ 0.35 ±0.25g |
| | Logic 1 = 3V to 5V at Pin 9 | | | | | |
| Temp Range | Operating: -40°C to +85°C Non-Operating: -55°C to +100°C | | | | | |
| RS422/485 Update Rate | 100 Hz or 10 Hz (user selectable) | | | | | |
| Temp Sensors | 6 Internal Temperature Sensors | | | | | |
| Start-up Time | < 0.65 sec | | | | | |
| Input Power | +6.0V to +36V Max. Input (single sided) (Input Transient Protection to 80V) | | | | | |
| Power Consumption | 640 mW at +12V typical 730 mW at +12V maximum | | | | | |
| SIZE U.S.: | 3.0 x 3.06 x 2.13 = 19.6 in³ | | | | | |
| | Metric: | 7.62 x 7.8 x 5.4 = 321cm³ | | | | |
| Weight | <450 grams | | | | | |
| Mounting | 4ea No.8 or M4 Screws | | | | | |
| Shock | 500g's ½ sine 1 msec powered | | | | | |
| Vibration | 6 gRMS (20Hz - 2KHz ~ 10g accelerometers) | | | | | |
| MTBF | 37,100 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C) | | | | | |

| Pin No. | Assignment |
|---------|----------------------------------|
| 1 | RS-422/RS-485 A (+) |
| 2 | RS-422/RS-485 B (-) |
| 3 | Power Ground |
| 4 | Analog/Digital Input (0V to 5V) |
| 5 | +6.0V to +36V 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, No Yaw |
| 15, 16, 17 | AC Velocities: (X), (Y) & No (Z) |
| 18, 19 | No Altitude, No Temp |
| 20 | 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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