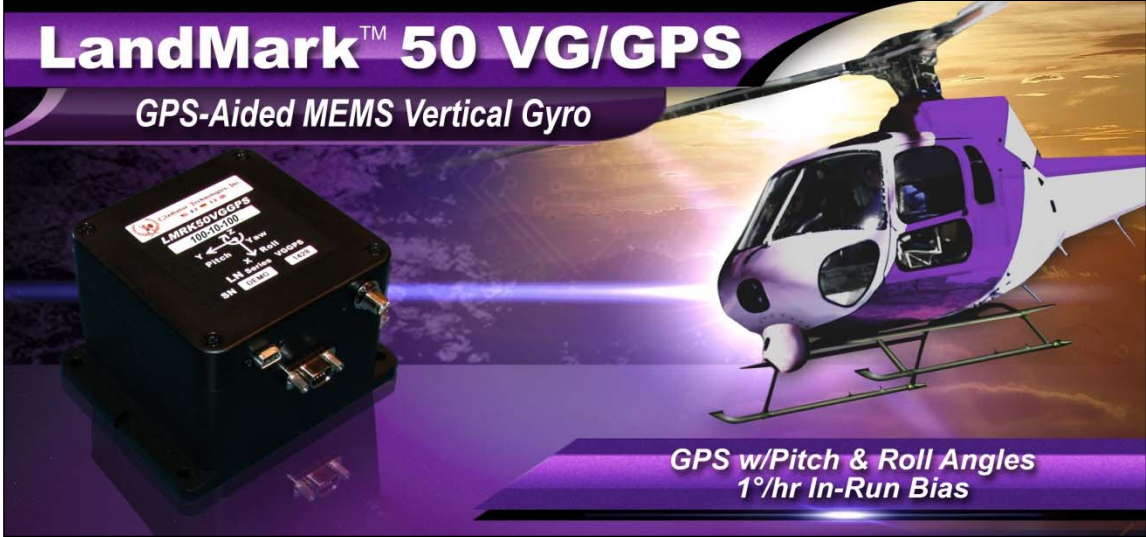


# LandMark™ 50 VG/GPS



- High Performance NON-ITAR Commercial MEMS GPS-Aided Vertical Gyro
- 72 Channel GNSS: GPS, GLONASS, BeiDou, QZSS & SBAS (Galileo Ready\*)
- SBAS: WAAS, EGNOS & MSAS
- Up to 18 Hz Navigation Update Rate *GPS*
- GPS Velocity Accuracy *0.05 m/s*
- GPS Heading Accuracy *0.3 degrees*
- GPS Horizontal Accuracy  $\pm 2.0m$  CEP w/SBAS
- Pitch & Roll Angles  $\pm 0.1^\circ$  stationary
- Ultra Low Noise Gyros  $0.0009^\circ / \text{sec}/\sqrt{\text{Hz}}$
- Low Noise Accels  $0.02\text{mg}/\sqrt{\text{Hz}}$  (2g)
- In-Run Gyro Bias  $1^\circ / \text{hour } 1\sigma$
- GPS-Aided Velocity & Built-in Turning Error Correction
- Fully Compensated Bias & Scale Factor
- Over Temperature  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$
- RS422/RS485 Serial Data Format
- Low Power  $<1$  W typical
- Input Voltage  $+6V$  to  $36V$
- Light Weight  $<550$  grams
- Small Size  $<360\text{cm}^3/21.8\text{in}^3$

**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 GPS/AHRS  
with RLG/FOG Gyro Performance**



**Gladiator Technologies**  
Division of LKD Aerospace  
High Performance Inertial MEMS

### Willburger System GmbH

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Rev. 15Jan30  
SN: 600

# LandMark™ 50 VG/GPS

## Specification

PARAMETER	RATE AXES			ACCEL AXES		
<b>Power Requirements</b>						
Input Voltage	<b>+6.0V to +36V Max. Input K8 (Input Transient Protection to 80V)</b>					
Power	850mW (950mW Max) at 12V					
<b>Inertial Performance</b>						
Standard Full Scale Ranges	±100°/sec	±175°/sec	±300°/sec	±2 g's	±6 g's	±10 g's
Bias (In Run Stability) 1σ	1°/hour	1.5°/hour	2°/hour	0.02mg	0.04mg	0.05mg
Angle Random Walk 1σ	0.0009°	0.0025°	0.003°	0.02	0.065	0.07
		/sec/√Hz 1σ			mg/√Hz 1σ	
Bias Over Temp. 1σ	<0.01°/sec	<0.02°/sec		<1.0mg	<1.3mg	<1.5mg
Scale Factor Error %	≤0.06% (over temperature)					
Non-Linearity % of FS	<0.1	<0.5	<2	<.025	<0.05	<0.05
Sensor Resolution	0.0005°/sec	0.0012°/sec	0.0015°/sec	0.02mg	0.05mg	0.06mg
Alignment	< 0.5 mrad 1σ					
G-Sensitivity	<0.002°/sec/g 1σ					
<b>VG/GPS System Performance</b>						
Channels	72 Channels					
GNSS Receiver	GPS L1C/A	GLONASS L1of	BeiDou B1	GALILEO E1B/C		
SBAS	WAAS EGNOS QZSS					
Max Navigation Update Rate (GPS)	Up to 18 Hz					
Concurrent GPS/GLONASS & GPS/BeiDou	Up to 10 Hz					
GPS Horizontal Position Accuracy	Autonomous 2.5 m					
SBAS - EGNOS WAAS MSAS	2.0 m					
Velocity Accuracy	0.05 m/s					
Heading Accuracy (GPS)	0.3 degrees					
Pitch & Roll Angles (sole inertial)	± 0.1° typical					
Altitude	± 3m typical					
Start-Up Time (inertial)	< 0.65 sec typical					
Time-To-First-Fix						
GPS Acquisition (Cold start)	30 sec					
GPS Reacquisition (Aided start)	3 sec					
GPS Reacquisition (Hot start)	1 sec					
Sensitivity						
Tracking	-166 dBm					
Reacquisition	-159 dBm					
Cold start	-148 dBm					
Hot start	-148 dBm					
Accuracy of time pulse signal	RMS 30ns 99% 60ns					
Update Rate (synced inertial) GPS	100 Hz					
<b>Physical</b>						
Weight	< 550 grams					
Size	U.S.:	3.0 X 3.06 X 2.38 = 21.8 in <sup>3</sup>				
	Metric:	7.62 X 7.8 X 6.05 = 360 cm <sup>3</sup>				
Operating Life	10 Years typical					
<b>Environments</b>						
Operating Temperature	-40°C to +85°C					
Storage Temperature	-55°C to +100°C					
Dynamics (GPS)	≤ 4 g					
Altitude	50,000 m					
Velocity	500 m/s					
Vibration Operating (inertial)	6gRMS (20Hz to 2KHz ~ 10g accelerometers)					
Shock	500g's ½ sine 2 msec powered, any axis					

Specification subject to change without notice



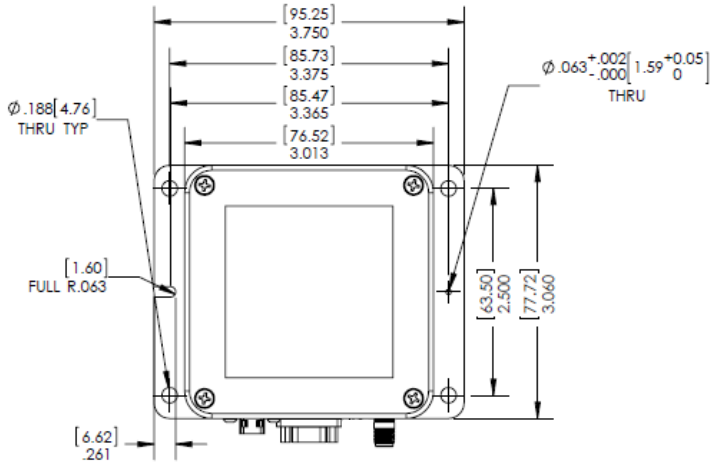
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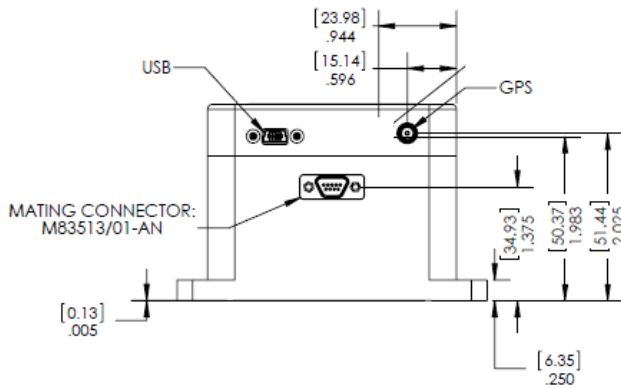
# LandMark™ 50 GPS/AHRS



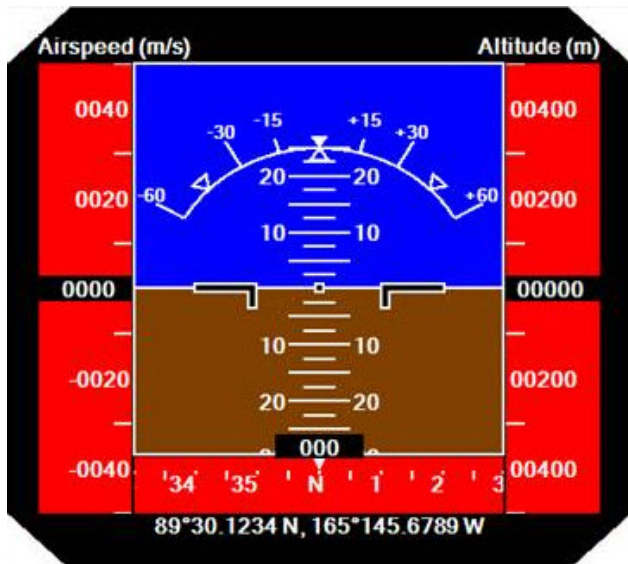
## LandMark™ 50 VG/GPS P/N:

LMRK50VGGPS-100-02-100 or -06 or -10  
 LMRK50VGGPS-175-02-100 or -06 or -10  
 LMRK50VGGPS-300-02-100 or -06 or -10

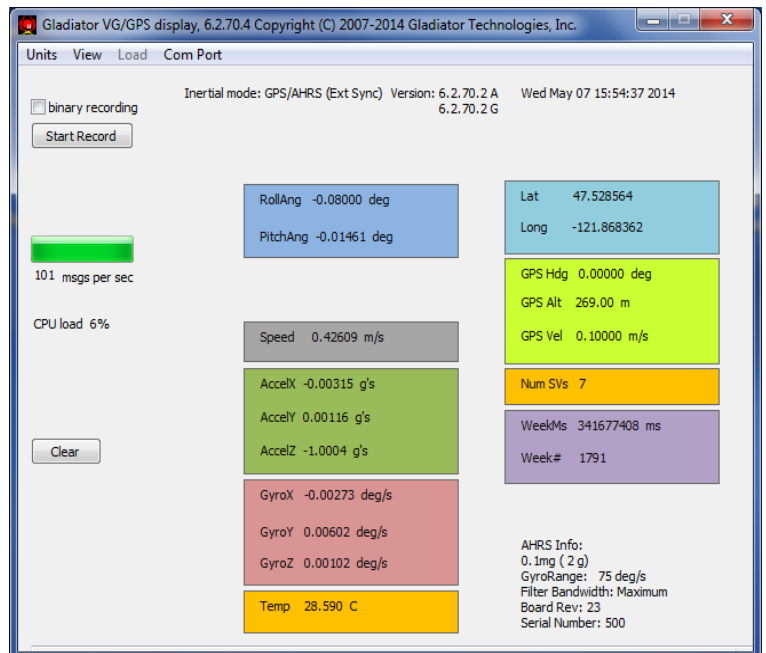
Pin No.	Assignment
1	RS-485 A (+) AHRS
2	RS-485 B (-) AHRS
3	Power Ground
4	RS-485 A (+) Combined GPS/AHRS
5	+6.0V to +36V Input Power
6	RS-485 B (-) Combined GPS/AHRS
7	1 Pulse Per Second Output
8	Signal Ground
9	Self Test



Outputs	Serial Sequence at 100Hz
1, 2, 3	Gyros: Roll (X), Pitch (Y), Yaw (Z)
4, 5, 6	Accelerometers: (X), (Y), (Z)
7	Temperature
8, 9, 10	Angles: Roll (X), Pitch (Y), Yaw (Z)
11	No Baro Altitude
12, 13, 14	Analog Airspeed Longitude, Latitude
15, 16	Time ms, Time Week
17, 18, 19	GPS: Altitude, Velocity, Heading
20	No. of SV's
21, 22, 23	IMU Status, Status, Checksum



SDK Attitude Indicator Display



SDK Data Display & Recording Software



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