

LandMark™ 50 GPS/AHRS

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MEMS GPS-Aided AHRS



CANBUS Output

*GPS w/ Pitch & Yaw Angles
1°/hr In-Run Bias*

- High Performance Non-ITAR Commercial MEMS GPS-Aided AHRS with CANBUS Output
- 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
- Heading $\pm 0.5^\circ$ typical
- Pitch & Roll Angles $\pm 0.1^\circ$ typical
- 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°C to $+85^\circ\text{C}$
- RS422/RS485 & CAN 2.0B Data Formats
- Low Power <1.2 W typical
- Input Voltage +6V to 36V
- Light Weight <550 grams

Export Classification:
Commerce ECCN7A994



Applications

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

***High Performance MEMS GPS/AHRS with
Low Noise and CANBUS Output***



Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS



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Rev. 15JUL17
SN: 600

LandMark™ 50 GPS/AHRS

Specification

PARAMETER	RATE AXES			ACCEL AXES		
Power Requirements						
Input Voltage	+6.0V to +36V Max. Input V(Input Transient Protection to 80V)					
Power	1.2W Typical (1.3W Max) at 12V					
Inertial Performance						
Standard Full Scale Ranges	±100°/sec	±175°/sec	±325°/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					
GPS/AHRS System Performance						
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 or 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					
Heading (sole inertial)	± 0.5° typical					
Pitch & Roll (sole inertial)	± 0.1° typical					
Altitude (sole inertial)	± 3m typical					
Start-Up Time (inertial)	.65 sec typical					
Time-To-First-Fix						
GPS Acquisition (Cold Start)	29 sec					
GPS Reacquisition (Aided Starts)	2 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 (INS/GPS)	100 Hz					
Physical						
Weight	< 550 grams					
Size	U.S.:	3.0 X 3.06 X 2.38 = 21.8 in ³				
	Metric:	7.62 X 7.8 X 6.05 = 360 cm ³				
Operating Life	10 Years typical					
Environments						
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 1 msec powered, any axis					



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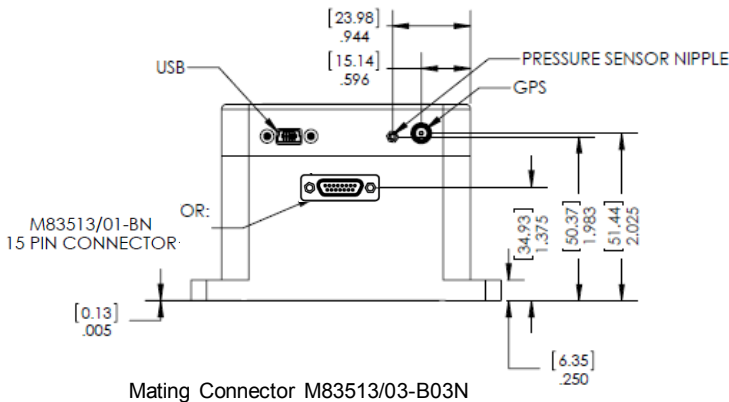
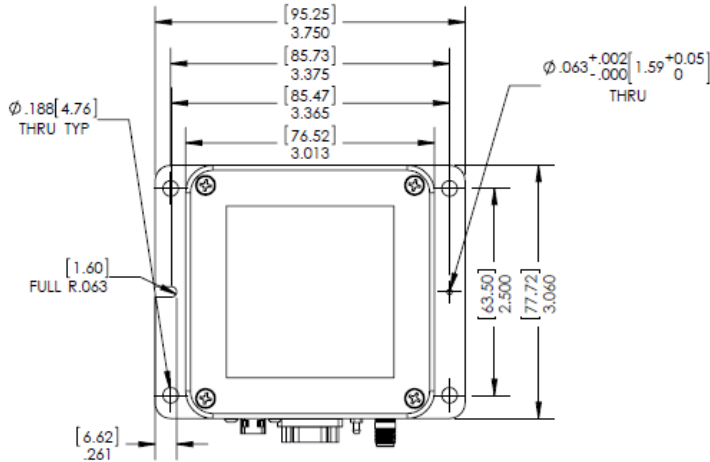
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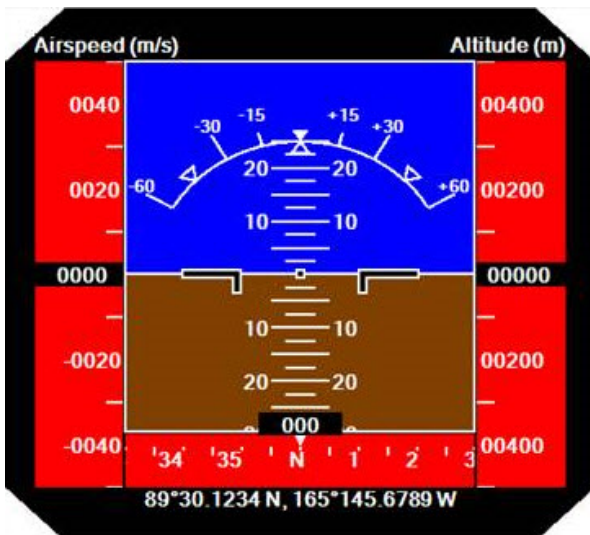


LandMark™ 50 GPS/AHRS P/N:

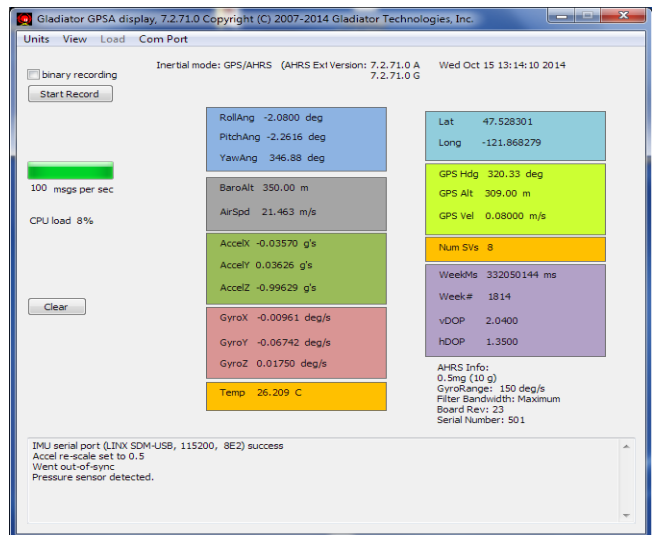
- LMRK50GPSA-100-02-200 or -06 or -10
- LMRK50GPSA-175-02-200 or -06 or -10
- LMRK50GPSA-300-02-200 or -06 or -10

Pin No.	GPS/AHRS Assignment
1	RS-422/RS-485 A (+) AHRS
2	RS-422/RS-485 B (-) AHRS
3	Power Ground
4	RS-422/RS-485 A (+) Combined GPS/AHRS
5	+6V to +36V Input Power
6	RS-422/RS-485 B (-) Combined GPS/AHRS
7	1 PPS Output
8	Signal Ground
9	Self Test
10	CAN H
11	CAN L
12	CAN Gnd
13	NC
14	NC
15	Case

Outputs	Serial Sequence at 100Hz
1, 2, 3	Gyros: Roll (X), Pitch (Y), Yaw (Z)
4, 5, 6	Accels: Fwd (X), Right (Y), Down (Z)
7	Temperature
8, 9, 10	Angles: Roll (X), Pitch (Y), Yaw (Z)
11, 12, 13	Baro Altitude, Airspeed
13, 14	vDOP, hDOP
15, 16	Longitude, Latitude
17, 18	Time ms, Time Week
19, 20, 21	GPS: Altitude, Velocity, Heading
22	No. of SV's
23, 24	AHRS Status/ Status, Checksum



SDK Attitude Indicator Display



SDK Data Display & Recording Software



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