

LandMark™ 50 AHRS



- NON-ITAR High Performance Commercial MEMS AHRS
- Heading (Yaw) Angles 0.5° typical
- Pitch & Roll Angles 0.1° typical
- *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
- Altitude ± 3 meter typical
- Fully Temperature Compensated Bias and Scale Factor -40°C to $+85^\circ\text{C}$
- Compensated Misalignment 0.5mrad
- G-Sensitivity $<0.002^\circ/\text{sec}/g$ typical
- Low Voltage $+6\text{V}$ to $+36\text{V}$ (single sided power)
- Light Weight < 500 grams
- Small Size $< 340\text{cm}^3/20.7\text{in}^3$
- RS422/RS485 Data Rate 100Hz (4KHz internal sampling)
- Wide Sensor Bandwidth 200 Hz
- Bandwidth Filtering Capability
- External Sync Input (1kHz or 1pps)
- Shock Resistant $500g$'s
- MTBF 22,700 Hours

Export Classification:
Commerce ECCN7A994 (NLR)



Applications

Airborne Platform Stabilization
Antenna Stabilization & Pointing
EO/IR Stabilization
LIDAR Stabilization
Navigation
Flight Testing
Racing Yacht Marine Compass

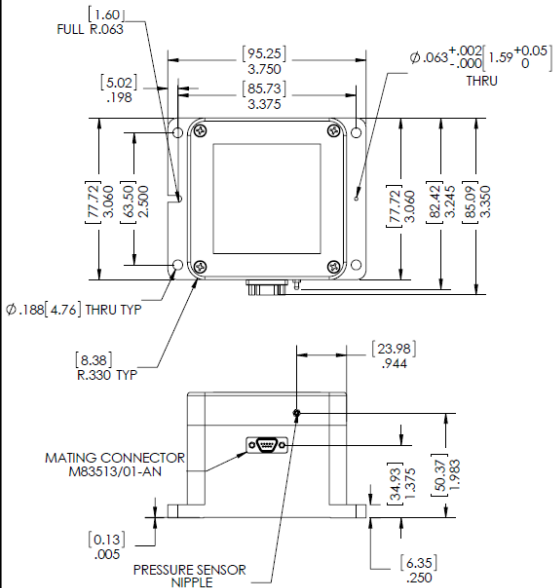
**High Performance MEMS AHRS with
Low Noise & Low Bias Performance**



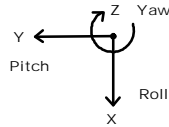
Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS



LandMark™ 50 AHRS



Axes (Top View)
Right Hand Rule



Standard LandMark™ 50 AHRS

LMRK50AHRS-075-02-100 or -06 or -10
LMRK50AHRS-100-02-100 or -06 or -10
LMRK50AHRS-175-02-100 or -06 or -10
LMRK50AHRS-300-02-100 or -06 or -10

Specification

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	Magnetometers: (X), (Y), (Z)
11	Pressure
12, 13, 14	Angles: Roll, Pitch, Yaw
15, 16, 17	Altitude, Temp, Forward Velocity

User to provide either analog or external velocity for velocity functions to be enabled (pin 4).

PARAMETER	LandMark™ 50 AHRS					
	RATE AXES			ACCEL AXES		
Range	±100°/sec	±175°/sec	±325°/sec	±2 g's	±6 g's	±10 g's
Heading	< ± 0.5° typical					
Pitch & Roll	< ± 0.1° typical					
Altitude	± 3m typical					
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
Alignment	< 0.5 mrad 1σ					
G-Sensitivity	<0.002°/sec/g 1σ					
Self Test On	N/A			Δ 1 ±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	100Hz or 10Hz (user selectable)					
Temp Sensors	6 Internal Temperature Sensors					
Start-up Time	< 0.65 sec					
Input Power	+6.0V to +36V Max. Input K8 (Input Transient Protection to 80V)					
Power Consumption	640 mW at +12V typical 730 mW at +12V maximum					
	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	22,700 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)					

Specification subject to change without notice



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