

LandMark™ 10 MEMS AHRS

*Improved
Performance*



- **Lower Noise, In-Run Bias, g-Sensitivity and Power**
- **Fully Temperature Compensated Bias, Scale Factor, Heading & Altitude**
- **Compensated Misalignment and g-Sensitivity** $<0.05^\circ/\text{sec}/g$ typical
- **In-Run Gyro Bias** $45^\circ/\text{hour}$ 1σ
- **Pitch, Roll & Yaw Angles** 0.5° typical
- **Altitude** ± 3 meter typical
- **Low Power** $< 1/2$ watt typical
- **Light Weight** 114 grams
- **Small Size** $< 67.5\text{cm}^3/4.1\text{in}^3$
- **Low Voltage** +3.3V (single sided power)
- **Wide Bandwidth** 100 Hz (user selectable)
- **RS485 Output** 200Hz or 100Hz (selectable)
- **Optional ASCII Output** 10Hz 38.4K Baud
- **External Sync** 1 kHz
- **Spare Analog Port for Air Data or Digital Port for Wheel Counter**
- **Vibration Isolation / Shock Resistant**
- **Precision Alignment**
- **Self Test & 3 Internal Temp. Sensors**

**Angle Outputs, Heading,
Altitude and Velocity Correction**

Export Classification: Commerce ECCN7A994

The improved performance LandMark™ 10 MEMS AHRS is an all silicon 6 Degree of Freedom (6DoF) digital Attitude and Heading Reference System (AHRS) that provides internally temperature compensated RS485 output of delta velocity, delta theta, heading, pitch and roll angle and altitude information.

The LandMark™ 10 AHRS is ideal for applications requiring ultra low power consumption, small size, light weight with no inherent wear out modes for long life. Spare ports are available for air data or wheel counter input

that supports error correction for turning errors. The signature feature of the LandMark™ 10 AHRS is the performance, which is optimized with **fully temperature compensated bias, scale factor, heading, pitch and roll angle and altitude as well as compensated misalignment and g-sensitivity**. The unit is highly durable and can withstand environmental vibration and shock typically associated with commercial aircraft requirements.

The LandMark™ 10 AHRS offers standard rate ranges of $\pm 75^\circ$, $\pm 150^\circ$ or $\pm 300^\circ/\text{sec}$ and $\pm 1.7g$ or $\pm 12g$ of linear acceleration. Other ranges are available. This AHRS is well suited for low cost navigation, backup compass for racing yachts, antenna stabilization and pointing, general aviation as well as laboratory use. The LandMark™ 10 AHRS is ideal where angle outputs coupled with small size, low power and light weight are desired for demanding applications.

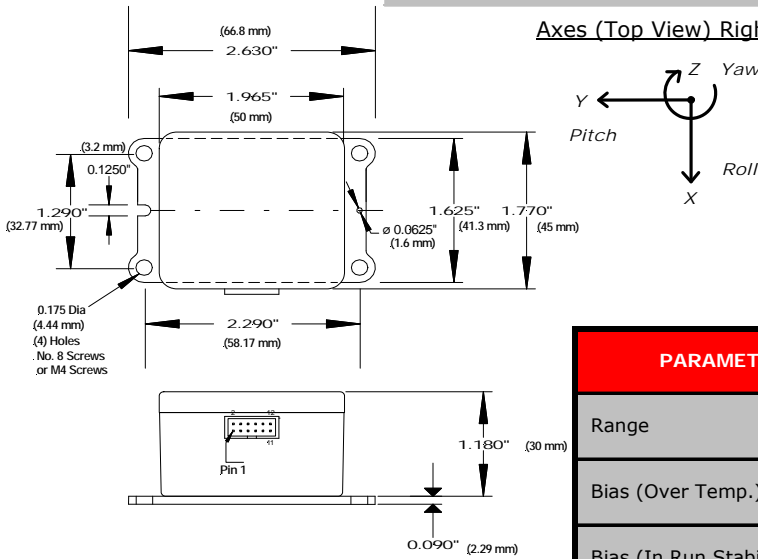


Gladiator Technologies, Inc.

Copyright © 2008 Gladiator Technologies, Inc.

Rev. Dec0908
SN: 200

LandMark™ 10 MEMS AHRS



Axes (Top View) Right Hand Rule

Standard LandMark™ 10 AHRS

LMRK10AHRS-075-02-100
 LMRK10AHRS-075-12-100
 LMRK10AHRS-150-02-100
 LMRK10AHRS-150-12-100
 LMRK10AHRS-300-02-100
 LMRK10AHRS-300-12-100

Pin No.	Assignment
1	RS-485 A (+)
2	RS-485 B (-)
3	Power Ground
4	Digital Input (0 to 5V)
5	+3.3V ± 0.2V Input Power
6	External Sync Input (1kHz)
7	Analog Input (0 to 5V)
8	Signal Ground
9	Self Test Input (3V to 5V)
10	3.3V Regulator Out
11	5V Regulator Out
12	Case

Outputs	Serial Sequence at 200Hz
1, 2, 3	Gyros: Roll (X), Pitch (y), Yaw (Z)
4, 5, 6	Accelerometers: (X), (Y), (Z)
7, 8, 9	Magnetometers: (X), (Y), (Z)
10	Pressure
11, 12, 13	Heading, Altitude, Temperature

PARAMETER	RATE AXES		ACCEL AXES	
	Range	±75°/sec or ±150°/sec	±300°/sec	±1.7 g's
Bias (Over Temp.)	<0.2°/sec <i>typical</i>		<3mg <i>typical</i>	<10mg <i>typical</i>
Bias (In Run Stability)	45°/hour <i>1σ</i>		<0.5mg <i>typical</i>	<2mg <i>typical</i>
Scale Factor Error %	≤1% (over temperature)			
Resolution	0.01°/sec	0.01°/sec	0.3mg	2mg
Analog Noise Density	0.04°/sec/ √Hz	0.05°/sec/ √Hz	0.07mg/ √Hz	0.5mg/ √Hz
Alignment	1mrad <i>typical</i>			
G-Sensitivity	< 0.05°/sec/g <i>typical</i>			
Self Test On	Δ +50 ± 30°/sec	Δ +54 ± 40°/sec	Δ >+1.7g	Δ +7 ±1.3g
	Logic 1 = 3V to 5V at Pin 9			
Temp Range	Operating: -40°C to +85°C Non-Operating: -55°C to +85°C			
Heading, Pitch & Roll	± 0.5° <i>typical</i>			
Altitude	± 3m <i>typical</i>			
Update Rate	200 Hz or 100 Hz (<i>user selectable</i>)			
Temp Sensors	3 Internal Temperature Sensors			
Start-up Time	< 1 sec			
Input Power	+3.1V to 4.2V Max. Input (<i>single sided</i>)			
Power Consumption	400 mW <i>typical</i> at 3.3V <i>Typical</i> 500 mW <i>typical</i> at 3.3V <i>Maximum</i>			
Size	U.S.:	1.965 x 1.77 x 1.18 = 4.1 in ³		
	Metric:	5 x 4.5 x 3 = 67.5 cm ³		
Weight	114 grams			
Mounting	4ea No. 8 or M4 Screws			
Shock	500g's ½ sine 30 msec powered			
Vibration	6gRMS (<i>12g accelerometers</i>)			
MTBF	No inherent wear out modes for long life.			

Specification subject to change without notice



Gladiator Technologies, Inc.

Copyright © 2008 Gladiator Technologies, Inc.

Sold Through:

LKD Aerospace Snoqualmie, WA 98065

Tel: (425) 396-0829 Fax: (425) 396-1129

Email: sales@gladiatortechologies.com

Web: www.gladiatortechologies.com

Rev. Dec0908

SN: 200