

LANDMARK10 MEMS AHRS



- **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** $+3.3\text{V}$ (single sided power)
- **Wide Bandwidth** 100 Hz (user selectable)
- **RS485 Output** 200Hz or 100Hz (selectable)
- **Optional ASCII Output** 10Hz 38.4K Baud
- **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 LandMark10 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 LandMark10 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 LandMark10 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 LandMark10 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 LandMark10 AHRS is ideal where angle outputs coupled with small size, low power and light weight are desired for demanding applications.

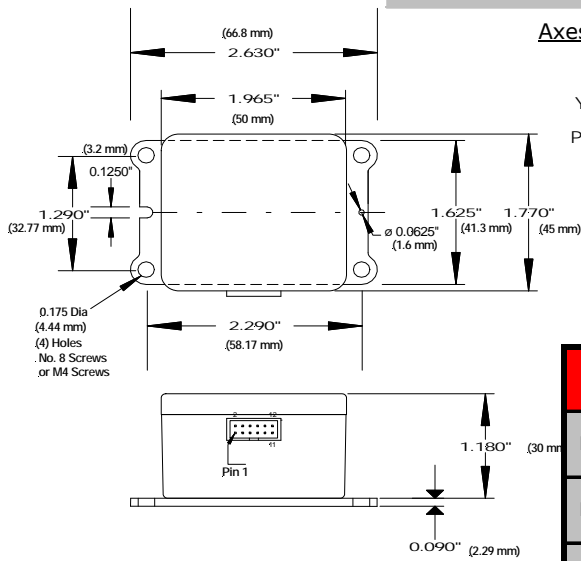


Gladiator Technologies, Inc.

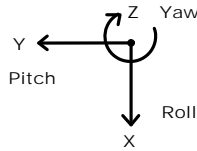
Copyright © 2008 Gladiator Technologies, Inc.

Rev. May102008
SN: 100

LANDMARK10 MEMS AHRS



Axes (Top View) Right Hand Rule



Standard LandMark10 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 | +3.0V ± 0.3V Input Power |
| 6 | 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 | 0.03°/sec | 0.075°/sec | 0.3mg | 2mg |
| Analog Noise Density | 0.05°/sec/ √Hz | 0.1°/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 | +3.3± 0.3V 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. May102008

SN: 100