AHRS500

ATTITUDE & HEADING REFERENCE SYSTEM

- FAA Certified for TSO C4c and TSO C6d Requirements
- Primary Flight Attitude and Heading
- No External Air-Data or GPS "Aiding" Required
- Avionics-Style Enclosure meets DO-160D Requirements
- Continuous BIT (Built-in-Test)

FAA CERTIFIED!

AHRS500GA

Crossbow Technology's AHRS500GA is the world's first stand-alone MEMS Attitude and Heading Reference System (AHRS) to receive FAA certification. FAA TSO certification means the AHRS500GA has passed an extensive regimen of rigorous qualification tests, including the newly proposed DO-160D multiple lightning strike test. Stand-alone means the Crossbow AHRS500GA operates as a truly independent device, eliminating the need for Air Data or GPS inputs as compared to other, less desirable solutions.

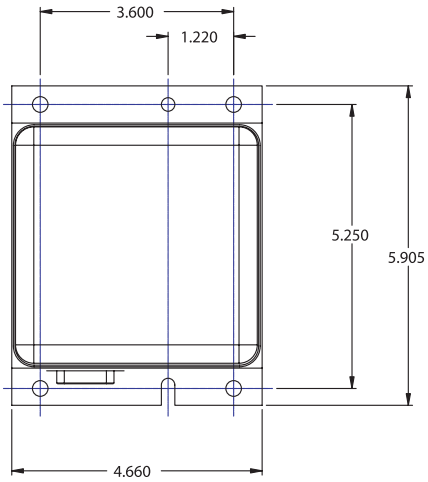
The AHRS500GA is a high-performance, solid-state attitude and heading reference system intended for general aviation aircraft.

This high reliability inertial system provides attitude and heading measurement with static and dynamic accuracy superior to traditional spinning mass vertical and directional gyros.

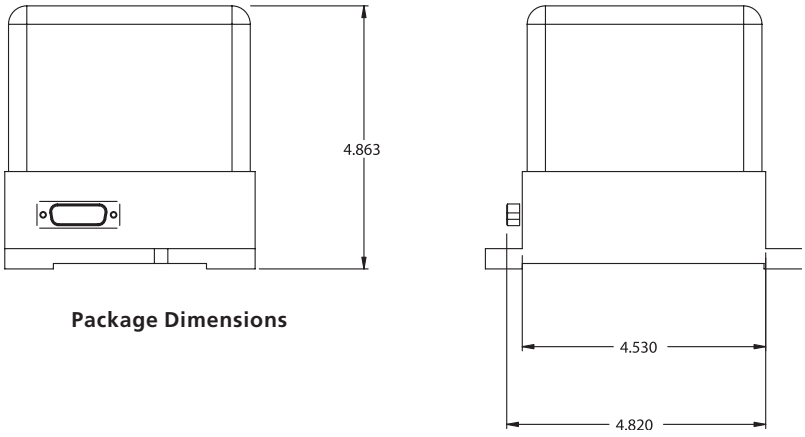
The AHRS500GA meets all FAA requirements for FAR 23 aircraft. A sophisticated suspension system, similar to those found on commercial air transport navigation systems, ensures full performance in aircraft vibration environments. A sealed enclosure provides long trouble-free life and full performance over the entire altitude and temperature range without risk of moisture contamination. A comprehensive Built-in-Test (BIT) monitors all sensors and internal electronics continuously during operation and sends a system status update in every output message.

The AHRS500GA is an "output only" device, ensuring stable operation by offering immunity from any external settings. Output data is provided on a digital RS-232 serial data bus.

TOP VIEW



SIDE VIEWS



Package Dimensions

inertial systems

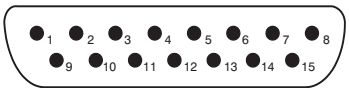
Specifications	AHRS500GA	Remarks
Performance		
Update Rate (Hz)	25 or 100	See Ordering Information
Full Accuracy Data (sec)	< 90	
Heading		
Range (°)	0 to 360	
Accuracy (°)	± 2	FAA TSO C6d Test Conditions
Resolution (°)	0.1	
Attitude		
Roll Range (°)	± 180	
Pitch Range (°)	± 90	
Accuracy (°)	± 2.5	FAA TSO C4c Test Conditions
Verticality (°)	< 1.0	
Resolution (°)	0.1	
Environment[1]		FAA DO-160D Test Conditions
Operating Temperature (°C)	-40 to +70	
Non-Operating Temperature (°C)	-55 to +85	
Operating Vibration (g rms)	DO-160D, Section 8	Category S, Curve M; Category U
EMI	DO-160D, Section 20	Category W
	DO-160D, Section 21	Category M
Waterproof/Humidity	Sealed Housing	
Altitude (ft)	35,000	
Maximum Angular Rate (°/sec)	200	Roll, Pitch, or Yaw
Maximum Acceleration Range (G)	10	
Electrical		
Input Supply Voltage (VDC)	12V or 24V Elec. System	DO-160D Section 16, Cat. B
Input Power (W)	< 4	@ 12 VDC
Digital Output Format	RS-232	
Physical		
Size (in)	4.66 x 4.53 x 4.863	Excludes Mounting Flanges
(cm)	11.84 x 11.51 x 12.35	Excludes Mounting Flanges
Weight (lbs)	3.5	
(kg)	1.6	
Connector	15 Pin Sub-Min DB Male	

Notes

[1]DO-160D Environmental Category: C4BBB[(SM)(U)]XWXXXXZBABCWMA3G33XAA

Specifications subject to change without notice

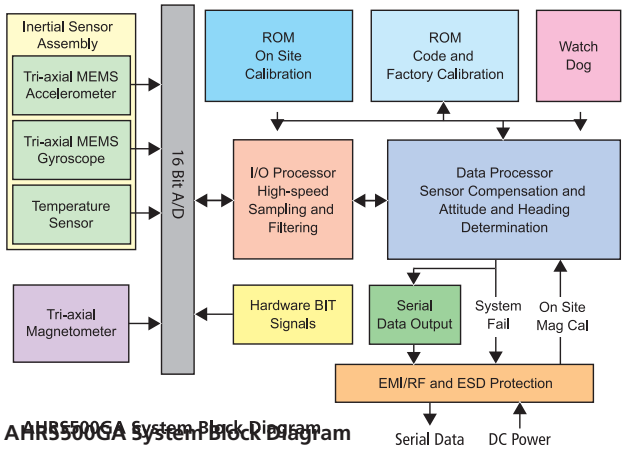
15 Pin "D" Connector Male Pinout



Pin Diagram

Pin	Function
1	RS-232 Transmit
2	Velocity Aiding Input (Optional)[1]
3	Power Input
4	Power Input Ground
5	No Connection
6	No Connection
7	No Connection
8	No Connection
9	Signal Ground
10	No Connection
11	No Connection
12	MagAlign Input[2]
13	No Connection
14	Remote Mag Input (Optional)[3]
15	Remote Mag Input (Optional)[3]

Notes
1 See User's Manual for additional information
2 Hard and Soft Iron Alignment input
3 RS-422 Interface



AHRS500GA System Block Diagram

Hardware Test	Power On BIT	Operation BIT
Power Suppy Voltage	Y	Y
RAM Memory Integrity	Y	N
ROM Memory Integrity	Y	N
Processor(s) Integrity	Y	Y
ADC Integrity	Y	Y
Gyro(s) Integrity	Y	Y
Accelerometer(s) Integrity	Y	Y
Temp Sensor Integrity	Y	Y
Sensor Temperature	Y	Y
Magnetometer(s) Integrity	Y	Y

Bit Tests Performed

inertial systems

Ordering Information

Model	Description	Interface	BAUD Rate	Packet Rate	Connector Orientation
AHRS500GA-220	Avionics AHRS Solution	RS-232	38400	100	AFT
AHRS500GA-221	Avionics AHRS Solution	RS-232	38400	100	FWD
AHRS500GA-224	Avionics AHRS Solution	RS-232	9600	25	AFT
AHRS500GA-225	Avionics AHRS Solution	RS-232	9600	25	FWD

CALL FACTORY FOR OTHER CONFIGURATIONS

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