MEMSIC *Power Sensing Solutions for a Better Life*

AHRS380SA

ATTITUDE HEADING REFERENCE SYSTEM

The MEMSIC AHRS380SA is a standalone fully-integrated Attitude & Heading Reference System offering a complete dynamic measurement solution in a miniature environmentally protected package. The AHRS380SA offers a highly-effective solution for cost-sensitive demanding applications.

UAV Flight Control

Uncertified Avionics

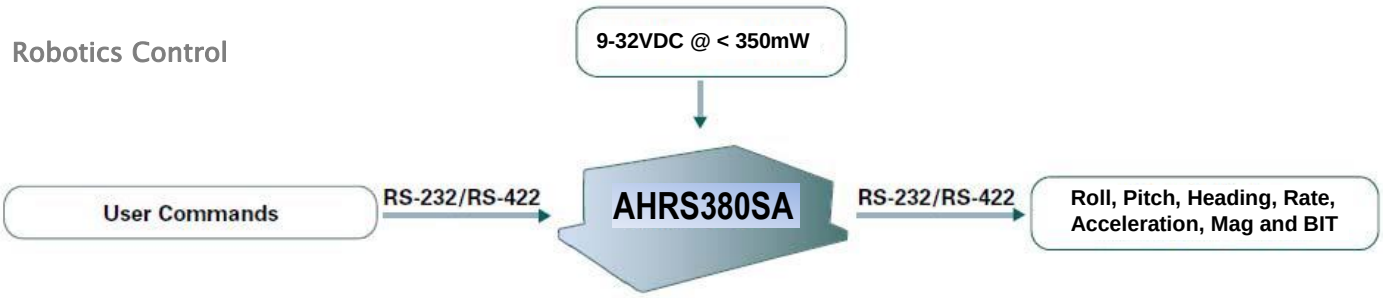
The MEMSIC AHRS380SA integrates highly-reliable MEMS 6DOF inertial sensors and 3-axis magnetic sensors with extended Kalman filtering in a miniature factory-calibrated module to provide consistent performance through the extreme operating environments in a wide variety of dynamic control and navigation applications.

Features

- Complete 9DOF Inertial System
- Roll/Pitch/Heading Outputs
- RS-232 or RS-422 Interface
- Update Rate, 1Hz to 100Hz
- Miniature Package, 41 x 48 x 22mm
- Wide Input Voltage Range, 9-32VDC
- Low Power Consumption < 350 mW
- Wide Temp Range, -40C to +85C
- High Reliability, MTBF > 50k hours
- Environmentally Protected Enclosure

Applications

- Unmanned Vehicle Control
- Uncertified Avionics
- Platform Stabilization
- Robotics Control



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Performance

Performance	AHRS380SA-200
Heading	
Range (º)	± 180
Accuracy (º)	< 3.0 [3], < 1.0 [4]
Resolution (º)	< 0.02
Attitude	
Range: Roll, Pitch (º)	± 180, ± 90
Accuracy (º)	< 1.0 [3], < 0.2 [4]
Resolution (º)	< 0.02
Angular Rate	
Range: Roll, Pitch, Yaw (º/sec)	± 200 (± 400 High Range Model)
Bias Instability (º/hr) [1,2]	< 10
Bias Stability Over Temp (º/sec)	< 0.1
Resolution (º/sec)	< 0.02
Scale Factor Accuracy (%)	< 0.1
Non-Linearity (%FS)	< 0.1
Angle Random Walk (º/√hr) [2]	< 0.75
Bandwidth (Hz)	5-50 (user-configurable)
Acceleration	
Range: X, Y Z (g)	± 4 (± 8 High Range Model)
Bias Instability (mg) [1,2]	< 0.02
Bias Stability Over Temp (mg)	< 5
Resolution (mg)	< 0.5
Scale Factor Accuracy (%)	< 0.1
Non-Linearity (%FS)	< 0.1
Velocity Random Walk (m/s/√hr) [2]	< 0.05
Bandwidth (Hz)	5-50 (user-configurable)
Magnetic Field	
Range: X, Y Z (Gauss)	± 4
Resolution (mGauss)	< 5
Noise Density (mGauss /√Hz)	< 1
Bandwidth (Hz)	5

Specifications

Environment	
Operating Temperature (ºC)	-40 to +85
Non-Operating Temperature (ºC)	-55 to +105
Enclosure	Aluminum (Gold Chem Film - ROHS)
Electrical	
Input Voltage (VDC)	9 to 32
Power Consumption (mW)	< 350
Digital Interface	RS-232 or RS-422 (user-configurable)
Output Data Rate	2Hz to 100Hz (user-configurable)
Physical	
Size (mm)	41 x 48 x 22
Weight (gm)	< 30
Interface Connector	9-Pin Micro-D

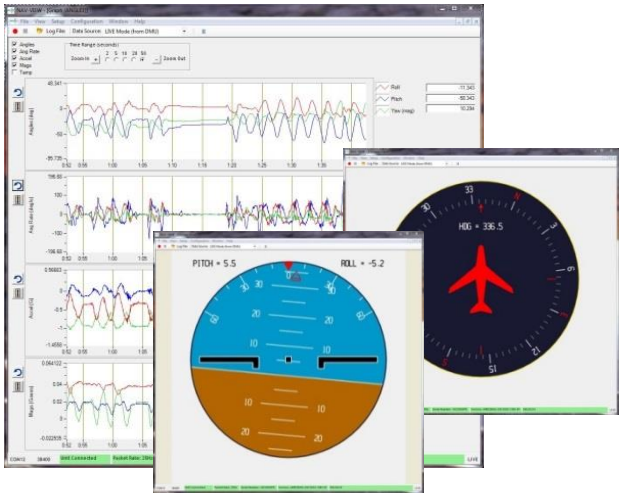
Ordering Information

Model	Description
AHRS380SA-200	Attitude and Heading Reference System (Standard Range)
AHRS380SA-400	Attitude and Heading Reference System (High Range)

This product has been developed exclusively for commercial applications. It has not been tested for, and makes no representation or warranty as to conformance with, any military specifications or its suitability for any military application or end-use. Additionally, any use of this product for nuclear, chemical or biological weapons, or weapons research, or for any use in missiles, rockets, and/or UAV's of 300km or greater range, or any other activity prohibited by the Export Administration Regulations, is expressly prohibited without the written consent and without obtaining appropriate US export license(s) when required by US law. Diversion contrary to U.S. law is prohibited. Specifications are subject to change without notice.

[1] Allan Variance Curve, constant temperature. [2] 1-sigma error. [3] RMS error under all dynamics. [4] RMS error under static conditions over full temperature range.

NAV-VIEW
Configuration and Display Software



NAV-VIEW provides an easy to use graphical interface to display, record, playback, and analyze all of the AHRS380SA Attitude & Heading Reference System parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the AHRS380SA to optimize the system performance for highly dynamic applications.

NAV-VIEW software is available for download from MEMSIC's website at: **www.memsic.com/support**

Other Components

The AHRS380SA evaluation kit includes an AHRS380SA, interface cable and USB cable, allowing direct connection to a PC for use with NAV-VIEW display and configuration software.

Support

For more detailed information please refer to the DMU380SA-Series User's Manual available online at: **www.memsic.com/support**

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