



The ACEINNA AHRS280ZA is a low cost miniature fully-calibrated Attitude & Heading Reference System designed for demanding embedded applications that require a complete dynamic measurement solution in a robust low-profile package. The AHRS280ZA provides a standard UART Interface (contact factory for SPI) for cost-effective board-to-board communications.



UAV Flight Control Uncertified Avionics

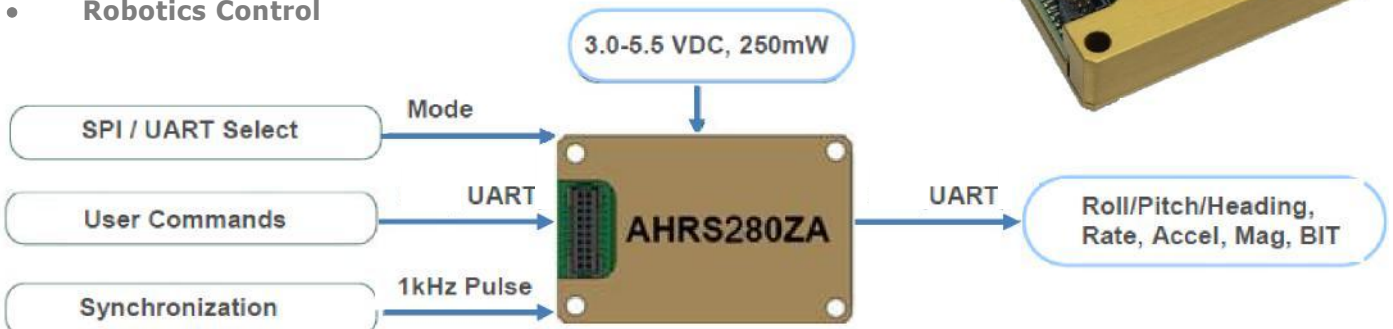
The ACEINNA AHRS280ZA integrates highly-reliable MEMS 6DOF inertial sensors and 3-axis magnetic sensors with extended Kalman filtering in a miniature factory-calibrated module to provide consistent performance through the extreme operating environments in a wide variety of dynamic control and navigation applications.

Applications

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

Features

- Complete 9DOF Inertial System
- Roll/Pitch/Heading Outputs
- UART Interface
- Update Rate, 1Hz to 100Hz
- 1KHz Clock Sync Input
- Miniature Package, 24 x 37 x 9.5 mm
- Lightweight < 17 g
- Low Power Consumption < 250 mW
- Wide Temp Range, -40C to +85C
- High Reliability, MTBF > 50k hours



AHRS280ZA

ATTITUDE HEADING REFERENCE SYSTEM

Performance	AHRS280ZA (-200, -400)
Heading	
Range (°)	± 180
Accuracy (°)	< 1.0 ⁴ , < 3.0 ³
Resolution (°)	< 0.02
Attitude	
Range: Roll, Pitch (°)	± 180, ± 90
Accuracy (°)	< 1.0 ⁴ , < 2.0 ³
Resolution (°)	< 0.02
Angular Rate	
Range: Roll, Pitch, Yaw (°/sec)	± 200 (± 400 High Range Model)
Bias Instability (°/hr) ^{1,2}	< 20
Bias Stability Over Temp (°/sec) ²	< 0.2
Resolution (°/sec)	< 0.02
Scale Factor Accuracy (%)	< 0.2
Non-Linearity (%FS)	< 0.2
Angle Random Walk (°/√hr) ²	< 1.5
Bandwidth (Hz)	5-50 (user-configurable)
Acceleration	
Range: X, Y, Z (g)	±4 (± 8 High Range Model)
Bias Instability (mg) ^{1,2}	< 0.05
Bias Stability Over Temp (mg) ²	< 15
Resolution (mg)	< 0.5
Scale Factor Accuracy (%)	< 0.2
Non-Linearity (%FS)	< 0.2
Velocity Random Walk (m/s/√hr) ²	< 0.1
Bandwidth (Hz)	5-50 (user-configurable)
Magnetic Field	
Range: X, Y, Z (Gauss)	±4
Resolution (mGauss)	< 5
Noise Density (mGauss /√Hz) ²	< 0.25
Bandwidth (Hz)	5

Specifications

Environment	
Operating Temperature (°C)	-40 to +85
Non-Operating Temperature (°C)	-55 to +105
Enclosure	Aluminum (Gold Anodized)
Electrical	
Input Voltage (VDC)	3.0 to 5.5
Power Consumption (mW)	< 250
Digital Interface	UART (C.F. for SPI)
Output Data Rate	1Hz to 100Hz (user-configurable)
Input Clock Sync	1kHz Sync Pulse
Physical	
Size (mm)	24.15 x 37.7 x 9.5
Weight (gm)	< 17
Interface Connector	20-Pin (10 x 2) 1.0 mm pitch header

Ordering Information

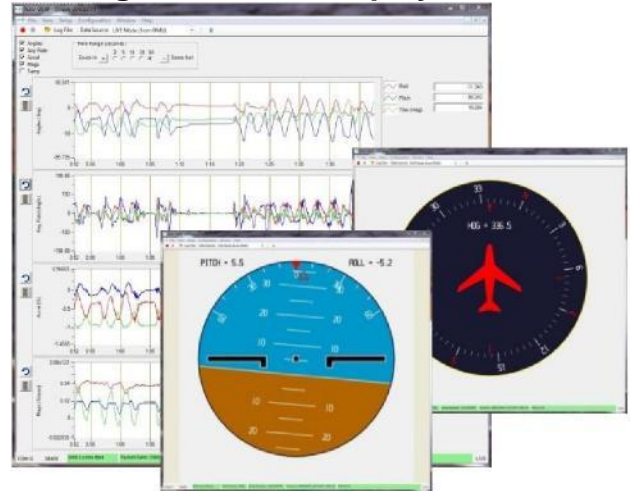
Model	Description
AHRS280ZA-200	Attitude and Heading Reference System (Standard Range)
AHRS280ZA-400	Attitude and Heading Reference System (High Range)

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 AHRS280ZA Attitude & Heading Reference System parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the AHRS280ZA to optimize the system performance for highly dynamic applications.

Other Components

The DMU280ZA evaluation kits include an AHRS280ZA, evaluation board, and USB cable allowing direct connection to a PC for use with NAV-VIEW display and configuration software.