

The ACEINNA VG280ZA is a miniature fully-calibrated Vertical Gyroscope designed for demanding embedded applications that require a complete dynamic measurement solution in a robust low-profile package. The VG280ZA provides a standard UART Interface (contact factory for SPI) for cost-effective board-to-board communications.



UAV Flight Control



Uncertified Avionics

The ACEINNA VG280ZA integrates highly-reliable MEMS 6DOF inertial 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. A pin-compatible upgrade (VG380) is also available.

Features

- Complete 6DOF Inertial System
- Roll/Pitch 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
- Pin-compatible with VG380ZA

Applications

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



Performance

VG280ZA (-200, -400)

Attitude	
Range: Roll, Pitch (°)	± 180, ± 90
Accuracy (°)	< 1.0 ⁴ , < 2.0 ³
Resolution (°)	< 0.02
Angular Rate	
Range: Roll, Pitch (°/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)

Specifications

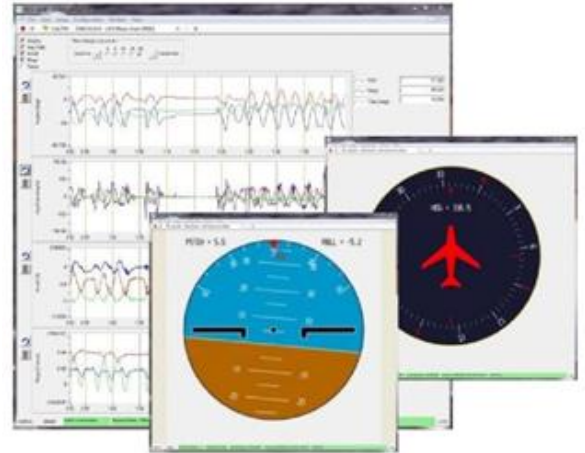
Environment	
Operating Temperature (°C)	-40 to +85
Non-Operating Temperature (°C)	-55 to +105
Enclosure	Aluminum (Gold Anodized)
Electrical	
Input Voltage (VDC)	3.0 to 5.5
Power Consumption (mW)	< 250
Digital Interface	UART (C.F. for SPI)
Output Data Rate	1Hz to 100Hz (user-configurable)
Input Clock 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
VG280ZA-200	Vertical Gyroscope (200dps Range)
VG280ZA-400	Vertical Gyroscope (400dps Range)
EVAL-KIT DMU280ZA-200	9DOF STD Range Evaluation Kit
EVAL-KIT DMU280ZA-400	9DOF High Range Evaluation Kit

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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 provides an easy to use graphical interface to display, record, playback, and analyze all of the VG280ZA System parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the VG280ZA to optimize the system performance for highly dynamic applications.

NAV-VIEW software is available for download from ACEINNA's website at: www.aceinna.com/support

Other Components

The DMU280ZA evaluation kits include an VG280ZA, evaluation board, and USB cable allowing direct connection to a PC for use with NAV-VIEW display and configuration software.