VG380ZA

VERTICAL GYROSCOPE

The ACEINNA VG380ZA 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 VG380ZA provides a standard UART Interface (contact factory for SPI) for cost-effective board-to-board communications.

UAV Flight Control

Uncertified Avionics

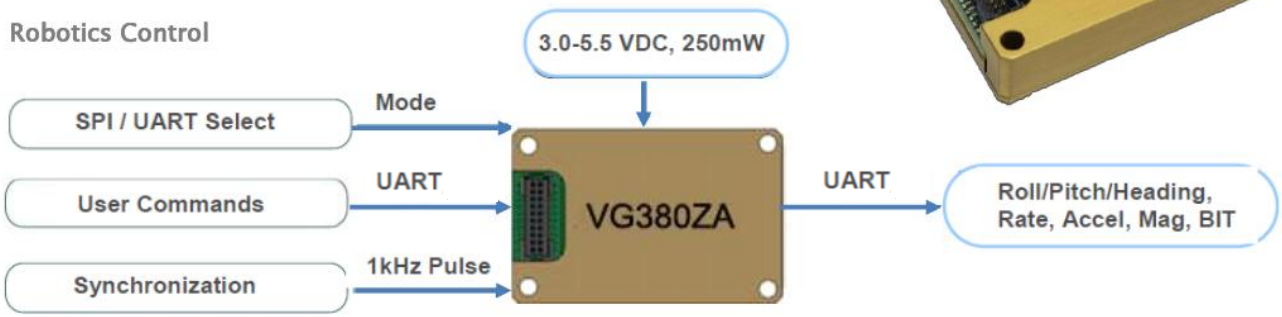
The ACEINNA VG380ZA integrates highly-reliable MEMS 6DOF inertial sensors with extended Kalman filtering in a miniature factory-calibrated module to provide consistent performance through the extreme operating environments in a wide variety of dynamic control and navigation applications.

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**
- **High Reliability, MTBF > 50k hours**

Applications

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



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Performance	VG380ZA (-200, -400)
Attitude	
Range: Roll, Pitch (°)	± 180, ± 90
Accuracy (°)	< 0.2 [4] ,< 1.0 [3]
Resolution (°)	< 0.02
Angular Rate	
Range: Roll, Pitch (°/sec)	± 200 (± 400 High Range Model)
Bias Instability (°/hr) [1,2]	< 10
Bias Stability Over Temp (°/sec) [2]	< 0.1
Resolution (°/sec)	< 0.02
Scale Factor Accuracy (%)	< 0.1
Non-Linearity (%FS)	< 0.1
Angle Random Walk (°/√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) [2]	< 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)

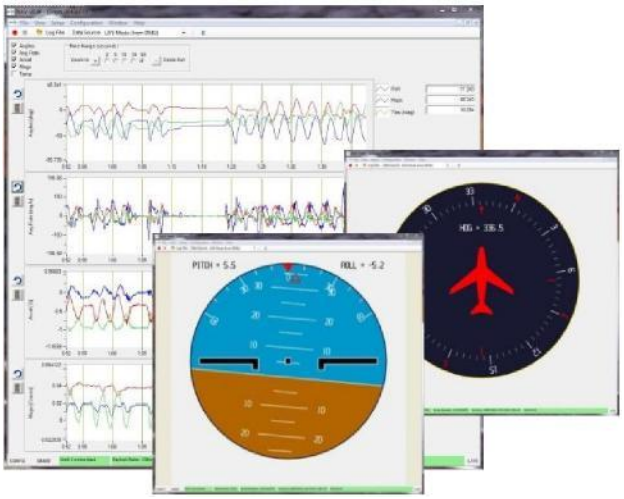
Specifications

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
VG380ZA-200	Vertical Gyroscope (200dps Range)
VG380ZA-400	Vertical Gyroscope (400dps Range)
EVAL-KIT DMU380ZA-200	Evaluation Kit for DMU380 Family (Std Range)
EVAL-KIT DMU380ZA-400	Evaluation kit for DMU380 Family (High Range)

[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 VG380ZA Attitude Reference System parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the VG380ZA to optimize the system performance for highly dynamic applications.

Other Components

The DMU380ZA evaluation kits include an VG380ZA, evaluation board, 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 DMU380ZA Series User's Manual available online at:

www.aceinna.com/support