



IMU381ZA

INERTIAL MEASUREMENT SYSTEM

The IMU381ZA is an improved version of the popular IMU380ZA miniature fully-calibrated Inertial Measurement System. The changes include better gyro performance, improved synchronization capability, and a bootloader function, which allows field upgrade-ability and also enables customers to take advantage of the ACEINNA open source navigation software development platform.



Precision Farming



Platform Stabilization

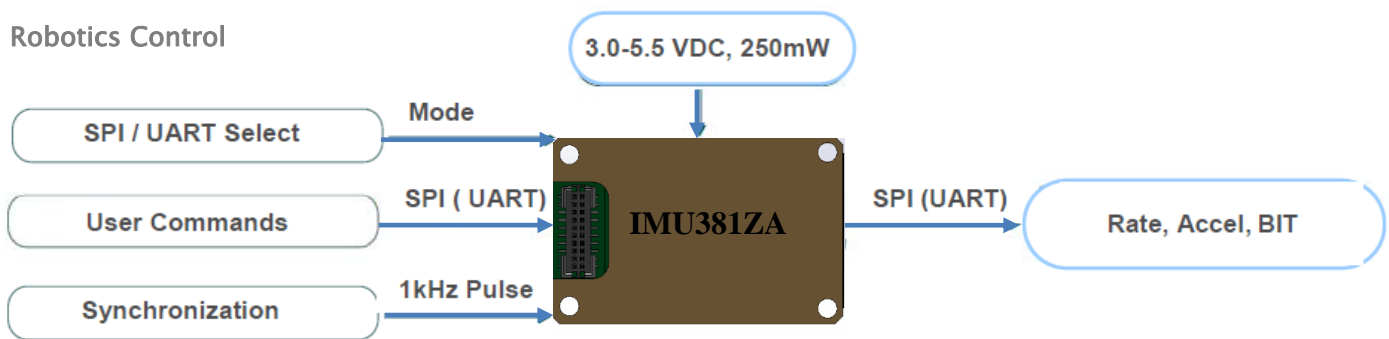
The ACEINNA IMU381ZA integrates highly-reliable MEMS 6DOF inertial sensors in a miniature factory-calibrated module to provide consistent performance through the extreme operating environments in a wide variety of dynamic control and navigation applications.

Applications

- Unmanned Vehicle Control
- Precision Agriculture
- Platform Stabilization
- Robotics Control

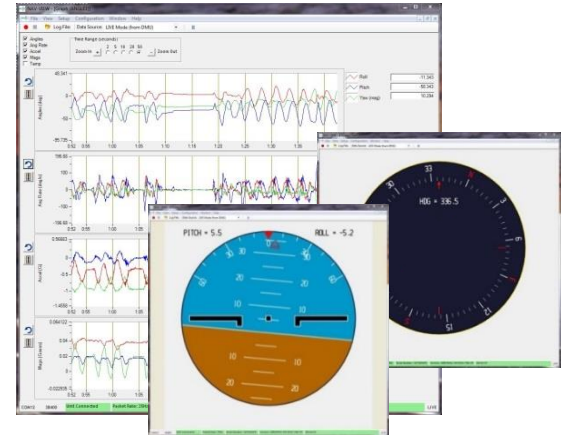
Features

- Complete 6DOF Inertial System
- SPI (or UART) Interface
- Update Rate, 1Hz to 200Hz
- 1KHz Clock Sync Input
- Miniature Package, 24 x 37 x 9.5 mm
- Drop-in upgrade for IMU380ZA
- Low Power Consumption < 250 mW
- Wide Temp Range, -40C to +85C
- High Reliability, MTBF > 50k hours



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NAV-VIEW provides an easy to use graphical interface to display, record, playback, and analyze all of the IMU381ZA system parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the IMU381ZA 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

EVAL KIT

The DMU381ZA evaluation kits include an IMU381ZA, evaluation / interface 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 DMU381ZA Series User's Manual available online at: www.aceinna.com/support

Performance IMU381ZA (-200/400)

| Angular Rate | |
|--|--------------------------------|
| Range: Roll, Pitch (°/sec) | ± 200 (± 400 High Range Model) |
| Bias Instability (°/hr) ^{1,2} | 6 |
| Bias Stability Over Temp (°/sec) ³ | < 0.5 |
| Resolution (°/sec) | < 0.02 |
| Scale Factor Accuracy (%) | < 0.1 |
| Non-Linearity (%FS) | < 0.1 |
| Angle Random Walk (°/√hr) ^{1,2} | 0.3 |
| 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) ³ | < 5 |
| Resolution (mg) | < 0.5 |
| Scale Factor Accuracy ¹ (-40 to 85 C) (%) | 0.6 |
| Non-Linearity (%FS) | < 0.1 |
| Velocity Random Walk (m/s/√hr) ^{1,2} | 0.05 |
| Bandwidth (Hz) | 5-50 (user-configurable) |

Other Specifications

| Environment | |
|--------------------------------|-------------------------------------|
| Operating Temperature (°C) | -40 to +85 |
| Non-Operating Temperature (°C) | -55 to +105 |
| Enclosure | Die-Cast Aluminum |
| Electrical | |
| Input Voltage (VDC) | 3.0 to 5.5 |
| Power Consumption (mW) | < 250 |
| Digital Interface | SPI or UART (user-configurable) |
| Output Data Rate | 1Hz to 200Hz (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 |
|-----------------------|---|
| IMU381ZA-200 | Inertial Measurement Unit (6 DOF, 200dps Range) |
| IMU381ZA-400 | Inertial Measurement Unit (6 DOF, 400dps Range) |
| EVAL-KIT DMU381ZA-200 | Evaluation Kit for DMU381 Family (Std Range) |
| EVAL-KIT DMU381ZA-400 | Evaluation Kit for DMU381 Family (High Range) |

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¹ Allan Variance Curve, constant temperature. ² 1-sigma error. ³ RMS error over temperature