ADIS16607

Precision, Miniature MEMS IMU

FEATURES

- Triaxial digital gyroscope
  - ±480°/s and ±2000°/s dynamic range models (ADIS16607-2, ADIS16607-3)
  - 2.3°/hr in-run bias stability, 1 σ (ADIS16607-2)
  - 0.19°/√hr angular random walk, 1 σ (ADIS16607-2)
  - ±0.1° axis to axis misalignment error, 1 σ
- Triaxial digital accelerometer, ±40*g* dynamic range
  - 13 µ*g* in-run bias stability, 1 σ
- Triaxial delta angle and delta velocity outputs
- Factory calibrated sensitivity, bias, and axial alignment
  - Calibration temperature range: −40°C to +85°C
- SPI and I²C-compatible data communications
- Programmable operation and control
  - Data ready indicator for synchronous data acquisition
  - External sync modes: direct (1kHz to 8kHz input) and scaled (0.8Hz to 400Hz input)
  - FIFO, 1024 words
  - On demand self-test of inertial sensors
  - User bias calibration registers
- Single-supply operation (VDD): 3.1 V to 3.6 V
- 2000*g* mechanical shock survivability
- Operating temperature range: −40°C to +105°C

APPLICATIONS

- Navigation, stabilization, and instrumentation
- Unmanned and autonomous vehicles
- Smart agriculture and construction machinery
- Factory/industrial automation, robotics
- Virtual/augmented reality
- Internet of Moving Things

GENERAL DESCRIPTION

The ADIS16607 is a precision, miniature micro-electromechanical system (MEMS) inertial measurement unit (IMU) that includes a triaxial gyroscope and a triaxial accelerometer. Each inertial sensor in the ADIS16607 is combined with signal conditioning that optimizes dynamic performance. The factory calibration characterizes each sensor for sensitivity, bias and alignment. As a result, each sensor has dynamic compensation formulas that provide accurate sensor measurements over a broad set of conditions. Additionally, the sensor provides strong vibration immunity for robust operation in challenging environments.

The ADIS16607 provides a simplified, cost effective method for integrating accurate, multi-axis inertial sensing into systems, especially when compared with the complexity and investment associated with discrete designs. All necessary motion testing and calibration are part of the production process at the factory, greatly reducing system integration time. Tight orthogonal alignment simplifies inertial frame alignment in navigation systems. The serial peripheral interfaces (both SPI and I²C) and register structure provide a simple interface for data collection and configuration control.

The ADIS16607 is available in a hermetic, 18-lead, ceramic chip carrier that is approximately 6.9 mm × 6.9 mm × 2.85 mm.

FUNCTIONAL BLOCK DIAGRAM

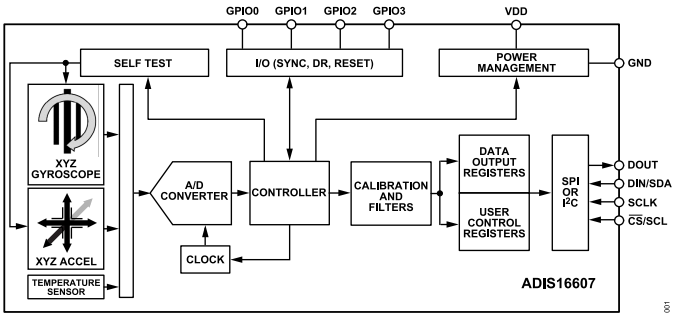

Figure 1. Functional Block Diagram

For more information on the ADIS16607, contact your local Analog Devices, Inc., sales office or contact mems_support@analog.com.

One Analog Way, Wilmington, MA 01887-2356, U.S.A. | Tel: 781.935.5565 |

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