

APUM-SCHA63T

6-DOF Open IMU Sensor Fusion Board

Overview

The 6-DOF Sensor Fusion board enables fast prototyping and algorithm development. It provides connectivity options (CANOpen) and the Murata high performance 6-DoF sensor. The board can be mounted on a main board by using the castellated pins.

Features

- Cortex-M7 microcontroller STM32H750VB
- **Murata SCHA63T-K03** XYZ-accelerometer and xyz gyroscope
- 2x CAN transceiver (In/Out) for daisy-chaining
- Licensed Fusion Software algorithm for dynamic compensated inclination sensing
- Z-axis Vibration sensor 6Hz to 11kHz
- 3-axis earth field magnetometer
- Interfaces RS-422, UART



| Parameter | Conditions | Min | Typ | Max | Unit | Notes |
|------------------------------|------------------------------|-----|-----|-----|------|-------|
| Supply voltage | | 3.3 | 5 | | V | |
| Supply current | Vin=12V, two IMUs and CAN on | | 34 | | mA | |
| | Vin=48V, two IMUs and CAN on | | 12 | | mA | |
| Operating temperature | | -40 | | +85 | °C | 3 |

3) expected, untested

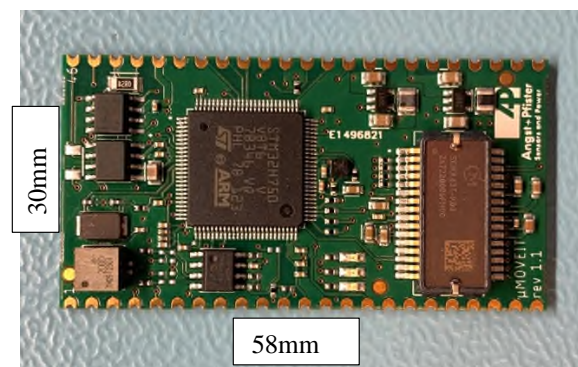
Gyroscope specification

| Parameter | Conditions | Min | Typ | Max | Unit |
|---|--------------------------------|-----------|--------|--------|------------------------|
| Measurement range | | ± 300 | | | $^{\circ}/s$ |
| Offset | | -0.2 | | 0.2 | $^{\circ}/s$ |
| Offset temperature dependency | | | | 0.15 | $^{\circ}/s$ |
| Sensitivity error | After SCHA factory calibration | | | 0.8 | % |
| Sensitivity temperature dependency | xy | | | 0.5 | % |
| | z | | | 0.11 | % |
| Linearity error | | | 0.25 | 0.7 | $^{\circ}/s$ |
| Noise density | | | 0.0014 | 0.0018 | $^{\circ}/s/\sqrt{Hz}$ |
| Angle random walk | | | 0.08 | 0.11 | $^{\circ}/\sqrt{h}$ |
| Bias instability | | | 1.68 | 2.52 | $^{\circ}/h$ |

Accelerometer specification

| Parameter | Conditions | Min | Typ | Max | Unit |
|---|--------------------------------|-----|------|------|-------------------|
| Measurement range | | 6 | | | g |
| Offset | After SCHA factory calibration | | 10 | | mg |
| Offset temperature dependency | Over temperature range | -5 | | 5 | mg |
| Sensitivity error | After SCHA factory calibration | | | 0.2 | % |
| Sensitivity temperature dependency | Over temperature range | | | 0.05 | % |
| Linearity error | ± 6 g | | 8 | 21.5 | mg |
| | ± 1 g | | | 1 | mg |
| Noise density | | | 53.9 | 64.8 | $\mu g/\sqrt{Hz}$ |
| Velocity random walk | | | 31.7 | 38.1 | mm/s/ \sqrt{h} |
| Bias instability | | | 10.1 | 21.8 | μg |

Mechanical dimensions



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