

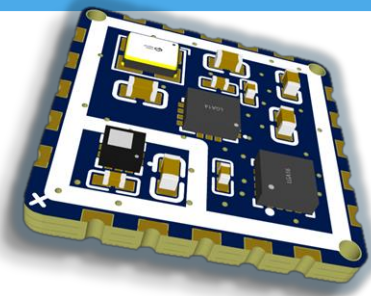


SRX-INS01-CAS

Description

The SRX-INS01-CAS is a small size, low power and high performance Inertial Measurements Unit board that intends to be integrated in robotic applications development. Its castellated format allows direct soldering on host board.

Coupled with the included c++ library, it allows a 360° drift free attitude measurements, and precise altitude measurements.



Caracteristics

Performances with fusion

- Pitch/Roll (static) 0,5° *RMS*
- Pitch/Roll (dynamic) 1,0° *RMS*
- Relative Yaw (static) 1,0° *RMS*
- Absolute yaw (static) 3,0° *RMS*
- Vertical Speed 0,2 m · s⁻¹ *RMS*
- Relative Altitude 1,0 m
- Range (Yaw/Pitch/roll) ±180°/±90°/±180°
- Angular Resolution 0,0001°
- Vertical Speed Resolution 0,0001 m · s⁻¹
- Altitude Resolution 2 · 10⁻⁷ m

Delays and bandwidth (-3dB)

- Angles Delays (configurable) 8,82 ms
- Vertical Delays (configurable) 8,82 ms
- Angular Rates BW (configurable) 72,5Hz
- Vertical Acceleration BW (configurable) 72,5 Hz

Features

- Proprietary algorithm featuring robust EKF allows 360° orientation tracking with high accuracy.
- Adaptative algorithms to ensure correct disturbances rejection even in complex environment.
- Real-time gyro bias tracking and compensation.
- Set of customizable parameters for adaptability to every project.
- Calibration tools provided for magnetometer and accelerometer for maximum precision

Sensors characteristics¹

	Gyrometer	Accelerometer	Barometer	Magnetometer
Range	±2000 °/s	±16 g	260 – 1260 hPa	±8 Gauss
Noise (RMS at default Bandwidth)	0,045 °/s	0,85 mg for XY 1,15 mg for Z	0,0087 hPa (0,073m)	0,6 mGauss
Resolution	0,0038 °/s	3,0518 · 10 ⁻⁵ g	0,0244 Pa (0,002 m)	0,061 mGauss
In run bias	2 – 7 °	–	–	–
Polling Frequency (default)	500 Hz	500 Hz	71,4 Hz	100Hz
Bandwidth (-3dB)	230,7 Hz	230,7 Hz	35,7 Hz	50 Hz

Customizable software

Inertial Measurements Unit library is completely tunable thanks to exposed parameters. It can be built and integrated in multiple applications on multiple platforms:

- Linux
- Windows
- MacOs apple silicon
- Esp32-s3
- Teensy 4.X

It can be paired with complete application provided for Esp32-s3 for immediate deployment

Hardware

Interface

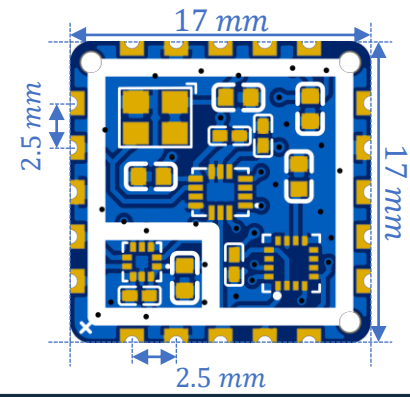
- SPI
- I2C

Dimensions

- Length = 17 mm
- Height = 17 mm
- Width = 1,6 mm

Supply

- 3,3V



Optional cover



1. Sensors used are Invensense ICM42688-p, Memsic MMC5983MA and ST LPS22HB