SRX-IMU00-DEV

Description

The SRX-IMU00-DEV is a small size, low power and high performance Inertial Measurements Unit board that intends to be integrated in robotic applications development. Its extreme compactness allows easy prototyping on breadboard and integration on host board with direct soldering of back side pads.

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

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 accelerometer for maximum precision
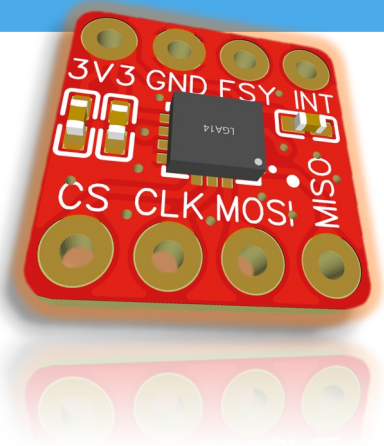
Customizable software

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

Caracteristics

Performances with fusion

- Pitch/Roll (static) .... $0,5°\ RMS$
- Pitch/Roll (dynamic) .... $1,0°\ RMS$
- Relative Yaw (static) .... $1,0°\ RMS$
- Range (Yaw/Pitch/roll) .... $\pm180°/\pm90°/\pm180°$
- Angular Resolution .... $0,0001°$

Delays and bandwidth (-3dB)

- Angles Delays (configurable) .... $8,82\ ms$
- Angular Rates BW (configurable) .... $72,5 Hz$

Sensors characteristics

	Gyrometer	Accelerometer
Range	$\pm2000\ °/s$	$\pm16\ g$
Noise (RMS at default Bandwidth)	$0,045\ °/s$	$0,85\ mg\ for\ XY$ $1,15\ mg\ for\ Z$
Resolution	$0,0038\ °/s$	$3,0518 \cdot 10^{-5} g$
In run bias (20°)	$7-10\ °$	$-$
Polling Frequency	$500\ Hz$ (adjustable $\rightarrow$ 32kHz)	$500\ Hz$ (adjustable $\rightarrow$ 32kHz)
Bandwidth (-3dB)	$230,7\ Hz\ (adjustable)$	$230,7\ Hz\ (adjustable)$

Hardware

Interface
- SPI
- I2C

Supply
- $3,3V$

Dimensions
- Length $= 10,5\ mm$
- Height $= 10,5\ mm$
- Width $= 1,6\ mm$

$10,5\ mm$

$10,5\ mm$

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