Freescale Sensor Fusion Software Library and Development Kit

Rapidly Prototype Sensor Fusion Algorithms

Sensor fusion is the process by which data from sensors are mathematically "fused" to accurately and reliably determine the orientation of a device in space. With the proliferation of sensors in computing, mobile and wearable applications, sensor fusion software provides the technical foundation for successful products in these demanding, fast moving markets.

The Freescale sensor fusion development kit brings together the Freescale sensor fusion software library with Freescale Freedom development boards for application development and rapid prototyping. This kit makes it easy to bring your next sensor-based design to life and offers premium grade support when you need it.
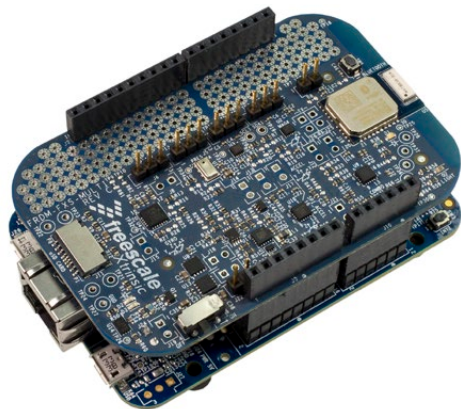
The Freescale sensor fusion development kit (FRDM-SFUSION) includes:

- FRDM-K64F Freescale Freedom development board for Kinetis K64, K63, and K24 MCUs
- FRDM-FXS-MULTI-B Freescale Freedom development board for sensors (Bluetooth)
- Sensor fusion software library (download)

Sensor Fusion Software

The Freescale sensor fusion software library for Kinetis microcontrollers is open source software supporting various combinations of magnetometers, accelerometers, and gyros. While providing the flexibility of open source, it contains proven technology such as Freescale's eCompass software that received the Electronic Products Magazine 2012 Product of the Year Award. The included software projects support Freescale's Kinetis Design Studio integrated development environment (IDE) and CodeWarrior development tools.

FRDM-SFUSION

Top board = FRDM-FXS-MULTI-B   Bottom board = FRDM-K64F

Get Started

Learn more:

www.freescale.com/sensorfusion
www.freescale.com/FRDM-SFUSION

The Freescale sensor fusion toolbox app (available for Android and Windows) offers easy selection of sensor fusion algorithms and provides visualization of fusion results, enabling immediate visual feedback.

Premium Support

To speed your development even further, premium support is available for the Freescale sensor fusion software library. By ordering FRDM-SFUSION-S, you will experience priority access to Freescale technical staff who are experts in the sensor fusion software. The support will be delivered through a private support portal.

Sensor Fusion Development Kit Features

	Included
MK64FN1M0VLL12 MCU (120 MHz, 1 MB flash memory, 256 KB RAM)	✔
OpenSDAv2 debug	✔
Ethernet	✔
SDHC	✔
FXAS21000 Gyroscope	✔
FXOS8700CQ and MMA8652FC Accelerometers	✔
MPL3115A2 Altimeter/Barometer Sensor	✔
FXLS8471 Accelerometer	✔
MMA9553L Pedometer	✔
MAG3110 Magnetometer	✔
Bluetooth Module and Battery	✔
Community Support	✔
Freescale Premium Support (50 Hours)	✔ (FRDM-SFUSION-S only)

Sensor Fusion Software Library Configurations

Feature	Accel only	Accel + gyro	Accel + mag	Accel + mag + gyro
Filter Type	Low Pass	Indirect Kalman	Low Pass	Indirect Kalman
Roll/Pitch/Tilt in degrees	Yes	Yes	Yes	Yes
Yaw in degrees	No	No	Yes	Yes
Angular Rate in degrees/second	virtual 2 axis	Yes	virtual 3 axis	Yes
Compass heading (magnetic north) in degrees	No	No	Yes	Yes
Quaternion and rotation vector	Yes	Yes	Yes	Yes
Rotation matrix	Yes	Yes	Yes	Yes
Linear acceleration separate from gravity	No	Yes	No	Yes
NED (North-East-Down Frame of Reference)	Yes	Yes	Yes	Yes
ENU (Windows 8 variant) Frame of Reference	Yes	Yes	Yes	Yes
ENU (Android variant) Frame of Reference	Yes	Yes	Yes	Yes
Magnetic calibration included	No	No	Yes	Yes
Gyro offset calibration included	N/A	Yes	N/A	Yes
FRDM-KL25Z board support	Yes	Yes	Yes	Yes
FRDM-KL25Z board support	Yes	Yes	Yes	Yes
FRDM-KL25Z board support	Yes	Yes	Yes	Yes
FRDM-K20D50M board support	Yes	Yes	Yes	Yes
FRDM-K64F board support	Yes	Yes	Yes	Yes

NOTE: See data sheet for details.

Get Connected

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