Sensors

Intelligent Sensing Framework 2.1 for Kinetis MCUs

Using Processor Expert Technology

Overview

The Intelligent Sensing Framework (ISF) 2.1 for Kinetis® MCUs uses Processor Expert® technology to autogenerate an embedded sensor application in less than 30 minutes without writing a single line of code.

ISF 2.1 for Kinetis MCUs is Sensor's latest release to meld the code generation of Processor Expert with a Kinetis processor-independent version of the ISF embedded middleware to produce sensor demonstrations and permit rapid prototyping of customer sensor projects.

Like previous versions, this most recent version of ISF enables developers to concentrate on using sensor data, not getting sensor data. It allows the customer to prototype on the Freedom platform of their choice and then seamlessly move to their production target without a code rewrite. It provides for immediate use of a broad range of Freescale sensors and sensor fusion without any software development required by customers. If customers so desire, however, they can add their own algorithms for demonstration of proof of concept, prototyping, and productization.

Target Applications

- All embedded sensor applications
- Internet of Things

ISF 2.1 Software Architecture
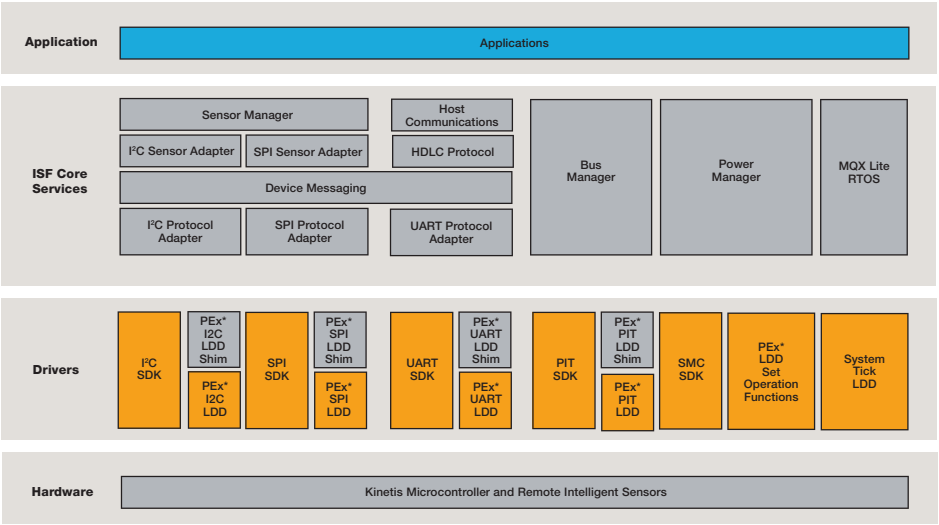
*Processor Expert Technology

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Features	Benefits
Fully integrated with Processor Expert Technology	• Allows customers to rapidly create original sensor projects • Facilitates "What If" learning in real-time, using the framework
Sensor Fusion Library integrated as an *orientation* Sensor	• Orientation sensor provides high-level configuration sensor fusion options based on Processor Expert property settings • Example projects for K22F and K64F run out of the box with the Sensor Toolbox.
Generic Sensor Data Types	• Allows the user to ignore scaling and formatting particular sensor data • Provides both integer and floating point engineering units
Expandable Embedded Application autogeneration	• Basic embedded application supplies raw sensor data at desired rates to a host application for any number of supported sensors • Application can be expanded to include customer specific sensor data processing and host commands with minimal effort
Deployable Across entire line of Freedom development platforms	• Example projects for KL25Z, K22F, and K64F • Processor Expert supplies target definitions for other Freedom boards
Support for development on both CodeWarrior Version 10.6 and Kinetis Design Studio 2.0 Integrated Development Environments	• Example projects available to provide excellent "out of the box" experience for any of the platforms supported by Sensor Toolbox.

Supported Sensors

Orderable Part	Description
MMA8652FC/MMA8653FC	3-Axis Accelerometers
MAG3110FC	3-Axis Magnetometer
FXOS8700CQ	6-Axis ECompass (3-Axis Magnetometer, 3-Axis Accelerometer)
FXAS21002C	3-Axis Gyroscope
FXLS8471Q	3-Axis SPI Accelerometer
MPL3115A2	Pressure Sensor
Sensor Fusion Library	Integrated as an *orientation* Sensor

Development Tools

Example Projects	
FRDM-K22F	Freedom Development Platform for Kinetis K22F MCUs
FRDM-KL25Z	Freedom Development Platform for the Kinetis KL25Z MCUs
FRDM-K64F	Freedom Development Platform for the Kinetis K64F MCUs

Sensor Toolbox for Freescale Freedom Development Boards	
FRDM-FXS-MULTI-B	Freedom Development Board with multiple sensors and Bluetooth enabled serial I/O.
FRDM-STBC-AGM01	9-Axis Inertial Measurement Sensor board.
Sensor Fusion Library	Integrated as an *orientation* Sensor

Documentation

Document Number	Title
ISF2P0_KINETIS_SW_REFERENCE_RM	Intelligent Sensing Framework 2.0 for Kinetis Software Reference Manual (Rev 0)
ISF2P1_API_REFERENCE_RM	API Reference Manual for ISF 2.1 for Kinetis

For more information, go to freescale.com/ISF