1321x Development Kits



Overview

The Freescale MC1321x Family is the second generation of its ZigBee™-compliant solutions. Freescale offers a comprehensive development kit suite that provides customers with the necessary hardware and software to evaluate and develop wireless solutions ranging from simple point-to-point networks to ZigBee mesh networks.

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Hardware

Freescale offers several different hardware platforms for evaluating the MC1321x Family of System in Package (SiP) ICs. Each hardware node contains a ZigBee-compliant MC13213 device, which contains a 2.4 GHz RF transceiver and an HCS08 GT60 MCU in a 64-pin 9 mm x 9 mm x 1 mm LGA package. The MC13213 has 60 Kbytes of Flash and 4K of RAM. The development boards are enclosed in plastic housing and contain easy access to push buttons, connectors, header pins and a background debug module (BDM) programming/debug port. The enclosures can be opened to allow full access to the development boards, which can be run via a power supply or AA batteries (both are included in the kits). The BDM port allows easy programming of the MC13213 Flash memory via the BDM USB multilink debugger/programmer, which enables users to program the MCU with a variety of sample applications included in the kit. Customized software may also be programmed to the Flash.

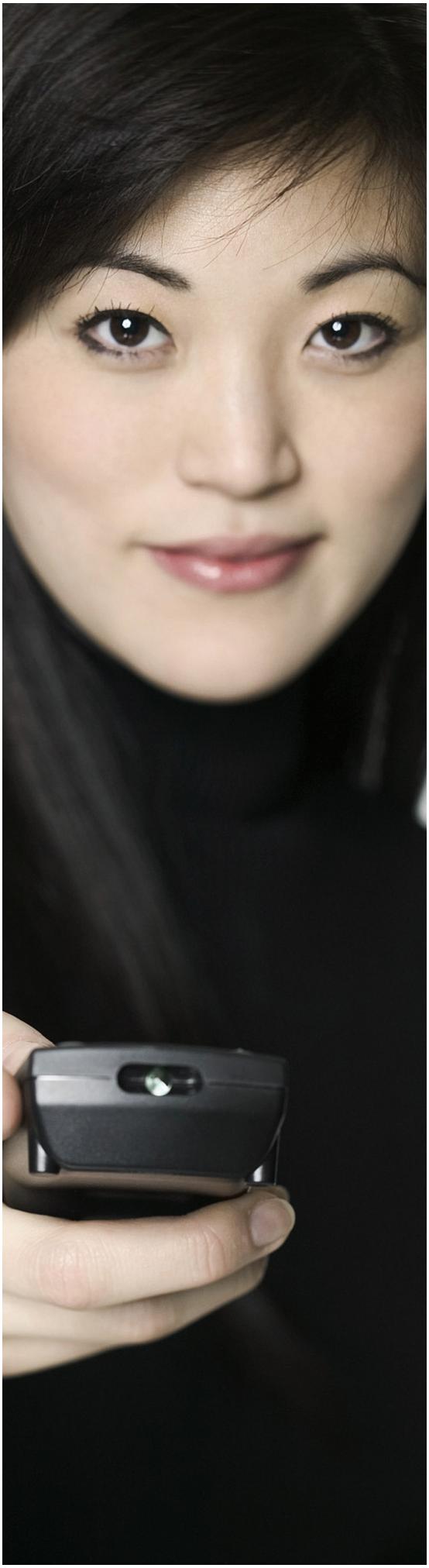
13213-SRB
(Sensor Reference Board)

The 13213-SRB contains an MC13213 IC and an MMA7260Q three-axis acceleration sensor and temperature sensor. The SRB provides a complete platform for evaluating the MC13213 IC. Data may be taken directly from the MMA7260Q three-axis acceleration sensor to create a wireless link to the other SRB included in the kit. The boards can also bypass the acceleration sensor to develop customized applications.

13213-NCB
(Network Coordinator Board)

The 13213-NCB contains an MC13213 IC and an LCD, creating the ideal demonstration platform for Network Coordinators. The LCD enables network monitoring by providing status messages of ZigBee commands. The board can be programmed with demonstration applications included in the kit, and may be programmed to develop custom applications.





Software

The 1321x Development Kits include several protocol stacks and demonstration applications. The Simple MAC (SMAC) is a protocol used for implementing point-to-point and star networks. Its small memory requirement, less than 3K of Flash, provides a cost-effective solution for simple, cost-sensitive applications.

The MAC compliant with the IEEE 802.15.4™ standard establishes robust building blocks that enable development of point-to-point, star and mesh networks. The Freescale Test Tool Application provides several applications, including a Packet Error Rate (PER) test and an example of a star network based on the 802.15.4 MAC.

Finally, users can use the ZigBee stack to program the development boards to demonstrate a ZigBee-compliant mesh network. Users may first evaluate a ZigBee mesh network by programming the boards with the Lighting demonstration sample application. The user may then migrate to developing a fully customized network using the ZigBee stack and the ZigBee software tools that are included in the evaluation kit.

SMAC Demonstration Applications

> Acceleration sensor application (Requires the 13213-SRD)

> Range demonstration application

> PER application

> Wireless universal asynchronous receiver/transmitter (UART) demonstration application

> Lighting demonstration application

802.15.4 PHY/MAC

> Radio test tool

> Network application

ZigBee

> ZigBee Application Network Demonstration (ZAND)

> ZigBee lighting application

Features/Benefits

> MC13213 ZigBee-compliant 2.4 GHz SiP

> MMA7260Q three-axis acceleration sensor (13213-SRD only)

> Temperature sensor (13213-SRD only)

> Printed F antenna

> Onboard expansion capabilities for external application-specific development activities

> Programmable 60K Flash with 4K of RAM

> Onboard BDM port for Flash reprogramming and in-circuit hardware debugging

> LEDs and switches for demonstration monitoring and control

> LCD for demonstration messaging (13213-NCB only)

> Connections for battery or external power supply

> RS232 and USB ports to interface with PC

> USB multilink BDM debugger/programmer (BDM kits only)

> Scalable software support for easy development of customer specific network topologies

Ordering Information

Part Number	Description
1321xDSK	1321x Developer's Starter Kit
1321xDSK-BDM	1321x Developer's Starter Kit with USB Multilink
1321xNSK	1321x Network Starter Kit
1321xNSK-BDM	1321x Network Starter Kit with USB Multilink
1321xEVK	1321x Evaluation Kit
1321xEVK-SFTW	1321x Evaluation Kit with CodeWarrior™ Standard Edition and Z-Stack Single-User License

Feature	1321xDSK 1321xDSK-BDM	1321xNSK 1321xNSK-BDM	1321xEVK 1321xEVK-SFTW
13213-SRB (boards per kit)	2	2	4
13213-NCB (boards per kit)	N/A	1	3
1321x Development Kit Software	Yes	Yes	Yes
USB Cables (per kit)	2	3	7
CodeWarrior IDE	Special Edition	Special Edition	Special Edition Standard Edition (1321x EVK-SFTW only)
F8 Z-Stack Software Suite	90-day Evaluation	90-day Evaluation	90-day Evaluation Full Version (1321x EVK-SFTW only)
ZigBee Packet Analyzer Hardware	No	No	Yes
Daintree Basic Protocol Analyzer	No	No	Yes
Out-of-Box Application (boards are preprogrammed to run applications)	Sensor Application Demo	Network Demo	ZigBee Application Network Demo

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