Jennic
TECHNOLOGY FOR A CHANGING WORLD

ZigBee made easy

Product Brief – JN5121-EK013

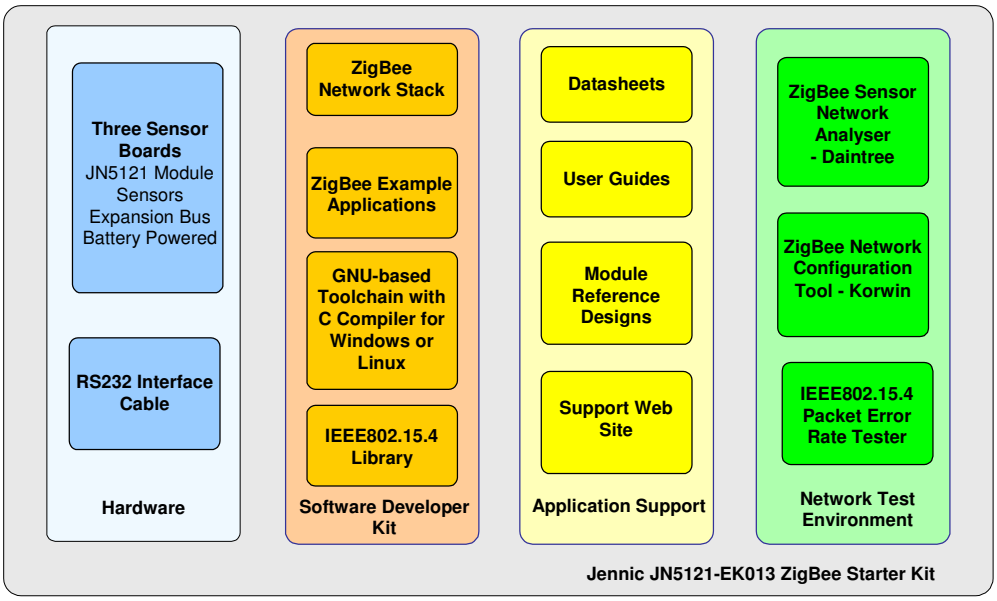
ZigBee Network Starter Kit

Overview

Jennic's starter kit provides a low cost route for the evaluation of ZigBee wireless sensor network technology. The kit contains a complete environment for the rapid development of applications based on the JN5121 wireless microcontroller. All the hardware and software required for product development is included, with three network nodes, an unrestricted software development kit, test environment and support applications. Multiple wireless networks including point-to-point, star, and mesh types can be supported.

A wireless lighting demonstration system is included that allows switches to remotely control LEDs across the network. Another application monitors data from remote sensors and displays the results onto a host PCs display. The source code for these applications is provided as examples.

Block Diagram



Benefits

- Rapid prototyping and development of wireless applications
- Create applications by simply customising the example
- Allows development of ZigBee Network 1.0 compliant applications
- Standard 'C' development environment
- Simple API

Applications

- Wireless sensor networks
- Home automation
- Consumer products
- Commercial building automation
- Industrial control
- Medical control and monitoring
- Toys and gaming

Features:

ZigBee network stack

- Tree, mesh network optio
- ZigBee v1.0 specification
  - ZigBee device object (ZDO)
  - Application support sub-layer (APS)
  - Network layer (NWK)
  - Security service sub-layer (SSL)
  - Simplified programming interface
- Library builds for coordinator, router and end-device

Embedded operating system

- Simple task scheduler
- Round robin scheme

Hardware

- 3 sensor boards (1 with SMA connector for external antenna, 2 with onboard ceramic antenna)
  - Each board contains wireless enabled temperature, humidity and light sensors and switches
  - Sensor boards include JN5121 module

Software development kit

- GNU-based toolchain
  - ANSI C, C++ compiler
  - Debugger
  - Flash programmer
- Wireless network libraries
- Microcontroller and peripheral libraries
- Application examples
- Wireless light switch demo

Network test tools

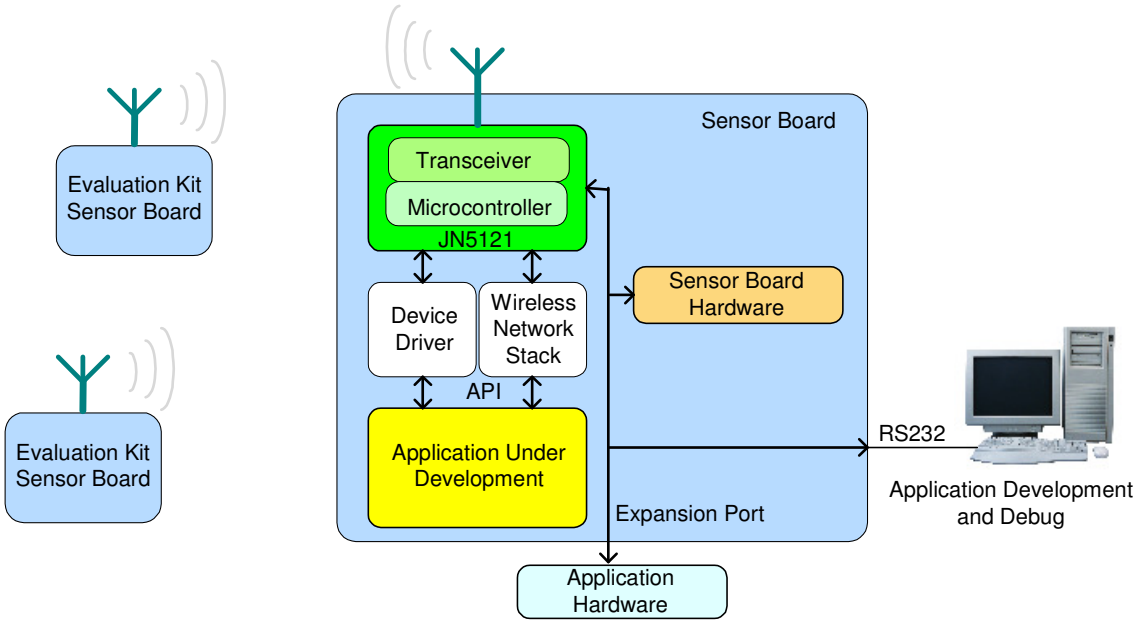
- Daintree Networks Sensor Network
- Korwin Network configuration application (NC-Tool)

Jennic's evaluation kit contains three sensor boards. Each board has temperature, humidity and light-level sensors and also features Jennic's JN5121 wireless microcontroller device implemented on a compact reference module. An expansion port enables connection of additional sensors and controls to the wireless microcontroller and its peripherals. An RS232 cable allows connection to a PC for programming of the flash and for serial communications.

The software development environment includes a complete tool suite for application development and debug, including compiler, assembler, debugger and flash programmer. Library builds for coordinator, routers and end-devices with different network configurations are provided. A comprehensive documentation package is backed by Jennic's support website.

Example applications demonstrate the reading of remote sensors across a wireless network. Light, humidity and temperature are read from the sensors on each board and are passed to the host PC for display. The application interfaces to the microcontroller peripherals and wireless network functions through a library with a simple programming interface.

Application Development and Debug



The kit includes two PC-based test tools for analysis, monitoring and control of mesh networks.

Daintree Networks' Sensor Network Analyser provides advanced data capture, monitoring and analysis capabilities for wireless sensor networks. The basic edition provides detailed decode capability for IEEE802.15.4, while the advanced versions add ZigBee networking and visualisation capabilities.

Korwins' Network Configuration Tool (NC-Tool) provides an environment for configuration and control of wireless sensor networks. The application allows the user to display network topology, binding and routing information. Network parameters can be sent between remote nodes, while application data and status can be read from remote nodes.

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