Product Brief – JN5121-EK000

IEEE802.15.4 Wireless Microcontroller Evaluation Kit

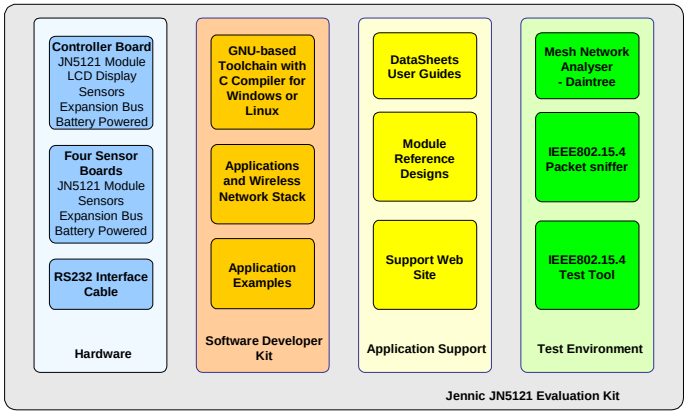
Overview

Jennic's IEEE802.15.4 evaluation kit provides a complete environment for the rapid development of wireless sensor network applications based on the JN5121 wireless microcontroller. All the hardware and software required for product development is included, with five 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 demonstrator of a home automation system is included that monitors data from remote sensors and displays the results onto the controllers LCD display, while commands sent between the nodes activate control signals. This is provided as an example to be directly used as the basis for many product developments.

The test environment supplied includes Daintree Networks' sensor network analyser that demonstrates advanced wireless sensor network data capture and monitoring. A basic packet sniffer and network test application also aids program development.

Block Diagram



Benefits

- Low cost evaluation platform for wireless sensor networks
- Complete SDK and network stack
- Unrestricted development environment
- Ideal for application development and demonstration

Applications

- Robust and secure low power wireless applications
- Wireless sensor networks, particularly IEEE802.15.4 / ZigBee systems
- Home and commercial building automation
- Home networks
- Toys and gaming peripherals
- Industrial systems
- Telemetry and utilities (e.g. AMR)

Features: Controller board

- JN5121 module
- Onboard temperature, light level and humidity sensors
- RS232 connection to PC
- Bitmapped LCD display 128x64
- JN5121 IO expansion port

Sensor boards (4 off)

- JN5121 module
- Onboard temperature, light level and humidity sensors
- RS232 connection to PC
- JN5121 IO expansion port
- RS232 serial cable

Software development kit

- GNU-based toolchain
  - ANSI C, C++ compiler
  - Debugger
  - Flash programmer
- Wireless network libraries
- Microcontroller and peripheral libraries
- Application examples
  - Star network
  - Home control demonstration

Application support

- Reference designs
- Datasheets, user guides, application notes

Test environment

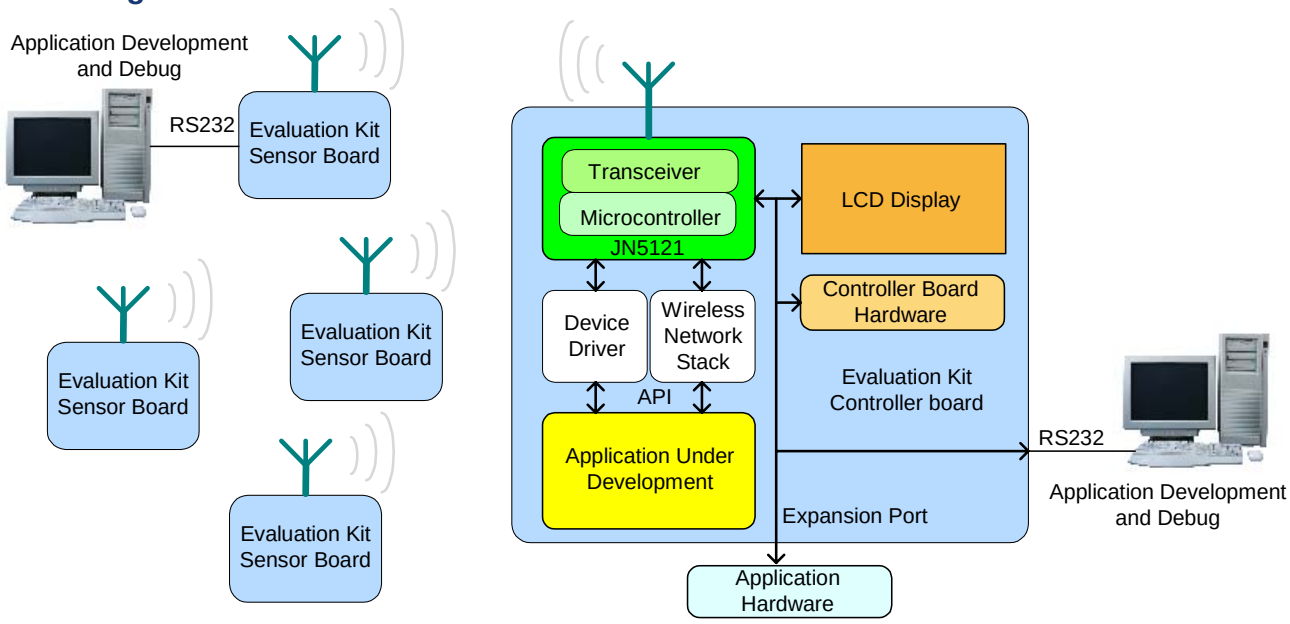
- Daintree Networks sensor network analyser package
- IEEE802.15.4 packet sniffer and network test application

Jennic's evaluation kit contains a controller board and four sensor boards. Each board has temperature, humidity and light-level sensors and 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 kit includes a complete tool suite for rapid application development and debug, including C compiler, assembler, debugger and flash programmer. The tool chain is based upon the mature GNU tools and runs on either Linux or Windows platforms.

The example application demonstrates a home automation system based on a star network. Light, humidity and temperature are read from the sensors on each board and are passed to the controller for display. Different display modes give a detailed node-by-node or network view. The application interfaces to the microcontroller peripherals and wireless network functions through a library with a simple programming interface.

Application Diagram



Jennic's comprehensive support package includes complete documentation package, module reference designs based on the JN5121, application notes and a dedicated support website all backed by our regional support team.

A PC-based test environment enables detailed testing of IEEE802.15.4 networks and devices. A packet sniffer acts as a low-level network monitor, giving feedback on exactly what traffic is passing over the network. Channel selection and filtering controls the type and amount of information displayed. A network level test application provides direct control of the IEEE802.15.4 MAC interface, featuring both GUI and scripted command driven interfaces, enabling complicated test sequences to be developed and network operation explored.

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