Product Brief – JN5121-EK003

Wireless Sensor Network Starter Kit

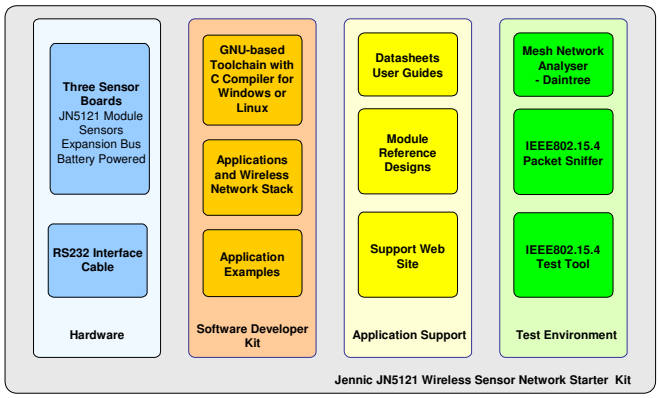
Overview

Jennic's starter kit provides a low cost route for the evaluation of 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 sensing system demonstration is included that monitors data from the remote sensors and displays the results onto a host PCs display. Switches remotely control the LEDs across the network. The code for these applications is provided as an example that can be directly used as the basis for initial product developments.

The test environment supplied includes Daintree Networks' advanced wireless sensor network system analyser complete with packet sniffer and sensor network monitor.

Block Diagram



Benefits

- Low cost evaluation platform for wireless sensor networks
- Complete SDK and network stack
- Unrestricted development environment
- Ideal for initial application development and demonstration
- SMA connector module enables connection to external test kit

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:

Sensor boards (3 off)

- Sensor boards feature
  - JN5121 module
  - Onboard temperature, light level and humidity sensors
  - RS232 connection to PC
  - JN5121 IO expansion port
- 2 Boards with sub-miniature ceramic antenna
- 1 Board with SMA connector for external antenna

Software development kit

- GNU-based toolchain
  - ANSI C, C++ compiler
  - Debugger
  - Flash programmer
- Wireless network libraries
- Microcontroller and peripheral libraries
- Application examples
  - Remote sensor monitoring
  - Remote output control
  - Star network

Application support

- Reference designs
- Datasheets, user guides, application notes

Test environment

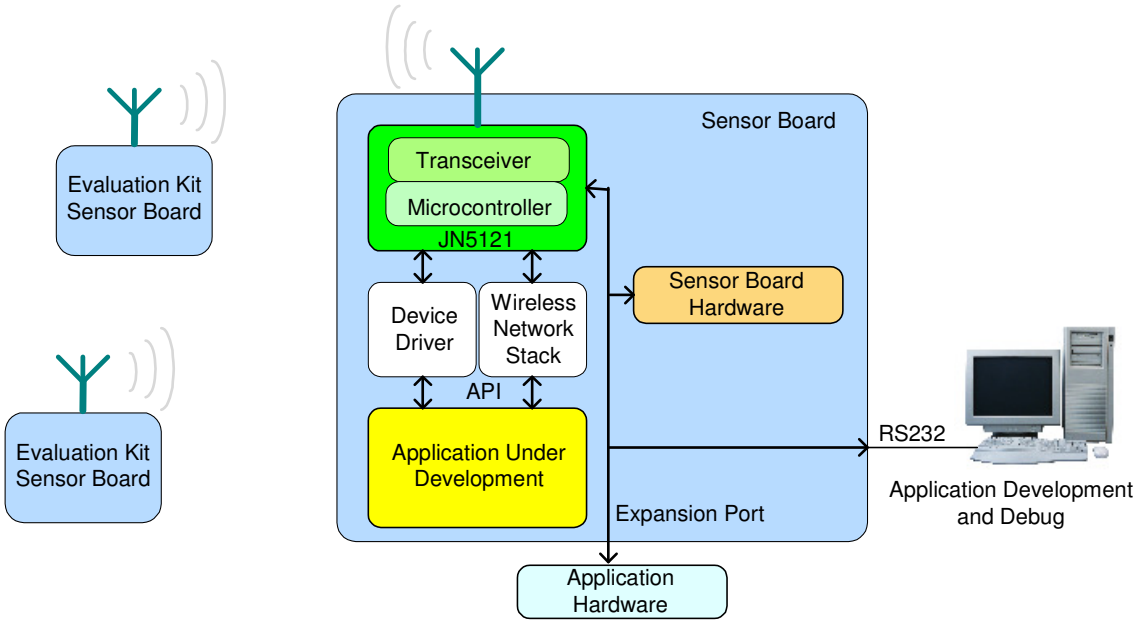
- Daintree Networks sensor network analyser package
  - IEEE802.15.4 packet sniffer and network test application
  - 30 day trial of full ZigBee test environment

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 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 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



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 worldwide 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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