Product Brief – JN5139-EK000
IEEE802.15.4 Wireless Microcontroller Evaluation Kit
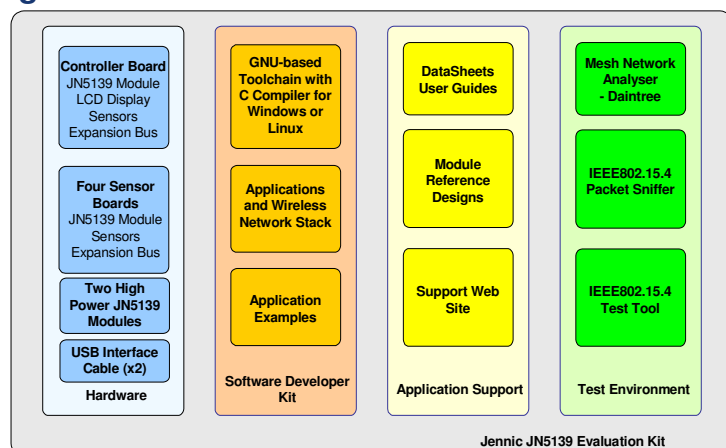
Overview

Jennic's IEEE802.15.4 evaluation kit provides a complete environment for the rapid development of wireless sensor network applications based on the JN5139 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 controller's 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

Jennic JN5139 Evaluation Kit

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

- JN5139 module
- Onboard temperature, light level and humidity sensors
- Bitmapped LCD display 128x64
- JN5139 IO expansion port
- USB connection to PC
- Battery or external power supply

Sensor boards (4 off)

- JN5139 module
- Onboard temperature, light level and humidity sensors
- JN5139 IO expansion port
- USB connection to PC
- Battery or external power supply

High power modules (2 off)

- JN5139 high power module for extended range

Software development kit

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

Application support

- Reference designs
- Datasheets, user guides, application notes
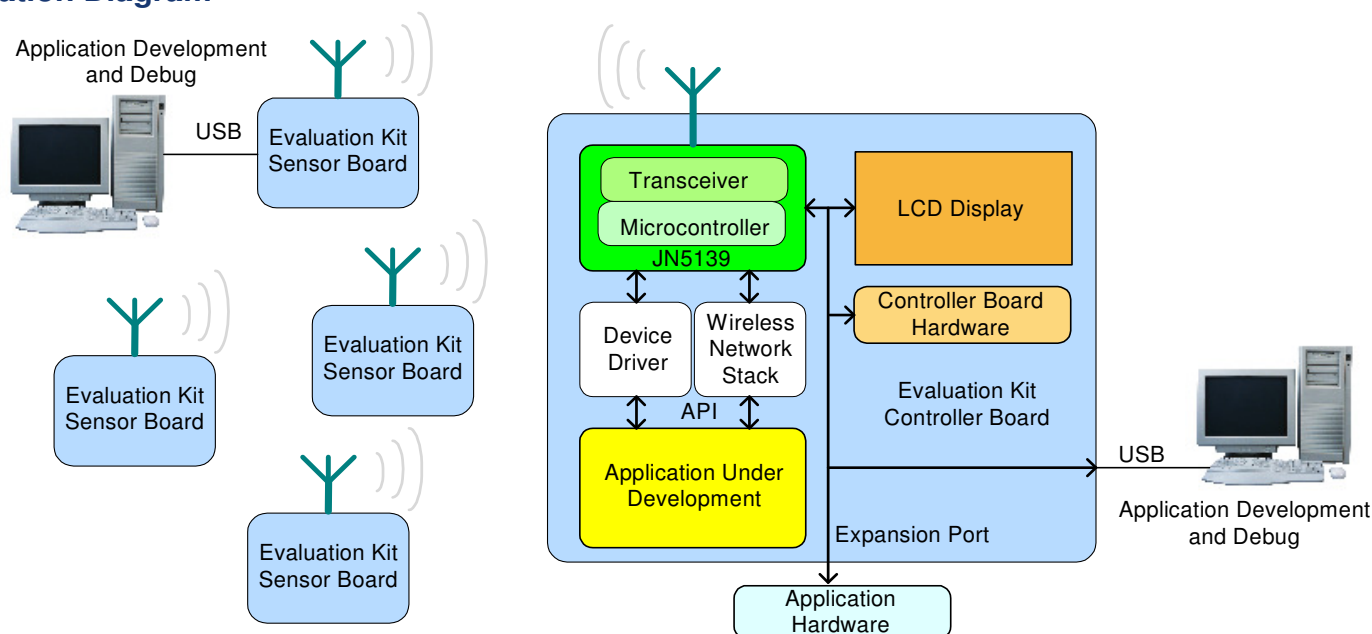
Test environment

- Daintree Networks' Sensor Network Analyser package

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 JN5139 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. A USB 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 Windows or Linux platforms. CodeBlocks IDE integrates the toolchain into an easy to use development environment.

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 includes complete documentation package, module reference designs based on the JN5139, application notes and a dedicated support website all backed by our regional support team.

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.