Product Brief – JN5148 Module
## JenNet, ZigBee PRO and IEEE802.15.4 Module

Overview

The JN5148-001-Myy family is a range of ultra low power, high performance surface mount modules targeted at low-power wireless networking applications, enabling users to realise products with minimum time to market and at the lowest cost. They remove the need for expensive and lengthy development of custom RF board designs and test suites. The modules use NXP's JN5148 wireless microcontroller to provide a comprehensive solution with large memory, high CPU and radio performance and all RF components included. All that is required to develop and manufacture wireless control or sensing products is to connect a power supply and peripherals such as switches, actuators and sensors, considerably simplifying product development.

Three module variants are available: JN5148-001-M00 with an integrated antenna, JN5148-001-M03 with an antenna connector and the JN5148-001-M04 with an antenna connector, power amplifier and LNA for extended range. All modules can run networking stacks such as JenNet and ZigBee PRO as well as customer applications.

Block Diagram
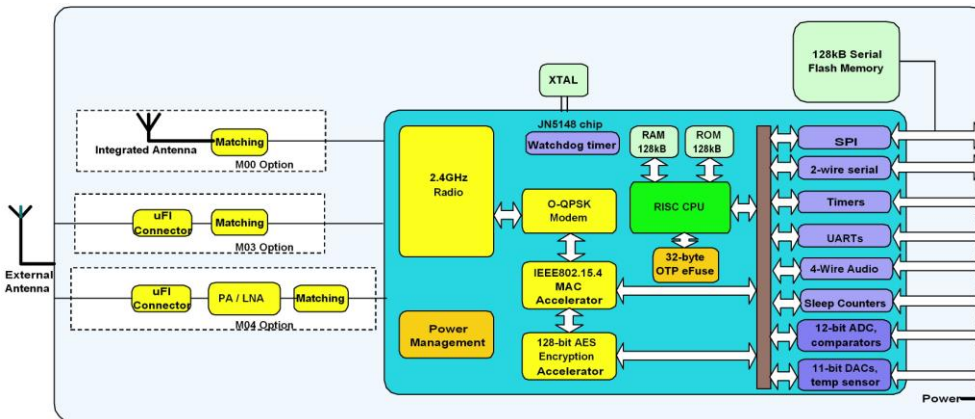
Benefits

- Microminiature module solutions
- Ready to use in products
- Minimises product development time
- No RF test required for systems
- Compliant with FCC part 15 rules, IC Canada RSS 210e, ETSI ETS 300-328 and Japan ARIB STD-T66
- Production volumes supplied pre-programmed with application software

Applications

- Robust and secure low power wireless applications
- ZigBee PRO and JenNet networks
- Home and commercial building automation
- Utilities metering (e.g. AMR)
- Location Aware services (e.g. Asset Tracking)
- Toys and gaming peripherals
- Industrial systems
- Telemetry
- Remote Control

Features: Module

- 2.4GHz IEEE802.15.4 and ZigBee PRO applications
- Sleep current (with active sleep timer) 2.6µA
- **JN5148-001-M00/03**
  Up to 1km range (Ext antenna)
  M00: integral antenna 18x32mm
  M03: uFl connector 18x30mm
  - TX power +2.5dBm
  - Receiver sensitivity –95dBm
  - TX current 15mA
  - RX current 17.5mA
  - 2.3-3.6V operation
- **JN5148-001-M04**
  Up to 4km range (Ext Antenna)
  - 20dBm TX power
  - Receiver sensitivity -98dBm
  - uFl connector
  - TX current 110mA
  - RX current 23mA
  - 18x41mm
  - 2.7-3.6V operation

Features: Microcontroller

- 32-bit RISC CPU, up to 32MIPs with low power
- 128kB ROM stores system code
- 128kB RAM stores system data and bootloaded program code
- 4Mbit serial flash for program code and data
- On chip OTP efuse
- JTAG debug interface
- 4-input 12-bit ADC, 2 12-bit DACs, 2 comparators
- 3 application timer/counters, 3 system timers
- 2 UARTs
- SPI port with 5 selects
- 2-wire serial interface
- 4-wire digital audio interface
- Watchdog timer
- Up to 21 DIO

Industrial temp (-40°C to +85°C)
Lead-free and RoHS compliant

These modules provide ease of use and fast time to market for applications using NXP's JN5148 low power, low cost IEEE802.15.4 and ZigBee PRO compliant wireless microcontroller. This device combines an on chip 32-bit RISC core, a high performance 2.4GHz IEEE802.15.4 transceiver, 128kB of ROM and 128kB of RAM and provides a versatile low cost solution for wireless sensor networking applications. The large memory footprint and powerful microcontroller provides the performance needed to run both network stack and application on the same device. This is combined with industry leading power consumption and a wealth of free to use reference design and applications information. Integrated sleep oscillator and power saving facilities are provided, giving low system power consumption. The device also incorporates a wide range of digital and analogue peripherals for the user to connect to their application.

JN5148-001-M03

ZigBee PRO Protocol Stack

The IEEE802.15.4 MAC and elements of the wireless networking stacks are included in the device ROM. The JN5148's combined memory footprint of 256kB and its efficient code usage ensure that it supports NXP's full ZigBee PRO stack with sufficient code space to implement the application as well. Supported protocols include IEEE802.15.4 and ZigBee PRO, and in the future 6LoWPAN and NXP's proprietary stack, JenNet. The 4Mbit flash memory included on the module supports the full RAM contents, whilst also providing multiple boot options and plenty of storage for the application and data.

Evaluation Kits

To assist users with the development of wireless sensor networks using the JN5148, NXP provides the JN5148-EK010 Evaluation Kit. This contains everything that is needed to carry out product development and test, and include controller and sensor boards and a Software Developer Kit (SDK).

The SDK provides a comprehensive suite of tools to facilitate the development of application code. The kit includes a C compiler, graphical and text debuggers, assembler, linker and flash programmer. Libraries are supplied for the supported network stacks, the chip peripheral interface and also a simple Application Programming Interface (API) to drive the peripherals on the controller and sensor boards. These, combined with the many example applications provided on NXP's support website, ensure that designers can take products to market easily and quickly.

Radio Standards Compliance

NXP modules are designed and manufactured to ISO9001 quality standards. The modules are also tested and qualified to worldwide government agency radio standards, which allows products using them to inherit the same approvals. The modules have FCC Modular approvals and a Notified body statement confirming compliance with ETS 300 328 is also available.