Panasonic ideas for life

Zigbee™ Comm Module IEEE802.15.4

Part No.: PAN802154HAR00

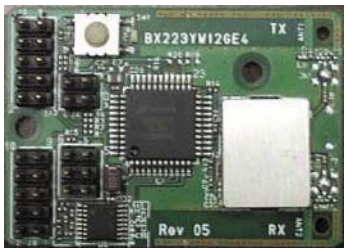
The PAN802154 is a full modem communication module for the 2.4GHz ISM band. It is designed to be in full compliance with 802.15.4 radio standard; and the Zigbee™ protocol layer.

Features:

- RS-232 Serial Interface for digital data interface
- Multiple I/Os for sensor inputs and actuator outputs
- Scalable for Simple MAC; 802.15.4 MAC; and will be applicable to future Zigbee™ layer
- On board antennas or optional external antennas via connectors.
- Switch and LED for customer specific application

Applications:

- Home Automation / Appliance control and monitoring
- Industrial / Security / Asset Tracking
- Commercial / Electronic Labeling
- Medical / Patient Monitor (non-critical)



Actual Size

Performance Specifications, Summary:

Parameter	Description	Remark
Dimensions	48 x 34 x 3 mm	w/ onboard printed antennas
Operating Voltage	2.2 to 3.4 Volts DC	
Operating Temperature	-20 to 70°C	
Power Consumption	Tx: 35ma Max Rx: 40ma Max Hybernate: Doze:	Dormant is less than 100ua.
Output RF Power	0 dBm typical 3 dBm max	
Receive Sensitivity	-92 dBm typ.	
CPU with 4K RAM; 60K Flash	8 bit	
Bit rate	250 Kbits / sec. 128 bytes / 4ms	
Interface	RS - 232 Header Header connector for 8 digital I/Os; and 2 analog inputs	2 ports - 10 bit A/D converter

Partnering with Freescale

Panasonic's PAN802154 Module is a low rate/low power communication device based upon the Freescale ZigBee Sensor Application Reference Design (SARD) development platform. It operates in the ISM 2.4 GHz band, and is fully compliant with the IEEE 802.15.4 standard. The PAN802154 is shipped ready to be downloaded with Freescale's 802.15.4 PHY/MAC layer and the ZigBee protocol layer.

The module uses Freescale's 802.15.4 transceiver (MC13193), microcontroller (GT60) and is licensed to use all released Freescale ZigBee Protocol stack layer software. Further, the PAN802154 has an on-board RS-232 interface IC and two on-board printed antennas that are etched on both sides of the board for optimum RF sensitivity. The entire RF section is shielded to prevent RF leakage and further improve RF performance.

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FC Industry Canada

ZigBee™ Technology: Making Connections Everywhere

A world leader in both RF and microcontrollers, Freescale is superbly qualified to introduce a platform solution for devices enabled with ZigBee™ technology, a network layer protocol designed to use the IEEE® 802.15.4 standard. This standard specifies a cost-effective, low data rate (<250 kbps), 2.4 GHz or 868/928 MHz wireless technology for personal-area and device-to-device wireless networking. Freescale's ZigBee-enabled solution supports low data rates, low power consumption, security and reliability—for smart homes and offices with flexibility and seamless mobility, all without wires.

Freescale's ZigBee-Compliant Platform

Freescale's ZRP-1 is a comprehensive, scalable platform designed to reduce the amount of time and money OEMs and ODMs spend developing wireless products for a variety of monitoring, automation and control applications in home, medical and industrial environments. The platform enables cost-effective, low-power applications ranging from simple point-to-point proprietary networks to fully compliant ZigBee technology networks. It's a complete one-stop-shop, including the MC1319x family of transceivers, HCS08 8-bit family of microcontrollers, sensor ICs, software and development tools.

ZRP-1 Platform Components

The MC13191, MC13192 and MC13193 can be used in a wide range of 2.4 GHz applications.

Freescale's simple media access controller (SMAC) software supports the MC13191. The SMAC and IEEE 802.15.4 standard-compliant media access controller (MAC) software from Freescale supports the MC13192. In addition to the SMAC and 802.15.4 compliant MAC, the MC13193 includes the complete ZigBee protocol stack. The SMAC software provides a layer of simple primitives that controls basic transceiver activities. Applications based on the SMAC software can establish simple point-to-point or star proprietary network topologies. The IEEE 802.15.4 MAC allows creation of standards-based peer-to-peer and star network topologies. Adding ZigBee technology to the IEEE 802.15.4 MAC provides a solution for interoperable remote monitoring and control applications with mesh and cluster tree networks.

Key Benefits

> Worldwide operability in the 2.4 GHz band, which Freescale's solution is designed to support, can simplify OEM product development and certification, minimizing the need to redesign a product for various markets or regions.

> Duty cycle and power conservation modes allow for long battery life, extending it to years, possibly decades. This helps to lower operating costs.

> ZigBee technology is designed to replace costly and complicated proprietary solutions currently on the market and is targeted at applications that already use an MCU. That translates into a small incremental cost for designs that only need to upgrade memory onboard the MCU.

> Freescale is first to sample with this solution, providing six to nine months lead time and fast time-to-market.

> ZigBee technology requires a smaller stack size than Bluetooth™ wireless technology. It occupies less memory on a chip, keeping costs low.

ZigBee technology combines interoperable hardware and software to help make the design process easy and efficient. Because it is standard based, Freescale's ZigBee technology helps reduce development time for the OEM, and offers reliability, security, interoperability and certification. To promote the creation of ZigBee-enabled products, Freescale has partnered with Panasonic Industrial Company to develop a communication device based upon the Freescale™ ZigBee development platform. The PAN802154 is tested to fully comply with current FCC requirements for 2.4 GHz ISM band applications, allowing the customer to complete and bring the end product to the market much quicker.

Panasonic
Industrial Company

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Learn More: For more information about Freescale's ZigBee-enabled solution, please visit **www.freescale.com/zigbee**.

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