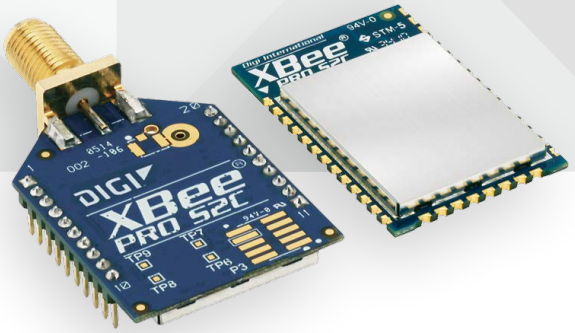
EMBEDDED RF
MODULES FOR OEMS



# DIGI XBEE® S2C 802.15.4 RF MODULES

## Low-cost, easy-to-deploy modules provide critical end-point connectivity to devices and sensors

Digi XBee RF modules provide OEMs with a common footprint shared by multiple platforms, including multipoint and ZigBee/Mesh topologies, and both 2.4 GHz and 900 MHz solutions. OEMs deploying the Digi XBee can substitute one Digi XBee for another, depending upon dynamic application needs, with minimal development, reduced risk and shorter time-to-market.

Digi XBee 802.15.4 RF modules are ideal for applications requiring low latency and predictable communication timing. Providing quick, robust communication in point-to-point, peer-to-peer, and multipoint/star configurations, Digi XBee 802.15.4 products enable robust end-point connectivity with ease. Whether deployed as a pure cable replacement for simple serial communication, or as part of a more complex hub-and-spoke network of sensors, Digi XBee 802.15.4 RF modules maximize performance and ease of development.

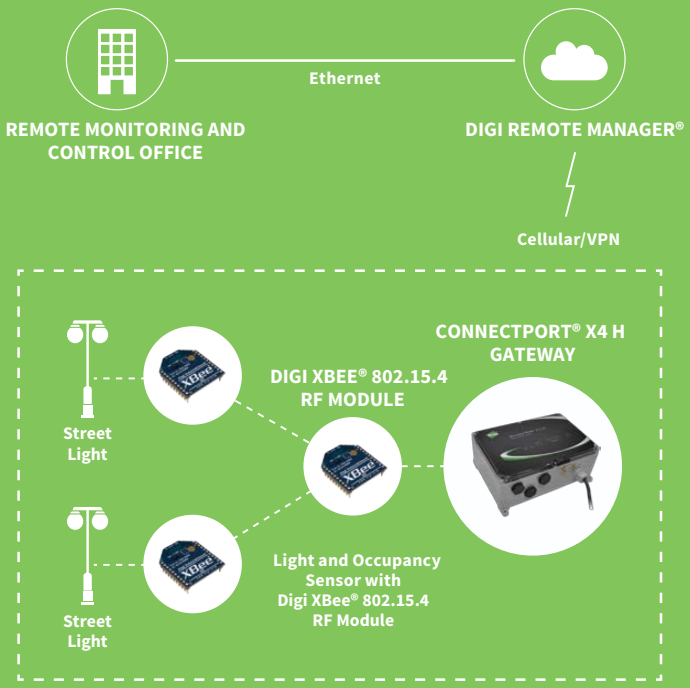
Digi XBee 802.15.4 modules seamlessly interface with compatible gateways, device adapters and range extenders, providing developers with true beyond-the-horizon connectivity.

The updated Digi XBee S2C 802.15.4 module is built with the SiliconLabs EM357 SoC and offers improved power consumption, support for over-the-air firmware updates, and provides an upgrade path to DigiMesh® or ZigBee® mesh protocols if desired.

### BENEFITS

- Simple, out-of-the-box RF communications, no configuration needed
- Point-to-multipoint network topology
- 2.4 GHz for worldwide deployment
- Common Digi XBee footprint for a variety of RF modules
- Industry leading sleep current of sub 1uA
- Firmware upgrades via UART, SPI or over the air
- Migratable to DigiMesh and ZigBee PRO protocols and vice-versa

### APPLICATION EXAMPLE



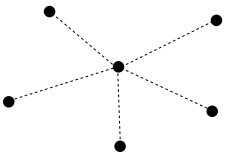

### RELATED PRODUCTS

| SPECIFICATIONS | Digi XBee® S2C 802.15.4 | Digi XBee-PRO® S2C 802.15.4 |
|---|---|---|
| **PERFORMANCE** | | |
| TRANSCEIVER CHIPSET | Silicon Labs EM357 SoC | |
| DATA RATE | RF 250 Kbps, Serial up to 1 Mbps | |
| INDOOR/URBAN RANGE* | Up to 200 ft (60 m) | Up to 300 ft (90 m) |
| OUTDOOR/RF LINE-OF-SIGHT RANGE* | Up to 4000 ft (1200 m) | Up to 2 miles (3200 m) |
| TRANSMIT POWER | 3.1 mW (+5 dBm) / 6.3 mW (+8 dBm) boost mode | 63 mW (+18 dBm) |
| RECEIVER SENSITIVITY (1% PER) | -100 dBm / -102 dBm boost mode | -101 dBm |
| **FEATURES** | | |
| SERIAL DATA INTERFACE | UART, SPI | |
| CONFIGURATION METHOD | API or AT commands, local or over-the-air (OTA) | |
| FREQUENCY BAND | ISM 2.4 GHz | |
| FORM FACTOR | Through-Hole, Surface Mount | |
| HARDWARE | S2C | |
| ADC INPUTS | (4) 10-bit ADC inputs | |
| DIGITAL I/O | 15 | |
| ANTENNA OPTIONS | Through-Hole: PCB Antenna, U.FL Connector, RPSMA Connector, or Integrated Wire<br>SMT: RF Pad, PCB Antenna, or U.FL Connector | |
| OPERATING TEMPERATURE | -40° C to +85° C | |
| DIMENSIONS (L X W X H) AND WEIGHT | Through-Hole: 0.960 x 1.087 in (2.438 x 2.761 cm)<br>SMT: 0.866 x 1.33 x 0.120 in (2.199 x 3.4 x 0.305 cm) | Through-Hole: 0.960 x 1.297 in (2.438 x 3.294 cm)<br>SMT: 0.866 x 1.33 x 0.120 in (2.199 x 3.4 x 0.305 cm) |
| **NETWORKING AND SECURITY** | | |
| PROTOCOL | Digi XBee 802.15.4 (Proprietary 802.15.4) | |
| UPDATABLE TO DIGIMESH PROTOCOL | Yes | |
| UPDATABLE TO ZIGBEE PROTOCOL | Yes | |
| INTERFERENCE IMMUNITY | DSSS (Direct Sequence Spread Spectrum) | |
| ENCRYPTION | 128-bit AES | |
| RELIABLE PACKET DELIVERY | Retries/Acknowledgements | |
| IDS | PAN ID and addresses, cluster IDs and endpoints (optional) | |
| CHANNELS | 16 channels | 15 channels |
| **POWER REQUIREMENTS** | | |
| SUPPLY VOLTAGE | 2.1 to 3.6V | 2.7 to 3.6V |
| TRANSMIT CURRENT | 33 mA @ 3.3 VDC /<br>45 mA boost mode | 120 mA @ 3.3 VDC |
| RECEIVE CURRENT | 28 mA @ 3.3 VDC /<br>31 mA boost mode | 31 mA @ 3.3 VDC |
| POWER-DOWN CURRENT | <1 µA @ 25° C | <1 µA @ 25° C |
| **REGULATORY APPROVALS** | | |
| FCC, IC (NORTH AMERICA) | Yes | Yes |
| ETSI (EUROPE) | Yes | No |
| RCM (AUSTRALIA AND NEW ZEALAND) | No (Coming soon) | No (Coming soon) |
| TELEC (JAPAN) | No (Coming soon) | No (Coming soon) |

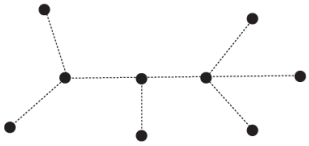
*Range figure estimates are based on free-air terrain with limited sources of interference. Actual range will vary based on transmitting power, orientation of transmitter and receiver, height of transmitting antenna, height of receiving antenna, weather conditions, interference sources in the area, and terrain between receiver and transmitter, including indoor and outdoor structures such as walls, trees, buildings, hills, and mountains.

| PART NUMBERS | DESCRIPTION |
|---|---|
| **KIT** | |
| XKB2-A2T-WWC | Wireless Connectivity Kit with Digi XBee 802.15.4 (S2C) |
| **MODULES** | |
| XB24CAWIT-001 | Digi XBee 802.15.4 through-hole module w/ wire antenna |
| XB24CAPIT-001 | Digi XBee 802.15.4 through-hole module w/ PCB antenna |
| XB24CAUIT-001 | Digi XBee 802.15.4 through-hole module w/ U.fl connector |
| XB24CASIT-001 | Digi XBee 802.15.4 through-hole module w/ RPSMA connector |
| XB24CAPIS-001 | Digi XBee 802.15.4 SMT module w/ PCB antenna |
| XB24CAUIS-001 | Digi XBee 802.15.4 SMT module w/ U.fl connector |
| XB24CARIS-001 | Digi XBee 802.15.4 SMT module w/ RF Pad connector |
| XBP24CAWIT-001 | Digi XBee-PRO 802.15.4 through-hole module w/ wire antenna |
| XBP24CAPIT-001 | Digi XBee-PRO 802.15.4 through-hole module w/ PCB antenna |
| XBP24CAUIT-001 | Digi XBee-PRO 802.15.4 through-hole module w/ U.fl connector |
| XBP24CASIT-001 | Digi XBee-PRO 802.15.4 through-hole module w/ RPSMA connector |
| XBP24CAPIS-001 | Digi XBee-PRO 802.15.4 SMT module w/ PCB antenna |
| XBP24CAUIS-001 | Digi XBee-PRO 802.15.4 SMT module w/ U.fl connector |
| XBP24CARIS-001 | Digi XBee-PRO 802.15.4 SMT module w/ RF Pad connector |

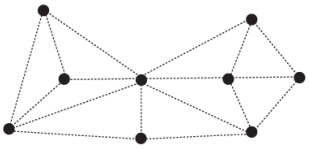
802.15.4 – Star



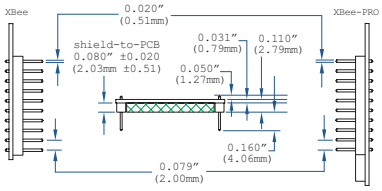
ZigBee - Migratable



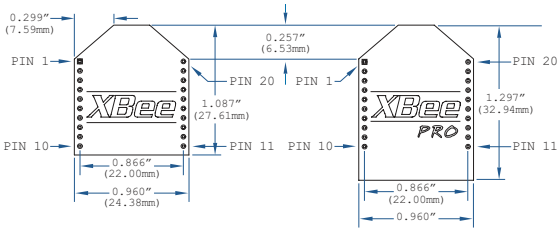
DigiMesh - Migratable



(Side Views)




(Top View)




(Top View)




**DIGI SERVICE AND SUPPORT** / You can purchase with confidence knowing that Digi is always available to serve you with expert technical support and our industry leading warranty. For detailed information visit www.digi.com/support.

© 1996-2018 Digi International Inc. All rights reserved.
All trademarks are the property of their respective owners.

91003287
A5/518

**DIGI INTERNATIONAL WORLDWIDE HQ**
877-912-3444 / 952-912-3444 / www.digi.com

**DIGI INTERNATIONAL GERMANY**
+49-89-540-428-0

**DIGI INTERNATIONAL JAPAN**
+81-3-5428-0261 / www.digi-intl.co.jp

**DIGI INTERNATIONAL SINGAPORE**
+65-6213-5380

**DIGI INTERNATIONAL CHINA**
+86-21-50492199 / www.digi.com.cn

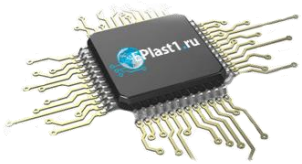
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

**Телефон:** 8 (812) 309 58 32 (многоканальный)
**Факс:** 8 (812) 320-02-42
**Электронная почта:** org@eplast1.ru
**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.