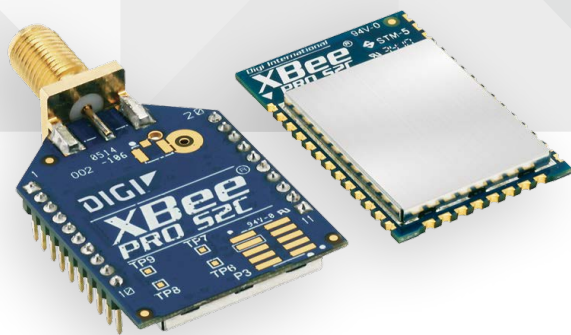




EMBEDDED RF  
MODULES FOR OEMS



# XBEE® S2C 802.15.4 RF MODULES

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

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 XBee can substitute one XBee for another, depending upon dynamic application needs, with minimal development, reduced risk and shorter time-to-market.

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, 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, XBee 802.15.4 RF modules maximize performance and ease of development.

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 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.

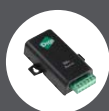
## BENEFITS

- Simple, out-of-the-box RF communications, no configuration needed
- Point-to-multipoint network topology
- 2.4 GHz for worldwide deployment
- Common 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

## RELATED PRODUCTS



ConnectPort®  
X4/X4H Gateways



XBee®  
Adapters



XCTU

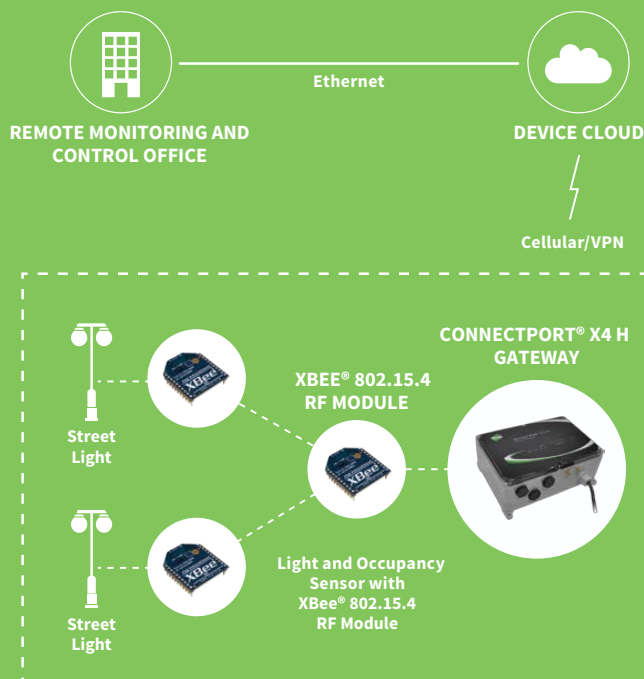


Digi Device  
Cloud<sup>SM</sup>



Development  
Kits

## APPLICATION EXAMPLE



## SPECIFICATIONS

XBee® S2C 802.15.4

| 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             | 200 ft (60 m)                                | 300 ft (90 m)    |
| OUTDOOR/RF LINE-OF-SIGHT RANGE | 4000 ft (1200 m)                             | 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                       | 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 / 45 mA boost mode | 120 mA @ 3.3 VDC |
| RECEIVE CURRENT    | 28 mA @ 3.3 VDC / 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) |

## PART NUMBERS

## DESCRIPTION

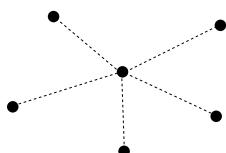
### KIT

|              |                                                    |
|--------------|----------------------------------------------------|
| XKB2-A2T-WWC | Wireless Connectivity Kit with XBee 802.15.4 (S2C) |
|--------------|----------------------------------------------------|

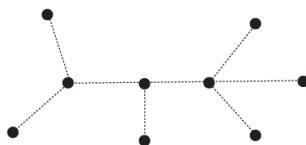
### MODULES

|                |                                                          |
|----------------|----------------------------------------------------------|
| XB24CAWIT-001  | XBee 802.15.4 through-hole module w/ wire antenna        |
| XB24CAPIT-001  | XBee 802.15.4 through-hole module w/ PCB antenna         |
| XB24CAUIT-001  | XBee 802.15.4 through-hole module w/ U.fl connector      |
| XB24CASIT-001  | XBee 802.15.4 through-hole module w/ RPSMA connector     |
| XB24CAPIS-001  | XBee 802.15.4 SMT module w/ PCB antenna                  |
| XB24CAUIS-001  | XBee 802.15.4 SMT module w/ U.fl connector               |
| XB24CARIS-001  | XBee 802.15.4 SMT module w/ RF Pad connector             |
| XBP24CAWIT-001 | XBee-PRO 802.15.4 through-hole module w/ wire antenna    |
| XBP24CAPIT-001 | XBee-PRO 802.15.4 through-hole module w/ PCB antenna     |
| XBP24CAUIT-001 | XBee-PRO 802.15.4 through-hole module w/ U.fl connector  |
| XBP24CASIT-001 | XBee-PRO 802.15.4 through-hole module w/ RPSMA connector |
| XBP24CAPIS-001 | XBee-PRO 802.15.4 SMT module w/ PCB antenna              |
| XBP24CAUIS-001 | XBee-PRO 802.15.4 SMT module w/ U.fl connector           |
| XBP24CARIS-001 | XBee-PRO 802.15.4 SMT module w/ RF Pad connector         |

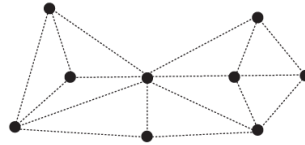
802.15.4 – Star



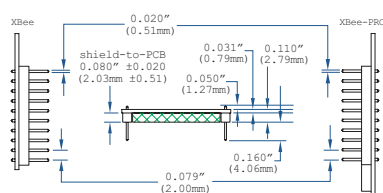
ZigBee - Migratable



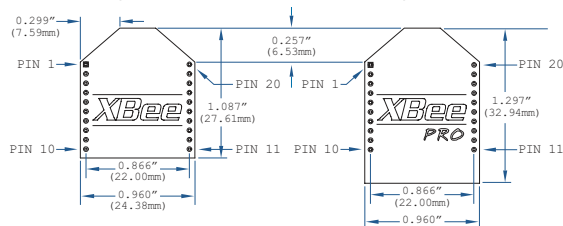
DigiMesh - Migratable



(Side Views)



(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](http://www.digi.com/support).

© 1996-2016 Digi International Inc. All rights reserved.  
All trademarks are the property of their respective owners.

91003287  
A3/616

**DIGI INTERNATIONAL WORLDWIDE HQ**  
877-912-3444 / 952-912-3444 / [www.digi.com](http://www.digi.com)

**DIGI INTERNATIONAL FRANCE**  
+33-1-55-61-98-98 / [www.digi.fr](http://www.digi.fr)

**DIGI INTERNATIONAL JAPAN**  
+81-3-5428-0261 / [www.digi-intl.co.jp](http://www.digi-intl.co.jp)

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

**DIGI INTERNATIONAL CHINA**  
+86-21-50492199 / [www.digi.com.cn](http://www.digi.com.cn)



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Digi International:

[XB24CAPIS-001](#) [XBP24CARIS-001](#) [XB24CAUIS-001](#) [XBP24CAPIT-001](#) [XBP24CAUIT-001](#) [XBP24CAPIS-001](#)  
[XBP24CASIT-001](#) [XBP24CAWIT-001](#) [XB24CAPIT-001](#) [XB24CARIS-001](#) [XB24CAWIT-001](#) [XB24CAUIT-001](#)  
[XBP24CAUIS-001](#) [XB24CASIT-001](#)