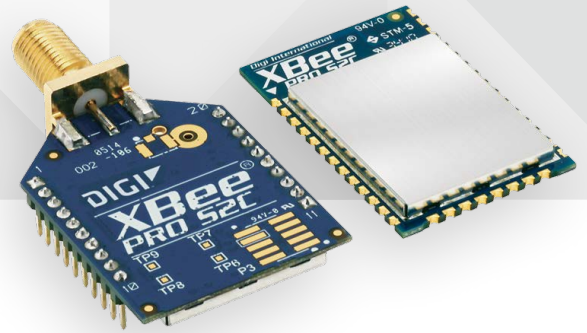




MESH NETWORKING  
EMBEDDED RF  
MODULES FOR OEMS



# DIGI XBEE® S2C DIGIMESH® 2.4

Embedded RF modules deliver wireless connectivity using the innovative and easy-to-deploy DigiMesh protocol

Digi XBee DigiMesh S2C 2.4 embedded RF modules provide wireless connectivity to electronic devices using a globally deployable 2.4 GHz transceiver. These modules use the DigiMesh networking protocol. This innovative, peer-to-peer mesh network offers users added network stability through self-healing, dense network operation, extending the operational life of battery dependent networks.

Digi XBee modules are ideal for low-power applications. Digi XBee-PRO modules are power-amplified versions of Digi XBee modules for extended-range applications. Products in the Digi XBee family are easy to use, share a common hardware footprint, and are fully interoperable with other

Digi XBee products utilizing the same technology. They are available in a variety of different protocols to suit different applications, enabling users to substitute one Digi XBee module for another with minimal development time and risk.

The updated Digi XBee S2C DigiMesh 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 IEEE 802.15.4 or ZigBee® mesh protocols if desired.

## BENEFITS

- No configuration needed for out-of-the-box RF communications
- Common Digi XBee footprint for a variety of RF modules
- Simple topology to deploy and grow
- 2.4 GHz for worldwide deployment
- Low-power Digi XBee or extended-range XBee-PRO (pin/over-the-air compatible)
- Multiple antenna options
- Outdoor RF line-of-sight range up to 2 miles (3.2 km) with high-gain antennas
- DigiMesh peer-to-peer mesh networking protocol
  - Supports self-healing and discovery for network stability

## RELATED PRODUCTS



Gateways



Modules



Adapters

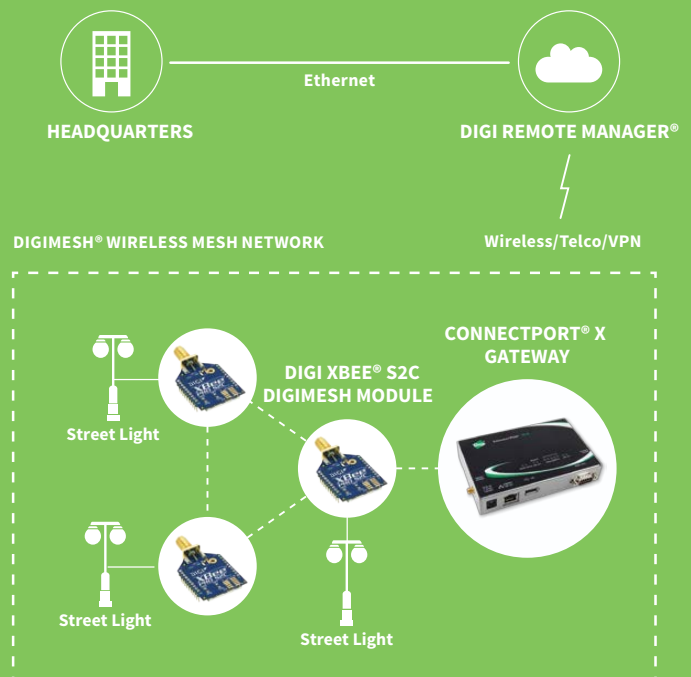


Network  
Extenders



Development  
Kits

## APPLICATION EXAMPLE



## SPECIFICATIONS

## Digi XBee® S2C DigiMesh® 2.4

## DigiXBee-PRO® S2C DigiMesh® 2.4

## PERFORMANCE

|                                |                                              |                                  |
|--------------------------------|----------------------------------------------|----------------------------------|
| TRANSCEIVER CHIPSET            | Silicon Labs EM357 SoC                       | Silicon Labs EM357 SoC           |
| DATA RATE                      | RF 250 Kbps, Serial up to 1 Mbps             | 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                                                                                                                   | UART, SPI                                                                                                  |
| CONFIGURATION METHOD              | API or AT commands, local or over-the-air (OTA)                                                                             | API or AT commands, local or over-the-air (OTA)                                                            |
| FREQUENCY BAND                    | ISM 2.4 GHz                                                                                                                 | ISM 2.4 GHz                                                                                                |
| FORM FACTOR                       | Through-Hole, Surface Mount                                                                                                 | Through-Hole, Surface Mount                                                                                |
| HARDWARE                          | S2C                                                                                                                         | S2C                                                                                                        |
| ADC INPUTS                        | (4) 10-bit ADC inputs                                                                                                       | (4) 10-bit ADC inputs                                                                                      |
| DIGITAL I/O                       | 15                                                                                                                          | 15                                                                                                         |
| ANTENNA OPTIONS                   | Through-Hole: PCB Antenna, U.FL Connector, RPSMA Connector, or Integrated Wire; SMT: RF Pad, PCB Antenna, or U.FL Connector |                                                                                                            |
| OPERATING TEMPERATURE             | -40° C to +85° C                                                                                                            | -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 DigiMesh 2.4 (Proprietary 802.15.4 based mesh protocol) | Digi XBee DigiMesh 2.4 (Proprietary 802.15.4 based mesh protocol) |
| UPDATABLE TO DIGI 802.15.4 PROTOCOL | Yes                                                               | Yes                                                               |
| UPDATABLE TO ZIGBEE PROTOCOL        | Yes                                                               | Yes                                                               |
| INTERFERENCE IMMUNITY               | DSSS (Direct Sequence Spread Spectrum)                            | DSSS (Direct Sequence Spread Spectrum)                            |
| ENCRYPTION                          | 128-bit AES                                                       | 128-bit AES                                                       |
| RELIABLE PACKET DELIVERY            | Retries/Acknowledgements                                          | Retries/Acknowledgements                                          |
| IDS                                 | PAN ID and addresses, cluster IDs and endpoints (optional)        | 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) | Yes | Yes              |
| TELEC (JAPAN)                   | Yes | No (Coming soon) |

| PART NUMBERS               | DESCRIPTION                                                                                         |
|----------------------------|-----------------------------------------------------------------------------------------------------|
| <b>SMT MODELS</b>          |                                                                                                     |
| XB24CDMPIS-001             | Digi XBee, S2C DigiMesh 2.4, SMT, PCB antenna                                                       |
| XBP24CDMPIS-001            | Digi XBee-PRO, S2C DigiMesh 2.4, SMT PCB antenna                                                    |
| XB24CDMUIS-001             | Digi XBee, S2C DigiMesh 2.4, SMT, U.FL                                                              |
| XBP24CDMUIS-001            | Digi XBee-PRO, S2C DigiMesh 2.4, SMT, U.FL                                                          |
| XB24CDMRIS-001             | Digi XBee, S2C DigiMesh 2.4, SMT, RF Pad                                                            |
| XBP24CDMRIS-001            | Digi XBee-PRO, S2C DigiMesh 2.4, SMT, RF Pad                                                        |
| <b>THROUGH-HOLE MODELS</b> |                                                                                                     |
| XB24CDMPIT-001             | Digi XBee, S2C DigiMesh 2.4, TH, PCB antenna                                                        |
| XBP24CDMPIT-001            | Digi XBee-PRO, S2C DigiMesh 2.4, TH, PCB antenna                                                    |
| XB24CDMUIT-001             | Digi XBee, S2C DigiMesh 2.4, TH, U.FL                                                               |
| XBP24CDMUIT-001            | Digi XBee-PRO, S2C DigiMesh 2.4, TH, U.FL                                                           |
| XB24CDMSIT-001             | Digi XBee, S2C DigiMesh 2.4, TH, RPSMA                                                              |
| XBP24CDMSIT-001            | Digi XBee-PRO, S2C DigiMesh 2.4, TH, RPSMA                                                          |
| XB24CDMWIT-001             | Digi XBee, S2C DigiMesh 2.4, TH, WIRE antenna                                                       |
| XBP24CDMWIT-001            | Digi XBee-PRO, S2C DigiMesh 2.4, TH, WIRE antenna                                                   |
| <b>KIT</b>                 |                                                                                                     |
| XK-WDM                     | Digi XBee S2C DigiMesh Development Kit with two XB24CDMPIT-001 modules and one XB24DMPIS-001 module |

Note: International users select the standard module. The PRO module is for use in North America only.

