

# XBee® & XBee-PRO® DigiMesh® 2.4

Mesh Networking Embedded RF Modules for OEMs

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



## Overview

XBee and XBee-PRO DigiMesh 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 network offers users added network stability through self-healing, dense network operation and support for sleeping routers, extending the operational life of battery dependent networks.

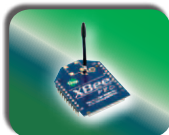
XBee modules are ideal for low-power, low-cost applications. XBee-PRO modules are power-amplified versions of XBee modules for extended-range applications. Products in the XBee family are easy to use, share a common hardware footprint, and are fully interoperable with other XBee products utilizing the same technology. They are available in a variety of different protocols to suit different applications, enabling users to substitute one XBee module for another with minimal development time and risk.

Digi's unsurpassed offering of Drop-in Networking products provide users with seamless communication between devices. XBee adapters deliver wireless connectivity to electronic devices in wired networks. ConnectPort® X gateways enable users to access and configure remote devices in a network.

### Related Products



Gateways



Modules



Adapters



Dev Kits

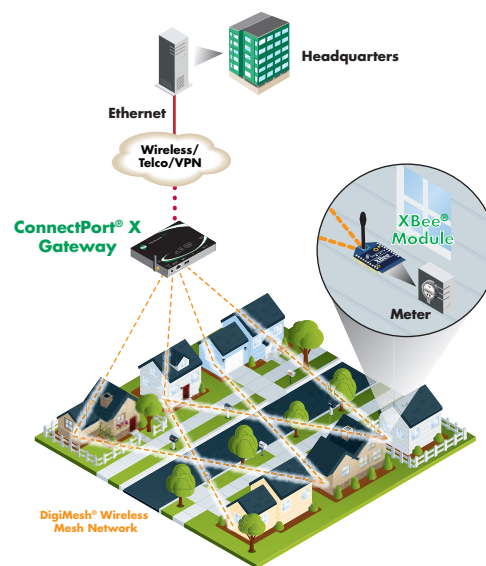


Range Extenders



Sensors

### Application Highlight

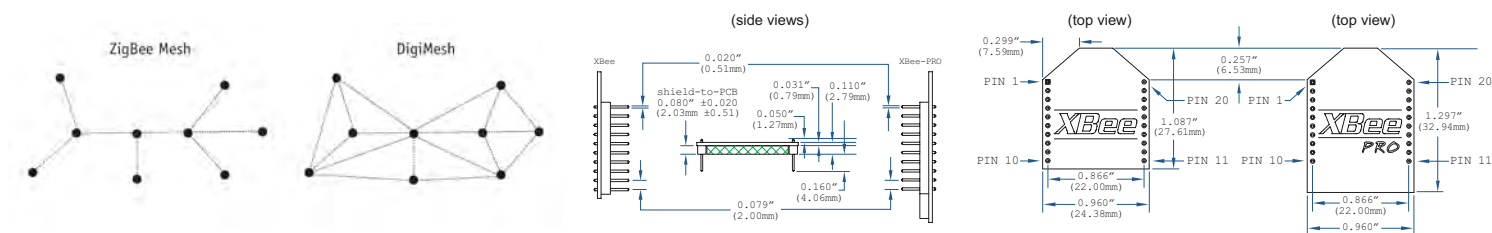


### Features/Benefits

- No configuration needed for out-of-the-box RF communications
- Common XBee footprint for a variety of RF modules
- Simple topology to deploy and grow
- 2.4 GHz for worldwide deployment
- Low-power XBee or extended-range XBee-PRO (pin/over-the-air compatible)
- Multiple antenna options
- Outdoor RF line-of-sight range up to 1 mile (1.6 km) with high-gain antennas
- DigiMesh peer-to-peer mesh networking protocol
  - Self-healing and discovery for network stability
  - Sleeping routers supported for long battery life



| Platform                       | XBee® DigiMesh® 2.4                    |                                           | XBee-PRO® DigiMesh® 2.4                   | XBee-PRO® DigiMesh® 2.4 (Int'l) |
|--------------------------------|----------------------------------------|-------------------------------------------|-------------------------------------------|---------------------------------|
| Performance                    |                                        |                                           |                                           |                                 |
| RF Data Rate                   | 250 Kbps                               |                                           |                                           |                                 |
| Indor/Urban Range              | 100 ft (30 m)                          | 300 ft (90 m)                             | 200 ft (60 m)                             |                                 |
| Outdoor/RF Line-of-Sight Range | 300 ft (90 m)                          | 1 mile (1.6 km)                           | 2500 ft (750 m)                           |                                 |
| Transmit Power                 | 1 mW (+0 dBm)                          | 63 mW (+18 dBm)                           | 10 mW (+10 dBm)                           |                                 |
| Receiver Sensitivity (1% PER)  | -92 dBm                                | -100 dBm                                  |                                           |                                 |
| Features                       |                                        |                                           |                                           |                                 |
| Serial Data Interface          | 3.3V CMOS serial UART                  |                                           |                                           |                                 |
| Configuration Method           | AT & API                               |                                           |                                           |                                 |
| Frequency Band                 | 2.4 GHz ISM                            |                                           |                                           |                                 |
| Interference Immunity          | DSSS (Direct Sequence Spread Spectrum) |                                           |                                           |                                 |
| Serial Data Rate               | Up to 115.2 Kbps                       |                                           |                                           |                                 |
| ADC Inputs                     | (6) 10-bit ADC inputs                  |                                           |                                           |                                 |
| Digital I/O                    | 13                                     |                                           |                                           |                                 |
| Antenna Options                | Chip, Wire Whip, U.FL, RPSMA           |                                           |                                           |                                 |
| Networking & Security          |                                        |                                           |                                           |                                 |
| Encryption                     | 128-bit AES                            |                                           |                                           |                                 |
| Reliable Packet Delivery       | Retries/Acknowledgments                |                                           |                                           |                                 |
| Addressing Options             | PAN ID, channel, 64-bit address        |                                           |                                           |                                 |
| Channels                       | 16                                     | 12                                        |                                           |                                 |
| Power Requirements             |                                        |                                           |                                           |                                 |
| Supply Voltage                 | 2.8 – 3.4VDC                           |                                           |                                           |                                 |
| Transmit Current               | 45 mA                                  | 250 mA (Wire, Chip, U.FL), 340 mA (RPSMA) | 150 mA (Wire, Chip, U.FL), 180 mA (RPSMA) |                                 |
| Receive Current                | 50 mA                                  | 55 mA                                     |                                           |                                 |
| Power-Down Current             | <50 uA                                 |                                           |                                           |                                 |
| Regulatory Approvals           |                                        |                                           |                                           |                                 |
| FCC (USA)                      | Yes                                    |                                           |                                           |                                 |
| IC (Canada)                    | Yes                                    |                                           |                                           |                                 |
| ETSI (Europe)                  | Yes                                    | Yes (Max Tx 10 mW)                        | Yes                                       |                                 |
| C-TICK Australia               | Yes                                    |                                           |                                           |                                 |
| Telec (Japan)                  | Yes                                    | No                                        | Yes                                       |                                 |



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**Digi International**  
877-912-3444  
952-912-3444  
email: [info@digi.com](mailto:info@digi.com)

**Digi International France**  
+33-1-55-61-98-98  
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