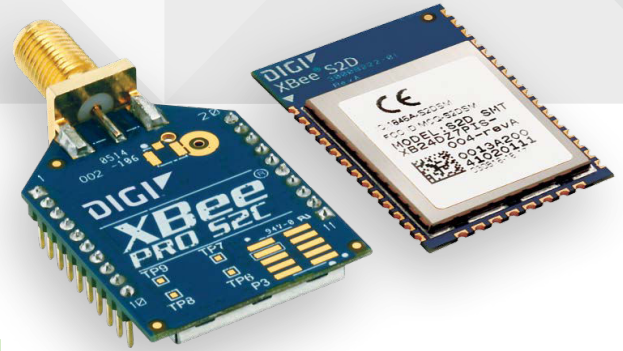




ZIGBEE® RF MODULES  
FOR OEMS



# XBEE® AND XBEE-PRO® ZIGBEE

Embedded ZigBee modules provide OEMs with a simple way to integrate mesh technology into their application

XBee and XBee-PRO ZigBee RF modules provide cost-effective wireless connectivity to electronic devices. They are interoperable with other ZigBee PRO feature set devices, including devices from other vendors\*.

XBee and XBee-PRO ZigBee modules are ideal for applications in the energy and controls markets where manufacturing efficiencies are critical. The Serial Peripheral Interface (SPI) provides a high-speed interface and optimizes integration with embedded microcontrollers, lowering development costs and reducing time to market.

Products in the XBee family require little to no configuration or additional development. Programmable versions of the

XBee and XBee-PRO ZigBee module make customizing applications easy. Programming directly on the module eliminates the need for a separate processor. Because the wireless software is isolated, applications can be developed with no risk to RF performance or security.

Digi's ZigBee compatible module is based on the Ember EM35x (EM357 and EM3587) system on chip (SoC) radio ICs from SiliconLabs, utilizing 32-bit ARM Cortex™ M3 processor. The S2D EM3587 version has a larger memory footprint for customers who may want to upgrade to Thread, an IPv6 based networking stack.

\*Interoperability requires the ZigBee Feature Set or ZigBee PRO Feature Set to be deployed on all devices. Contact Digi Support for details.

## BENEFITS

- Programmable versions with on-board microprocessor enable custom ZigBee application development
- Through-Hole and Surface Mount form factors enable flexible design options
- Link budgets of 110 dB for XBee and 119 dB for XBee-PRO
- Industry-leading sleep current
- Firmware upgrades via UART, SPI or over the air (OTA)
- Thread updatable on the S2D EM3587 variant for maximum flexibility

## RELATED PRODUCTS



XBee Gateways



Modules



Network Extenders

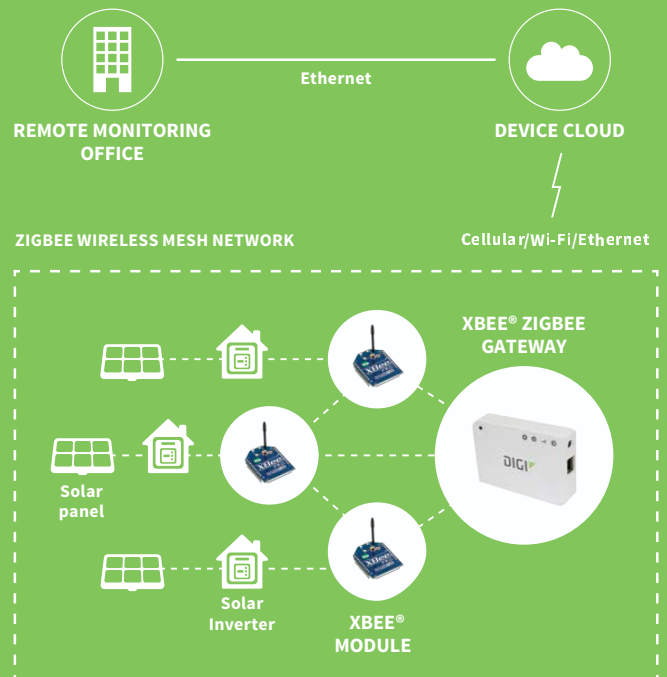


Development Kits



Digi Device Cloud<sup>SM</sup>

## APPLICATION EXAMPLE



## SPECIFICATIONS

XBee® S2C ZigBee  
Standard | Programmable

XBee-PRO® S2C ZigBee  
Standard | Programmable

XBee® S2D ZigBee Thread Ready  
Standard

### PERFORMANCE

<b>TRANSCIVER CHIPSET</b>	Silicon Labs EM357 SoC		Silicon Labs EM3587 Soc	
<b>DATA RATE</b>	RF 250 Kbps, Serial up to 1 Mbps			
<b>INDOOR/URBAN RANGE</b>	200 ft (60 m)	300 ft (90 m)	200 ft (60 m)	
<b>OUTDOOR/RF LINE-OF-SIGHT RANGE</b>	4000 ft (1200 m)	2 miles (3200 m)	4000 ft (1200 m)	
<b>TRANSMIT POWER</b>	3.1 mW (+5 dBm) / 6.3 mW (+8 dBm) boost mode	63 mW (+18 dBm)	3.1 mW (+5 dBm) / 6.3 mW (+8 dBm) boost mode	
<b>RECEIVER SENSITIVITY (1% PER)</b>	-100 dBm / -102 dBm boost mode	-101 dBm	-100 dBm / -102 dBm boost mode	

### FEATURES

<b>SERIAL DATA INTERFACE</b>	UART, SPI			
<b>CONFIGURATION METHOD</b>	API or AT commands, local or over-the-air (OTA)			
<b>FREQUENCY BAND</b>	ISM 2.4 GHz			
<b>FORM FACTOR</b>	Through-Hole, Surface Mount		Surface Mount	
<b>INTERFERENCE IMMUNITY</b>	DSSS (Direct Sequence Spread Spectrum)			
<b>ADC INPUTS</b>	(4) 10-bit ADC inputs			
<b>DIGITAL I/O</b>	15			
<b>ANTENNA OPTIONS</b>	Through-Hole: PCB Antenna, U.FL Connector, RPSMA Connector, or Integrated Wire SMT: RF Pad, PCB Antenna, or U.FL Connector			
<b>OPERATING TEMPERATURE</b>	-40° C to +85° C			
<b>DIMENSIONS (L X W X H) AND WEIGHT</b>	Through-Hole: 0.960 x 1.087 in (2.438 x 2.761 cm) 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) SMT: 0.866 x 1.33 x 0.120 in (2.199 x 3.4 x 0.305 cm)	SMT: 0.866 x 1.33 x 0.120 in (2.199 x 3.4 x 0.305 cm)	

### PROGRAMMABILITY

<b>MEMORY</b>	N/A	32 KB Flash / 2 KB RAM	N/A	32 KB Flash / 2 KB RAM	N/A
<b>CPU/CLOCK SPEED</b>	N/A	HCS08 / up to 50.33 MHz	N/A	HCS08 / up to 50.33 MHz	N/A

### NETWORKING AND SECURITY

<b>PROTOCOL</b>	ZigBee PRO 2007, HA-Ready with support for binding/multicasting			
<b>ENCRYPTION</b>	128-bit AES			
<b>RELIABLE PACKET DELIVERY</b>	Retries/Acknowledgements			
<b>IDS</b>	PAN ID and addresses, cluster IDs and endpoints (optional)			
<b>CHANNELS</b>	16 channels	15 channels	16 channels	

### POWER REQUIREMENTS

<b>SUPPLY VOLTAGE</b>	2.1 to 3.6V		2.7 to 3.6V		2.1 to 3.6V
<b>TRANSMIT CURRENT</b>	33 mA @ 3.3 VDC / 45 mA boost mode	47 mA @ 3.3 VDC / 59 mA boost mode	120 mA @ 3.3 VDC	120 mA @ 3.3 VDC	33 mA @ 3.3 VDC / 45 mA boost mode
<b>RECEIVE CURRENT</b>	28 mA @ 3.3 VDC / 31 mA boost mode	42 mA @ 3.3 VDC / 45 mA boost mode	31 mA @ 3.3 VDC	45 mA @ 3.3 VDC	28 mA @ 3.3 VDC / 31 mA boost mode
<b>POWER-DOWN CURRENT</b>	<1 µA @ 25° C	1.5 µA @ 25° C	<1 µA @ 25° C	1.5 µA @ 25° C	<3 µA at 25° C

### REGULATORY APPROVALS

<b>FCC, IC (NORTH AMERICA)</b>	Yes	Yes	Yes	
<b>ETSI (EUROPE)</b>	Yes	No	Yes	
<b>RCM (AUSTRALIA AND NEW ZEALAND)</b>	Yes	Yes	No (Coming Soon)	

PART NUMBERS	DESCRIPTION
<b>S2C MODULES</b>	
XB24CZ7PIT-004	XBee ZigBee Through-Hole, PCB Antenna
XB24CZ7WIT-004	XBee ZigBee Through-Hole, Wire Antenna
XB24CZ7UIT-004	XBee ZigBee Through-Hole, U.FL
XB24CZ7SIT-004	XBee ZigBee Through-Hole, RPSMA
XB24CZ7PITB003	Programmable XBee ZigBee Through-Hole, PCB Antenna
XB24CZ7WITB003	Programmable XBee ZigBee Through-Hole, Wire Antenna
XB24CZ7UITB003	Programmable XBee ZigBee Through-Hole, U.FL
XB24CZ7SITB003	Programmable XBee ZigBee Through-Hole, RPSMA
XB24CZ7PIS-004	XBee ZigBee SMT, PCB Antenna
XB24CZ7RIS-004	XBee ZigBee SMT, RF Pad
XB24CZ7UIS-004	XBee ZigBee SMT, U.FL
XB24CZ7PISB003	Programmable XBee ZigBee SMT, PCB Antenna
XB24CZ7RISB003	Programmable XBee ZigBee SMT, RF Pad
XB24CZ7UISB003	Programmable XBee ZigBee SMT, U.FL
XBP24CZ7PIT-004	XBee-PRO ZigBee Through-Hole, PCB Antenna
XBP24CZ7WIT-004	XBee-PRO ZigBee Through-Hole, Wire Antenna
XBP24CZ7UIT-004	XBee-PRO ZigBee Through-Hole, U.FL
XBP24CZ7SIT-004	XBee-PRO ZigBee Through-Hole, RPSMA
XBP24CZ7PITB003	Programmable XBee-PRO ZigBee Through-Hole, PCB Antenna
XBP24CZ7WITB003	Programmable XBee-PRO ZigBee Through-Hole, U.FL
XBP24CZ7SITB003	Programmable XBee-PRO ZigBee Through-Hole, RPSMA
XBP24CZ7PIS-004	XBee-PRO ZigBee SMT, PCB Antenna
XBP24CZ7RIS-004	XBee-PRO ZigBee SMT, RF Pad
XBP24CZ7UIS-004	XBee-PRO ZigBee SMT, U.FL
XBP24CZ7PISB003	Programmable XBee-PRO ZigBee SMT, PCB Antenna
XBP24CZ7RISB003	Programmable XBee-PRO ZigBee SMT, RF Pad
XBP24CZ7UISB003	Programmable XBee-PRO ZigBee SMT, U.FL
<b>S2D MODULES</b>	
XB24DZ7PIS-004	XBee ZigBee - Thread Ready SMT, PCB Antenna
XB24DZ7RIS-004	XBee ZigBee - Thread Ready SMT, RF Pad Antenna
XB24DZ7UIS-004	XBee ZigBee - Thread Ready SMT, U.FL Antenna
<b>S2C KITS</b>	
XKA2C-Z7T-U	XBee ZigBee Cloud Kit
XKB2-Z7T-WZM	XBee ZigBee Mesh Kit, worldwide
XKB2-Z7T-ZM	XBee-PRO ZigBee Mesh Kit
<b>S2D KIT</b>	
XKB2-Z7T-WTZM	XBee ZigBee Mesh Kit, worldwide

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