DIGI

ZIGBEE® RF MODULES FOR OEMS



DIGI XBEE® AND DIGI XBEE-PRO® ZIGBEE

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

Digi XBee and Digi 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*.

Digi XBee and Digi 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 Digi XBee family require little to no configuration or additional development. Programmable

versions of the Digi XBee and Digi 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.

APPLICATION EXAMPLE

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 Digi XBee and 119 dB for Digi 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

Ethernet REMOTE MONITORING OFFICE ZIGBEE WIRELESS MESH NETWORK Cellular/Wi-Fi/Ethernet DIGI XBEE® ZIGBEE GATEWAY Solar panel Inverter DIGI XBEE® MODULE

RELATED PRODUCTS





s Network





Digi Remote Manager®

SPECIFICATIONS	Digi XBee [®] S2C Zig Standard	gBee Programmable	Digi XBee-PRO® S20 Standard	C ZigBee Programmable	Digi XBee® S2D ZigBee Thread Ready Standard	
PERFORMANCE						
TRANSCEIVER CHIPSET	Silicon Labs EM357 Sc	С			Silicon Labs EM3587 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)		Up to 200 ft (60 m)	
OUTDOOR/RF LINE-OF-SIGHT RANGE*	Up to 4000 ft (1200 m)		Up to 2 miles (3200 m)		Up to 4000 ft (1200 m)	
TRANSMIT POWER	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	
RECEIVER SENSITIVITY (1% PER)	-100 dBm / -102 dBm boost mode -101 dBm			-100 dBm / -102 dBm boost mode		
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 Surface Mount					
INTERFERENCE IMMUNITY	DSSS (Direct Sequence Spread Spectrum)					
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 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) 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						
MEMORY	N/A	32 KB Flash / 2 KB RAM	N/A	32 KB Flash / 2 KB RAM	N/A	
CPU/CLOCK SPEED	N/A	HCS08 / up to 50.33 MHz	N/A	HCS08 / up to 50.33 MHz	N/A	
NETWORKING AND SECURITY						
PROTOCOL	ZigBee PRO 2007, HA-Ready with support for binding/multicasting					
ENCRYPTION	128-bit AES					
RELIABLE PACKET DELIVERY	Retries/Acknowledgements					
IDS	PAN ID and addresses, cluster IDs and endpoints (optional)					
CHANNELS	16 channels		15 channels		16 channels	
POWER REQUIREMENTS						
SUPPLY VOLTAGE	2.1 to 3.6V		2.7 to 3.6V		2.1 to 3.6V	
TRANSMIT CURRENT	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	
RECEIVE CURRENT	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	
POWER-DOWN CURRENT	<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						
FCC, IC (NORTH AMERICA)	Yes		Yes		Yes	
ETSI (EUROPE)	Yes		No		Yes	
RCM (AUSTRALIA AND	Yes		Yes		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		
S2C MODULES			
XB24CZ7PIT-004	Digi XBee ZigBee Through-Hole, PCB Antenna		
XB24CZ7WIT-004	Digi XBee ZigBee Through-Hole, Wire Antenna		
XB24CZ7UIT-004	Digi XBee ZigBee Through-Hole, U.FL		
XB24CZ7SIT-004	Digi XBee ZigBee Through-Hole, RPSMA		
XB24CZ7PITB003	Programmable Digi XBee ZigBee Through-Hole, PCB Antenna		
XB24CZ7WITB003	Programmable Digi XBee ZigBee Through-Hole, Wire Antenna		
XB24CZ7UITB003	Programmable Digi XBee ZigBee Through-Hole, U.FL		
XB24CZ7SITB003	Programmable Digi XBee ZigBee Through-Hole, RPSMA		
XB24CZ7PIS-004	Digi XBee ZigBee SMT, PCB Antenna		
XB24CZ7RIS-004	Digi XBee ZigBee SMT, RF Pad		
XB24CZ7UIS-004	Digi XBee ZigBee SMT, U.FL		
XB24CZ7PISB003	Programmable Digi XBee ZigBee SMT, PCB Antenna		
XB24CZ7RISB003	Programmable Digi XBee ZigBee SMT, RF Pad		
XB24CZ7UISB003	Programmable Digi XBee ZigBee SMT, U.FL		
XBP24CZ7PIT-004	Digi XBee-PRO ZigBee Through-Hole, PCB Antenna		
XBP24CZ7WIT-004	Digi XBee-PRO ZigBee Through-Hole, Wire Antenna		
XBP24CZ7UIT-004	Digi XBee-PRO ZigBee Through-Hole, U.FL		
XBP24CZ7SIT-004	Digi XBee-PRO ZigBee Through-Hole, RPSMA		
XBP24CZ7PITB003	Programmable Digi XBee-PRO ZigBee Through-Hole, PCB Antenna		
XBP24CZ7WITB003	Programmable Digi XBee-PRO ZigBee Through-Hole, U.FL		
XBP24CZ7SITB003	Programmable Digi XBee-PRO ZigBee Through-Hole, RPSMA		
XBP24CZ7PIS-004	Digi XBee-PRO ZigBee SMT, PCB Antenna		
XBP24CZ7RIS-004	Digi XBee-PRO ZigBee SMT, RF Pad		
XBP24CZ7UIS-004	Digi XBee-PRO ZigBee SMT, U.FL		
XBP24CZ7PISB003	Programmable Digi XBee-PRO ZigBee SMT, PCB Antenna		
XBP24CZ7RISB003	Programmable Digi XBee-PRO ZigBee SMT, RF Pad		
XBP24CZ7UISB003	Programmable Digi XBee-PRO ZigBee SMT, U.FL		
S2D MODULES			
XB24DZ7PIS-004	Digi XBee ZigBee – Thread Ready SMT, PCB Antenna		
XB24DZ7RIS-004	Digi XBee ZigBee – Thread Ready SMT, RF Pad Antenna		
XB24DZ7UIS-004	Digi XBee ZigBee – Thread Ready SMT, U.FL Antenna		
S2C KIT			
XKB2-Z7T-WZM	Digi XBee ZigBee Mesh Kit, worldwide		
S2D KIT			
XKB2-Z7T-WTZM	Digi XBee ZigBee Mesh Kit, worldwide		

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