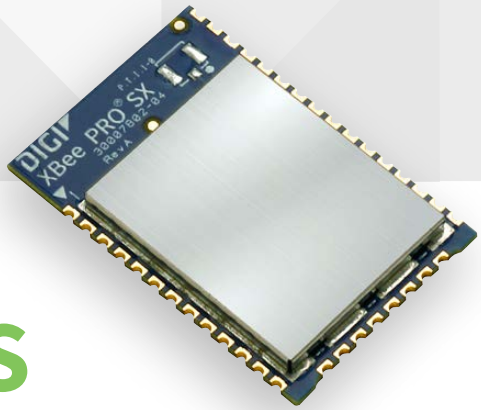
900 MHZ
RF MODULES
FOR OEMS



XBEE® SX MODULES

900 MHz OEM RF modules pack maximum power, security and flexibility into the XBee SMT footprint for mission-critical wireless designs

XBee SX 900 MHz RF modules are the “muscle modules” of the XBee ecosystem, providing a combination of reliability and redundancy for OEMs building low-power, mission-critical wireless devices. They utilize the DigiMesh® networking protocol, featuring redundant mesh network operation and support for low-power sleeping nodes. Customers that don’t require mesh network architecture can configure the XBee SX to operate in simple point to multipoint mode.

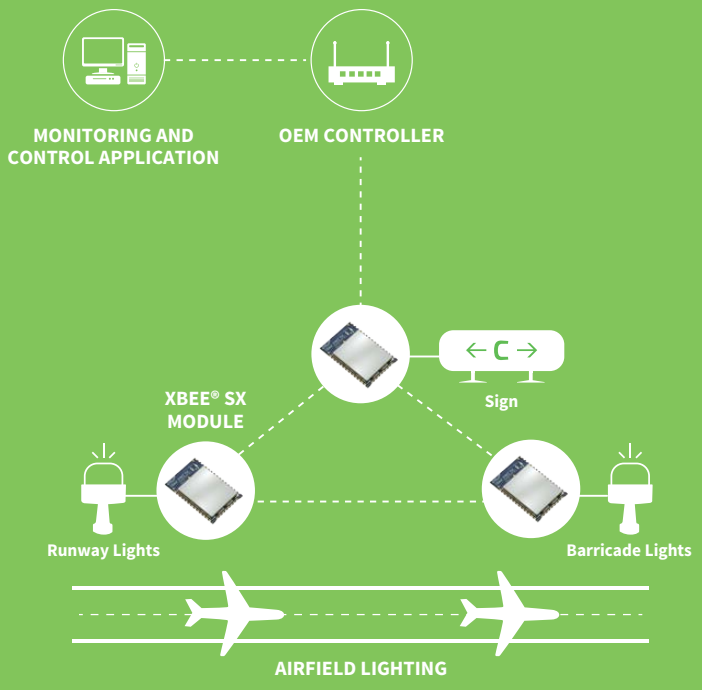
With RF line-of-sight ranges up to 65 miles and strong interference blocking, these modules are ideal for applications requiring the combination of range, data redundancy and data reliability.

The XBee SX modules can be configured easily using Digi’s free XCTU software or via Digi’s simplified AT or API command sets. They are pre-certified for use in multiple countries and include integrated antennas, removing the burden of RF development/support costs and enabling fast time to market for OEM designs. The modules provide secure, reliable delivery of critical data between devices with 256-bit AES encryption, and the small XBee surface-mount form factor saves valuable board space.

BENEFITS

- Family includes powerful 1-Watt 900 MHz XBee-PRO SX and battery-optimized 20 mW XBee SX modules for mission-critical OEM designs
- DigiMesh™ networking topology for redundancy and reliability
- 256-bit AES encryption for secure data communications
- XBee SMT form factor saves valuable PCB space
- Fully certified for use in unlicensed 900 MHz band

APPLICATION EXAMPLE



RELATED PRODUCTS

SPECIFICATIONS		XBee® SX Module	XBee-PRO® SX Module
PERFORMANCE			
FREQUENCY RANGE		ISM 902 to 928 MHz	ISM 902 to 928 MHz
TRANSMIT POWER (SOFTWARE SELECTABLE)		Up to 13 dBm	Up to 30 dBm*
CHANNELS		10 hopping sequences share 50 frequencies	10 hopping sequences share 50 frequencies
RF DATA RATE		Low data rate: 10 kb/s; Middle data rate: 110 kb/s; High data rate: 250 kb/s	
MAXIMUM DATA THROUGHPUT		High data rate: 120 kb/s	High data rate: 120 kb/s
AVAILABLE CHANNEL FREQUENCIES		Low and middle data rate: 101**; High data rate: 50	Low and middle data rate: 101**; High data rate: 50
RECEIVER SENSITIVITY		Low data rate: -113 dBm; Middle data rate: -106 dBm; High data rate: -103 dBm	
RECEIVER IF SELECTIVITY		Low data rate, +/- 250 kHz: 40 dB; Low data rate, +/- 500 kHz: 50 dB Middle data rate, +/- 250 kHz: 30 dB; Middle data rate, +/- 500 kHz: 40 dB High data rate, +/- 500 kHz: 30 dB; High data rate, +/- 1000 kHz: 45 dB	
RECEIVER RF SELECTIVITY		Below 900 MHz and above 930 MHz; > 50 dB	Below 900 MHz and above 930 MHz; > 50 dB
RURAL RANGE LINE OF SIGHT***		Low data rate: Up to 14.5 km (9 mi)	Low data rate: Up to 105 km (65 mi)
URBAN RANGE LINE OF SIGHT****		Low data rate: Up to 2.5 km (1.5 mi)	Low data rate: Up to 18 km (11 mi)
INDOOR RANGE		Low data rate: Up to 100 m (330 feet)	Low data rate: Up to 300 m (1,000 feet)
NETWORKING AND SECURITY			
MODULATION		Gaussian Frequency Shift Keying	Gaussian Frequency Shift Keying
SPREADING TECHNOLOGY		Frequency Hopping Spread Spectrum (FHSS)	Frequency Hopping Spread Spectrum (FHSS)
SUPPORTED NETWORK TOPOLOGIES (SOFTWARE SELECTABLE)		Peer-to-peer (master/slave relationship not required), point-to-point/point-to-multipoint, mesh	
ENCRYPTION		Optional 256-bit AES CBC encryption. Encryption is enabled with the ATKY command.	
GENERAL			
DIMENSIONS		3.38 x 2.21 x 1.29 cm (1.33 x 0.87 x 0.12 in)	3.38 x 2.21 x 1.29 cm (1.33 x 0.87 x 0.12 in)
WEIGHT		3 g	3 g
ROHS		Compliant	Compliant
MANUFACTURING		ISO 9001:2000 registered standards	ISO 9001:2000 registered standards
HOST INTERFACE CONNECTOR		37 castellated SMT pads	37 castellated SMT pads
ANTENNA CONNECTOR OPTIONS		U.FL or RF pad	U.FL or RF pad
ANTENNA IMPEDANCE		50 ohms unbalanced	50 ohms unbalanced
MAXIMUM INPUT RF LEVEL AT ANTENNA PORT		6 dBm	6 dBm
OPERATING TEMPERATURE		-40° C to 85° C	-40° C to 85° C
POWER REQUIREMENTS			
SUPPLY VOLTAGE		2.4 to 3.6 VDC, 3.3 V typical	2.6 to 3.6 VDC, 3.3 V typical
RECEIVE CURRENT	VCC = 3.3 V	40 mA	40 mA
TRANSMIT CURRENT	VCC = 3.3 V	55 mA @ 13 dBm; 45 mA @ 10 dBm; 35 mA @ 0 dBm	900 mA @ 30 dBm; 640 mA @ 27 dBm; 330 mA @ 20 dBm
SLEEP CURRENT	VCC = 3.3 V	2.5 uA	2.5 uA
REGULATORY APPROVALS			
UNITED STATES		FCC ID: MCQ-XBSX	FCC ID: MCQ-XBPSX
CANADA		IC: 1846A-XBSX	IC: 1846A-XBPSX
AUSTRALIA		RCM	RCM
NEW ZEALAND		RSM	–

* 30 dBm guaranteed at 3.3 V and above. Maximum power will decrease at lower voltages.
** The device hops on 50 channels selected, using the CM command, from 101 available frequencies.
*** We estimate rural ranges based on a 14.5 km (9 mi) range test with dipole antennas.
**** Range estimated assuming that the urban noise floor is approximately 15 dB higher than rural. The actual range depends on the setup and level of interference in your location.

PART NUMBERS	DESCRIPTION
KITS	
XK9X-DMS-0	XBee SX RF Module Dev Kit
XBee-PRO SX Modules (1-Watt)	
XBP9X-DMRS-001	XBee-PRO SX, 1W, DigiMesh/Point to Multipoint, SMT, RF Pad, North America
XBP9X-DMUS-001	XBee-PRO SX, 1W, DigiMesh/Point to Multipoint, SMT, U.FL, North America
XBP9X-DMRS-021	XBee-PRO SX, 1W, DigiMesh/Point to Multipoint, SMT, RF Pad, Australia
XBP9X-DMUS-021	XBee-PRO SX, 1W, DigiMesh/Point to Multipoint, SMT, U.FL, Australia
XBee SX Modules (20 mW)	
XB9X-DMRS-001	XBee SX, 20 mW, DigiMesh/Point to Multipoint, SMT, RF Pad, North America
XB9X-DMUS-001	XBee SX, 20 mW, DigiMesh/Point to Multipoint, SMT, U.FL, North America
XB9X-DMRS-021	XBee SX, 20 mW, DigiMesh/Point to Multipoint, SMT, RF Pad, Australia
XB9X-DMUS-021	XBee SX, 20 mW, DigiMesh/Point to Multipoint, SMT, U.FL, Australia
XB9X-DMRS-031	XBee SX, 20mW, DigiMesh, Point to Multipoint, SMT, RFPAD, New Zealand
XB9X-DMUS-031	XBee SX, 20mW, DigiMesh, Point to Multipoint, SMT, U.FL, New Zealand

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