

Sentry™ XBee-PRO RF Modem

The **XBee-PRO RS-232 RF Modem** is an IEEE 802.15.4 compliant solution that features an RS-232 or optional USB interface. Out-of-box, the modem is equipped to sustain outstanding range (2-3x the range of typical 802.15.4 solutions) and requires no additional configuration for immediate RF communications. Simply feed data into one modem, then the data is sent out the other end of the wireless link. The modem transfers a standard asynchronous serial data stream between two or more devices and is designed for rapid integration into existing data systems. Included is X-CTU software for configuring and testing XBee-PRO radio modems. The software is easy to use and allows users to test the radio modems in the actual environment with just a computer and the items included with the radio modems.

One of the XBee-Pro RF Modems is installed in the Sentry™ Visibility Sensor main electronics enclosure. It is factory pre-wired for power and RS-232 serial data and fully tested. For most applications, the 1/2 wave dipole antenna is installed inside the fiberglass electronics enclosure. The 2nd RF Modem is installed at the user's PC and connects to the PC via a supplied serial RS-232 or USB cable. For RS-232 applications, an AC Power Adapter is supplied for the RF Modem connected to the user's PC. It is recommended that the user select the USB option for the 2nd RF Modem since the USB connector supplies power to operate the RF Modem, eliminating the need for the external AC Power Adapter.

Features include:

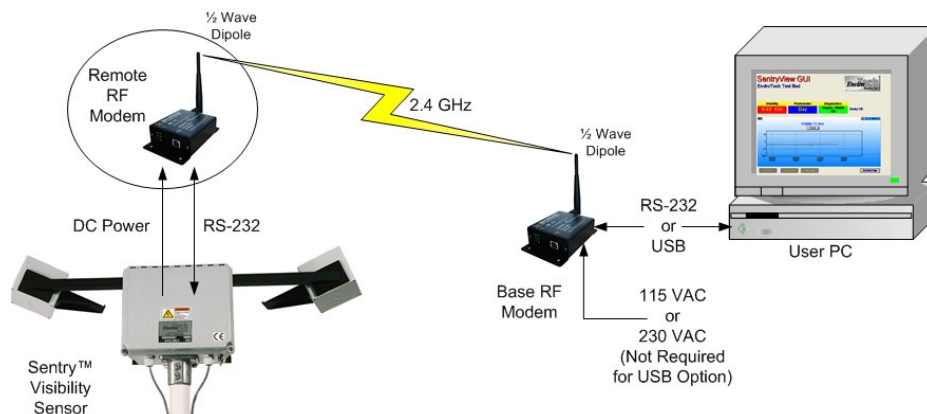
- Indoor/urban Range: up to 300' (100 m)
- Outdoor line-of-sight Range: up to 1 mile (1.6 km)(*)
- Transmit Power Output: 100 mW (20 dBm) EIRP
- Operating Frequency: 2.4 GHz
- Receiver Sensitivity: -100 dBm
- RS-232 or optional USB interface
- Economic, reliable alternative to wired communications

System requirements:

- Runs on Windows® 98, XP, 2000, or Vista platforms
- For use with Sentry™ Visibility Sensor with RS-232 output
- Compatible with SentryView™ Graphical User Interface Software

Ordering Information:

- P/N 70015 XBee Pro with RS-232 Interface includes 1/2 wave dipole antenna & AC Power Adapter (2 each required or 1 if USB interface used for user PC, see below),
- P/N 70016 XBee Pro with USB Interface includes 1/2 wave dipole antenna (1 each optional for user PC)



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Specifications		XBee-PRO PKG-R™ (RS-232)	XBee-PRO PKG-U™ (USB)
Performance	Indoor/Urban Range (w/ 2.1 dB dipole antenna)	up to 300 ft. (100 m)	
	Outdoor RF line-of-sight Range (w/ 2.1 dB dipole antenna)	up to 1 mile (1.6 km)	
	Transmit Power Output	60 mW (18 dBm)*, 100 mW (20 dBm) EIRP*	
	Receiver Sensitivity	-100 dBm (1% PER (Packet Error Rate))	
	Interface Data Rate (software selectable)	1200 - 115200 bps (non-standard baud rates also supported)	
	RF Data Rate	250,000 bps	
Networking & Security	Frequency Range	ISM 2.4 GHz	
	Spread Spectrum	DSSS (Direct Sequence Spread Spectrum)	
	Modulation	OQPSK (Offset Quadrature Phase Shift Keying)	
	Supported Network Topologies	Peer-to-peer (no master/slave dependencies), Point-to-point, Point-to-multipoint & Mesh (coming soon)	
	Number of channels (software selectable)	12 Direct Sequence Channels	
	Filtration Options	PAN ID, Channel & Destination/Source Addresses	
Antenna	Connector Options	RPSMA (reverse polarity SMA)	
	Impedance	50 ohms unbalanced	
Certifications (partial list)	United States (FCC Part 15.247)	OUR-XBEEPRO	
	Industry Canada (IC)	4214A-XBEEPRO	
	Europe (EC)	ETSI (10 dBm max TX output)	
		XBee-PRO PKG-R™	XBee-PRO PKG-U™
Power Requirements	Power Supply Voltage	5 - 14 VDC	USB bus power
	Transmit Current	300 mA (@ 9V) **	300 mA ***
	Receive Current	80 mA	90 mA
	Power Down Current	< 6 mA	< 25 mA
Physical Properties	Size	4.500" x 2.750" x 1.125" (11.4cm x 7.0cm x 2.9cm)	
	Weight	5.25 oz (150 g)	
	Data Connection	female DB-9	USB
	Operating Temperature	-40 to 85° C (Industrial)	0 to 70° C (Commercial)

- Approval Notes -

FCC Approved (USA) to Appendix A [p57] for FCC Requirements. Systems that include XBee-PRO RF Modems inherit MaxStream Certifications. Operates within the ISM (Industrial, Scientific & Medical) 2.4 GHz frequency band Manufactured under ISO 9001:2000 registered standards. XBee-PRO RF Modems are optimized for use in US, Canada, Australia, Israel and Europe (contact EnviroTech for complete list of approvals). When operating in Europe: XBee-PRO Modems must be configured to operate at a maximum TX power output level of 10 dBm (power

- Range Notes -

The difference between "indoor/urban" and "outdoor line of sight" range is due to environmental conditions and the amount of signal that is absorbed by different obstacles in the RF path. In order for radio waves to travel the greatest distances, the waves need to travel through as few obstacles as possible. Dense obstacles such as concrete, brick or other heavy construction will inhibit signals more than light obstacles such as a few trees or a simple post. When trying to increase the range, several factors including antenna height, frequency, antenna type and power output all should be considered. Antenna height allows the signal to travel above obstacles and also reduce any interference from the ground. Contact EnviroTech for assistance.



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