XTend™ OEM RF Module

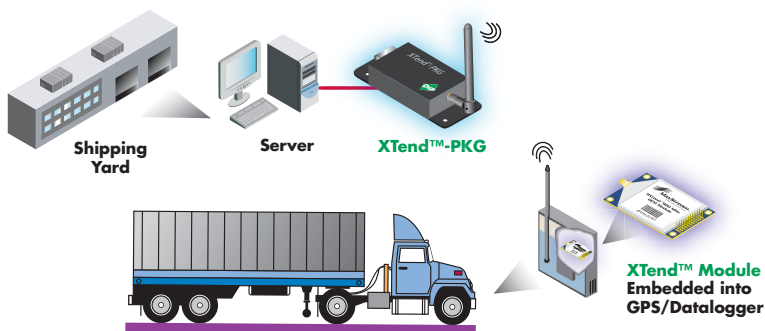## 1 Watt - 900 MHz - Long Range OEM RF Module

Overview

The XTend OEM RF Module provides unprecedented range in a low-cost wireless data solution. The module is easy to use, requires minimal power and provides reliable delivery of critical data between devices. Its small form factor saves valuable board space.

The XTend module utilizes FHSS (Frequency Hopping Spread Spectrum) agility to avoid interference by hopping to a new frequency on every packet transmission or re-transmission. Its transmit power is software adjustable from 1 mW to 1 W, the maximum output power allowable by governments that use 900 MHz as a license-free band. The XTend module is approved for use in the United States, Canada, Australia and other countries (contact MaxStream for a complete listing).

Due to innovations stamped in its design, the XTend module supplies two- to eight-times the range of other modules operating within the unlicensed 900 MHz frequency band. The range gained by OEMs and integrators is due to proprietary technologies embedded into each module, including superior RX (receiver) sensitivity, interference immunity, modulation/demodulation techniques, etc.

No configuration is necessary for out-of-the-box RF communication. The XTend module's default configuration supports a wide range of data system applications. Advanced configurations can be implemented using simple AT or binary commands.

Shipping Yard · Server · XTend™-PKG · XTend™ Module Embedded into GPS/Datalogger

MaxStream
A Digi International® Brand

www.maxstream.net

Product Definition

The XTend OEM RF Module is a board-level module that enables wireless communication from UART serial data to 900 MHz RF. With 1 Watt transmit power it has the longest range of MaxStream's wireless products. The XTend is the performance-to-price leader in its market.

Key Features

256-bit AES Encryption
The XTend module provides security through data encryption that is not available on competing modules. The Advanced Encryption Standard (AES) is used with a 256-bit key, U.S. Government FIPS 197 approved.

Receiver Sensitivity
MaxStream RF modules "hear" what others cannot, enabling them to supply greater range and reliability in wireless links.

Low Power Consumption
For power-sensitive applications, several low-power modes are available. The Shutdown pin allows for current consumption below 1uA.

Mesh
Advanced mesh firmware is now available. This masterless mesh networking functionality is the first of its kind in the industry. Mesh provides automatic routing/repeating in a self-healing network to yield unmatched reliability in even the toughest environments.

Interface Options
The XTend OEM RF Module communicates with MaxStream/Digi-PKG RF Modems: RS-232/485/422 (including NEMA and Class 1 Div 2 enclosures); USB; Ethernet; ZigBee® XBee XTender™.
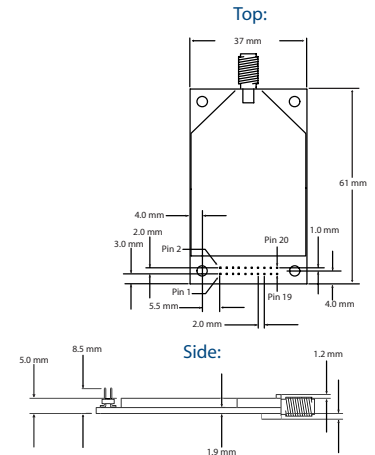
Sample Applications
Monitoring of remote systems; Sensor data capture in embedded systems; Home automation & building control; SCADA (Supervisory Control & Data Acquisition); Fleet management & asset tracking; AMR (Automatic Meter Reading).

Specifications

|			
Performance	**Transmit Power Output** (software selectable)	1 mW - 1 W (0 - 30 dBm)	
	Indoor/Urban Range (w/ 2.1 dB dipole antenna)	up to 3000' (900 m)	
	Outdoor RF Line-of-Sight Range (w/ 2.1 dB dipole antenna)	up to 14 miles (22 km)	
	Outdoor RF Line-of-Sight Range (w/ high-gain antenna)	up to 40 miles (64 km)	
	Interface Data Rate (software selectable)	10 - 230400 bps (including non-standard baud rates)	
	Throughput Data Rate (software selectable)	9,600 bps	115,200 bps
	RF Data Rate	10,000 bps	125,000 bps
	Receiver Sensitivity	-110 dBm	-100 dBm
Power Requirements	**Receive Current**	80 mA	
	Transmit Current	See chart below	
	Shutdown Pin Power-Down	< 1 µA	
	Pin Sleep Power-Down	147 µA	
	Cyclic Sleep (Idle Current)	0.3 - 0.8 mA (16 sec cyclic sleep)	
Networking & Security	**Frequency**	ISM 902 - 928 MHz	
	Spread Spectrum	FHSS (Frequency Hopping Spread Spectrum)	
	Modulation	FSK (Frequency Shift Keying)	
	Supported Network Topologies	Point-to-point, Point-to-Multipoint, Peer-to-peer, Repeater, Mesh (Mesh networking and 256-bit encryption capabilities are currently only available in separate releases.)	
	Channel Capacity	10 hop sequences share 50 frequencies	
	Encryption	256-bit AES Encryption AES algorithm meets Federal Information Processing Standard-197 (FIPS-197)	
Physical Properties	**Electrical Interface**	3V/5V CMOS Serial UART	
	Module Board Size	1.44 in x 2.38 in x 0.20 in (3.65 cm x 6.05 cm x 0.51 cm)	
	Weight	0.64 oz (18 g)	
	Connector	20-pin, 2 rows, 2 mm spacing	
	Operating Temperature	-40º C to 85º C (industrial)	
Antenna	**Connector Options**	RPSMA female or MMCX female	
	Impedance	50 ohms unbalanced	
Certifications (partial list)	**FCC Part 15.247**	OUR-9XTEND	
	Industry Canada (IC)	4214A-9XTEND	

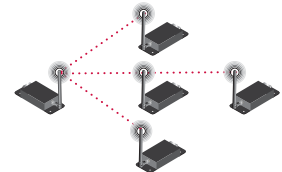## Mechanical Diagrams

Top:

Side:

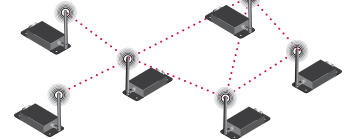## Network Architectures

Point-to-point

Peer-to-Peer
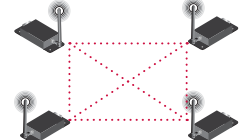
Point-to-multipoint & Repeater

Mesh

Power Requirements (relative to each Transmit Power Output option)

Transmit Power Output	1 mW	10 mW	100 mW	500 mW•	1 W•
Supply Voltage	2.8 -5.5 VDC	2.8 - 5.5 VDC	2.8 -5.5 VDC	3.0 - 5.5 VDC	4.75 - 5.5 VDC
Transmit Current (5 V) typical	110 mA	140 mA	270 mA	500 mA	730 mA
Transmit Current (3.3 V) typical	90 mA	110 mA	260 mA	600 mA	**

Specifications are subject to change without notice.

* If the supply voltage is lower than the minimum supply voltage requirement, the TX Power Output will decrease to the highest power level setting given the current supply voltage.

** 1W Power Output is not supported when using a 3.3 supply voltage

MaxStream
A Digi International® Brand