



The **Xeta9s IO** radio is an extremely capable, flexible, low cost industrial Frequency Hopping Spread Spectrum (FHSS) and Digital Transmission System (DTS) 900 MHz software defined radio (SDR). The Xeta9s IO is a serial only radio available as a board level product with 8 independently programmable Input/Output signals. The Xeta9s IO can communicate with GE MDS TransNET and FGR radios, is the ideal replacement for the discontinued FreeWave FGR series, and offers 20x the performance of the FGR3.

The **Xeta9s IO** utilizes XetaWave's patented **Dual Decode Digital Architecture™** that offers superior receiver performance, supports multiple modulation schemes, and selectively switches modulation to achieve optimal data throughput given the available channel size and environment noise. XetaWave's **MultiSpeed MultiPoint™** mode enables Endpoints operating at different over-the-air data transfer rates to communicate with a single Access Point over the same network while **XetaEMP** provides enhanced multipoint capability and **XetaMESH** provides peer to peer frequency hopping.

## Key Features

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**High Speed** Over-the-air data transfer rates from 57 to 5.3 Mbps plus higher throughput in **XetaEMP** mode.

**Adjustable RF Output** RF power output from 10 mW to 1 Watts (+10 dBm to +30 dBm).

**Network Types** Point to Point, Point to Multipoint, Enhanced MultiPoint, Peer to Peer, and **XetaMESH**.

**Selective Modulation** Multiple MSK, FSK, PSK, and QAM modulations.

**Dual Mode** Frequency hopping and single channel operations.

**Secure** Over-the-air data encryption using 128-bit and 256-bit AES.

**MultiSpeed Multipoint** Enables Access Points to communicate with Endpoints operating at different RF Data Rates.

**Programmable I/O** Independently configure 4 I/O as analog inputs, analog outputs, or digital inputs and 4 I/O as digital inputs or outputs.

**Compatibility** Optional modes offer the ability to communicate with GE MDS TransNET and FreeWave FGR/FGR2/FGR3 repeaters and master radios.

# Xeta9s IO Specifications

Transmitter	ISM FHSS	ISM DSS
Frequency Range	902 to 928 MHz	
Output Power	10 to 1000 mW (non-QAM) and 250 mW (QAM)	
Modulation	MSK, 2FSK, BPSK, QPSK, 8PSK, 16PSK, 16QAM, 32QAM, 64QAM	
Data Rate	57 to 5303 kbps	530 to 5303 kbps
Channel Bandwidth	77, 154, 207, 310, 600 & 1200 kHz	600, 900 & 1200 kHz
Frequency Stability	1.0 ppm	
Range	70+ miles	

ISM Receiver	77 kHz Channel		154 kHz Channel		207 kHz Channel	
Modulation	Sensitivity	Data Rate	Sensitivity	Data Rate	Sensitivity	Data Rate
MSK	-110 dBm	57 kbps	-107 dBm	114 kbps	-106 dBm	153 kbps

	310 kHz Channel		600 kHz Channel		1200 kHz Channel	
Modulation	Sensitivity	Data Rate	Sensitivity	Data Rate	Sensitivity	Data Rate
MSK	-105 dBm	229 kbps				
BPSK			-100 dBm	530 kbps	-99 dBm	884 kbps
QPSK			-98 dBm	1061 kbps	-97 dBm	1768 kbps
8PSK			-93 dBm	1591 kbps	-92 dBm	2651 kbps
16PSK					-85 dBm	3535 kbps
16QAM			-89 dBm	2121 kbps	-87 dBm	3535 kbps
32QAM			-86 dBm	2651 kbps	-83 dBm	4419 kbps
64 QAM			-76 dBm	3182 kbps	-76 dBm	5303 kbps

900 kHz Channel		
Modulation	Sensitivity	Data Rate
2FSK	-100 dBm	663 kbps

*\* Frequency Range may vary by Country, for example*

Australia, Peru	916-928 MHz
Brazil	902-907 & 916-928 MHz

# Xeta9s IO Specifications

## Interfaces

Power Connector	2-pin Phoenix / +10 to +32 Vdc
Serial	1 x RJ45 / up to 1Mbps / RS232/422/485 1 x RJ45 / up to 1Mbps / RS232
Micro USB	Client mode
I/O	12-pin Phoenix 4 Analog In, Analog Out, or Digital In 4 Digital In or Digital Out 4 Ground
RF Connector	SMA / 50 Ohms

## Power

Transmit	< 204 mA@ +12 Vdc
Receive	< 141mA@ +12 Vdc
Idle	< 103 mA @ +12 Vdc

## Environmental/Physical

Op. Temperature	-40°C to +85°C
Humidity	95% @ +40°C non-condensing
Safety	UL Class 1 Div 2
Dimensions (LxWxH)	5.1" x 3.2" x 1.0" (board level)
Weight	170 grams

## Functionality

Operating Modes	Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, Mesh
Roles	Access Point, Endpoint, Repeater
Repeater	Store-and-forward
Error Handling	CRC, FEC, Retransmit on error
Error Correction	Golay, Small Block
Data Encryption	128 & 256-bit AES Payload Data Encryption
RF Encryption	128-bit AES RF Overhead Encryption
Hop Patterns	10 Pseudo Random, 1 Pseudo Random Based on Network ID, & 1 Secure
Secure Hop Pattern	128-bit AES Hop Pattern Determination
MultiSpeed	Up to 4 Data Rates within the Same Channel Bandwidth
Programmable I/O	8 programmable input/output signals (4 independently programmed analog inputs, analog outputs, or digital inputs and 4 independently programmed digital inputs or digital outputs)
Diagnostics	Neighbor List, RF Ping, RF Throughput, RF Statistics, RF Scan

## Ordering

XETA9S-10INNFD-IO	Board level, 1 Serial Data & 1 Serial Config & 8 I/O
XETA9S-10INNFD-FGRIO	Board level, 1 Serial Data & 1 Serial Config & 8 I/O, FGR2 style connector

