

## 2.4 GHz Ethernet *Software Defined Industrial Radio*

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The **Xeta24 Debian** Ethernet radio is an extremely capable and flexible industrial Frequency Hopping Spread Spectrum (FHSS) and Digital Transmission System (DTS) software defined radio covering the unlicensed 2.4 GHz frequency band. The module utilizes a XetaWave patented **Dual Decode Digital Architecture™** that offers significant receiver performance.

The **Xeta24** supports multiple modulation schemes and features that can selectively switch the modulation to achieve optimal data throughput given the available channel size and environmental noise.



The **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. Simultaneous transmissions within a network using the **XetaMESH** feature increases the aggregate throughput while supporting peer to peer communications.

### Key Features

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**High Speed** Over-the-air data rates from 57 kbps to 5.3 Mbps plus higher throughput with payload compression and **XetaEMP**.

**Adjustable RF Output** Power output of 10 mW to 1 Watt (+10 to +30 dBm).

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

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

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

**MultiSpeed Multipoint** Access Point communicates with Endpoints operating at different RF data rates.

**Diagnostics** Monitoring of TX and RX statistics (noise, RSSI, more), voltage, and temperature over Modbus.

# Xeta24 Debian Specifications

Transmitter	FCC FHSS	FCC DTS
Frequency Range	2402 to 2478 MHz	
Output Power	10 to 1000 mW (10 to 30 dBm)	
Modulation	MSK, BPSK, QSPK, 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 & 1200 kHz
Frequency Stability	1.0 ppm	
Range	40 miles	10 miles

Receive sensitivity numbers below are with FEC disabled. With FEC enabled, these typically improve by 3 dBm.

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

Receiver	310 kHz Channel		600 kHz Channel		1200 kHz Channel	
Modulation	Sensitivity	Data Rate	Sensitivity	Data Rate	Sensitivity	Data Rate
MSK	-103 dBm	229 kbps				
BPSK			-98 dBm	530 kbps	-100 dBm	884 kbps
QPSK			-99 dBm	1061 kbps	-96 dBm	1768 kbps
8PSK			-96 dBm	1591 kbps	-90 dBm	2651 kbps
16PSK					-84 dBm	3535 kbps
16QAM			-91 dBm	2121 kbps	-85 dBm	3535 kbps
32QAM			-85 dBm	2651 kbps	-80 dBm	4419 kbps
64 QAM			-80 dBm	3182 kbps	-77 dBm	5303 kbps

# Xeta24 Debian Specifications

## Processing

CPU	ARM Cortex-A8
OS	Debian
RAM / Flash	256 MB / 4 GB

## Interfaces

Power Connector	2-pin Phoenix / +12 to +32 Vdc
Ethernet	2 x RJ45 / 10/100 Mbps Base-T
Serial	2 x RJ45 / up to 1Mbps / RS232/422/485
Micro USB	On-the-Go; +5 Vdc @ 500 mA
RF Connector	TNC / 50 Ohms

## Power

Transmit	235 mA @ +12 Vdc
Receive	190 mA @ +12 Vdc
Idle	176 mA @ +12 Vdc

## Environmental/Physical

Op. Temperature	-40°C to +75°C
Humidity	95% @ +40°C non-condensing
Safety	UL Class 1 Div 2
Dimensions (LxWxH)	6.62" x 3.45" x 1.83" (metal)
	5.5" x 3.5" x 1.5" (plastic)
Weight	700 grams (metal)
	182 grams (plastic)

## Functionality

Operating Modes	Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, Mesh
Roles	Access Point, Endpoint, Repeater
Networking	Static IP Routing, Net Filtering, Port Forwarding, Network Address Translation, Modbus Bridging
Protocols	IEEE 802.3, TCP, UDP, ARP, DHCP, NTP, FTP, ICMP, HTTP, HTTPS, SSH, Telnet, Multicast SNMP
Management	Web GUI, SNMP v1, v2, & v3
VLANs	802.1q VLANs and Trunks, QoS
Quality of Service	Four Levels of VLAN QoS
Serial Services	TCP/UDP Terminal Server, TCP Terminal Client, Modbus RTU Server
Error Handling	CRC, FEC, Retransmit on error
Error Correction	Golay, Reed-Solomon
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
Compression	Low, High, Decompress Only
Repeater	Store-and-forward
MultiMaster	Synchronization of Collocated Access Points or Multiple Access Points within a Network
MultiSpeed	Up to 4 Data Rates within the Same Channel Bandwidth
Diagnostics	Neighbor List, RF Ping, RF Throughput, RF Statistics, IP Ping, Traceroute, IPERF, TCP Dump, DNS Lookup, Serial Statistics, Modbus Bridging Statistics
Programmable I/O	Option for 8 programmable input/output signals (4 independently programmed analog inputs, analog outputs, or digital inputs and 4 independently programmed digital inputs or digital outputs)
Dual Radio	Option for dual radio that has the same or different frequency band

# Xeta24 Debian Specifications

## Ordering

XETA24-11IMDFB	Metal Enclosed, 1 Ethernet & 1 Serial
XETA24-22IMDFB	Metal Enclosed, 2 Ethernet & 2 Serial
XETA24-22IMDFB-IO	Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O
XETA24X24-22IMDFB	Metal Enclosed, Dual Radio, 2 Ethernet & 2 Serial
XETA24-11IPDFB	Plastic Enclosed, 1 Ethernet & 1 Serial
XETA24-22IPDFB	Plastic Enclosed, 2 Ethernet & 2 Serial
XETA24-22IPDFB-IO	Plastic Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O
Mixed Band Dual Radios	
XETA9X24-22DMDFC	902-960 MHz & 2.4 GHz Dual Radio, Metal Enclosed, 2 Ethernet & 2 Serial
XETA9X24-22DMDFC-IO	902-960 MHz & 2.4 GHz Dual Radio, Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O

