

# Xeta24 Debian

## 2.4 GHz ISM 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 (SDR) supporting the unlicensed 2.4 GHz frequency band. Based on the Debian operating system, the **Xeta24** Debian radios are XetaWave's latest generation of radios.

The **Xeta24** utilizes a XetaWave patented **Dual Decode Digital Architecture™** which offers significant receiver performance. The radio supports multiple modulation schemes and features. The **MultiSpeed** mode allows Endpoints operating at different RF data rates to communicate with a single Access Point to achieve optimal data throughput given the available channel size and RF environment. The **Enhanced Multipoint** mode provides an increase in throughput and a decrease in latency over traditional modes and against competitive products and the **MESH** allows for frequency hopping peer to peer communications.



All **Xeta24** radios from the XetaWave uTasker, Linux, Debian, and XetaEdge families are over-the-air compatible and the **Xeta24x24** Debian radio also supports full duplex operation.

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## 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 **EMP**.

**Adjustable RF Output** Power output up to 1 Watt (+30 dBm).

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

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

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

**MultiSpeed** Endpoints communicate at different RF data rates with Access Point.

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

# Xeta24 Debian Specifications

<b>Transmitter</b>	<b>ISM FHSS</b>	<b>ISM DSS</b>
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, 900 & 1200 kHz
Frequency Stability	1.0 ppm	
Range	70+ miles	

Receive sensitivity numbers are with FEC disabled. When enabled, sensitivity improves by 3 dBm.

<b>Receiver</b>	<b>ISM</b>					
	<b>77 kHz Channel</b>		<b>154 kHz Channel</b>		<b>207 kHz Channel</b>	
<b>Modulation</b>	<b>Sensitivity</b>	<b>Data Rate</b>	<b>Sensitivity</b>	<b>Data Rate</b>	<b>Sensitivity</b>	<b>Data Rate</b>
MSK	-110 dBm	57 kbps	-107 dBm	114 kbps	-106 dBm	153 kbps
<b>Modulation</b>	<b>310 kHz Channel</b>		<b>600 kHz Channel</b>		<b>1200 kHz Channel</b>	
	<b>Sensitivity</b>	<b>Data Rate</b>	<b>Sensitivity</b>	<b>Data Rate</b>	<b>Sensitivity</b>	<b>Data Rate</b>
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 @ 300 MHz
OS	Debian
RAM   Flash	256 MB   4 GB

## Interfaces

Power	2-pin Phoenix   +10 to +32 Vdc
Ethernet	2x RJ45   10/100 Mbps Base-T
Serial	2x RJ45   up to 1Mbps   RS232/422/485
Micro-USB	On-the-Go   +5 Vdc @ 500 mA
RF	TNC   50 Ohms
Standard I/O	1x MMS input/output   2 x DI

## Functionality

Operating Modes	Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, Full Duplex, 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, Up to 5 Simultaneous Connections
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 (MMS)	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, Network Statistics, Serial Statistics, Modbus Bridging Statistics, Statistics Graphing and CSV downloading
Programmable I/O Option	8 programmable input/output signals (4 independently programmed analog inputs/outputs, or digital inputs and 4 independently programmed digital inputs/outputs)
Dual Radio Option	Dual radio with the same or different frequency bands

## Power

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

## Environmental/Physical

Op. Temp.	-40°C to +75°C (ISM)
Humidity	95% @ +40°C non-condensing
Safety	UL Class 1 Div 2
Dimensions	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)

# Xeta24 Debian Specifications

## Ordering

XETA24-11IMDFB	Metal Enclosed, 1 Ethernet & 1 Serial, ISM
XETA24-22IMDFB	Metal Enclosed, 2 Ethernet & 2 Serial, 2DIs, 1 MMS, ISM
XETA24-22IMDFB-IO	Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O, 2DIs, 1 MMS, ISM
XETA24X24-22IMDFB	Metal Enclosed, Dual Radio, 2 Ethernet & 2 Serial, 2DIs, 1 MMS, ISM
XETA24-11IPDFB	Plastic Enclosed, 1 Ethernet & 1 Serial, ISM
XETA24-22IPDFB	Plastic Enclosed, 2 Ethernet & 2 Serial, 2DIs, 1 MMS, ISM
XETA24-22IPDFB-IO	Plastic Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O, 2DIs, 1 MMS, ISM

## Mixed Band Dual Radios

XETA9X24-22DMDFC	902-960 MHz & 2.4 GHz Dual Radio, Metal Enclosed, 2 Ethernet & 2 Serial, 2 DIs, 1 MMS, ISM
XETA9X24-22DMDFC-IO	902-960 MHz & 2.4 GHz Dual Radio, Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O, 1 MMS, ISM
XETA9X24-22IMDFC	902-928 MHz & 2.4 GHz Dual Radio, Metal Enclosed, 2 Ethernet & 2 Serial, 2DIs, 1 MMS, ISM
XETA9X24-22IMDFC-IO	902-928 MHz & 2.4 GHz Dual Radio, Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O, 1 MMS, ISM

