Xeta9x Debian
## *900 MHz ISM Ethernet*
Software Defined Industrial Radio

The **Xeta9x** Debian Ethernet radio is an extremely capable, flexible, and low cost industrial Frequency Hopping Spread Spectrum (FHSS) and Digital Transmission System (DTS) unlicensed 900 MHz software defined radio (SDR). The **Xeta9x** Debian is available as a board level or in a plastic enclosure. Based on the Debian operating system, the **Xeta9x** Debian is XetaWave's latest generation of radios.

The **Xeta9x** 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.
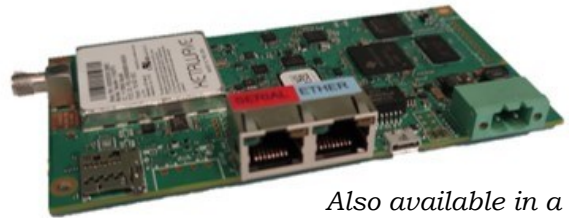
Also available in a plastic enclosure

All **Xeta9x** and **Xeta9** radios from the XetaWave uTasker, Linux, Debian, and XetaEdge families are over-the-air compatible and the **Xeta9x** Debian also supports **compatibility** with the **MDS TransNet™**, and **TransNext™** master radios.

Key Features

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) for all non-QAM modes and 250 mW (+24 dBm) for all QAM modes.

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.

Xeta9x Debian 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, 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 below are with FEC disabled.   When enabled, sensitivity improves by 3 dBm.

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

RF Selectivity	50 dB

* Frequency Range may vary by Country, for example

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

Xeta9x 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	1 x RJ45	10/100 Mbps Base-T
Serial	1 x RJ45	up to 1Mbps	RS232/422/485
Micro USB	On-the-Go	+5 Vdc @ 500 mA
RF	TNC	50 Ohms (plastic) SMA	50 Ohms (board)

Power

Transmit	204 mA (ISM) @ +12 Vdc
Receive	141 mA (ISM) @ +12 Vdc
Idle	103 mA @ +12 Vdc

Environmental/Physical

Op. Temp.	-40ºC to +85ºC (board) & +75ºC (plastic)
Humidity	95% @ +40ºC non-condensing
Safety	UL Class 1 Div 2
Dimensions	5.1" x 3.2" x 1.0" (board) 5.5" x 3.5" x 1.5" (plastic)
Weight	170 grams (board)	182 grams (plastic)

Functionality

Operating Modes	Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, Mesh
Roles	Access Point, Endpoint, Repeater
Compatibility	As an Endpoint compatible with the MDS TransNET and TransNext
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 6 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
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

Xeta9x Debian Specifications

Ordering

XETA9X-11INDFD	Board level, 1 Ethernet & 1 Serial, ISM
XETA9X-11IPDFD	Plastic Enclosed, 1 Ethernet & 1 Serial, ISM

XETAWAVE
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