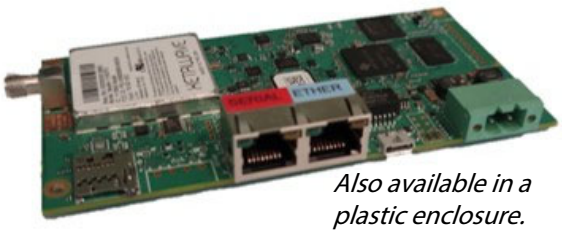
Xeta9x Debian

900 MHz ISM Ethernet Software Defined Industrial Radio



Also available in a plastic enclosure.

The **Xeta9x Debian** is an extremely capable, flexible, low cost industrial Frequency Hopping Spread Spectrum (FHSS) and Digital Transmission System (DTS) 900 MHz ISM (902-928 MHz) software defined radio (SDR). The **Xeta9x Debian** is an Ethernet/Serial radio available as a board level version or in a plastic enclosure. Based on the Debian operating system, the Xeta9x Debian is XetaWave's latest generation of radios.

The Xeta9x Debian utilizes a XetaWave patented **Dual Decode Digital Architecture™** that offers significant receiver performance. The Xeta9x Debian also supports multiple modulation schemes and MultiSpeed MultiPoint™ that allows End Points to selectively switch transfer rates with an Access Point to achieve optimal data throughput given the available channel size and RF environment. In addition, the frequency hopping peer to peer XetaMESH feature enables simultaneous transmissions and increased aggregate throughput.

All **Xeta9** radios from XetaWave's uTasker, Linux, XetaEdge, and Debian series are over-the-air compatible and XetaWave's seamless serial mode allows Serial and Ethernet End Points to simultaneously communicate with Ethernet Access Points. The **Xeta9x Debian** also supports compatibility with **MDS TransNET™** master and repeater radios.

Key Features

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

Adjustable RF Output RF power output up to 1 Watt (+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.

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

Compatibility Compatible with MDS TransNET master and repeater radios.

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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. With FEC enabled

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
OS	Debian
RAM / Flash	256 MB / 4 GB

Power

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

Interfaces

Power Connector	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 Connector	TNC / 50 Ohms (plastic)
	SMA / 50 Ohms (board level)

Environmental/Physical

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

Functionality

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

Ordering

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

Specifications subject to change without notice. 5.2024

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