Xeta1 Debian
100 MHz MAS Ethernet
Software Defined Industrial Radio

The **Xeta1** Debian Ethernet radio is an extremely capable and flexible industrial software defined radio (SDR) supporting the licensed 135 to 174 MHz frequency band. Based on the Debian operating system, the **Xeta1** Debian family is XetaWave's latest generation of radios.

The **Xeta1** utilizes a XetaWave patented **Dual Decode Digital Architecture™** which offers significant received 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 (EMP)** mode provides an increase in throughput and a decrease in latency over traditional modes and against competitive products.

All **Xeta1** radios from the XetaWave uTasker, Linux, Debian, and XetaEdge families are over-the-air compatible. The **Xeta1** Debian supports **compatibility** with the **MDS 1710** and **SD1** master radios and the **Xeta1x1** Debian radio also supports full duplex operation.

Key Features

High Speed Over-the-air data rates from 5 kbps to 88 kbps plus higher throughput with payload compression and **EMP**.

Dual Mode Duplex and single channel operation.

Adjustable RF Output Power output up to 5 Watts (+37 dBm).

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

Selective Modulation Multiple MSK, 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.

Xeta1 Debian Specifications

Transmitter	FCC	IC
Frequency Range	150.8 to 173.4 MHz	150.05 to 174 MHz
Output Power	10 to 5000 mW (10 to 37 dBm)	
Modulation	MSK, QSPK, 8PSK, 16QAM, 32QAM, 64QAM	
Data Rate	5 to 88 kbps	
Channel Bandwidth	6.25, 12.5 & 25 kHz	
Frequency Stability	1.0 ppm	
Range	70+ miles	

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

Receiver	6.25 kHz Channel		12.5 kHz Channel		25 kHz Channel	
Modulation	Sensitivity	Data Rate	Sensitivity	Data Rate	Sensitivity	Data Rate
MSK		5 kbps	-113 dBm	10 kbps	-113 dBm	17 kbps
QPSK			-103 dBm	18 kbps	-109 dBm	29 kbps
8PSK			-97 dBm	27 kbps	-103 dBm	41 kbps
16QAM			-94 dBm	37 kbps	-100 dBm	56 kbps
32QAM			-91 dBm	45 kbps	-96 dBm	72 kbps
64QAM			-86 dBm	54 kbps	-90 dBm	88 kbps

Xeta1 Debian Specifications

Processing

CPU	ARM Cortex-A8 @ 300 MHz
OS	Debian
RAM | Flash	256 MB | 4 GB

Interfaces

Power	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	TNC | 50 Ohms
Standard I/O	1x MMS input/output | 2 x DI

Power

Transmit	945 mA @ +12 Vdc
Receive	300 mA @ +12 Vdc
Idle	176 mA @ +12 Vdc

Environmental/Physical

Op. Temp.	-40ºC to +60ºC
Humidity	95% @ +40ºC non-condensing
Safety	UL Class 1 Div 2
Dimensions	6.62" x 3.45" x 1.83"
Weight	700 grams

Functionality

Operating Modes	Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, Full Duplex
Roles	Access Point, Endpoint, Repeater
Compatibility	As an Endpoint compatible with MDS 1710 and SD1
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
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
Programmable I/O	Option for 8 programmable input/output signals (4 independently programmed analog inputs, analog outputs, or digital inputs and 4 independently programed digital inputs or digital outputs)
Dual Radio	Option for dual radio that has the same or different frequency band

Xeta1 Debian Specifications

Ordering

XETA1-22MMDFA	Metal Enclosed, 2 Ethernet & 2 Serial, 2DIs, 1 MMS, MAS
XETA1-22MMDFA-IO	Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O, 1 MMS, MAS
XETA1X1-22MMDFA	Metal Enclosed, Dual Radio, 2 Ethernet & 2 Serial, 2DIs, 1 MMS, MAS