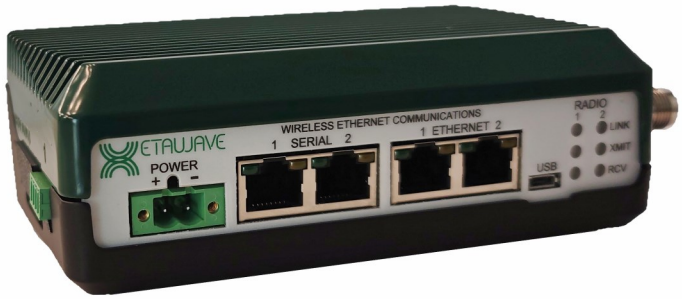
# Xeta1 Debian

## *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 radios are XetaWave's latest generation of radios.




The **Xeta1** 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 (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 radios support **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.

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# 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 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 |

## Power

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

## Interfaces

| | |
|---|---|
| Power | 2-pin Phoenix \| +12 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 |

## Environmental/Physical

| | |
|---|---|
| Op. Temp. | -40°C to +60°C |
| Humidity | 95% @ +40°C 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 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 |
| 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 |

# 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 |



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