

Xeta7 Debian

700 MHz MAS Ethernet

Software Defined Industrial Radio

The **Xeta7** Debian Ethernet radio is an extremely capable and flexible industrial software defined radio (SDR) supporting the licensed 757 to 758 and 787 to 788 MHz frequency band. Based on the Debian operating system, the **Xeta7** Debian family is XetaWave's latest generation of radios.

The **Xeta7** 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 **Xeta7** radios from the XetaWave Linux and Debian families are over-the-air compatible and the **Xeta7x7** Debian radio also supports full duplex operation.

Key Features

High Speed Over-the-air data rates from 10 kbps to 1008 kbps plus higher throughput with payload compression and **EMP**.

Dual Mode Duplex and single channel operation.

Adjustable RF Output Power output up to 10 Watts (+40 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.

Xeta7 Debian Specifications

Transmitter

| | |
|---------------------|--------------------------------------|
| Frequency Range | 757 to 758 & 787 to 788 MHz |
| Output Power | 10 to 10000 mW (10 to 40 dBm) |
| Modulation | MSK, QSPK, 8PSK, 16QAM, 32QAM, 64QAM |
| Data Rate | 10 to 1008 kbps |
| Channel Bandwidth | 12.5, 25, 50, 100, 200 & 250 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 Modulation | 12.5 kHz Channel | | 25 kHz Channel | | 50 kHz Channel | |
|------------------------|------------------|-----------|----------------|-----------|----------------|-----------|
| | Sensitivity | Data Rate | Sensitivity | Data Rate | Sensitivity | Data Rate |
| MSK | -113 dBm | 10 kbps | -113 dBm | 19 kbps | -110 dBm | 39 kbps |
| QPSK | -109 dBm | 23 kbps | -107 dBm | 36 kbps | -105 dBm | 71 kbps |
| 8PSK | -104 dBm | 34 kbps | -102 dBm | 52 kbps | -99 dBm | 101 kbps |
| 16QAM | -100 dBm | 45 kbps | -98 dBm | 70 kbps | -93 dBm | 137 kbps |
| 32QAM | -94 dBm | 57 kbps | -93 dBm | 87 kbps | -89 dBm | 175 kbps |
| 64QAM | | 68 kbps | | 105 kbps | | 210 kbps |

| Receiver Modulation | 100 kHz Channel | | 200 kHz Channel | | 250 kHz Channel | |
|------------------------|-----------------|-----------|-----------------|-----------|-----------------|-----------|
| | Sensitivity | Data Rate | Sensitivity | Data Rate | Sensitivity | Data Rate |
| MSK | -108 dBm | 76 kbps | -105 dBm | 153 kbps | -104 dBm | 194 kbps |
| QPSK | -103 dBm | 160 kbps | -102 dBm | 320 kbps | -101 dBm | 403 kbps |
| 8PSK | -97 dBm | 240 kbps | -94 dBm | 480 kbps | -95 dBm | 605 kbps |
| 16QAM | -91 dBm | 320 kbps | -91 dBm | 640 kbps | -91 dBm | 806 kbps |
| 32QAM | -87 dBm | 400 kbps | -87 dBm | 800 kbps | -87 dBm | 1008 kbps |
| 64QAM | | 480 kbps | | 960 kbps | | 1209 kbps |

Xeta7 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 |

Functionality

| | |
|--------------------|---|
| Operating Modes | Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, Full Duplex |
| 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 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 programmed digital inputs or digital outputs) |
| Dual Radio | Option for dual radio that has the same or different frequency band |

Power

| | |
|----------|-----------------------|
| Transmit | 593 mA (3W) @ +12 Vdc |
| Receive | 300 mA @ +12 Vdc |
| Idle | 176 mA @ +12 Vdc |

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 |

Xeta7 Debian Specifications

Ordering

| | |
|--------------------|---|
| XETA7-22MMDFB | Metal Enclosed, 2 Ethernet & 2 Serial, 2 DIs, 1 MMS, MAS |
| XETA7-22MMDFB-IO | Metal Enclosed, 2 Ethernet & 2 Serial with 8 Programmable I/O, 1 MMS, MAS |
| XETA7X7-22MMDFB | Metal Enclosed, Dual Radio, 2 Ethernet & 2 Serial, 2 DIs, 1 MMS, MAS |
| XETA7X7-22MMDFB-IO | Metal Enclosed, Dual Radio, 2 Ethernet & 2 Serial with 8 Programmable I/O, 1 MMS, MAS |