XETAWAVE
CUSTOM RF SOLUTIONS

XETA7 DEBIAN

700 MHz Ethernet Radio

Industrial software-defined radio · licensed 757 to 758 & 787 to 788 MHz



1209kbps
Max over-the-air rate

10w
RF output (+40 dBm)

70+mi
Range

Mesh
Mobile ad-hoc networking

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 and running the Debian operating system, the **Xeta7 Debian** radios are part of XetaWave's latest generation of radios.

The **Xeta7** utilizes a XetaWave Dual Decode Digital Architecture which offers significant receiver performance. The radio supports multiple network types, modulation schemes, and many other features.

All **Xeta7** radios across the XetaWave Linux and Debian families are fully over-the-air compatible. For applications requiring simultaneous transmit and receive capability, the **Xeta7x7 Debian** models support full-duplex operation.

KEY FEATURES

High Speed
10 kbps to 1209 kbps over the air; higher throughput with payload compression and Enhanced MultiPoint.

Multiple Modes
Duplex and simplex operation supported along with full-duplex Access Point with half-duplex End Points.

Adjustable RF Output
Transmit output power from 10 mW (+10 dBm) up to 10 W (+40 dBm).

Network Types
Point-to-Point, Point-to-Multipoint, CSMA Peer-to-Peer, Enhanced MultiPoint, and Mesh.

Secure
Over-the-air payload and overhead encryption using 128-bit and 256-bit AES.

Selective Modulation
Multiple MSK, PSK, and QAM modulations.

MultiSpeed
Endpoints communicate at different RF data rates with the Access Point.

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

Programmable I/O
I/O consisting of 4 analog inputs, outputs, or digital inputs and 4 digital inputs or outputs is available.

Dual Channel
Dual channel radios covering the same or different frequency bands are available.

GPS
Models with an optional integrated GPS.

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Hardware & Transmitter Specifications

PROCESSING

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

POWER @ +12 VDC

Transmit	593 mA (3 W)
Receive	300 mA
Idle	176 mA

INTERFACES

Power	2-pin Phoenix · +12 to +32 Vdc
Ethernet	2× RJ45 · 10/100 Mbps Base-T
Serial	2× RJ45 · up to 1 Mbps · RS-232/422/485
Micro-USB	On-the-Go · +5 Vdc @ 500 mA
RF	TNC · 50 Ω
GPS	TNC · 50 Ω
Standard I/O	1× MMS · 2× DI

ENVIRONMENTAL & MECHANICAL

Op. Temp.	-40 °C to +60 °C
Humidity	95% @ +40 °C, non-condensing
Dimensions	6.62 × 3.45 × 1.83 in
Weight	700 g
Safety	UL Class I, Div 2

TRANSMITTER

	FCC
Frequency Range	757 to 758 & 787 to 788 MHz
Output Power	10 to 10000 mW (+10 to +40 dBm)
Modulation	MSK, QPSK, 8PSK, 16QAM, 32QAM, 64QAM
Data Rate	10 to 1209 kbps
Channel Bandwidth	12.5, 25, 50, 100, 200, 250 kHz
Frequency Stability	1.0 ppm
Range	70+ miles

Receiver Specifications

FCC · 757–758 & 787–788 MHz

Modulation	Sensitivity	Data Rate
12.5 kHz channel		
MSK	-113 dBm	10 kbps
QPSK	-109 dBm	23 kbps
8PSK	-104 dBm	34 kbps
16QAM	-100 dBm	45 kbps
32QAM	-94 dBm	57 kbps
64QAM	—	68 kbps
25 kHz channel		
MSK	-113 dBm	19 kbps
QPSK	-107 dBm	36 kbps
8PSK	-102 dBm	52 kbps
16QAM	-98 dBm	70 kbps
32QAM	-93 dBm	87 kbps
64QAM	—	105 kbps
50 kHz channel		
MSK	-110 dBm	39 kbps
QPSK	-105 dBm	71 kbps
8PSK	-99 dBm	101 kbps
16QAM	-93 dBm	137 kbps
32QAM	-89 dBm	175 kbps
64QAM	—	210 kbps

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

Sensitivity shown with FEC disabled. Enabling FEC can improve sensitivity by 3 dB.

Functionality

Networking	
Operating Modes	Point-to-Point, Point-to-MultiPoint, Enhanced MultiPoint, Peer-to-Peer, Full Duplex, Mesh
Roles	Access Point, Endpoint, Repeater (store-and-forward)
Networking	Static IP Routing, Net Filtering, Port Forwarding, Masquerading, Network Address Translation, Modbus Bridging, BATMAN Mobile Ad-hoc Networking
Protocols	IEEE 802.3, TCP, UDP, ARP, DHCP, NTP, STP, FTP, ICMP, HTTP, HTTPS, SSH, Telnet, Multicast, SNMP
Management	Web GUI, SNMP v1, v2a, 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
Reliability & Security	
Error Handling	CRC, FEC, Retransmit on error
Error Correction	Golay, Reed-Solomon
Data/RF Encryption	128- & 256-bit AES, payload only or payload and RF
Compression	Low, High, Decompress Only
Network Performance & Diagnostics	
MultiMaster	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, Spectrum Analyzer, IP Ping, Traceroute, IPERF, TCP Dump, DNS Lookup, Network / VPN / Serial / Modbus Bridging Statistics, statistics graphing and CSV download
Options	
Programmable I/O	8 programmable I/O signals (4 independently programmed analog inputs/outputs or digital inputs, and 4 independently programmed digital inputs/outputs)
Dual Radio	Dual radio with the same or different frequency bands
Integrated GPS	Integrated GPS receiver

Ordering Information

Part Number	Frequency	Enclosure	Eth / Serial	I/O	Band
Single-Channel Radios					
XETA7-22MMDFB	757–758 & 787–788 MHz	Metal	2 / 2	2 DI, 1 MMS	MAS
XETA7-22MMDFB-IO	757–758 & 787–788 MHz	Metal	2 / 2	8 I/O, 1 MMS	MAS
Dual-Channel Radios					
XETA7X7-22MMDFB	757–758 & 787–788 MHz	Metal	2 / 2	2 DI, 1 MMS	MAS
XETA7X7-22MMDFB-IO	757–758 & 787–788 MHz	Metal	2 / 2	8 I/O, 1 MMS	MAS
Radios with Integrated GPS					
XETA7XG-22MMDFA	757–758 & 787–788 MHz	Metal	2 / 2	2 DI, 1 MMS	MAS
XETA7XG-22MMDFA-IO	757–758 & 787–788 MHz	Metal	2 / 2	8 I/O, 1 MMS	MAS

Specifications subject to change without notice. **Rev. 9.2026**