XETAWAVE
CUSTOM RF SOLUTIONS

XETA1 DEBIAN

100 MHz Ethernet Radio

Industrial software-defined radio · licensed 150 to 174 MHz



88kbps
Max over-the-air rate

5W
RF output (+37 dBm)

70+mi
Range

Compatible
MDS 1710 and SD1

The **Xeta1 Debian** Ethernet radios are highly capable, flexible industrial MAS software defined radio (SDR) supporting the licensed 150 to 174 MHz frequency band and running the Debian operating system, the **Xeta1 Debian** radios are part of XetaWave's latest generation of radios.

The **Xeta1** 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 **Xeta1** radios across the uTasker, uCLinux, Debian, and XetaEdge product families are fully over-the-air compatible. **Xeta1 Debian** Ethernet radios support compatibility with the **MDS 1710** and **SD1** master radios. For applications requiring simultaneous transmit and receive capability, the **Xeta1x1 Debian** models support full-duplex.

KEY FEATURES

High Speed
5 kbps to 88 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 5 W (+37 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 or 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.

Edge Computer
XetaEdge1 models with edge computing capability are available.

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

GPS
Models with an integrated GPS are available.

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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	945 mA
Receive	190 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/IC
Frequency Range	150 to 174 MHz
Output Power	10 to 5000 mW (+10 to +37 dBm)
Modulation	MSK, QPSK, 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

Receiver Specifications

FCC/IC · 150–174 MHz

Modulation	Sensitivity	Data Rate
6.25 kHz channel		
MSK	—	5 kbps
12.5 kHz channel		
MSK	-113 dBm	10 kbps
QPSK	-103 dBm	18 kbps
8PSK	-97 dBm	27 kbps
16QAM	-94 dBm	37 kbps
32QAM	-91 dBm	45 kbps
64QAM	-86 dBm	54 kbps

Modulation	Sensitivity	Data Rate
25 kHz channel		
MSK	-113 dBm	17 kbps
QPSK	-109 dBm	29 kbps
8PSK	-103 dBm	41 kbps
16QAM	-100 dBm	56 kbps
32QAM	-96 dBm	72 kbps
64QAM	-90 dBm	88 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)
Compatibility	As an Endpoint, compatible with MDS 1710, SD1
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					
XETA1-22MMDFA	150–174 MHz	Metal	2 / 2	2 DI, 1 MMS	MAS
XETA1-22MMDFA-IO	150–174 MHz	Metal	2 / 2	8 I/O, 1 MMS	MAS
Dual-Channel Radios					
XETA1X1-22MMDFA	150–174 MHz	Metal	2 / 2	2 DI, 1 MMS	MAS
XETA1X1-22MMDFA-IO	150–174 MHz	Metal	2 / 2	8 I/O, 1 MMS	MAS
Mixed-Band Dual-Channel Radios					
XETA9X1-22DMDFC	902–960 + 150–174 MHz	Metal	2 / 2	2 DI, 1 MMS	ISM/MAS
Radios with Integrated GPS					
XETA1XG-22MMDFA	150–174 MHz	Metal	2 / 2	2 DI, 1 MMS	MAS
XETA1XG-22MMDFA-IO	150–174 MHz	Metal	2 / 2	8 I/O, 1 MMS	MAS

Specifications subject to change without notice. **Rev. 11.2026**