# Xeta9

## *900 MHz ISM/MAS Serial Software Defined Industrial Radio*

The **Xeta9** Serial radio is an extremely capable and flexible industrial Frequency Hopping Spread Spectrum (FHSS) and Digital Transmission System (DTS) software defined radio (SDR) supporting the unlicensed or both the licensed and unlicensed 900 MHz frequency bands. The **Xeta9** utilizes a XetaWave patented **Dual Decode Digital Architecture™** which offers significant receiver performance.

The **Xeta9** 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 **Xeta9** Serial radios are backwards compatible and over-the-air compatible with the XetaWave uTasker, Linux, Debian, and XetaEdge families. XetaWave's seamless serial mode allows serial and Ethernet Endpoints to simultaneously communicate with an Ethernet Access Point. The **Xeta9** serial radios support **compatibility** with the **MDS 9710/9790**, **SD9**, **TransNet™**, and **TransNext™** master radios.

## Key Features

**High Speed** Over-the-air data rates from 10 kbps to 5.3 Mbps plus higher throughput when operating in **EMP** mode.

**Dual Mode** Frequency hopping and single channel operation in ISM and duplex and simplex operation in MAS.

**Adjustable RF Output** Power output up to 1 Watt in ISM or 4 Watts in MAS.

**Selective Modulation** Multiple MSK, PSK, and QAM modulations.

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

**Secure** Over-the-air data encryption using 128-bit and 256-bit AES.

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

**Multi-Speed TDMA** Offers multiple logical data channels with different speeds within a single radio.

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# Xeta9 Serial Specifications

| Transmitter | ISM FHSS | ISM DTS |
|---|---|---|
| Frequency Range | 902 to 928 MHz | |
| Output Power | 10 to 1000 mW (10 to 30 dBm) | |
| Modulation | MSK, 2FSK, BPSK, QSPK, 8PSK, 16PSK, 16QAM, 32QAM, 64QAM | |
| Data Rate | 57 to 5303 kbps | 530 to 5303 kbps |
| Channel Bandwidth | 77, 154, 207, 310, 600, 900 & 1200 kHz | 600, 900 & 1200 kHz |
| Frequency Stability | 1.0 ppm | |
| Range | 70+ miles | 30 miles |

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

| Receiver | ISM | | | | | |
|---|---|---|---|---|---|---|
| | 77 kHz Channel | | 154 kHz Channel | | 207 kHz Channel | |
| **Modulation** | **Sensitivity** | **Data Rate** | **Sensitivity** | **Data Rate** | **Sensitivity** | **Data Rate** |
| MSK | -110 dBm | 57 kbps | -107 dBm | 114 kbps | -106 dBm | 153 kbps |

| | 310 kHz Channel | | 600 kHz Channel | | 1200 kHz Channel | |
|---|---|---|---|---|---|---|
| **Modulation** | **Sensitivity** | **Data Rate** | **Sensitivity** | **Data Rate** | **Sensitivity** | **Data Rate** |
| MSK | -105 dBm | 229 kbps | | | | |
| BPSK | | | -100 dBm | 530 kbps | -99 dBm | 884 kbps |
| QPSK | | | -98 dBm | 1061 kbps | -97 dBm | 1768 kbps |
| 8PSK | | | -93 dBm | 1591 kbps | -92 dBm | 2651 kbps |
| 16PSK | | | | | -85 dBm | 3535 kbps |
| 16QAM | | | -89 dBm | 2121 kbps | -87 dBm | 3535 kbps |
| 32QAM | | | -86 dBm | 2651 kbps | -83 dBm | 4419 kbps |
| 64 QAM | | | -76 dBm | 3182 kbps | -76 dBm | 5303 kbps |

| | 900 kHz Channel | |
|---|---|---|
| **Modulation** | **Sensitivity** | **Data Rate** |
| 2FSK | -100 dBm | 663 kbps |

| | |
|---|---|
| RF Selectivity | 50 dB |

**** Frequency Range may vary by Country, for example***

| | |
|---|---|
| Australia, Peru | 916-928 MHz |
| Brazil | 902-907 & 916-928 MHz |

# Xeta9 Serial Specifications

| Transmitter | MAS |
|---|---|
| Frequency Range | 928 to 960 MHz |
| Output Power | 10 to 4000 mW (10 to 36 dBm) |
| Modulation | MSK, 4FSK, QSPK, 8PSK, 16QAM, 32QAM, 64QAM |
| Data Rate | 10 to 210 kbps |
| Channel Bandwidth | 12.5, 25, and 50 kHz (100, 200, & 250 kHz available upon request) |
| Frequency Stability | 1.0 ppm |
| Range | 70+ miles |

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

| Receiver | MAS | | | | | |
|---|---|---|---|---|---|---|
| | 12.5 kHz Channel | | 25 kHz Channel | | 50 kHz Channel | |
| **Modulation** | **Sensitivity** | **Data Rate** | **Sensitivity** | **Data Rate** | **Sensitivity** | **Data Rate** |
| MSK | -115 dBm | 10 kbps | -114 dBm | 19 kbps | -114 dBm | 39 kbps |
| 4FSK | -108 dBm | 19 kbps | -111 dBm | 39 kbps | | |
| QPSK | -104 dBm | 23 kbps | -107 dBm | 36 kbps | -107 dBm | 71 kbps |
| 8PSK | -100 dBm | 34 kbps | -101 dBm | 52 kbps | -101 dBm | 101 kbps |
| 16QAM | -95 dBm | 45 kbps | -98 dBm | 70 kbps | -98 dBm | 137 kbps |
| 32QAM | -91 dBm | 57 kbps | -95 dBm | 87 kbps | -95 dBm | 175 kbps |
| 64 QAM | -90 dBm | 68 kbps | -89 dBm | 105 kbps | -89 dBm | 210 kbps |
| | | | | | | |
| RF Selectivity | 33 dB | | 30 dB | | 30 dB | |

# Xeta9 Serial Specifications

## Power

| | |
|---|---|
| Transmit | 235 mA (ISM) \| 325 mA (MAS) @ +12 Vdc |
| Receive | 100 mA @ +12 Vdc |
| Idle | 85 mA @ +12 Vdc |

## Interfaces

| | |
|---|---|
| Power | 2-pin Phoenix \| +12 to +32 Vdc |
| Data | 1x RJ45 \| up to 1Mbps \| RS232/422/485 |
| Control/Diag | 1x RJ45 \| 115.2 kbps \| RS232 |
| RF | TNC \| 50 Ohms |

## Environmental/Physical

| | |
|---|---|
| Op. Temp. | -40°C to +75°C (ISM)<br>-40°C to +60°C (MAS) |
| Humidity | 95% @ +40°C non-condensing |
| Safety | UL Class 1 Div 2 |
| Dimensions | 6.62" x 3.45" x 1.83" (metal)<br>5.5" x 3.5" x 1.5" (plastic) |
| Weight | 700 grams (metal)<br>182 grams (plastic) |

## Functionality

| | |
|---|---|
| Operating Modes | Point to Point, Point to MultiPoint, Enhanced MultiPoint, Peer to Peer, TDMA |
| Roles | Access Point, Endpoint, Repeater |
| Compatibility | As an Endpoint compatible with the MDS 9710/9790, SD9, TransNET, and TransNext |
| Error Handling | CRC, FEC, Retransmit on error |
| Error Correction | Golay, Small Block, Reed-Solomon |
| Data Encryption | 128 & 256-bit AES Payload Data Encryption |
| RF Encryption | 128-bit AES RF Overhead Encryption |
| Hop Patterns | 10 Pseudo Random, 1 Pseudo Random Based on Network ID, & 1 Secure |
| Secure Hop Pattern | 128-bit AES Hop Pattern Determination |
| Repeater | Store-and-forward |
| MultiSpeed | Up to 4 Data Rates within the Same Channel Bandwidth |
| Diagnostics | Network Scan, RF Ping, RF Throughput, RF Statistics |

## Ordering

| | |
|---|---|
| XETA9-10DMNFC | Plastic Enclosed, 2 Serial, ISM/MAS |
| XETA9-10IMNFC | Plastic Enclosed, 2 Serial, ISM |
| XETA9-10IPNFC | Plastic Enclosed, 2 Serial, ISM |

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*Specifications subject to change without notice.* 3.2025

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