

## RV-M9

M9 VHF/UHF Band  
½ - 5 watt Data Radio

The M9 data transceiver is a rugged MIL810G compliant IP67 ½ - 5 watt UHF or VHF data radio modem. Interface options include Ethernet, dual serial ports, USB, and CAN. It has optional GPS for asset tracking applications. Other options include tilt-sensor, AES encryption. The RV-M9 incorporates Raveon's M8 data radio modems incorporating many bands and features.



## Product Overview

### Long-Range Operation

Operating in the UHF or UHF frequency band, the RV-M9 radio modem works over 50 miles point-to-point with omni-directional antennas. All RV-M9 modems support store-and-forward repeating for wide-area coverage.

### High-Performance RF

The M9 has enhanced RF performance. Its 3mS PLL makes it fast, and its receiver has an exceptional dynamic range and selectivity. The GFSK transmitter can operate up to 5 watts output, and 25 watts with the optional RF power amplifier. This M9 radio utilizes Raveon's [M8 radio modules](#) for the RF transceiver portion.

### Rugged and Weather Proof

The RV-M9 is built to MIL810G standards, and is fully submersible for an hour at 1 meter. The M9 will work in the harshest of physical and RF environments. IP67 rated.

### High Speed and High Efficiency

The RV-M9 operates with user-selectable over-the air data rates of 1200 to 19200bps. It draws less than 120mA when receiving.

### GPS Option

The optional internal GPS allows the RV-M9 to be a powerful Automatic Vehicle Locating (AVL) system or Time Space Position Information (TSPI) reporting device.

### Fully Programmable

It is configured using industry-standard AT commands. The RV-M9S has dual RS232 serial ports, allowing simultaneous configuration and

system monitoring. The RV-M9L has an Ethernet port for simultaneous data communications using TCP/Ip sockets, and configuration via Telnet or WEB browser. Raveon also provides a free PC program called "[Radio Manager](#)" that makes configuring the M9 a snap.

### OTA Configuration

The ID of a particular transponder and certain system parameters such as report rate may be configured Over-The-Air, without having to physically connect to the unit.

### Real-time diagnostics and statistics

Channel performance, RSSI, RF power, packet counters, and radio configuration are easily accessed via the secondary serial port, telnet, or remotely over-the-air.

### Very Low Power Consumption

The advanced UHF transceiver is integrated with a powerful 32-bit ARM microprocessor-based modem in one easy-to mount package. It has very low power consumption, and sleep modes that allow it to be active and consume almost no power at all.

### Flexible Addressing and Error Correction

The RV-M9 uses a 16 bit address with a 16 bit network mask, allowing for many devices to be co-located without receiving each other, as well as the creation of sophisticated network topologies.

### Ethernet Interface

The RV-M9 can be setup as a terminal server, so it is easy to connect into and pass in data to transmit, and receive over-the air data and GPS tracking messages.

A graphical user interface is also embedded in it to configure the primary settings using a web Browser. Statistics and system operation can be viewed on a browser. This feature can be disabled.

## General Specifications

### Model:

RV-M9i-Ux-oo (i-I/O, x=band, oo=options)

Size: ..... 4.50" X 2.60" X 1.62  
(11.7cm X 6.6cm X 2.43cm)

Weight: ..... 12 oz

Input Voltage: ..... 10.5 – 30 VDC

Optional Extended Voltage: ..40.0 – 50.0 VDC Other options available.

### Current draw:

Receiving data: serial ..... <120mA

Receiving data: Ethernet I/O ..... <160mA

Transmitting data: 2.4A @ 5w, 1.2A @ 2W typical

Sleep ..... <15mA

### Frequency Bands:

UA 403-434MHz (for export)

UB 419-440MHz (for export)

UC 450-480MHz (for US)

UD 470-512MHz (for export)

VA 132-155 MHz / 23 MHz

VB 150-174 MHz / 24 MHz

VC 216-222 MHz / 2 MHz

### Optional Serial Port Baud Rates (programmable)

1.2k, 2.4k, 4.8k, 9.6k, 19.2k, 38.4k, 57.6k, 115.2k

### Over-the-air baud rates (programmable)

-N 1200, 2000, 2400, 4800

-W 1200, 2000, 2400, 4800, 9600

### Operating Mode

Simplex or Half-duplex

### Full Spec Operating Temperature range

Full-spec: ..... -30°C to +60°C

Reduced performance ..... -40°C to +70°C

### TX-RX and RX-TX turn-around time

<3mS

Wake-up time ..... <2s from OFF

..... <15ms from Sleep

### Front Panel LEDs

Power , Status, GPS

RF Connector ..... N (Female)

GPS Connector ..... TNC(Female)

Power Cable ..... Sealed 3-pin 7mm "M8"

### Addressing

Individual address: ..... 65,536

### I/O Choices

Single Serial Port ..... R

Dual serial port option ..... S

Ethernet I/O ..... E

### Options:

Internal GPS ..... -GX

## Transmitter Specifications

RF Power Output ..... 500mW – 5.0 W programmable if you need more power, let us know.

Maximum Duty Cycle ... 100% @ 2W to 40C, 25% @5W  
(100% w/ optional heat-sink)

Frequency Deviation .....  $\pm 2.2\text{kHz} (-N) \pm 3.5\text{kHz} (-W)$

RF Bandwidth ..... 20MHz no-tune

Occupied bandwidth ..... 11 kHz (-N) 16kHz(-W)

TX Spurious outputs ..... < -80dBc

Occupied Bandwidth ..... Per FCC

FCC Emissions Designator ..... 11K0F1D (-N)

Frequency Stability -30 to +60C ..... Better than  $\pm 1.0\text{ppm}$

Frequency Stability -40 to +70C ..... Better than  $\pm 1.5\text{ppm}$

## Receiver Specifications

RX sensitivity (.1% BER) ..... 1200bps < -117dBm

RF No-tune bandwidth ..... 20MHz

12.5KHz Adjacent Channel Selectivity -60dB

25KHz Adjacent Channel Selectivity -65dB

Alternate Channel Selectivity ..... -75dB

Blocking and spurious rejection ..... -80dB

RX intermodulation rejection ..... -80dB

## Interface Specifications

### Serial Interface Port

Connector Type ..... 5-Pin Circular

IO Voltage Levels ..... RS-232, RS-485, RS-422

(user selectable)

RX and TX data ..... Transparent Async

Word length ..... 7 or 8 bits

Format ..... N, O, or E

### Ethernet Interface

Connector Type ..... RJ45

Standard ..... 802.3-2008

Speed ..... 10/100 auto-sense

Protocols ..... telnet

## For More Information

For more information about this or any other Raveon product, call in the U.S.A. 1-760-444-5995.

## Raveon Technologies Corporation

2320 Cousteau Court

Vista, CA 92081

Phone: +1-760-444-5995

Fax: +1-760-444-5997

Email: [sales@raveon.com](mailto:sales@raveon.com)

Copyright Raveon Technologies Corp, 2019

C1 All rights reserved