

## RV-M7-U

**M7 UHF Band  
½ - 5 watt Data Radio**

*The M7 UHF data transceiver is a rugged ½ - 5 watt UHF data radio modem with an RS-232 (or optional 422/485) serial interface, perfect for SCADA and telemetry applications. It has an optional GPS for use in AVL and asset tracking applications.*



## Product Overview

### Long-Range Operation

Operating in the UHF 450-470MHz frequency band, the RV-M7 radio modem works over 50 miles point-to-point and many miles with omnidirectional antennas. All RV-M7 modems support store-and-forward repeating for wide-area coverage.

### Fast Polling

The M7 transceiver has a 3mS PLL in it, making it one of the fastest telemetry radios available, especially well suited for polled, DNP and MODBUS applications.

### High Speed and High Efficiency

The RV-M7 operates with user-selectable over-the-air data rates of 1200 to 19200bps. Faster rates for higher efficiency, or lower-speed for increased communication range. Its fast-switching radio enables it to send up to 50 transmissions per second.

### GPS Option

The optional internal GPS allows the RV-M7 to be a powerful Automatic Vehicle Locating (AVL) system or Time Space Position Information (TSPI) reporting device.

### Fully Programmable

It is configured with a serial connection using industry-standard AT commands. Parameters such as network IDs, unit ID and transmission rate are easily configured. Raveon also provides a PC program called "[Radio Manager](#)" that makes configuring the M7 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 serial port or remotely over-the-air. An *Auto-Status* feature enables the RV-M7 to periodically report its status and DC voltage.

### Very Low Power Consumption

The advanced UHF transceiver is integrated with a powerful 16-bit 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.

### Rugged and Weather Proof

The RV-M7 is available with optional 'weather proof' IP65 (NEMA 4) rated connections and enclosure. All models include protection against damage from over-temperature, high VSWR, and reverse voltage.

### Flexible Addressing and Error Correction

The RV-M7 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.

### For More Information

For more information about this or any other Raveon product, call in the U.S.A. 1-760-444-5995 or visit [www.raveon.com](http://www.raveon.com).

## General Specifications

Model:  
RV-M7-Ux-oo (x=band) (oo=options)

Size:  
4.60" X 2.60" X .956 (11.7cm X 6.6cm X 2.43cm)

Weight:  
6 oz

Input Voltage:  
9.5 – 16 VDC

Current draw:  
Receiving data: <90mA,  
Transmitting data:  
(2.7A @ 5w, 1.2A @ 2W typical)  
Sleep (<25mA)

Frequency Bands:  
A 403-434MHz (for export)  
B 419-440MHz (for export)  
C 450-480MHz (for US channels)  
D 470-512MHz (for export)

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, 4.8k, 5142, 8K,9.6k  
-W 1200, 2000, 2400, 4.8k, 8k, 9.6k, 19.2k

Operating Mode  
Simplex or Half-duplex

Full Spec Operating Temperature range  
-30°C to +60°C

TX-RX and RX-TX turn-around time  
<3mS

Wake-up time  
<500mS from OFF  
<5mS from Sleep

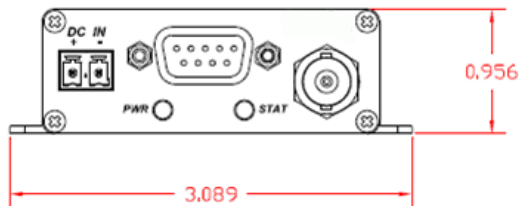
Front Panel LEDs  
Power , Status (Carr Det, TX, mode...)

RF I/O Connector  
BNC (Female)

Power Cable  
Raveon P/N: RT-CB-H1

Addressing  
Individual address: 65,536

Options:  
Internal GPS -GX option  
Waterproof Enclosure -WX option  
RS422/485 option -4 option



## Transmitter Specifications

RF Power Output ..... 500mW – 5.0 W  
programmable

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..... < -70dBc

Occupied Bandwidth..... Per FCC

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

Frequency Stability ..... Better than  $\pm 1.5\text{ppm}$

## Receiver Specifications

RX sensitivity (.1% BER) ..... 9600bps < -108dBm  
4800bps < -116dB

1200 & 2400baud ..... Contact Factory

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

Adjacent Channel Selectivity..... -50dB

Alternate Channel Selectivity ..... -65dB

Blocking and spurious rejection..... -75dB

RX intermodulation rejection ..... -70dB

## Interface Specifications

### Serial Interface Port

Connector Type	DB-9
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
Modem handshake signals	RTS, CTS, CD

### AT Commands Overview

- Channel Number and Operating Frequency
- Carrier Detect Operation
- Modem Statistics
- Power-savings modes
- Unit Address and Destination address
- Network Address Mask
- ARQ error correction on/off
- Baud Rate, parity, stop bits
- Select Packet or Streaming mode of data transmission
- Store-and-forward Repeating configuration
- Busy-channel lock-out
- Hardware flow control operation
- LEDs operation or disabled
- Auto Status report on/off and interval.
- Read DC voltage, current, forward RF power, VSWR
- Remote PING

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