The M7 VHF data transceiver is a rugged 5 Watt VHF data radio modem with an RS-232 or optional 422/485 serial interface, perfect for SCADA and telemetry applications. Additional options include IP65 ("weatherproof") enclosure and GPS.

**Product Overview**

**Long-Range Operation**
Operating in the VHF 136-174MHz frequency bands, the RV-M7 radio modem works over 60 miles point-to-point and many miles with omni-directional antennas. All RV-M7 modems support store-and-forward repeating for wide-area coverage.

**Fast Polling**
The M7 transceiver has a 5mS PLL in it, making it one of the fastest telemetry radios available, especially well suited for polled, DNP and MODBUS applications. Its can send up to 50 transmissions per second.

**High Speed and High Efficiency**
The RV-M7 operates with user-selectable over-the-air data rates of 800 to 19200bps. Faster rates for higher efficiency or lower-speed for increased communication range.

**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.

**Secure Data**
When secure data is enabled, the D50 will encrypt transmissions using AES128 encryption. When properly managed, your wireless network using D50 radio modems will be secure and hacker-proof.

**Digital Base Band**
Data rate, modulation, and IF bandwidth are all digitally programmed. Wide (25kHz) and Narrow (12.5kHz) IF bandwidths may be user-configured. The over-the-air data rate may be adjusted to suit a particular application.

**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.

**Very Low Power Consumption**
The advanced VHF transceiver is integrated with a powerful 32-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 Weatherproof**
The RV-M7 is available with optional IP65-rated “weatherproof” 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.
### General Specifications

| Model: | RV-M7-Vx-oo (x=band) (oo=options) RV-M7-VM (MURS model) |
| Size: | 4.60” X 2.60” X .956 (11.7cm X 6.6cm X 2.43cm) |
| Weight: | 6 oz |
| Input Voltage: | 10 – 16 VDC |
| Current draw: | Receiving data: <65mA (55mA typ. at 12VDC) Transmitting data: (1.8A @ 5w, 1.1A @ 2W typical) |

#### Frequency Bands:

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency</th>
<th>FCC ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>136-155MHz</td>
<td>(not US/Commercial)</td>
</tr>
<tr>
<td>B</td>
<td>150-174MHz</td>
<td></td>
</tr>
<tr>
<td>MURS</td>
<td>5 MURS chan.</td>
<td></td>
</tr>
</tbody>
</table>

#### 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)
  - Narrow IF: 800, 1200, 2000, 2400, 4.8k, 5142, 8k, 9.6k
  - Wide IF: 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: <5mS
- 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
  - Groups: 254
- Options:
  - Internal GPS
  - Waterproof Enclosure
  - RX422/485 option

### Transmitter Specifications

| RF Power Output | 500mW – 5.0 W programmable (2W max for MURS model) |
| Maximum Duty Cycle | 100% @ 2W to 40C, 25% @5W (100% w/ optional heatsink) |
| Frequency Deviation | ± 2.2kHz (N) ± 3.3kHz (W) |
| RF Bandwidth | Full-band without tuning |
| Occupied bandwidth | 11 kHz (-N) 16kHz(-W) |
| TX Spurious outputs | < -70dBc |
| TX Harmonic outputs | < -80dBc |
| Occupied Bandwidth | Per FCC |
| FCC Emissions Designator | 11K0F1D (narrowband mode) 15K0F1D (wideband mode) |
| Frequency Stability | Better than ±2.5ppm |

### Receiver Specifications

| RX sensitivity  (1% PER, N) | 9600bps < -108dBm 4800bps < -114dB 1200bps < -118dB |
| RF No-tune bandwidth | Full-band without tuning |
| Adjacent Channel Selectivity | -70dB (1200bps Wide) -65dB (1200bps Narrow) -60dB (4800bps Narrow) |
| Alternate Channel Selectivity | -70dB |
| Blocking and spurious rejection | –80dB |
| RX intermodulation rejection | –75dB (4800bps Narrow) –80dB (1200bps Narrow) |

### Interface Specifications

**Serial Interface Port**

- Connector Type: DB-9
- IO Voltage Levels: RS-232, RS-485, RS-422 (user selectable)
- Word length: 7 or 8 bits, N, O, or E
- Modem handshake signals: RTS, CTS, CD

**AT Commands Overview**

- Channel Number, Operating Frequency, IF bandwidth
- 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
- Hardware flow control operation
- LEDs operation or disabled

For a complete feature list see the technical manual here: [http://www.raveon.com/support.html](http://www.raveon.com/support.html)