

## Raveon's M7™ Competitive Features

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Raveon's M7 wireless modem is a sophisticated radio modem incorporating a wealth of features that make it not only one of the most advanced radio modems available, but also one of the easiest to use.



Although it features plug-and-play operation, working straight out of the box as a point-to-point or point-to-multipoint radio modem, the user may configure it for more advanced network topologies, repeating, and diagnostic abilities.

This paper summarizes its advanced features, and their benefits to the user. No radio modem on the market has all of these features, and because the M7 is built with a highly integrated modern 32-bit processor, it does all this at a price similar to old analog radio modems.

## M7™ Features

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### **Business benefits**

**One design, many uses** The M7 has a programmable I/O interface that works in RS232, RS422, and RS485 modes. Its RF power can be set down to 1 watts for low-power channels, or 5 watts for higher power channels. Any M7 (other than the MURS band version) may be configured as a repeater. So much flexibility in one unit reduces inventory and spare parts costs.

**Lowest Cost** The M7 radio modem is small and highly integrated, making it the most economical modem on the market. With its very-low power consumption, it reduces system power supply expenses. With its remote-diagnostic capabilities, it reduces installation time and maintenance costs by eliminating the need for on-site tests.

**2-Year Warranty** Raveon's M7 radio modems are backed by a 2-year warranty. Its unique single-board construction makes it very rugged, and for those very harsh environments, a water-proof IP65 rated enclosure option is available.

### **System Benefits**

**Long-Range** Raveon's modems have outstanding receiver sensitivity, and with their programmable data rates, the user may select long-range and slower data or faster-data at reduced sensitivity.

**Easy Installation and Test** Each M7 has a host of diagnostic features to aid in their installation and testing. Using the serial port or over-the-air commands, the installer may read voltage, current, transmission statistics,



received signal strength, and antenna performance. The remote PING command makes system check-out a snap.

**Dual-Mode** Unique to the *M7*, it operates in *EITHER* Streaming or Packetized modes. In *Streaming Mode*, data is transmitted in real-time as it enters the modem, and is sent from the receiver the moment it is received. In *Packetized Mode*, data is collected into packets, sent in bursts, and includes error-checking, error-correction, and network addressing overhead to ensure reliable data with no errors, and no dribble bits.

**Integrated Repeater in Every Unit** All *M7* modems have integrated store-and-forward repeater capabilities in them. When used in Packetized mode, any *M7* may operate as a regular radio modem, AND as a store-and-forward repeater. Similar to IP networks, the repeater function uses the network address and an “address mask” to determine if a particular reception should be repeated.

**Flexible I/O** The *M7* has more I/O options than any other radio modem. Regardless of the I/O option used, all *M7* radio modems will communicate with all others. The *M7* has the following I/O options:

- RS-232 Serial, 1200 baud to 115.2kbps
- RS-485 Duplex, 1200 baud to 115.2kbps
- RS-485 Simplex, 1200 baud to 115.2kbps
- RS-422, 1200 baud to 115.2kbps

**16-bit Modem Addresses** The *M7*s in a system may be configured with a 16-bit address and network mask. This allows sub-groups of radios to communicate on the same radio channel, and not have their data interfere with modems that are not in their group. Also, many point-to-point systems may share one radio channel, or a point-to-multipoint may be set-up so that the multi-point modems do not hear each other’s data. The *M7*’s addressing is the most flexible radio modem addressing scheme available, yet if it is not needed, is simple to turn off.

**Reliable Data** Raveon’s *M7* incorporates 16-bit CRCs, and reverse error correction, so that all data that comes out of an *M7* is 100% perfect. – No bit errors. – No “dribble-bits” after a reception. – No noise data. This gives the radio modem a “Transparent” look to the network. Most applications simply work over an *M7* link, just as they would a hard-wired link.

**Common Port** Similar to all telco/Hayes type modems with the AT command set, the *M7* uses a common serial port for operation, configuration, and diagnostics. The user needs only one data channel to use and manage the modem. Simple “AT” commands are used to configure the modem, and to perform diagnostics.



**Remote Ping** The *M7* supports a variety of remote diagnostics, including a remote “Ping” command. Invaluable when configuring the system, the operator may query any *M7* in the system, and receive a report of its signal strength.

**Comprehensive Statistics** The *M7* maintains over two dozen statistical parameters to aid with system analysis. Transmit and receive byte counters as well as packet statistics, temperature and voltage, and signal strength statistics will help identify issues before they become problems.

**Low Power Consumption** The *M7* series of radios has about the lowest power consumption in the industry. The UHF version typically draws less than 80mA and the VHF version less than 60mA, making them ideal for battery and solar powered installations.

### ***M7's Unique Options***

**Waterproof Housing** The *M7* may be ordered with an optional IP65 rated waterproof housing. This allows it to be located in wet or dirty environments without the concern for damage to the internal electronics.

**GPS Option** The –GX version of the *M7* incorporates a GPS built into it. The GPS is a high-sensitivity, 12-channel GPS module with an SMA connector to connect either to a passive or active GPS antenna. The *M7* may be configured to send the GPS position over-the-air and output it in NMEA format, or a proprietary Raveon format. See [www.ravtrack.com](http://www.ravtrack.com) for details on the GPS version of the *M7*.

**TDMA Option** The –GX version of the *M7* offers the ability to use the standard CSMA access scheme or a more advanced TDMA (Time Division Multiple Access) access scheme for sending data. TDMA provides *M7* system deployments with the ability to scale far beyond traditional CSMA deployments and still provide sufficient radio space to get your data across the system. TDMA networks provide deterministic scalability and allows the system designer to engineer a radio network with the capacity they need, and not be impacted by random RF carrier contention that can cause other networks to simply stop working.

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