**HF & V/UHF Data Modem**

The **RM2** is a compact HF and V/UHF data modem. The **RM2** is suitable for governmental and NGO users requiring long distance data communication links. The **RM2** is designed for desktop, vehicular and marine installations.

The optional 2G ALE function is built-in and can be activated with the appropriate RapidM activation key. For more information on these functions, please see the **RM2 2G ALE** product datasheet.

**Key Features**

- Modem & ALE hardware solution
- HF & V/UHF Compatible
- Up to 9600 bps in 3 kHz HF
- Up to 96000 bps in 24 kHz VHF
- 2G ALE Option
- HF Email via RC50 Email Software
- MIL-STD-188-110A/B
- STANAG 4539
- STANAG 4415
- Vehicle Surge Protected DC Power Input
- Mobile form factor

**HF & V/UHF E-mail**

The **RM2** is designed to operate in conjunction with an external STANAG 5066 compliant automatic repeat request (ARQ) server, for example RapidM’s **RC50 Email Communications Suite**. For more information please refer to the RC50 product datasheet.

**V/UHF Waveforms**

The **RM2** V/UHF Waveforms are suitable for high-speed mobile data communication applications.

High performance Doppler tacking allows operation at up to 250 km/h relative speed (at 80 MHz).

Modem bandwidth is configurable to best suite radio capabilities (24, 12, 9, 6 or 3 kHz).

The low data rates (PSK modulation) are suitable for radios with a non-linear power amplifier (PA). The very high rates use QAM and require a linear PA or can work with wideband FM or AM radios.

**HF Waveforms**

MIL-STD-188-110 A/B, STANAG 4539 and STANAG 4415.

Adaptive equalization mitigates the effects of channel multi-path.

Convolutional encoding combined with soft-decision Viterbi decoding provides forward error correction (FEC). Cancellation of narrowband co-channel interference is accomplished via adaptive tone excision.

**Modem Software Options**

The waveforms that are included in the **RM2** can be customized by choosing from software options. Please see the reverse page for more details.

**Interfaces**

The **RM2** is fully remote controllable via a high speed remote serial control interface or Ethernet interface. The RapidM RIPC/RAP1 protocol is used for both control and data messages. Full documentation on the RIPC/RAP1 protocol is included with the unit (or available from RapidM upon request).

The data interface of the **RM2** is via RIPC/RAP1 messages over the remote control serial interface or Ethernet interface. A Raw Data interface is also available for interfacing with Asynchronous DTE devices (TX, RX, RTS/CTS and DCD signals are available). The data interface offers FEC but no ARQ.

Radio interfacing is accomplished using industry standard 600 Ohm audio transmit and receive lines as well as a PTT line. Optionally the radio can be controlled by the ALE radio control protocol embedded in the **RM2**.
For cables please contact RapidM at:

- For 24VDC, use Rx, TX, CTS, DCD
- For 10/100 Base T (IEEE 802.3U compatible), full duplex, embedded TCP/IP Stack Protocol: RapidM Control Protocol (RAPI + RPC) over TCP/IP

**Interfaces**

### Front Panel

- 8 bi-colour status LED indicators on front panel:
  - RAW DATA
  - ETH/ REM
  - RADIO CTRL
  - GPS
  - TX
  - RX
  - ALE
  - AUDIO IN

### GPS Antenna (MCX)

- Int. GPS (optional): High performance internal GPS module with Trimble GPS Antenna.

### Ethernet Port (RJ45)

- Remote Control: 10/100 Base T (IEEE 802.3U compatible), full duplex, embedded TCP/IP Stack Protocol: RapidM Control Protocol (RAPI + RPC) over TCP/IP

### Remote Control / GPS Port (DB9M)

- Remote Control: RS-232, 115200 bps, 1 stop bit, 8 bit character length
- Protocol: Control Protocol (RAPI + RPC)
- GPS:
  - External GPS Control Pins: RS-232 (nominally input)
  - Data Rate: 300 to 115200 bps (nominally 4800 bps), 1/2 stop bits, 7/8 bit data. PPS line: RS 232 (NMEA) or TTL

### Radio / Data Port (DB25M)

- Radio Control:
  - Selectable RS-232, TTL and 1 wire modes (1-wire allows direct connection to Icom CT-7/CT-V)
  - 75 to 230400 bps, 1 or 2 stop bits, 7/8 bit data (no Hardware flow control)
- Radio Audio:
  - Input Audio: 600 Ohm balanced, –35 to +3 dBm without adjustment
  - Output Audio: Balanced, –40 to +4 dBm adjustable into 600 ohm load
  - Keyline: Open Collector (<9 V, 200 mA)
  - PTT Sense Input: Pull to ground to indicate external PTT

### Raw Data:

- RS-232 unbalanced, Rx, Tx, RTS, CTS, DCD
- Half & Full Duplex operation, Standard Async and High-speed Async mode supported
- 75 to 230400 bps, Full Duplex, 5/6/7/8 bit data, 1/2 stop bits, Hardware (RTS/CTS)/Software (XON/XOFF) Flow ctrl

### Environmental

- **Temperature**: -30°C to +70°C (operating)
- -40°C to +85°C (storage)
- **Humidity**: 0 to 90%, non-condensing
- **Shock**: 40G, 6-9 ms, 3 shocks in x, y and z axis
- **Vibration**: Composite wheeled vehicle exposure 10Hz – 2000Hz, 30 minutes in x, y and z axis @2.5g
- **Safety**: IEC/EN 60950
  - **Power**: 6-36 V DC (designed for MIL-STD-1275B), XLR3 plug (supplied)

### FCC

- Title 47 CFR, Part 15 Subpart B for Class A Digital Device
- GND Screw Use to ensure proper system grounding

### Ordering Information

- **AM2 HARDWARE**
  - Stock Number: RM2-2G-91-NDVM
  - Description: RM2-91-NDVM (BI Loader) Active
- **HF MODEM M4 SOFTWARE OPTION**
  - Stock Number: RM2-SW-O-M4-5.1
  - Description: SW M4 (RF MGR 54539 9600 bps)
- **V/УHF MODEM V1 (24 kHz) SOFTWARE OPTION**
  - Stock Number: RM2-SW-O-V1-3.1
  - Description: SW V1 (VHF 24kHz 596000 bps)
- **V/УHF MODEM V2 (12 kHz) SOFTWARE OPTION**
  - Stock Number: RM2-SW-O-V2-3.1
  - Description: SW V2 (VHF 36kHz 548000 bps)
- **2G ALE (MIL-STD-188-141B) SOFTWARE OPTION**
  - Stock Number: RM2-SW-O-2G-1.8
  - Description: SW M2-2G ALE / MS 141B, App. A, B
- **RC50 EMAIL COMMUNICATIONS SUITE PC SOFTWARE**
  - Stock Number: RM2-PC-RC50-2.3
  - Description: SW RC50 Group Email Suite Win
- **INTERNAL GPS MODULE**
  - Stock Number: RM2-AC-2004-0PC
  - Description: GPS: Module Int Fitted with Ant, RM2 V01

For cables please contact RapidM at info@rapadm.com

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