

RM2 HF VHF UHF Compact Data Modem for Government and NGOs

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Intended for government and non-government organisations (NGOs), the RM2 provides a compact data modem for high frequency (HF) and very high frequency/ultra high frequency (VHF/UHF) applications. Designed for desktop, vehicular and marine installations, the RM2 is suitable for governmental and NGO users requiring long distance data communication links.

An optional second-generation automatic link establishment (2G ALE) software capability is built in and can be activated with a key.

Features:

- ✓ Modem and ALE hardware solution
- ✓ Optional 2G ALE
- ✓ HF and VHF/UHF Compatible
- ✓ Up to 9600 bps in 3kHz HF
- ✓ Up to 96000 bps in 24 kHz VHF
- ✓ RC50 HF email software
- ✓ MIL-STD-188-110A/B
- ✓ STANAG 4539
- ✓ STANAG 4415
- ✓ Vehicle surge protected DC power input
- ✓ Mobile form factor

HF & VHF/UHF E-mail

The RM2 is designed to operate in conjunction with an external STANAG 5066 compliant automatic repeat request (ARQ) server, for example RC50 Email Communications Suite.

VHF/UHF Waveforms for high-speed data communication

Suitable for mobile applications requiring high speed data, the RM2 VHF/UHF waveforms provide high performance Doppler tracking 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 meet Military and NATO standards

The RM2 HF waveforms conform to 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

Choosing from software options can customize the waveforms that are included in the RM2. Please see the specifications for more details.

Remote, data and radio Interfaces

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

The data interface of the RM2 is via RIPC/RAP1 messages over the remote control serial interface or Ethernet interface. 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.

Modem Software Options						
Modem Waveforms	Modulation	Coding	Data Rates	Software Options		
				M4	V1	V2
STANAG 4539	PSK / QAM	C	75, 150, 300, 600, 1200, 2400, 3200, 4800, 6400, 8000, 9600 bps	◆	-	-
STANAG 4415	PSK	C	NATO robust: 75 bps	◆	-	-
MIL-STD-118-110A	PSK / QAM	C	75, 150, 300, 600, 1200, 2400 bps	◆	-	-

VHF 24kHz	PSK / QAM	C	2400, 4800, 9600, 16000, 32000, 48000, 64000, 78600, 96000 bps	-	◆	-
VHF 12kHz	PSK / QAM	C	1200, 2400, 4800, 8000, 16000, 24000, 32000, 38400, 48000 bps	-	◆	◆
VHF 9kHz	PSK / QAM	C	900, 1800, 3600, 6000, 12000, 18000, 24000, 28800, 36000 bps	-	◆	◆
VHF 6kHz	PSK / QAM	C	600, 1200, 2400, 4000, 8000, 12000, 16000, 19200, 24000 bps	-	◆	◆
VHF 3kHz	PSK / QAM	C	300, 600, 1200, 2000, 4000, 6000, 8000, 9600, 12000 bps	-	◆	◆
ALE	Characteristics					
ALE 2G	Automatic Link Establishment 2nd Generation (2G ALE) Occupancy Detection: MS 110A/B, S 4539, S 4285, S 4415, S 4529, S 4481, FSK, 8-FSK, SSB Voice Protocol: Calling, AMD, DTM, Excluding: DBM, AQC-ALE					
MIL-STD-188-141B APPENDIX A, B & FED-STD 1045 FED-STD 1049	The RM2 unit may already support a particular radio protocol. If not, the radio control protocol must be made available to AT Comms for integration & testing.					



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: AT Comms Control Protocol (RAP1 + RIPC) over TCP/IP
Remote Control / GPS Port (DE9M)	Remote Control:	RS-232, 115200 bps, 1 stop bit, 8 bit character lengths Protocol: Control Protocol (RAP1 + RIPC)
	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-17/CI-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 +3 dBm adjustable into 600 ohm load Keyline: Open Collector (<36 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
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<i>ENVIRONMENTAL</i>		<i>HARDWARE</i>	
Temperature	-30°C to +70°C (operating) -40°C to +85°C (storage)	Weight	0.7 kg
Humidity	0 to 90%, non-condensing	Colour	Black, powder coat
Shock	40G, 6-9 ms, 3 shocks in x, y and z axis	Size	34.4 x 111.0 x 180.0 x mm (h x w x d)
Vibration	Composite wheeled vehicle exposure 10Hz – 2000Hz, 30 minutes in x, y and z axis @2.5g.	Mounting	Desktop or vehicle & marine installation using the supplied mounting bracket
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

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