

RM4 HF Data Modem

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RM4 HF Data Modem with 2G ALE for Naval and Military Communications



Comms license key.

Suitable for long distance point-to-point data links, the RM4 provides high data rates and ALE controls for high frequency data communications for naval and military mission. Embedded in the RM4 unit, the 2nd Generation Automatic Link Establishment (2G ALE) Controller is activated with the appropriate AT

Features

- ✓ High Data Rate HF Modem and ALE controller in one unit
- ✓ Up to 9600 bps in 3kHz
- ✓ MIL-STD-188-141B App. A
- ✓ MIL-STD-188-110 A/B
- ✓ STANAG 4539 (QAM)
- ✓ STANAG 4285 (PSK)
- ✓ STANAG 4529 (NB PSK)
- ✓ STANAG 4415 (ROBUS)
- ✓ STANAG 4481 (P/FSK)
- ✓ STANAG 5065 (MSK)
- ✓ STANAG 5066 compliant interface (RC66 Combat Communications Suite)
- ✓ Synchronous DTE port for high grade cryptographic equipment

✓ Ethernet interface

Robust Waveforms

Adaptive equalization mitigates the effects of HF channel multi-path. Convolutional encoding combined with soft-decision Viterbi decoding provides forward error correction. Cancellation of narrowband co-channel interference is accomplished via adaptive tone excision capable of eliminating up to four signals.

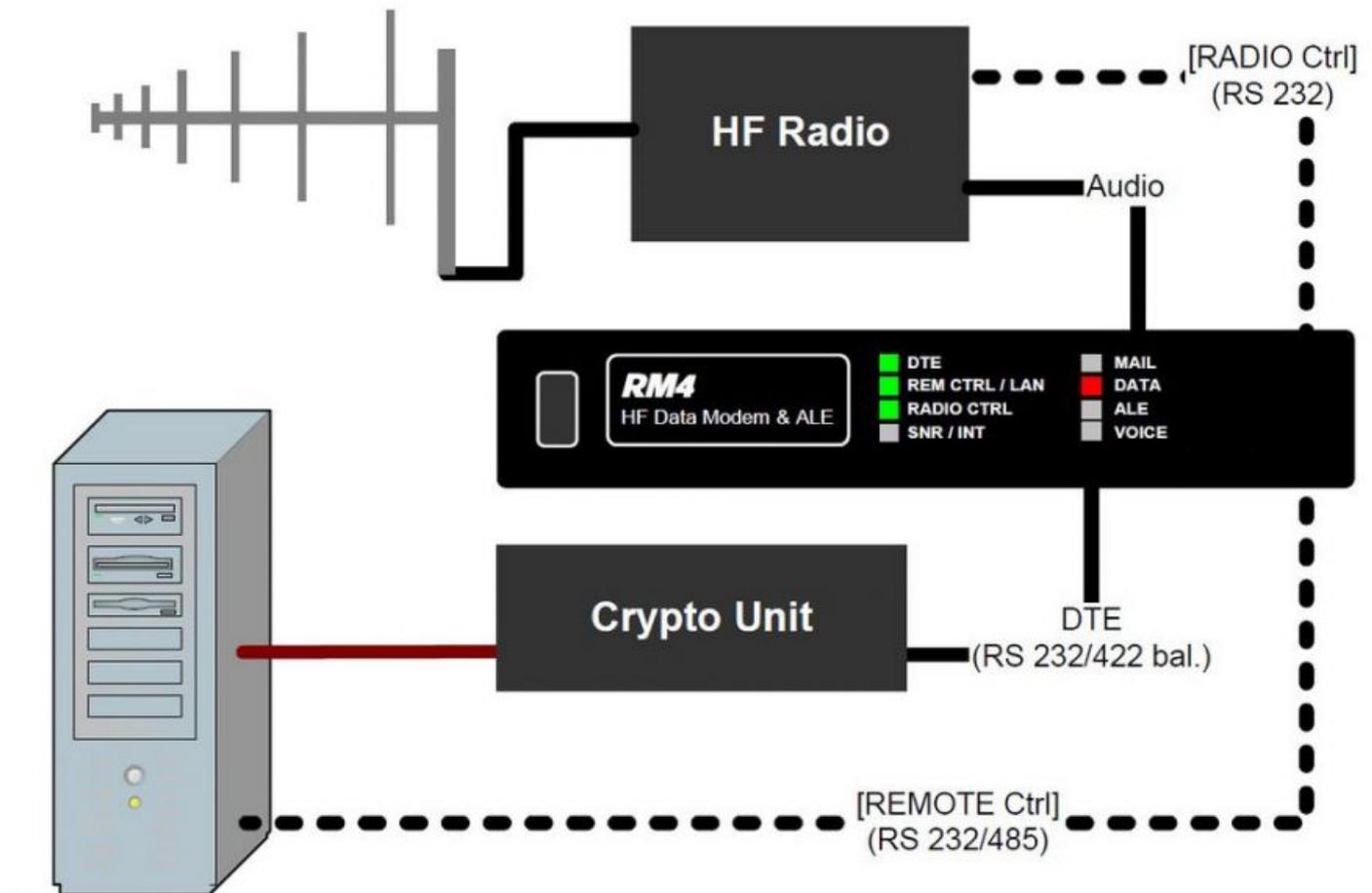
The RM4 offers customizable waveforms via a software pack option (see the reverse page for more details)

Encryption for Security

Encrypted data is routed through a crypto unit into the synchronous DTE port of the RM4. The modem Tx and Rx audio signals are fed to the HF radio. The radio is keyed by the RM4, while the unit monitors independent PTT activity on the radio.

Remote Control

The unit is fully controllable via RIPC/RAP1 remote control protocol (available from AT Comms). The unit supports split-site operation via two radio control ports.



Secure System Configuration with RM4 Unit



RM4 Unit front panel

Standard	Coding Modulation		Data Rates & Characteristics	Military Modem Software Pack		
				M2	M3	M4
MIL-STD-188-110B Appendix C	C	PSK/ QAM	3200, 4800, 6400, 8000, 9600 bps	◆	-	◆
	U		12800 bps	◆	-	◆
STANAG 4539	C	PSK/ QAM	75, 150, 300, 600, 1200, 2400, 3200, 4800, 6400, 8000, 9600 bps	◆	-	◆
	U		12800 bps	◆	-	◆
MIL-STD-188-110B	C	PSK/ QAM	75, 150, 300, 600, 1200, 2400, 3200, 4800, 6400, 8000, bps	◆	-	◆
MIL-STD-188-110A § 5.3	C	PSK	75, 150, 300, 600, 1200, 2400 bps	◆	◆	◆
	U		4800 bps	◆	◆	◆
STANAG 4415	C	PSK	NATO robust: 75 bps	◆	◆	◆
STANAG 4285	C	PSK	75, 150, 300, 600, 1200, 2400 bps	◆	◆	-
	U		1200, 2400, 3600 bps	◆	◆	-
STANAG 4481 PSK	C	PSK	300 bps	◆	◆	-
STANAG 4481 FSK	U	FSK	Single channel: 75 bps	◆	◆	-
			Multi-channel: 75 bps selectable carrier	◆	◆	-
FSK Variable	U	FSK	Data Rates: 50, 75, 100, 150, 200, 300, 400, 600, 1200 bps Mark & Space Frequency: 350 to 3000 Hz	◆	◆	-

General	
All Waveforms	Carrier capture range ± 200 Hz. Sync-on-Data Frequency tracking of up to 75 Hz changing at 3.5 Hz per second (triangular sweep)
BIT	Comprehensive BIT (Built-In-Test), Continuous error detection
Presets	20 Factory Presets, 10 Custom Presets
AGC Control	Transceiver AGC control is necessary for optimum performance of QAM W/Fs
Remote Control	All W/Fs and 2G ALE settings are remote controllable via Remote Control Port
Autobaud	All PSK waveforms except for STANAG 4285 & 4529. Sync-on-Data capability

Tone Excision	Narrowband Interference cancellation of up to 4 signals
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Software Option	Characteristics
ALE 2G	Automatic Link Establishment 2nd Generation (2G ALE) <i>Occupancy Detection:</i> MS 110A/B, S 4539, S 4285, S 4415, S 4529, S 4481, FSK, 8-FSK, SSB Voice <i>Protocol:</i> Calling, AMD, DTM, <i>Excluding:</i> DBM, AQC-ALE
MIL-STD-188-141B	<input checked="" type="checkbox"/> Link Quality Analysis (LQA)
APPENDIX A, B & FED-STD 1045	<input checked="" type="checkbox"/> Scanning (2 or 5 channels per second)
FED-STD 1049	<input checked="" type="checkbox"/> Selective Calling
	<input checked="" type="checkbox"/> Automatic Sounding
	<input checked="" type="checkbox"/> Automatic Hand-Off to Internal Modem
	The 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	
DTE (Data) Port	RS-422 balanced, RS-423, RS-232 unbal., MIL-STD-188-114 compatible & EIA 530A compliant (DB25 connector) Half & Full Duplex operation, Sync, standard async and high-speed mode supported: <input checked="" type="checkbox"/> Synchronous: Data Rate: 50, 75, 100, 150, 200, 300, 400, 600, 1200, 1800, 2400, 3200, 3600, 4800, 6400, 8000, 9600 bps, Clock: Internal / Ext., data polarity: norm / in <input checked="" type="checkbox"/> Asynchronous: 75 to 115200 bps, Full Duplex, 5/6/7/8 bit data, 1, 2 stop bits, Flow ctrl: CTS/RTS, data polarity: norm / inv.
Remote Control Port	RS-485 Multi-drop, RS-232D (DE9 connector, male): Data Rate: 1200 to 115200 bps, 1 or 2 stop bits, 8 bit character lengths Flow Control CTS/RTS, Protocol: RM4 Control Protocol (proprietary)
Ethernet	Data & Control, 10/100 Base T, RJ 45 connector, embedded TCP/IP Stack, Protocol: RM4 Ctrl Protocol
F / Panel	8 bit-colour status LED indicators on front panel: <input checked="" type="checkbox"/> DTE, REM Ctrl / LAN, RADIO Ctrl connection status <input checked="" type="checkbox"/> Mail (AMD), Modem & ALE, Voice (ALE voice call) activity status, Power indicator
Radio Control Port	RS-232 (DE9 connector): 75 to 115200 bps, 1 or 2 stop bits, 7/8 bit character lengths. Supports for various radio control protocols are built-in. See the AT Comms 2G ALE Product brochure for more details.
Radio Audio Port	Input Audio: 600 Ohm balanced, -20 to +15 dBm without adjustment Output Audio: Balanced, -40 to +10 dBm (PMP) adjustable into 600 ohm load Keyline: Open collector to ground (<45 volts, 50 mA) & non-polarized contact closure (<45 V, 200 mA)

Installation		Environmental	
Weight	1.7 kg (approx.)	Temperature	-30°C to +70°C (operating)
Colour	Black powder coat	Humidity	0 to 90%, non-condensing
Size	41.1 x 212.7 x 159.0 mm (h x w x d), Front panel height : 44.1 mm	Shock	MIL-STD-810E Method 516.4, Procedure 1, Funct. (40G, 11 ms)
Power	87 to 267 V AC, 47 to 440 Hz 6 to 36V DC	Vibration	MIL-STD-810E Meth. 514.4, Cat. 9 Shipboard
Rack Mounting	1 unit in ½ 19" Rack slot	EMC	MIL-STD 461-E
	2 units side-by-side on shelf	Safety	IEC/EN 60950

RM4 HF - Data Modem - 2G - ALE - Naval - Military