

RM8 Product Overview



The *RM8 Software Defined Modem & ALE* is a standalone unit intended for strategic and maritime data communications. The *RM8* offers a wide range of standards-based waveforms and protocols for interoperable data modem and link setup operations, whether point-to-point or point-to-multipoint.

The operation of the *RM8* is determined by the selection of a built-in modem software pack. RapidM offers a choice between HF and V/UHF modem software packs that can be activated with the appropriate RapidM activation key.

Key Features

- License keys unlock software
- V/UHF modem operation
 - 96000 bps in 24 kHz channel
 - 48000 bps in 12 kHz channel
- Adaptable configuration
 - Bandwidths: 24, 12, 9, 6 & 3 kHz
- Menu-Driven control & configuration
- Synchronous/Asynchronous DTE port
- Ethernet LAN interface for Control
- AC and DC Power
- Works with RC66/ARQ (Datasheet Avail.)

V/UHF Data Modem

The *RM8* V/UHF data modem intended for operation with V/UHF radios with an audio bandwidth exceeding 21 kHz. Data is transferred at rates of up to 96,000 bps over a standard 25 kHz V/UHF radio channel.

Low data rates (up to 32 kbps) use Offset QPSK and 8-PSK waveforms. The low data rates 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.

Adaptive equalization mitigates the effects of V/UHF channel multi-path. Convolutional encoding combined with soft-decision Viterbi decoding provides forward error correction. High performance Doppler tracking allows operation at up to 250 km/h relative speed (at 80 MHz).

Additional Features

- High Data Rate Modems
 - Up to 96000 bps (128-QAM)
 - Up to 76800 bps (64-QAM)
 - Up to 48000 bps (16-QAM)
- Low Data Rate Modems
 - Up to 32000 bps (8-PSK)
 - Up to 16000 bps (QPSK)
- Adaptive Equalization

External Interfaces

The *RM8* unit is fully controllable via the front panel as well as via either the serial remote or Ethernet control interfaces. The *RapidM* RIPC/RAP1 protocol is used for this purpose.

The *RM8* unit provides a DTE port for synchronous and asynchronous data.



Figure 1: RM8 based Synchronous V/UHF Data System

BANDWIDTH	DATA RATES [BPS]	V1
24 kHz	High Rate: 96000, 76800, 64000, 48000 (Coded) Low Rate: 32000, 16000, 9600, 4800, 2400 (Coded)	•
12 kHz	High Rate: 48000, 38400, 32000, 24000 (Coded) Low Rate: 16000, 8000, 4800, 2400, 1200 (Coded)	•
9 kHz	High Rate: 36000, 28800, 24000, 18000 (Coded) Low Rate: 12000, 6000, 3600, 1800, 900 (Coded)	•
6 kHz	High Rate: 24000, 19200, 16000, 12000 (Coded) Low Rate: 8000, 4000, 2400, 1200, 600 (Coded)	•
3 kHz	High Rate: 12000, 9600, 8000, 6000 (Coded) Low Rate: 4000, 2000, 1200, 600, 300 (Coded)	•

GENERAL		
ENVIRONMENTAL SPECIFICATIONS	- Climatic: - Storage: -30 °C to +77 °C - Operation: -30 °C to +70 °C - Safety: CE: Low Voltage Directive (Directive 73/23/EEC as amended) - Safety: CE: Electromagnetic Compatibility (EMC) Directive (Directive 89/336/EEC as amended)	
SIZE	- Width: 212.2 mm - Depth: 225.6 mm	- Height: 41.1 mm (excl. front panel) - Height: 44.1 mm (incl. front panel)
INSTALLATION	Compact design: The unit occupies a width less than ½ of an 1U 19" rack slot.	
PRESETS	Factory and Custom Presets	

INTERFACES		
DTE (DATA) PORT (DB25F)	RS-422 balanced, RS-423, RS-232 unbalanced., MIL-STD-188-114 (interoperable), EIA 530A compliant Half & Full Duplex operation, Synchronous, Standard and High-speed Async modes	
REMOTE CONTROL/ GPS PORT (DE9M)	Remote Control Pins: RS-485 Multi-drop, RS-422 balanced or RS-232 Protocol: Control Protocol (RAP1 + RIPC, ASCII S5066 Annex E) External GPS Control Pins: RS-232 (nominally input) Data Rate: 300 to 19200 bps, 1/2 stop bits, 7/8 bit data. PPS line: RS 232/422 (NMEA) or TTL	
GPS ANTENNA (MCX)	Built-in GPS receiver: Time reference for 2G ALE Linking protection (AL-2).	
ETHERNET CTRL PORT (RJ45)	Remote Control: 10/100 Base T (IEEE 802.3U compatible), embedded TCP/IP Stack Protocol: Control Protocol (RAP1 + RIPC)	
ETHERNET DATA PORT (RJ45)	IP Packet Data: 10/100 Base T (IEEE 802.3U compatible), embedded TCP/IP Stack Protocol: Raw IP packet data.	
LOCAL CONTROL	Local control via 32x202 pixel graphical LCD display and 16-key keypad. 3 bi-colour LED indicators Alphanumeric and digit keypad for fast data entry, 4-way navigation button	
RADIO CONTROL & AUDIO PORTS (DB25M)	Radio Control Pins (2 channels): RS-232, up to 115200 bps, 1/2 stop bits, 7/8 bit data Supports for various radio control protocols are built-in. Input Audio (2 channels): 600 Ohm balanced, -20 to +10 dBm without adjustment Output Audio (2 channels): Balanced, -40 to +10 dBm adjustable into 600 ohm load Keyline: Non-polarized contact closure (<45 V, 200 mA). PTT Sense Input: Pull to ground to indicate external PTT. Aux Audio Pins: Connection of microphone for ALE voice calling Input Audio: 600 ohm balanced, -20 to +10 dBm without adjustment or MIC input (selectable) Output Audio: Balanced, -40 to +10 dBm adjustable into 600 ohm load	

ORDERING INFORMATION	STOCK NUMBER	DESCRIPTION
RM8 (HF MODEM M1)	RME-8R-P0-M15.1	SDM: RM8 M1 (110B,F ISB 2x9600) V5.1
RM8 (HF MODEM M2)	RME-8R-P0-M25.1	SDM: RM8 M2 (HF S4285, S4539 9600) V5.1
V/UHF MODEM V1 (24 kHz) SOFTWARE OPTION	RM8-SW-O-V1-3.1	SW MDL-V1 (VHF B≤24kHz ≤96000 bps) V3.1

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