



RM6-A Product Overview

Strategic and maritime platforms have a need for long distance communications. Relying on satellites is not always an option. The *RM6-A Data Modem & ALE Controller* provides beyond-lone-of-site (BLOS) data links via HF radio. The *RM6-A* is the form, fit & function replacement of the well-established *RapidM RM6* unit. The *RM6-A* provides systems integrators with peace-of-mind stemming from *RapidM's* commitment to long-term product availability and support. The *RM6-A* is intended for installation into 19" rack systems.

Key Features

- **Standards compliance** – MIL-STD and STANAG
- **High Data Rate HF Modem:**
 - Up to 9k6 bps in SSB
 - Up to 19k2 bps in ISB
- **Compact solution** – Modem & ALE 2G Controller
- **2G ALE** – Many HF radio protocols embedded
- **DTE port** – EIA 530A Synchronous/Asynchronous
- **Remote control interfaces** – Serial and Ethernet
- **Local configuration & control** – Menu-driven
- **Power supply variants** – AC and AC + DC
- **Serial GPS interface** – NMEA & 1 pps
- **2G ALE option** – datasheet available
- **Works with RC66 ARQ** – datasheet available

LF and HF Data Modem

The *RM6-A* offers a maximum data rate of 9600 bps over a standard 3 kHz (SSB) HF radio channel and 19200 bps over a 6 kHz (ISB) channel.

The waveform's AUTOBAUD feature supports fast data rate change ARQ algorithms. Adaptive equalization mitigates the effects of HF channel multi-path. Cancellation of narrowband co-channel interference is accomplished via adaptive tone excision capable of eliminating up to four signals. For LF operation a maximum data rate of 300 bps is offered using MSK modulation.

Additional Features

- **HF Data Modem Waveform Standards**
 - MIL-STD-188-110A
 - MIL-STD-188-110B & App. F
 - STANAG 4539 (QAM), incl. Annex D TDMA
 - STANAG 4285 (PSK)
 - STANAG 4529 (NB PSK)
 - STANAG 4415 (robust)
 - STANAG 4481 (shore-to-ship)
- **LF Data Modem Waveform Standards**
 - STANAG 5065 (MSK)
- **Configuration and Control Protocols**
 - RAP1/RIPC Protocol
 - STANAG 5066 (Annex E)
- **Waveform Performance**
 - Field hardened performance
 - Incl. tests with STANAG 4203 Filter

External Interfaces

The *RM6-A* unit provides a DTE port for synchronous and asynchronous data. The unit has two audio ports to support ISB. The *RM6-A* unit software can also support split-site operation - two radio control ports are available. The *RM6-A* will operate with most legacy LF and HF voice radios and has built-in control protocols to control many transceiver types.

STANDARD	Modulation	DATA RATES & CHARACTERISTICS	Options	
			M1	M2
MIL-STD-188-110B APPENDIX C	PSK/QAM	3200, 4800, 6400, 8000, 9600 bps (Coded)	•	•
STANAG 4539	PSK/QAM	75, 150, 300, 600, 1200, 2400, 3200, 4800, 6400, 8000, 9600 bps (Coded) Includes STANAG 4539 Annex D TDMA Protocol & WF1, WF2 & WF3	•	•
MIL-STD-188-110B	PSK/QAM	75, 150, 300, 600, 1200, 2400, 3200, 4800, 6400, 8000, bps (Coded)	•	•
MIL-STD-188-110B APPENDIX F	PSK/QAM	ISB: 9600, 12800, 16000, 19200 bps (Coded)	•	-
MIL-STD-188-110A	PSK	75, 150, 300, 600, 1200, 2400 bps (Coded), 4800 bps	•	•
STANAG 4415	PSK	NATO robust: 75 bps (Coded)	•	•
STANAG 4285	PSK	75, 150, 300, 600, 1200, 2400 bps (Coded), 1200, 2400, 3600 bps	•	•
STANAG 4529	PSK	75, 150, 300, 600, 1200 bps (Coded), 600, 1200, 1800 bps	•	•
STANAG 4481 PSK	PSK	300 bps (Coded)	•	•
STANAG 5065 (LF)	FSK/MSK	75 bps (FSK) 300 bps (MSK) (Coded)	•	-
STANAG 4481 FSK	FSK	Single channel: 75 bps Multi-channel: 75 bps selectable carrier	•	•
FSK VARIABLE	FSK	Data Rates: 50, 75, 100, 150, 200, 300, 400, 600, 1200 bps Mark & Space Frequency: 325 to 3200 Hz	•	•

GENERAL			
SIZE	Width: 212.2 mm Depth: 225.6 mm	Height: 41.1 mm (excl. front panel) Height: 44.1 mm (incl. front panel)	Weight: 2.2 kg
ENVIRONMENTAL SPECIFICATIONS	Climatic	Temperature: Storage: -33 °C to +77 °C, Operation: -33 °C to +65 °C (MIL-STD-810G, Methods 501.4 & 502.4) Humidity: 95% non-condensing at 30 °C & 60 °C (MIL-STD-810G, Method 507.5)	
	Altitude	Storage: 20 000 ft @ -25 °C (MIL-STD-810F) Operation: 15 000 ft @ -25 °C (MIL-STD-810F)	
	Mechanical	Vibration: Surface Ship, Marine Vehicles, Aircraft, Min. Integrity (MIL-STD-810F, Method 514.5) Shock: 60 G, 6 – 9 ms (MIL-STD-810F, Method 516.5 Procedure VI)	
	EMC	MIL-STD-461E	
	CE Marking	EMC: CISPR 22/IEC 61000 Safety: EC 60950-1/SANS 60950-1	
	MTBF	> 40,000 hours	
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 Asynchronous modes
REMOTE CONTROL (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
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. Not used on the RM6-A.
LOCAL CONTROL	Local control via 32x202 pixel graphical LCD display and 16-key keypad. 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
POWER SUPPLY	Variants 1, AC Supply: 90-264 VAC, 40-440 Hz, 2A; 100-370 VDC Variants 2, AC + DC: 90-264 VAC, 40-440 Hz, 2A; 100-370 VDC & 6-36 VDC MIL-STD 1275B protection

ORDERING INFORMATION	STOCK NUMBER	DESCRIPTION
RM6 M1 MODEM – AC ONLY	RME-61-RA-M15.3	SDM: RM6-A M1 (110B, F ISB 2x9600) V5.3
RM6 M1 MODEM – AC & DC	RME-61-RY-M15.3	SDM: RM6-A A/DC M1 (110B, F ISB) V5.3
RM6 M2 MODEM – AC ONLY	RME-61-RA-M25.3	SDM: RM6-A M2 (S4285, S4539 9600) V5.3
RM6 M2 MODEM – AC & DC	RME-61-RY-M25.3	SDM: RM6-A A/DC M2 (S4285, S4539) V5.3
LINK SETUP ALE 2G	R6A-SW-O-2G-5.3	SW MDL-2G ALE / MS 141B, App. A, B V5.3

* Contact RapidM for datasheets.

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