



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* provides systems integrators with peace-of-mind stemming from *RapidM's* commitment to long-term product availability and support.

The 2nd Generation (2G) ALE Controller is available as a software option for the *RM6-A*. 2G ALE can be combined with LF & HF Modem software packs (M1 & M2). The software options can be activated with the appropriate *RapidM* activation key.

The 2G ALE function can operate in combination with the *RapidM RC66* or *RC8 5066 Server and IP Controller*. These external ARQ functions control the ALE on the *RM6-A* directly through the REMOTE CONTROL port.

Key Features

- **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
- **Works with RC66** – datasheet available
- **Compact solution** – Modem & ALE 2G Controller
- **HF modem operation** – datasheet available

2G ALE Network

Using an ALE network over a number of frequencies offers a much higher level of connectivity compared with using a single frequency. Using ALE will substantially upgrade the availability of service.

2G ALE Front Panel

The *RM6-A* offers 2G ALE configuration and control via the front panel menu interface.

Call	2	6	HFNET	LP	Off
Scan	3		Net HFBASE	In	0/0
				Out	1

no	2	6	HFNET	LP	Off
Calling			Net HFBASE	In	0/0
				Out	1

	2	6	HFNET [HFM]	LP	Off
1 Link			Net HFBASE	In	0/0
				Out	1

Automatic Link Establishment

Embedded Automatic Link Establishment (ALE) allows linking with other HF stations without operator intervention. A number of frequencies can be used to overcome variable HF propagation conditions.

The ALE Controller performs all the basic protocol functions for individual calling, one-to-many calling, sounding and scanning up to 5 channels per second.

For link set-up the 2G ALE Controller calls first on channels with the best Link Quality Analysis (LQA) score. The LQA information is obtained by continuously listening to sounds and calls from other stations.

Linking Protection

MIL-STD-188-141B, App. B Linking Protection provides additional security to your HF network.

The *RM6-A* unit has a dedicated interface to connect a GPS unit as time reference. The *RM6-A* supports the standard Time Exchange protocol. Time exchange transfers the reference time to units without GPS.

2G ALE Features

- Individual, Group & Net Calls
- All, Any, Wildcard Call
- AMD, DTM, UUF
- LQA Sounding & Polling
- Automatic channel selection
- Emergency Operator break-in
- Automatic Hand-Off to Modem
- GPS Time updates
- Security Level (AL-1, AL-2)
- Time Exchange

2G ALE Radio Control

The control protocols for various radios are embedded. The radio manufacturer and model are selectable via the front panel and remote control interface.

Please contact *RapidM* to verify whether your radio is supported. The control protocols for additional radios can be added as needed.

CHARACTERISTIC	DESCRIPTION
ALE WAVEFORMS	<ul style="list-style-type: none"> 8-FSK according to MIL-STD-188-141C App A. & FED-STD 1045 Doppler lock and track (capture range up to ± 100 Hz, configurable) Adaptive multi-path tracking, Soft Golay decoding Adaptive triple word-phase synchronization, lock and track Linking probability performance 2-3 dB better than MIL-STD-188-141C specification No LP mode degradation Concurrent operation with other <i>RapidM</i> waveforms
ALE PROTOCOL	<ul style="list-style-type: none"> Calling (IND, GRP, NET, All, Any, Wildcard Call), UUF, AMD, DTM (with or without CRC), (excluding: DBM, AQC-ALE) Calling POLLING, INLINK, RELINK (ALM support commands) Link Quality Analysis (LQA), Scanning (2 or 5 channels per second), Auto Sounding Automatic Hand-Off to Internal Modem (integrated with 3G Traffic Manager) Concurrent operation within 3G Network environment (integrated Session Manager)
LINKING PROTECTION	<ul style="list-style-type: none"> According to MIL-STD-188-141C App B. & FED-STD 1049 LP key-tables (256) and key select function Automatic key management (Time of day based key selection), LP up to AL-2 Can use PPS interface for Time reference. Time Exchange protocol support (AL-1) Key Storage: 2 x 32 LP Keys Key Selection: Manual or Automatic (Daily)
OCCUPANCY DETECTION	<ul style="list-style-type: none"> MS 110A/B, S4539, S4285, S4415, S4529, S4481, 8-FSK, SSB Voice
REMOTE CONTROL	<ul style="list-style-type: none"> Configuration Protocol RAP1/RIPC, REMOTE Control Protocol RAP1/RIPC
RADIO CONTROL PROTOCOL	<ul style="list-style-type: none"> Integrated with Radio Control Manager (Radio Control Protocol) Integrated with Modem Controller (Radio baseband control, ATU & keyline delay settings, matched volume control etc.) RADIO Control Protocol RAP1/RIPC or Programmable Radio Selection
CONFIGURATION FOR NON-VOLATILE RAM	<ul style="list-style-type: none"> Network Table: Up to 100 Other IDs, 20 Self IDs LQA Table continuous (compressed) Non-volatile storage. Re-load at start-up. LQA Table pre-load (RAP1/RIPC) 20x 2G ALE Full Network Configuration Presets (MIB in Non-volatile storage)

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
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 <i>RM6-A</i> .
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
POWER SUPPLY	Variant 1, AC Supply: 90-264 VAC, 40-440 Hz, 2A; 100-370 VDC Variant 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-A (M1) AC SUPPLY	RME-61-RA-M15.3	SDM: RM6-A M1 (110B, F ISB 2x9600) V5.3
RM6-A (M2) AC SUPPLY	RME-61-RA-M25.3	SDM: RM6-A M2 (S4285, S4539 9600) V5.3
RM6-A (M1) AC & DC SUPPLY	RME-61-RY-M15.3	SDM: RM6-A A/DC M1 (110B, F ISB) V5.3
RM6-A (M2) AC & DC SUPPLY	RME-61-RY-M25.3	SDM: RM6-A A/DC M2 (S4285, S4539) V5.3
2G ALE (MIL-STD-188-141B) SOFTWARE OPTION	RM6-SW-O-2G-5.3	SW MDL-2G ALE / MS 141B, App. A, B V5.3
ACCESSORIES	STOCK NUMBER	DESCRIPTION
TELESCOPIC MOUNTING TRAY	RMX-AC-TR6R-001	Tray: 19" Telescopic, RM8/RM6-A/RM6 V01
CONNECTOR KIT	RM8-SP-1001-SPC	Spare Pac: RM8/RM6-A Connector Kit V01

* Contact RapidM for datasheets.

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