**RM8 Product Overview**

The RM8 Software Defined Modem & ALE Controller is a standalone unit intended for strategic and maritime data communications and is aimed at both naval and governmental end-users. 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 2nd Generation (2G) ALE Controller (this datasheet) is available as a software option for the RM8. The use of 2G ALE allows for linking with other HF stations in a HF radio network without operator intervention. The 2G ALE Controller performs all the basic protocol functions for individual calling, one-to-many calling, sounding and scanning up to 5 channels per second.

2G ALE can be combined with Modem software packs (M1 or M2). Software options are accessible with the appropriate RapidM activation key.

### Key Features

- **Standards compliance**
  - MIL-STD 1108, 141C and STANAG 4539, 4538
- **High Data Rate HF & V/UHF Modems**
- **DTE port**
  - EIA 530A Synchronous/Asynchronous
- **Remote control interfaces**
  - Serial and Ethernet
- **Local configuration & control**
  - Menu-driven
- **Power supply variants**
  - AC and AC + DC
- **GPS unit built-in & I/F**
  - for ALE time (Link Prot.)
- **2G ALE option**
  - datasheet available
- **3G ALE FLSU option**
  - current datasheet
- **3G Packet data option**
  - datasheet available
- **Works with RC8 ARQ**
  - datasheet available

### 2G ALE Network

Using a 2G ALE network that scans a number of frequencies offers a much higher level of HF radio network connectivity compared with using a single frequency. Using 2G ALE will substantially upgrade the availability of service.

### 2G ALE Channel Scanning

When not otherwise committed, the 2G ALE Controller continually scans the pre-selected set of channels, listening for calls. Link Quality Analysis (LQA) is obtained by continuously listening to sounds and calls from other stations.

### 2G ALE Linking Protection

MIL-STD-188-141C, App. B Linking Protection provides additional security to the HF Radio network. The RM8 unit has a built-in GPS unit that provides the time reference required for secure linking. The RM8 supports the standard Time Exchange protocol.

### 2G ALE Additional Features

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

### 2G ALE Front Panel

The RM8 offers 2G ALE configuration and control via the front panel menu interface.

### 2G ALE Radios Supported

The control protocols for various radios are embedded. The radio manufacturer and model are selectable via the front panel and remote control interface.
### CHARACTERISTIC | DESCRIPTION
--- | ---
**ALE WAVEFORMS** | - 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 RapidM waveforms

**ALE PROTOCOL** | - Calling (IND, GRP, NET, Ali, Any, Wildcard Call), UJF, 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** | - 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** | - MS 110A/B, S4539, S4285, S4415, S4529, S4481, 8-FSK, SS Voice

**REMOTE CONTROL** | - Configuration Protocol RAP1/RIPC, REMOTE Control Protocol RAP1/RIPC

**RADIO CONTROL PROTOCOL** | - Integrated with 3G 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** | - 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 (MB in Non-volatile storage)

### INTERFACES

| --- | --- |

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 (MCK)** | 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, requires 3G ALE |

**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  
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 |

**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. |

### ORDERING INFORMATION

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<thead>
<tr>
<th>STOCK NUMBER</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>RMB-81-RA-M13.2</td>
<td>SDM: RMB M1 (110B,F ISB 2a9600) V3.2</td>
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<tr>
<td>RMB-81-RA-M23.2</td>
<td>SDM: RMB M2 (HF S4285, S4539 9600) V3.2</td>
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<tr>
<td>RMB-SW-0-2G-5.3</td>
<td>SW MDL-2G ALE / MS 141B, App. A, B V5.3</td>
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</tbody>
</table>

**Other RMB Software Options** | |
| STOCK NUMBER | DESCRIPTION |
| USB+SW-0-3A-5.3 | SW MDL-3G ALE 4538 FLSU, xDL V5.3 |

*Contact RapidM for datasheets.*

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