

# RC10

## Wideband ARQ & IP Controller – 120 kbps



S4691 MARLIN 120 kbps

S5066 Ed 4 WB-ARQ

PRODUCT OVERVIEW

### Features

- **Available Embedded Functions**
  - STANAG 5066 Ed. 4\* – WB-ARQ Stack & Clients ( $\leq 120\,000$  bps)
  - STANAG 4691\* – MARLIN Controller ( $\leq 96\,000$  bps)

\* refer to separate datasheets for technical specifications.
- **Product Interfaces**
  - DTE Data – Connects to COMSEC, Synchronous / Async, serial I/F
  - Serial Remote Control – Connects to Trusted Filter, serial I/F
  - Ethernet Remote Control – Connects to Management System, Eth. I/F
  - Ethernet Auxiliary Data – Connects to Data Applications, Eth. I/F
  - Ethernet Data – Alternative data connection to Modem, Eth. I/F
  - Serial Data – Connects to ACP-127 Message Terminal, serial I/F
  - Analog Audio – Connects to Audio Intercom, 2 channel audio I/F
  - GPS – Accurate time updates from external GPS
- **STANAG 5066 Wideband ARQ Features**
  - HF BLOS – STANAG 5066 data over HF BLOS (skywave) radio links
  - Data Rate Change – Dynamically adapts to BLOS radio link variability
  - ALE Control – Multi-channel support, 2G/3G/4G ALE with ALM
  - Collision Avoidance – For HF Networking, CSMA & WTRP
  - Deployment – Ship-Borne & Shore Station incl. Split-Site
- **STANAG 4691 MARLIN Controller Features**
  - HF ELOS – IPv4 data over HF ELOS (surface wave) radio links
  - V/UHF LOS – IPv4 data over V/UHF LOS radio links
  - Collision Avoidance – For HF & V/UHF Networking, TDMA slots
  - Deployment – Ship-Borne for C2 in Naval Task Force
- **Product Features**
  - Factory Presets – Simplified configuration using pre-defined profiles
  - Radio Silence – EMCON support for S5066, S4691 & S4591
  - Split-Site Operation – TSupports dedicated TX and RX modems
  - Environmental Spec – Tested to MIL-STD-810G and MIL-STD-461E
  - Product Availability – 15 years, then Form Fit Function replacement
  - Interoperability – NATO architecture support, proven interoperability
  - Network Time – Accurate time updates via NTP time server

### RC10 Product Overview

The RC10 ARQ Server and IP Controller is a software defined OSI Layer 2 product for HF and V/UHF, offering the following standards-conformant protocol and voice embedded functions in a 19" rack-mountable unit:

- STANAG 5066 Edition 4 Automatic Repeat Request (ARQ) protocol stack for HF Beyond-Line-Of-Sight (BLOS) data communication,
- STANAG 4691 Appendix A Mobile Ad-Hoc Relay Line of Sight Networking (MARLIN) controller for V/UHF Line-of-Sight (LOS) and HF Extended Line-of-Sight (ELOS) data communication, and

These functions enable seamless end-to-end interoperability between strategic and tactical data and voice radio communication systems for NATO and Allied Forces. The RC10 embedded functions can be ordered separately and activated via software activation keys. Refer to the ordering information on the back page of this datasheet.

The STANAG 5066 Ed.4 ARQ Stack was designed for emerging wideband HF applications providing data communications over HF BLOS radio links. The RC10's wideband ARQ function supports automatic Data Rate Change (DRC), multi-frequency Automatic Link Establishment (ALE) and Automatic Link Maintenance (ALM) operation which combined, significantly increases geographic reach and availability of service – day and night.

The STANAG 5066 Ed.3 Narrowband ARQ Stack for HF, including the Wireless Token Ring Protocol (WTRP), is available as an operating mode in the RC10. This can be used for backward compatibility with existing fielded equipment supporting STANAG 5066 Ed.3 only.

Even though the STANAG 4691 MARLIN standard was originally developed to provide connectivity amongst ships at sea and slow-moving aircraft using V/UHF LOS radio links, it has become a proven technology for ships using HF LOS radio links, i.e. using surface wave propagation. This use case enables task force based ship-to-ship command and control (C2) operation over HF ELOS, where direct UHF LOS (including multi-hop relay) communication is not possible due to distance.

General Specifications & Interfaces

GENERAL SPECIFICATIONS				
SIZE, WEIGHT & COLOR	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	Color: Black Grey (RAL 7021), Saddlewood Powder (VX 7517)
ENVIRONMENTAL SPECIFICATIONS	Climatic	○ Storage/Operation: -30 °C to +60 °C (MIL-STD-810G) ○ Humidity: 90% non-condensing at 30 °C (MIL-STD-810G)		
	Mechanical	○ Vibration: Surface Ship, Marine Vehicles, Aircraft, Min. Integrity (MIL-STD-810G) ○ Shock: 40 G, 11 ms (MIL-STD-810G)		
	EMC	○ MIL-STD-461E (RE101, RE102, CE102, CS101, CS114, RS101, RS103)		
	Safety/CE Marking	○ CE Marking - Directives 2006/95/EC as amended ○ SANS 60950-1:2010 / IEC 60950-1:2012	○ LVD - Low Voltage Directive 2014/35/UE ○ EMC - Electromagnetic Compatibility Directive 2014/30/UE ○ EDD – Eco-Design Directive 2009/125/EC	
	MTBF	○ > 40,000 hours		
INSTALLATION	Compact design: The unit occupies a width less than ½ of an 1U 19" rack slot, <i>RapidM</i> 19" rack-mountable tray available.			
PRESETS	Factory and Custom Presets: Predefined configurations for various standard deployment scenarios.			

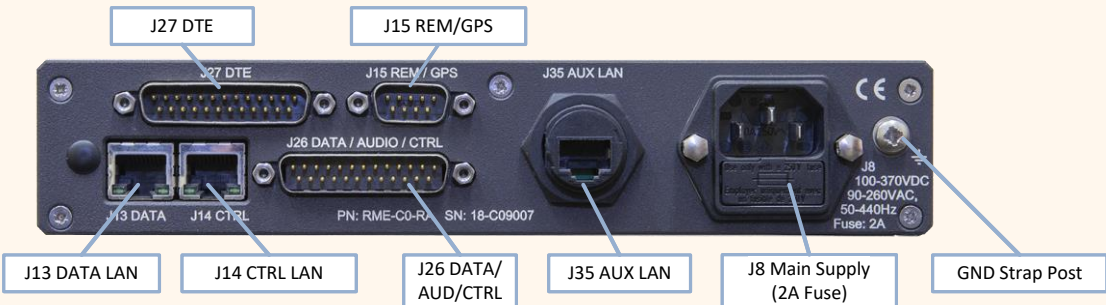


Figure 1: RC10 Rear Panel Layout

INTERFACES		
DTE (DATA) PORT (DB25M)	J27	RS-422 balanced, RS-232 unbalanced, MIL-STD-188-114 (interoperable), EIA 530A compliant. Half Duplex operation, DTE Synchronous and Asynchronous modes. Connects to serial cryptographic equipment for communication security.
ETHERNET DATA LAN (RJ45)	J13	IP Packet Data: 10/100 Base T (IEEE 802.3U compatible), embedded TCP/IP Stack Protocol: TCP data for modem. Connects to <i>RM10 Wideband SDM &amp; ALE</i> modem.
ETHERNET AUX LAN (RJ45)	J35	IP Packet Data: 10/100 Base T (IEEE 802.3U compatible), embedded TCP/IP Stack Protocol: IP - connects to application Router (Enclave or Federating); SIS S_Primitives over TCP/IP - connects to PCs & routers.
REMOTE CONTROL/ GPS PORT (DE9M)	J15	Remote Control Pins: RS-422 balanced or RS-232 Protocol: Control Protocol (RAP1 + RIPC). Connects to <i>RM10 Wideband SDM &amp; ALE</i> modem for real-time operational control for data rate change and ALE/ALM operation. External GPS Control Pins: RS-232 (nominally input). Data Rate: 300 to 19200 bps. PPS line: RS 232/422 (NMEA) or TTL. Connects to external GPS. Used for accurate system time (not position) from GPS.
SERIAL DATA (2) & AUDIO PORTS (2) (DB25M)	J26	Asynchronous Data (2 ports): RS-232, up to 115200 bps, 1/2 stop bits, 5/6/7/8 data bits Support for: ITA-2, ITA-5 for ACP-127 support. Connects to ACP 127 terminal. Input Audio: 600 ohm balanced, -20 to +10 dBm without adjustment or MIC input Output Audio: Balanced, -40 to +10 dBm adjustable into 600 ohm load. Connects to intercom or hand / headset.
ETHERNET CTRL LAN (RJ45)	J14	Remote Control: 10/100 Base T (IEEE 802.3U compatible), embedded TCP/IP Stack Protocol: Control Protocol (RAP1 + RIPC). Connects to external management / control system; connects to Modem as an alternative to J15.
USER INTERFACE FOR UNIT 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.
POWER SUPPLY	J8	Wide-range supply input: 90-264 VAC, 40-440 Hz, 2A & 100-370 VAC. Makes the unit suitable for use on military base stations, vessels and aircraft.

RC10 Ordering Information

The RC10 product can be ordered in two software defined basic variants, i.e. STANAG 5066 Wideband ARQ for operation of HF BLOS radio links or STANAG 4691 MARLIN Controller for operation over HF ELOS or V/UHF LOS radio links. For both basic variants, the other software functions can be ordered as software options.

RC10 Hardware + STANAG 5066 Wideband ARQ Software

RC10 ARQ SERVER ORDERING INFORMATION	STOCK NUMBER	DESCRIPTION
RC10 S5066 Wideband ARQ & IP Controller (CW)	RME-C0-RA-CWV06	SDC: RC10 CW (5066WB ARQ, IP Client) V06
Software Option: Email Gateway (SMTP/CFTP/HMTP) (CE)	C10-SW-O-CE-V06	SW MDL-CE (5066 Email G/way, SMTP) V06
Software Option: S4691 MARLIN Controller (CU)	C10-SW-O-CU-V06	SW MDL-CU (4691-A Contr., ≤ 120 kbps) V06

RC10 Hardware + STANAG S4691 MARLIN Controller Software

RC10 ARQ SERVER ORDERING INFORMATION	STOCK NUMBER	DESCRIPTION
RC10 S4691 MARLIN Controller (CU)	RME-C0-RA-CUV06	SDC: RC10 CU (4691-A Contr., ≤ 120 kbps) V06
Software Option: S5066 Wideband ARQ & IP Controller (CW)	C10-SW-O-CW-V06	SW MDL-CW (5066WB ARQ, IP Client) V06
Software Option: Email Gateway (SMTP/CFTP/HMTP) (CE)	C10-SW-O-CE-V06	SW MDL-CE (5066 Email G/way, SMTP) V06