

RC10

Wideband ARQ & IP Controller – 120 kbps



S4691 MARLIN 120 kbps

S5066 Ed 4 WB-ARQ

PRODUCT OVERVIEW

Features and Benefits

- **STANAG 5066 Edition 4 Support**
 - **STANAG 5066 Ed.4** – Conformant to all mandatory Annexes
 - **SIS interface** – Supports 3rd-party STANAG 5066 clients, Eth. I/F
 - **HF IP Client** – Supports IPv4 over HF applications, Eth. I/F
 - **COSS Client** – Supports ACP-126 / 127 terminals, serial I/F
 - **HF Operator Chat Client** – Supports text messaging, serial I/F
 - **CFTP & HMTP Email** – Supports SMTP email gateway, Eth. I/F
 - **STANAG 5066 Ed.3** – Compatibility mode supported
- **IP PEP** – Improved performance for IPv4 (Future, STANAG 5070 Ann. H-based)
- **COMSEC DTE Port** – Synchronous / Async serial I/F
- **SEF Port** – Security Enforcing Function, Trusted Filter, serial I/F
- **Data Rates** – 120 kbps MIL-STD 110D/STANAG 5069 (Block 3)
- **Data Rate Change** – Dynamically adapts to BLOS radio link variability
- **ALE Control** – Multi-channel, 2G, 3G & 4G ALE with ALM
- **Factory Presets** – Simplified configuration using pre-defined profiles
- **Operation** – Point-to-Point ARQ and Broadcast non-ARQ
- **Radio Silence** – EMCON support
- **Deployment** – Ship-Borne & Shore Station incl. Split-Site
- **Product Availability** – 15 years, then Form Fit Functions replacement
- **Interoperability** – proven interoperability with other products, e.g. RC66, BFEM 66, 4KMA, OMAR HD, RIFAN, BRASS ICC/BRE1TA and BRE2TA.

STANAG 5066 Edition 4 ARQ Stack Function

The RC10 ARQ Server and IP Controller includes a standards-conformant STANAG 5066 Edition 4 Wideband Automatic Repeat Request (WB-ARQ) protocol stack for error-free data transfer over bandwidth constrained long-distance HF radio links. The unit's built-in HF IP Client natively supports IPv4 applications.

The RC10 is a 19" rack-mount unit intended for naval and governmental end users who employ HF radio technology for Extended Line-of-Sight (ELOS) and Beyond-Line-of-Sight (BLOS) maritime, strategic or trans-continental data communications.

The RC10's synchronous DTE interface supports all the MIL-STD-188-110D / STANAG 5069 data rates up to 120 kbps (Block 3) for interfacing directly to bulk encryption equipment.

The RC10 with its embedded STANAG 5066 Ed.4 WB-ARQ stack, together with the RapidM 24 kHz RM10 HF data modem, comprise the equipment necessary for applications like chat, email, message handling systems or IP traffic to run over long range HF radio links. By adding the RapidM RI10 IP-to-SYNC unit to the solution, split-site solutions can be deployed over large geographical areas.

STANAG 5066 Ed.4 addresses data operation using waveforms with bandwidths ranging from 3 to 48 kHz, with a maximum data rate of 240 kbps. The RC10 provides data operation for a maximum bandwidth of 24 kHz, with a maximum data rate of 120 kbps. The RC10 also supports Data Rate Change (DRC) and multi-frequency ALE control for improved operation over varying HF BLOS radio channels.

The Narrowband HF STANAG 5066 Ed.3 ARQ Stack, 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.

The embedded STANAG 5066 HF Operator Chat, COSS and HF IP clients are always activated, ready to support applications such as text messaging, ACP127 and IP applications.

The RC10 will in near future also support a STANAG 5070 Annex H-based IP Performance Enhancing Proxy (PEP) that will improve the performance of UDP and TCP data over HF radio.

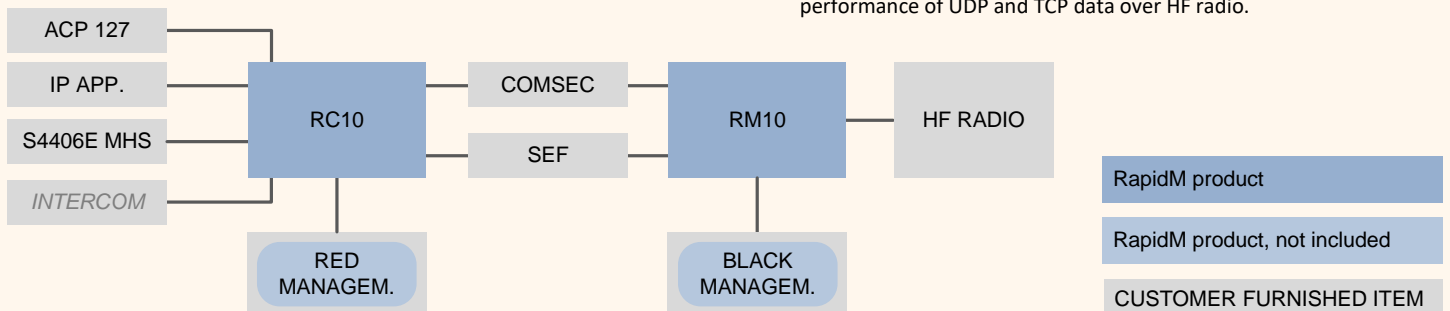


Figure 1: HF Circuit Architecture for STANAG 5066

Conformance To STANAG 5066 Edition 4

The RC10 conforms to all the mandatory requirements of the STANAG 5066 Ed.4 mandatory annexes (A, B, C, D, F and S), and also to a subset of the optional requirements of these annexes.

Annexes J, K and L address the Media Access Control (MAC) capabilities. The RC10 conforms to the requirements of Annexes J and K. The RC10 will be updated to include the STANAG 5066 Ed.4 Annex L in an upcoming release.

STANAG 5066 Ed.4 further introduces Annexes R and T specifying the Routing and TRANSEC Crypto Sublayers respectively as optional features. These annexes will be added to the RC10 in a later release.

Note: In Edition 4, the clients have been moved into their own separate annexes, and the STANAG 4406 Annex E and IP Clients have been updated. Some clients have been removed from the Ed.4 specification.

The table below provides a summary of the RC10's conformance to the STANAG 5066 Edition 4 standard.

* Future (Q4/2024)

CONFORMANCE WITH STANAG 5066 EDITION 4					
ANNEX A	Subnetwork Interface Sublayer (SIS)	✓	ANNEX O	HF Operator Chat	✓
ANNEX B	Channel Access Sublayer (CAS)	✓	ANNEX P	ACP 127 & Character-Oriented Serial Stream	✓
ANNEX C	Data Transfer Sublayer (DTS)	✓	ANNEX Q	ACP 142. Supported via external MMHS Applications.	-
ANNEX D	Interface between DTS and Communications Equipment	✓	ANNEX R	Routing Sublayer	*
ANNEX F	SAP Assignment	✓	ANNEX S	SIS Access Protocol	✓
ANNEX J	REQs for Enhanced MAC Cap. in Multi-Node S5066 Networks	✓	ANNEX T	S5066 TRANSEC Crypto Sublayer using AES, and other Prot.	*
ANNEX K	High-Frequency Carrier-Sense Multiple-Access (CSMA) Prot.	✓	ANNEX U	IP Client (<i>excluding IPv6 support</i>)	✓
ANNEX L	High-Frequency Wireless Token-Ring-Protocol (WTRP) REQs	*	ANNEX V	Compressed File Transfer Protocol (CFTP)	✓
ANNEX N	Guidance on Address Management in S5066 Networks (Info)	✓	Note: The following Edition 3 annexes were not added to Edition 4: E, G, H, I, M.		

Backwards-interoperability with Edition 3

The RC10 supports networks consisting of a mixture of STANAG 5066 Ed.3 and Ed.4 nodes. As part of the RC10 address configuration, it can be specified on a per-node-basis whether a node is Ed.3 or Ed.4 capable.

Only when the RC10 is configured for Ed.4 will it be able to communicate with nodes being Ed.3 or Ed.4 capable. If not specified in the address configuration, the Ed.4 capability of the remote node can be determined as part of the link request.

If a remote node is only Ed.3 capable, then all following STANAG 5066 data exchanges with that node will conform to STANAG 5066 Ed.3. Alternatively, if a remote node is indeed Ed.4 capable, then all following STANAG 5066 data exchanges will make use of the Ed.4 functionality.

When the RC10 is run in the STANAG 5066 Ed.3 mode, it will only be able to communicate using Ed.3 features. The RC10 complies with the STANAG 5066 Ed.3 Annex L (WTRP), which is not interoperable with the STANAG 5066 Ed.4 Annex L.

The table below provides a summary of the RC10's conformance to the STANAG 5066 Ed.3 annexes that are removed from Ed.4.

CONFORMANCE WITH STANAG 5066 Ed.3 ANNEXES REMOVED FROM Ed.4					
ANNEX E	HF Modem Remote Control Interface (RM Proprietary I/F)	N/A	ANNEX I	Messages and Procedures for Frequency Change	✓
ANNEX G	Use of Waveforms at Data Rates Above 2400 bps	✓	ANNEX M	ATDMA Prot using S5066 DTS Layer Messaging (Empty)	N/A
ANNEX H	Implementation Guide and Notes (Information Only)	N/A	Note: This is not a complete conformance-to-standard table for STANAG 5066 Ed.3.		

Embedded STANAG 5066 Clients

By default, the STANAG 5066 compliant IP Client, COSS Client and Chat Client are activated for use. The RC10 further offers an optional Email Gateway function, which enables the use of the embedded STANAG 5066 Ed.4 CFTP Client, Ed.3 HMTP Client, and an SMTP component for

legacy Email operation. This is required for BFEM 66 & OMAR HD interoperability, as an example. The Email Gateway functionality is subject to applying the software activation key, CE (S5066 Email Gateway).

ADDITIONAL STANAG 5066 Ed.3 ANNEX F CLIENTS SUPPORT					
ANNEX F.5	STANAG 5066 HF Mail Transfer Protocol (HMTP) Client	✓	ANNEX F.16	RAW SIS Socket Server	✓
EMBEDDED EMAIL GATEWAY – SMTP, RFC 2821					
SMTP	Embedded SMTP Client (RFC 2821)	✓	Note: This is not a complete list of the supported STANAG 5066 Clients. STANAG 5066 Ed.4 retained most of the clients specified in Ed.3 Annex F.		

Binding of STANAG 5066 Clients

The RC10's embedded STANAG 5066 Ed.4 WB-ARQ stack support simultaneous binding from multiple clients. Clients connect to the Subnet Interface Sublayer (SIS), each using an unique Service Access Point (SAP). Each SAP is identified by its SAP Identifier (SAP ID), which is a number in the range 0-15; hence a maximum of 16 clients can be supported simultaneously.

The RC10's embedded clients uses the following SAP IDs internally: COSS: ID 1; HMTP: ID 3; CHAT: ID 5; IP Client: ID 9 and CFTP: ID 12.

An external Military Message Handling System (MMHS) based on NATO standard STANAG 4406 Annex E typically binds to SAP ID 2. Similarly, an external Military Email System (MEMS) based on Allied Communication Publication standard ACP-142 typically binds to SAP ID 7.

RC10 Ordering Information

RC10 ARQ SERVER ORDERING INFORMATION	STOCK NUMBER	DESCRIPTION
RC10 HF S5066 Wideband ARQ & IP Controller [CW]	RME-C0-RA-CWV06	SDC: RC10 CW (5066WB ARQ, IP Client) V06
RC10 Software Option: Email Gateway (SMTP/CFTP/HMTP) [CE]	C10-SW-O-CE-V06	SW MDL-CE (5066 Email G/way, SMTP) V06

Rapid Mobile (Pty) Ltd is a world-leading business-to-business supplier of digital radio communication technology. We produce data modems, embedded modules and related technology for use with HF and V/UHF radios. Reproduction or transmission of this document in any form without prior consent from RapidM is prohibited. All information and technical specifications are subject to change without prior notice.

 info@rapidm.com
 +27 12 349 0000
 <https://www.rapidm.com/>


 Copyright © 2024 Rapid Mobile (Pty) Ltd
 Revision: RC10_S5066_EN_03D