

Section 16: Special Purpose Modules

This chapter describes special-purpose modules for PACSystems RX3i controllers:

Module Description	Catalog Number	Section
RX3i I/O Link Interface Module	IC694BEM320	16.1
RX3i I/O Link Master Module	IC694BEM321	16.2
RX3i Genius Bus Controller Module	IC694BEM331	16.4
RX3i Serial Communications Module, 2 Ports	IC695CMM002	16.5
RX3i Serial Communications Module, 4 Ports	IC695CMM004	16.5
RX3i Control Memory Xchange Module	IC695CMX128	16.7
RX3i Redundancy Memory Xchange Module, Multi-mode fiber	IC695RMX128	16.8
RX3i Redundancy Memory Xchange Module, Single-mode fiber	IC695RMX228	16.8
RX3i DeviceNet Master Module	IC694DNM200	16.9
RX3i Motion Mate Module	IC694DSM314	16.10
RX3i Motion Controller Module	IC694DSM324	16.11
RX3i PACMotion Multi-Axis Motion Controller	IC695PMM335	16.12
RX3i IEC 61850 Ethernet Communication Module	IC695ECM850	16.13
RX3i Ethernet Transmitter Module	IC695ETM001	16.15
RX3i DNP3 Outstation Module	IC695EDS001	16.16
RX3i Ethernet 104 Server Module	IC695EIS001	16.18
RX3i Ethernet Network Interface Unit	IC695NIU001	0
RX3i Ethernet Network Interface Unit	IC695NIU001 <i>PLUS</i>	16.21
RX3i PROFIBUS Master Module	IC695PBM300	16.22
RX3i PROFIBUS Slave Module	IC695PBS301	0
RX3i PROFINET Controller Module	IC695PNC001	16.24
RX3i PROFINET Scanner Module	IC695PNS001	16.25
	IC695PNS101	
RX3i CEP Carrier	IC695CEP001	16.26
RX3i CEP Expansion Carrier	IC694CEE001	16.26
RX3i Genius Communications Gateway	IC695GCG001	16.27
RX3i Pressure Transducer Module	IC695PRS015	16.28

16.8 RX3i Redundancy Memory Xchange Modules: IC695RMX128, IC695RMX228

Both Redundancy Memory Xchange (RMX) modules operate as a node on a reflective memory network or as a dedicated link between CPUs in an RX3i Hot Standby CPU Redundancy system⁹¹. When the RMX is not being used as a link in a redundancy system, it is functionally identical to the IC695CMX128 module. Each node in the network can be any reflective memory device that is compatible with the 5565 family⁸⁹. Whenever data is written to one node, all nodes on the network are automatically updated with the new data.

Note: A hub is required to connect a single mode fiber device into a ring with multi-mode fiber devices. Hubs are not permitted when connecting redundant pairs.

When used as a node on a reflective memory network, the RMX module provides deterministic sharing of data among PLCs and other computing devices on a high-speed fiber optic network. A reflective memory network can contain up to 256 nodes.

Figure 393:

IC695RMX128



Figure 394:

IC695RMX228



Each node in the reflective memory network is connected in a daisy-chained loop using fiber optic cables. The transmitter of the first node is tied to the receiver of the second. The transmitter of the second node is tied to the receiver of the third node, and so on, until the loop is completed at the receiver of the first node. When used in a CPU redundancy system, the RMX modules provide a path for transferring data between the two redundancy CPUs in the redundant system. A complete communications path consists of one RMX in the primary unit, one RMX in the secondary unit, and two high-speed fiber optic cables connecting them to each other. This must be a two-node ring: no other reflective memory nodes are allowed to be part of this fiber optic network.

Emerson **strongly recommends** two redundancy links (a total of four RMX modules) be configured and installed. Optionally, systems can be configured for a single redundancy link (a total of two RMX modules).

⁹¹ RMX modules are not compatible with rack-less RX3i CPU systems, such as CPE400 & CPL410. Instead, these CPUs use LAN3 to provide a high-speed link in support of Redundancy applications.

When the RMX is being used as link in a redundancy system, it cannot be used as a general-purpose Memory Xchange module. For details on the operation of a PACSystems CPU redundancy system, refer to the *PACSystems Hot Standby CPU Redundancy User's Manual*, GFK-2308.

A PACSystems RX3i main rack supports a maximum of six Memory Xchange modules in any combination of RMX128, RMX228 and CMX128 modules. A maximum of two RMX modules can be configured as redundancy communication links.

16.8.1 Features: RMX128 & RMX228

- PACSystems RX3i single slot form factor.
- 128 Mbytes reflective memory.⁹²
- Software configuration of all node parameters (no jumper or switch settings required).⁹²
- High-speed easy-to-use 2.12 GBaud fiber-optic network.
- No RX3i CPU processing required to operate the network.
- Network-compatible with VMIC 5565 family⁸⁹ of reflective memory devices

Note: A hub is required to connect a single-mode fiber device into a ring with multi-mode fiber devices. Hubs are not permitted when connecting redundant pairs.

- IC695RMX128: Connection with multi-mode fiber up to 300 m (984.25 ft).
- IC695RMX228: Connection with single-mode fiber up to 10 km (32,808 ft 4 in).
- Dynamic packet sizes of 4 to 64 bytes, controlled by the RMX module.
- Programmable module interrupt output.
- Four general-purpose network interrupts with 32 bits of data each.⁹²
- Network error detection.
- Up to 256 nodes per network.⁹²
- Redundant transfer mode operation. This optional mode reduces the chance of a data packet being dropped from the network.⁹²
- Configurable network memory offset allows you to assign nodes on a network to groups according to the 16MB segment in the network address space that they use.⁹²

The RMX128/RMX228 module must be located in an RX3i Universal Backplane. These modules support insertion into and removal from an RX3i Universal Backplane which is under power. Refer to *Hot Insertion and Removal*.

RMX128/RMX228 modules require a metal enclosure to meet radiated emissions requirements. For details, refer to Module datasheet, GFK-2511.

⁹² Not available when operating as a redundancy link in a CPU redundancy system.

16.8.3 Specifications: RMX128 & RMX228

RMX128/RMX228	Specifications
Packet size	Dynamic, automatically controlled by RMX128/RMX228 module
User memory	128MB SDRAM
Input power (from RX3i power supply)	580 mA at +3.3 Vdc 220 mA at +5 Vdc
Connectors	Fiber optic LC type, conforms to IEC 61754-20 Zirconium ceramic ferrule Insertion loss: 0.35 dB (maximum) Return loss: Refer to cable/connector specifications.

For product standards and general specifications, refer to Appendix A:.