

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

GE PACSYSTEMS RX3I

IC695CRU320

REDUNDANT RX3I CONTROLLER

Used with the applicable PACSystems RX3i controllers configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: GE official manufacturer documentation



High Availability Redundant Controllers

High Availability CPU Redundancy family allows critical application or process to continue operating if a failure occurs in any single component. A High Availability system uses two or more CPUs; an active unit that actively controls the process, and one or more backup units that are synchronized with the active unit and can take over the process should it becomes necessary.

An RX3i QuadPAC solution utilizes four CRU320QP controllers — one is a master controller and three are synchronized backup controllers. The QuadPAC solution features “Smart Redundancy,” a patent pending algorithm that calculates the relative system availability in real time and identifies the most available controller as master. The I/O racks may be grouped into either single (one I/O rack), redundant (two I/O racks), or triple redundant (three I/O racks) rack configurations.

	IC695CRU320	IC695CRU320QP
Product Name	RX3i Bumpless Redundant High Availability CPU with two built-in serial ports. (Requires IC695RMX128 Data Sync Module)	QuadPAC CPU for RX3i Bumpless Redundant High Availability CPU with two built-in serial ports. (Requires IC695RMX128 Data Sync Module AND Quad Redundancy Solution Code)
Lifecycle Status	Active	Active
Module Type	Redundant Controller	Quad System Redundant Controller
Backplane Support	Universal Backplane Only. Uses PCI Bus.	Universal Backplane Only. Uses PCI Bus.
Boolean Execution Speed (ms/K)	0.047	0.047
User Logic Memory	64Meg bytes	64Meg bytes
Battery Backed Real Time Clock	Yes	Yes
I/O Discrete Points	32K	32K
I/O Analog Points	32K	32K
Type of Memory Storage	SRAM, Flash	SRAM, Flash
Dynamic Data Back-up	Battery Backup only	Battery Backup only
Processor Speed	1GHz	1GHz
Built-in Communication Ports	One RS-485 port and one RS-232 port. Supports SNP, Serial I/O, Modbus Slave and Modbus Master (Application code)	One RS-485 port and one RS-232 port. Supports SNP, Serial I/O, Modbus Slave and Modbus Master (Application code)
Total Number of Racks	8	8
Communications Options	Serial, Genius, CMX, Ethernet, PROFINET, PROFIBUS, and DeviceNet	Serial, Genius, CMX, Ethernet, PROFINET, PROFIBUS, and DeviceNet
Field Busses/Device Networks	Ethernet (Ethernet Global Data, Channels, Modbus TCP Server and Client), PROFIBUS DP, DeviceNet	Ethernet (Ethernet Global Data, Channels, Modbus TCP Server and Client), PROFIBUS DP, DeviceNet
Software Programming Support	Proficy Machine Edition Logic Developer Professional edition 5.7 or above	Proficy Machine Edition Logic Developer Professional edition 7.0 SIM 8 or above
Program Languages Supported	Ladder Logic, Structured Text, C, Function Block Diagram	Ladder Logic, Structured Text, C, Function Block Diagram
Redundancy Maximum amount of data in for Synchronization	Up to 2 Mbytes beginning and end of scan	Up to 2 Mbytes beginning and end of scan
Redundancy Typical Base Sweep Time (Reference Data Transfer List Impact)	3.66 msec: 1K Discrete I/O, 125 Analog I/O and 1K Registers 3.87 msec: 2K Discrete I/O, 250 Analog I/O and 2K Registers 4.30 msec: 4K Discrete I/O, 500 Analog I/O and 4K Registers 5.16 msec: 8K Discrete I/O, 1K Analog I/O and 8K Registers	3.66 msec: 1K Discrete I/O, 125 Analog I/O and 1K Registers 3.87 msec: 2K Discrete I/O, 250 Analog I/O and 2K Registers 4.30 msec: 4K Discrete I/O, 500 Analog I/O and 4K Registers 5.16 msec: 8K Discrete I/O, 1K Analog I/O and 8K Registers
Redundancy Switchover Time	Maximum 1 logic scan, minimum 3.133 msec.	Maximum 1 logic scan, minimum 3.133 msec.
CPU Scan Synchronization	Automatic Each Scan	Automatic Each Scan
Redundant Synch LAN	Yes	Yes
Redundant I/O LAN	Yes	Yes
Internal Power Used	1750 mA @ 3.3 VDC; 1200 mA @ 5 VDC	1750 mA @ 3.3 VDC; 1200 mA @ 5 VDC
Number of Slots Module Occupies on Backplane	2	2



High Availability Data Synch

The Redundancy Memory Xchange (RMX) module operates as a dedicated link between CPUs in an RX3i Hot Standby CPU (IC695CRU320) 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. One or two redundancy links are supported per high availability CPU.

IC695RMX128	
Product Name	RX3i Control Memory Xchange Module for Peer to Peer network. 128Megabytes of user shared memory.
Lifecycle Status	Active
Module Type	High Availability Data Synchronization Link
Backplane Support	Universal Backplane Only. Uses PCI Bus.
Sync Link Speed	2.1 Gbits/s
Communications Data Rate	2.12Gbaud
Synchronized Link Transfer Rate	43 Mbyte/s (4 byte packets) to 174 Mbyte/s (64 byte packets)
Maximum Data Synchronization	Up to 2 megabytes. Twice per Scan.
Bus Diagnostics	Network error detection.
Redundant RMX Support	Yes
Maximum Distance Between Redundant Controllers	300 meters
Connector Type	-Fiber optic LC type, conforms to IEC 61754-20 - Zirconium ceramic ferrule -Insertion loss: 0.35 dB (maximum) -Return loss: -30dB
Internal Power Used	660 mA @ +3.3 VDC 253 mA @ +5 VDC
Number of Slots Module Occupies on Backplane	1

PACSystems RX3i Controllers

PACSystems RX3i is the high performance, modular and scalable control system that supports the PACSystem engine. This rack-based system is built on PCI standards and provides fast, consistent control between the modules. In addition to more than one hundred discrete and process I/O points, the PACSystems RX3i features:

- **PACSystems High Availability** – This scalable, synchronized, hot-standby redundancy control platform helps ensure uninterrupted control of your applications and processes — with total transparency.
- **PACMotion Controller** – Our versatile servo motion controller combines the benefits of a highly integrated motion and machine logic solution, with the performance, flexibility and scalability required for advanced machine automation.
- **Proficy Process Systems** – A scalable, fully integrated system for process automation and control.
- **Integrated PROFINET** provides real time control of distributed I/O.
- **Proficy Machine Edition** – Develop, configure and maintain all of your control functions including motion, visualization and networking with complete software package.

PACSystems RX3i also offers an outstanding migration path for moving any Series 90 application to the PACSystems architecture.

Power Supplies pages 1.11-1.14

CPUs pages 1.7-1.8

Publication Reference Chart

GFK-2222	PACSystems CPU Reference Manual
GFK-2224	TCP/IP Ethernet Communications for PACSystems
GFK-2225	PACSystems Station Manager User's Manual
GFK-2259	C Programmer's Toolkit for PACSystems User's Manual
GFK-2308	PACSystems Hot Standby CPU Redundancy User's Manual
GFK-2314	PACSystems RX3i Hardware and Installation Manual

Discrete Input Modules pages 1.14-1.16

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Analog Input Modules pages 1.17-1.21

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Pneumatic Module page 1.51

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Specialty Modules pages 1.31-1.42, 1.46

Serial Communication Modules page 1.45

PACMotion pages 1.47-1.48

Networks and Distributed I/O Systems pages 1.43-1.44

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