PACSystems RX3i

IC695CMU310

Max-ON Hot-Standby Redundancy CPU

GFK-2420Q
May 2011

The PACSystems* RX3i Max-ON CPU IC695CMU310 provides Hot-Standby CPU redundancy using two RX3i systems. The redundant controllers exchange operating data by way of one or two dedicated Ethernet LANs. Each RX3i system in a Max-On application consists of:

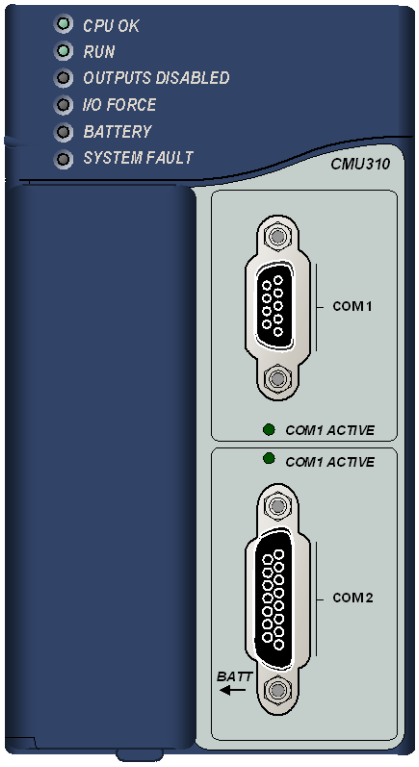
- the Max-ON CPU (IC695CMU310)
- an RX3i Universal Backplane (IC695CHS0xx)
- an RX3i power supply (IC695PSxxxx)
- one or more RX3i Ethernet modules (IC695ETM001)
- Max-ON application software
- Optional Series 90-30 expansion backplanes.
- PACSystems RX3i and/or Series 90-30 modules, as appropriate for the application.

The Max-ON CPU is compatible with a wide range of RX3i and Series 90-30 modules, backplanes, and other equipment, as listed in the *PACSystems RX3i Hardware and Installation Manual,* GFK-2314.

Max-ON redundancy applications include fuel loading, standby power generation, boiler systems, and manufacturing systems. The proprietary Max-ON software provides subroutines for synchronization of variables, program equivalence testing, selection of master CPU, and diagnostics. When using Max-ON redundancy, transfer of control from the Master to the Backup can take two to three CPU logic scans. I/O states are maintained during the transfer. Max-ON redundancy is not suitable for SIL 2 or 3 applications.

Features

- Programming in Ladder Diagram, Structured Text, Function Block Diagram, and C.
- Auto-located Symbolic Variables that can use any amount of user memory.
- 10 Mbytes of battery-backed user memory and 10 Mbytes of non-volatile flash user memory. Use of this flash memory is optional.
- Access to bulk memory via reference table %W.
- Reference table sizes include 32Kbits for discrete %I and %Q and up to 32Kwords each for analog %AI and %AQ.
- Up to 512 program blocks. Maximum size for a block is 128KB.
- Test Edit mode to check changes to a running program.
- Bit-in-word referencing.
- Battery-backed calendar clock.
- In-system upgradeable firmware.
- Two serial ports: RS-485 and RS-232.



Ordering Information

Description	Catalog Number
PACSystems RX3i Max-ON CPU	IC695CMU310
Lithium Smart Battery	IC695ACC302
Auxiliary Battery Module	IC693ACC302
Lithium Battery Pack	IC698ACC701
Standard Power Supplies 120/240VAC, 125VDC, 40W 24VDC, 40W	 IC695PSA040 IC695PSD040
Multifunctional Power Supplies 120/240 VAC, 125 VDC, 40W 24 VDC, 40 Watt	 IC695PSA140 IC695PSD140
Rx3i 16 Slot Universal Backplane	IC695CHS016
Rx3i 16 Slot Universal Backplane	IC695CHS016
Note: For Conformal Coat option, please consult the factory for price and availability.	

Specifications

Battery: Memory retention	RX3i CPU Lithium Smart Battery, IC695ACC302 (recommended), Series 90-30 Lithium Battery Pack, IC693ACC302, or IC698ACC701 Smart Coin Cell Battery Pack
Program storage	Up to 10 Mbytes battery-backed RAM; 10 Mbytes non-volatile flash user memory
Power requirements	+3.3 VDC: 1.25 Amps nominal +5 VDC: 1.0 Amps nominal
Operating Temperature	0 to 60°C (32°F to 140°F)
Floating point	Yes
Boolean execution speed	0.195ms per 1000 Boolean instructions, typical
Time of Day Clock accuracy	Maximum drift of 2 seconds per day
Elapsed Time Clock (internal timing) accuracy	0.01% maximum
Embedded communications	RS-232, RS-485
Serial Protocols supported	Modbus RTU Slave, SNP, Serial I/O
Backplane	Dual backplane bus support: RX3i PCI and 90-30-style serial
PCI compatibility	System designed to be electrically compliant with PCI 2.2 standard
Program blocks	Up to 512 program blocks. Maximum size for a block is 128KB.
Memory	*%I and %Q:* 32Kbits for discrete *%AI and %AQ:* configurable up to 32Kwords *%W:* configurable up to the maximum available user RAM Symbolic: configurable up to 10 Mbytes

For environmental specifications and compliance to standards (for example, FCC or European Union Directives), refer to the PACSystems RX3i Hardware and Installation Manual, GFK-2314.

Important Installation Instructions for Battery

Do not connect the battery until the CPU is installed in the rack and the rack is powered on. The battery may then be attached to either of the two terminals in the battery compartment. Once that is done, the CPU may be powered down and normal battery back up operation will begin. To save battery life, do not connect the battery for the first time until the CPU is powered up.

Estimated Battery Life without Power Applied

The nominal backup values are estimated at 20ºC (68°F). Backup time increases approximately 17% at 60ºC and decreases approximately 32% at 0ºC.

IC695ACC302 RX3i CPU Lithium Smart Battery:

Battery Life in Good State	*Battery Life in Low State*	*Total Battery life*
185 days	15 days	200 days

Note: When using the Smart Battery, the Battery Low indication can be detected only on the power up condition of the CPU either by the LED indication or the fault table.

Smart Coin Cell Battery, IC698ACC701C and later:

Battery Back-up Life in Good State	*Battery Back-up Life in Low State*	*Total Back-up Battery Life*
18 days	15 days	33 days

IC693ACC302 Auxiliary Battery Module:

200 days at 20ºC (68°F)

Release History

Catalog Number	Revision	Comments
IC695CMU310-DR	6.71	Corrects the behavior of the Logic Driven Read/Write to Flash service requests, SVC_REQ56 and SVC_REQ 57.
IC695CMU310-DP	6.70	Introduces support for new modules, enhancements to the Modbus RTU protocol, improved Run signal handling in the expansion rack and other improvements. Resolves several problems found in earlier releases.
IC695CMU310-DN	6.01	Provides for OEM protection in flash-based systems that do not use a battery. For additional problems resolved, see GFK-2420N.
IC695CMU310-DM	6.00	Adds *User Defined Types, Variable Indexed Arrays, Logic Driven Write to Flash,* and *Backplane Operations Controller Enhancement* features. See GFK-2420M for details and problems resolved.
IC695CMU310-DL	5.70	Enables support functionally identical to the IC695CMX128 for the IC695RMX128.
IC695CMU310-CK	5.61	Corrects the problem described in GFK-2420K.
IC695CMU310-CK	5.60	Supports the IC695PMM335 PACMotion Multi-Axis Motion Controller. Provides other new features and corrects the problems listed in GFK-2420K.
IC695CMU310-CJ	5.50	Supports Run-mode store of EGD. Adds support for LREAL data type.
IC695CMU310-CH	5.03	Corrects problems described in GFK-2420G.
IC695CMU310-BG	5.02	Fixed an issue where certain IC694/IC693 modules in the main backplane did not transition to stop mode after a “Loss of Module” fault was logged.
IC695CMU310-BF	5.00	Supports Scan_Set_IO, Quality Function Blocks, Optional UDF Parameters, IEC Transitionals, SNPT Network time sync.
IC695CMU310-BE	3.83	Supports the RX3i Serial Communications Modules IC695CMM002 and CMM004.
IC695CMU310-BD	3.82	
IC695CMU310-BC	3.81	Supports eight ETM modules in main backplane
IC695CMU310-AB	3.52	
IC695CMU310-AA	3.51	Initial Release

Important Product Information for this Release

Release 6.71 corrects the behavior of the Logic Driven Read/Write to Flash service requests, SVC_REQ56 and SVC_REQ 57. For details, see “Problems Resolved in Release 6.71” on page 5.

Updates

IC695CMU310 can be field upgraded to firmware version 6.71 using the firmware upgrade utility and upgrade kit 44A753019-G15, which can be downloaded from http://www.ge-ip.com/support.