

PACSystems* RX7i

IC698CPE030-JP/CPE040-JP

Central Processing Unit

GFK-2438W

May 2013

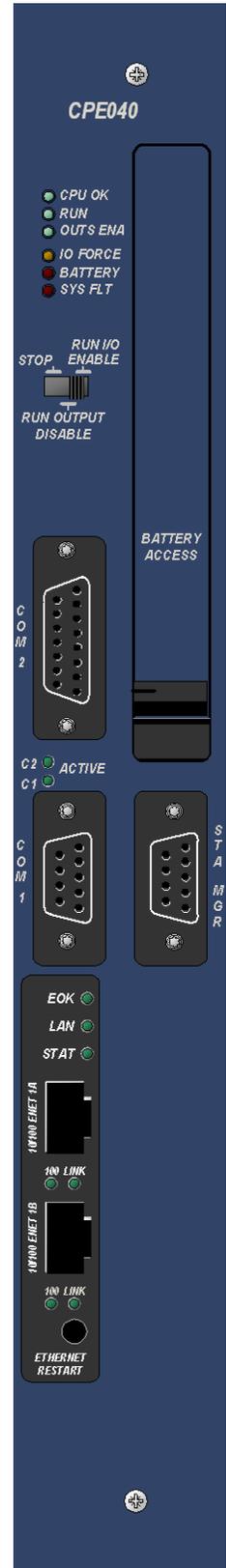
The RX7i CPUs are programmed and configured by the programming software to perform real time control of machines, processes, and material handling systems. The CPU communicates with I/O and smart option modules over a rack-mounted backplane using the VME64 Standard format. It communicates with the programmer and HMI devices via the embedded Ethernet ports or a serial port using SNP Slave protocol.

CPE030: 600MHz Pentium-M microprocessor with 64 MB of user memory and 64 MB of user flash

CPE040: 1800MHz Pentium-M microprocessor with 64 MB of user memory and 64 MB of user flash

Features

- Contains 64 Mbytes each of battery-backed user memory and non-volatile flash user memory for user data (program, configuration, register data, and symbolic variable) storage.
- Access to bulk memory via reference table %W.
- Configurable data and program memory.
- Programming in Ladder Diagram, C, Structured Text, and Function Block Diagram.
- Auto-located Symbolic Variables that can use any amount of user memory.
- Support for Series 90-70 discrete and analog I/O, communications, and other modules. For a list of modules supported, refer to the *PACSystems RX7i Installation Manual*, GFK-2223.
- Support for all VME modules supported by Series 90-70.
- Rx7i data monitoring over the web. Allows a combined total of up to 16 web server and FTP connections.
- Up to 512 program blocks. Maximum size for a block is 128KB.
- Test Edit mode that allows you to easily test modifications to a running program.
- Bit-in-word referencing
- Battery-backed calendar clock.
- CPU and module firmware upgrades via Winloader through CPU's RS-232 or RS-485 serial port.
- Three isolated serial ports: an RS-485 serial port, an RS-232 serial port, and an RS-232 Ethernet station manager serial port.
- An embedded Ethernet interface with:
 - Data exchange using Ethernet Global Data (EGD)
 - TCP/IP communication services using SRTP
 - Support for SRTP Channels, Modbus/TCP Server, and Modbus/TCP Client
 - Full programming and configuration services
 - Comprehensive station management and diagnostic tools
 - Two full-duplex 10BaseT/100BaseT/TX (RJ-45 Connector) ports with an internal network switch providing auto-negotiated network speed, duplex mode, and crossover detection.
 - User-configurable Redundant IP address
 - Time synchronization to SNTP time server on Ethernet network (when used with Release 5.00 or later CPU module).



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Specifications

Note: For environmental specifications and compliance to standards (for example, FCC or European Union Directives), refer to Appendix A of the *PACSystems RX7i Installation Manual*, GFK-2223.

Battery: Memory retention		For battery selection, installation and estimated life, refer to the <i>PACSystems Controller Battery and Energy Pack Manual</i> , GFK-2741.
Program storage		Up to 64 Mbytes of battery-backed RAM 64 Mbytes of non-volatile flash user memory
Power requirements:	CPE030	+5 VDC: 3.2 Amps nominal +12 VDC: 0.003 Amps nominal -12 VDC: 0.003 Amps nominal
	CPE040	+5 VDC: 6.8 Amps nominal +12 VDC: 0.003 Amps nominal -12 VDC: 0.003 Amps nominal
Operating temperature:	CPE030	0 to 50°C (32°F to 122°F) 0 to 60°C (32°F to 140°F) with fan tray
	CPE040	0 to 60°C (32°F to 140°F), fan tray required
Boolean execution speed, typical:	CPE030	0.069ms per 1000 Boolean contacts/coils
	CPE040	0.02391ms per 1000 Boolean contacts/coils
Time of Day Clock accuracy		Maximum drift of ± 2 seconds per day
Elapsed Time Clock (internal timing) accuracy		$\pm 0.01\%$ maximum
Embedded communications		RS-232, RS-485, Ethernet interface
Serial Protocols supported		Modbus RTU Slave, SNP, Serial I/O
Ethernet Ports		Embedded auto-sensing 10/100 Mbps half/full duplex Ethernet interface
VME Compatibility		System designed to support the VME64 standard ANSI/VITA 1
Program blocks		Up to 512 program blocks. Maximum size for a block is 128KB.
Memory (For a detailed listing of memory areas, refer to the <i>CPU Reference Manual</i> , GFK-2222.)		%I and %Q: 32Kbits for discrete %AI and %AQ: configurable up to 32Kwords %W: configurable up to the maximum available user RAM Managed memory (<i>Symbolic and I/O variables combined</i>): configurable up to 10 Mbytes
<i>Ethernet Interface Specifications</i>		
Web-based data monitoring		Up to 16 web server and FTP connections (combined)
Ethernet data rate		10Mb/sec and 100Mb/sec
Physical interface		10BaseT RJ45
WinLoader support		Yes
Number of EGD configuration-based pages		255
Time synchronization		SNTP
Selective consumption of EGD		Yes
Load EGD configuration from RX7i to programmer		Yes
Remote Station Manager over UDP		Yes
Local Station Manager (RS-232)		Dedicated RS-232 port
Configurable Advanced User Parameters		Yes

Release History

Catalog Numbers	Date	CPU Firmware Version	Ethernet Firmware Version
IC698CPE030-JP/IC698CPE040-JP	May 2013	6.75	6.20
IC698CPE030-HN/IC698CPE040-HN	May 2012	6.75	6.13
IC698CPE030-GN/IC698CPE040-GN	Apr. 2012	6.75	6.13
IC698CPE030-GM/IC698CPE040-GM	Feb. 2012	6.75	6.12
IC698CPE030-GL/IC698CPE040-GL	Nov. 2011	6.75	6.10
IC698CPE030-GK/IC698CPE040-GK	July 2011	6.71	6.10
IC698CPE030-GJ/IC698CPE040-GJ	Nov. 2010	6.01	6.00
IC698CPE030-FJ/IC698CPE040-FJ	Mar. 2010	6.01	6.00
IC698CPE030-FH/IC698CPE040-FH	Sep. 2009	6.00	6.00
IC698CPE030-FG/IC698CPE040-FG	Dec. 2008	5.50	5.51
IC698CPE030-FF/IC698CPE040-FF	Oct. 2008	5.50	5.50
IC698CPE030-EF/IC698CPE040-EF	May 2008	5.50	5.50
IC698CPE030-EE/IC698CPE040-EE	Dec. 2007	5.00	5.01
IC698CPE030-EDH/IC698CPE040-ED	Oct. 2007	5.00	5.00
IC698CPE030-DD/IC698CPE040-DD	Aug. 2007	5.00	5.00
IC698CPE030-DC/IC698CPE040-DC	Jul. 2007	4.02	4.00
IC698CPE030-CC/IC698CPE040-CC	Dec. 2006	4.02	4.00
IC698CPE030-CB/IC698CPE040-CB	Sep. 2006	4.00	4.00
IC698CPE030-BA/IC698CPE040-BA	Sep. 2006	3.60	3.60
IC698CPE030-AA	April 2006	3.60	3.60
IC698CPE040-AA	Dec. 2005	3.60	3.60

Important Product Information for this Release

Ethernet Firmware version 6.20 adds support in SNTP for local time zones and daylight savings.

For details, see "New Ethernet Features and Enhancements in Firmware Version 6.20" on page 5. For problems resolved in this release, see "Ethernet Problems Resolved in Firmware Version 6.20" on page 16.

Hardware version -Jx corrects the hardware ID to enable low battery detection when used with a smart battery.

Important Note: It is recommended that the user change the station manager password to a password other than the default password. Access to remote station manager will be disabled when the station manager password is set to the default password.

GE Intelligent Platforms recommends disabling FTP server and/or Web server connections if not used. For details, see page 19.

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Updates

The CPE030 and CPE040 can be field upgraded to CPU version 6.75 and Ethernet version 6.20 using the Winloader firmware upgrade utility and one of the following upgrade kits.

An IC698CPE030 can be field-upgraded to an IC698CPE030-xL using firmware upgrade kit 44A753096-G14.

An IC698CPE030 can be field-upgraded to an IC698CRE030-xK using firmware upgrade kit 44A753107-G14.

An IC698CPE040 can be field-upgraded to an IC698CPE040-xL using firmware upgrade kit 44A753097-G14.

An IC698CPE040 can be field-upgraded to an IC698CRE040-xK using firmware upgrade kit 44A753108-G14.

Firmware upgrade kits can be downloaded at no cost from <http://www.ge-ip.com/support>. *The hardware is not field-upgradeable.*

CPU Functional Compatibility

Subject	Description
Programmer version requirements	<ul style="list-style-type: none"> ▪ Proficy* Machine Edition Logic Developer PLC 7.0 SIM5 or later must be used for Release 6.75 new features. ▪ Proficy Machine Edition Logic Developer PLC 6.0 or later must be used for Release 6.00 new features. ▪ Proficy Machine Edition Logic Developer 5.8 or later must be used for Release 5.50 new features. ▪ Proficy Machine Edition Logic Developer 5.7 or later must be used for Release 5.00 new features. ▪ Proficy Machine Edition Logic Developer 5.5 Service Pack 2 or later must be used for Release 4.00 new features. ▪ Proficy Machine Edition Logic Developer 5.5 Service Pack 1 or later must be used for Release 3.80 new features ▪ Proficy Machine Edition Logic Developer 5.5 or later must be used for Release 3.50 new features. ▪ Proficy Machine Edition Logic Developer 5.0 Service Pack 3 HotFix 3 or later must be used for Release 3.10 new features. ▪ Proficy Machine Edition Logic Developer 5.0 Service Pack 3 or later must be used for Release 3.00 new features. ▪ Proficy Machine Edition Logic Developer 4.5 or later must be used for Release 2.56 new features.
C Toolkit compatibility	<p>The C Toolkit for PACSystems is distributed with Proficy Machine Edition Logic Developer. Updates can be downloaded from http://www.ge-ip.com/support.</p> <p>C Toolkit Release 5.50 or later is required for LREAL data type support.</p> <p>C Toolkit Release 5.00 Build 16C1 or later is required when the PACSystems CPU contains firmware Release 5.00 or later.</p> <p>Notes: C blocks that were built using C Toolkit versions earlier than 5.00 Build 16C1 must be recompiled using a newer toolkit version for use with CPU firmware release 5.00 or higher.</p> <p>The Series 90 Toolkit (IC641SWP709/719) is not compatible with PACSystems.</p>
Series 90-70 expansion rack compatibility	<p>Series 90-70 expansion racks are supported by the PACSystems RX7i.</p> <p>PACSystems RX7i CPUs and the RX7i Ethernet Module do not operate in a Series 90-70 rack.</p>
Series 90-70 Main rack compatibility	<p>Series 90-70 Main Racks cannot be used in a PACSystems RX7i system.</p> <p>PACSystems RX7i CPUs and the RX7i Ethernet Module do not operate in a Series 90-70 rack.</p>

Subject	Description
Series 90-70 module compatibility	For a list of modules supported by the RX7i CPUs, refer to the <i>PACSystems RX7i Installation Manual</i> , GFK-2223.
Insulating strips for high voltage modules	<p>An insulator strip is required on a high voltage module that is installed to the immediate right of a module with a metal faceplate. Insulating strips should be installed on the following modules that have versions earlier than:</p> <p>IC697MDL240D IC697MDL640E IC697MDL241D IC697MDL340G IC697MDL250G IC697MDL341E IC697MDL251E IC697MDL350F</p> <p>Note: Current versions of these modules are shipped with the insulators installed. The strip is visible on the back of the printed wiring assembly. The RX7i rack is shipped with an Insulator Kit that includes enough parts to update three Series 90-70 I/O modules, a BEM713 (Bus Transmitter) module, and a BEM731 (Genius Bus Controller) module.</p>
Multiple calls to SVC_REQ 57 in a single sweep may cause CPU watchdog timeouts	<p>Multiple calls to SVC_REQ 57 (Logic Driven Write to Nonvolatile Storage) could result in the CPU tripping the watchdog timer and going to STOP-HALT mode. The number of calls to SVC_REQ 57 that can be made requires consideration of many variables: what the software watchdog timeout value is, how much data is being written, how long the sweep is, age of nonvolatile storage (flash), etc.</p> <p>GE Intelligent Platforms recommends limiting the number of calls to SVC_REQ 57 to one call per sweep to avoid the potential of going to Stop-Halt.</p>
SNP ID not always provided	Unlike the Series 90, the PACSystems CPU's SNP ID will not appear in the Machine Edition programmer Show Status display. Service Request 11 will always return zeros when no SNP ID has been stored to the CPU.

New Ethernet Features and Enhancements in Release 6.20

In SNTP, added support for

- Local Time Zone & Day light saving time for all Modes of SNTP communications.
- Time Synchronization using Unicast Mode.

New CPU Features and Enhancements in Release 6.75

This firmware release adds support for additional VME IO modules on RX7i CPUs. These include:

- VME-1182A-02001x** 64 Point Discrete input Module with 24VDC, 18VAC (ordering option 020)
- VME-3122A-40001x** 64 Channel High Performance Analog Input voltage Module (Ordering option 400)
- VME-3125A-20001x** 32 channel Analog Input current Module with 250 Ω 0.01% Termination (High Accuracy Current Input) (ordering option 200)

Where x stands for:

- 0 = Standard VME front panel without conformal coating
- 1 = Reserved
- 2 = Standard VME front panel with conformal coating