PACSystems™ RX3i CPU IC695CPE330 IPI

IC695CPE330-AFAT[1] [2]

Firmware Version 10.80

---

[1] *Includes conformal coat and low temperature module variants, if available.*

[2] *The last two characters of the catalog number suffix may not increment with every firmware release beginning with IC695CPE330-ABAQ 9.75*

EMERSON™

Warnings and Caution Notes as Used in this Publication

⚠ WARNING

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

⚠ CAUTION

Caution notices are used where equipment might be damaged if care is not taken.

Note: *Notes merely call attention to information that is especially significant to understanding and operating the equipment.*

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met during installation, operation, and maintenance. The information is supplied for informational purposes only, and Emerson makes no warranty as to the accuracy of the information included herein. Changes, modifications, and/or improvements to equipment and specifications are made periodically and these changes may or may not be reflected herein. It is understood that Emerson may make changes, modifications, or improvements to the equipment referenced herein or to the document itself at any time. This document is intended for trained personnel familiar with the Emerson products referenced herein.

Emerson may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not provide any license whatsoever to any of these patents.

Emerson provides the following document and the information included therein as is and without warranty of any kind, expressed or implied, including but not limited to any implied statutory warranty of merchantability or fitness for particular purpose.

Overview

The PACSystems™ RX3i CPE330 is a richly featured programmable controller CPU equipped with 64Mbytes of built-in program memory and two independent high-speed Ethernet interfaces. It is ideally suited for multi-tier communications and for synchronizing large amounts of data. Its metal housing provides superior noise immunity.

The CPE330 is programmed and configured over Ethernet via PAC Machine Edition (PME) software. It resides in the RX3i main rack and supports all RX3i I/O and Intelligent Option modules, up to 32K I/O points.

CPU Features

- Supports OPC UA Non-Transparent Server Redundancy as described in Part 4 of the "OPC Unified Architecture Specification." Additional support for OPC UA server performance and OPC UA server logging capabilities.
- Supports produced EGD on Redundant IPs. Produced EGD exchanges may now originate from either the Redundant IP address or the Direct IP address of the active controller in a host standby redundancy system.
- RX3i Hot Standby Redundancy CPU with support for PROFINET® I/O using embedded PROFINET Controller or IC695PNC001 PROFINET Controllers.
- RX3i Hot Standby Redundancy with Ethernet (EGD) & Genius I/O.
- Simplex PROFINET I/O Controller with support for up to 32 I/O devices and update rates of 1 – 512ms. I/O device update rates of 8ms and faster are possible with 16 or fewer devices. When there are more than 16 devices configured, update rates of 16ms and higher are +69available.
- Supports two independent 10/100/1000 Ethernet LANs. LAN1 attaches via the dedicated (upper) RJ-45 connector. LAN2 attaches via the lower pair of internally-switched RJ-45 connectors.
- Achilles Level 2 Communications Certification[3]
- Supports secure firmware updates. The controller authenticates new firmware prior to installation and continues to use the current version if non-authentic firmware is detected.
- The embedded Ethernet interface is supported by a dedicated microprocessor core. This dedicated processing capability permits the CPU to support these two LANs with:
    o up to 48 simultaneous SRTP Server connections,
    o up to 16 simultaneous Modbus®/TCP Server connections.
    o 32 clients are permitted; each may be SRTP or Modbus/SRTP.
    o OPC UA Server with support for up to 5 concurrent sessions with up to 10 concurrent variable subscriptions and up to 12,500 variables;
    o up to 255 simultaneous Class 1 Ethernet Global Data (EGD) exchanges;
    o two independent Redundant IP addresses, one for each of the embedded Ethernet LANs.

---

[3] Achilles Level 2 Communication Certification available in CPE330 R8.80.

- Embedded SNTP Client allows synchronization of the high-resolution Time of Day Clock to an SNTP network time server.
- Optional Energy Pack, IC695ACC402, allows CPE330 to instantly save user memory to non-volatile storage in the event of loss of power.
- Ability to transfer user programs and/or data to and from USB 2.0 A type Removable Data Storage Devices (RDSDs)
- HART® Pass Through allows the CPE330 to communicate HART asset management data between HART-capable I/O modules and PC-based asset management tools. (Requires additional HART-compatible products.)
- Supports the *Remote Get HART Device Information COMMREQ*, which allows the user application to read information from a HART device connected to an RX3i Analog module in an IC695PNS001 RX3i PROFINET Scanner. A UDFB that automates the COMMREQ control logic is available for download from the Emerson support website. (Refer to *New Features and Enhancements* for additional information.)
- Sequence of Events recording is available through the Embedded PROFINET Controller when used with up to fiveIC695PNS101 *Advanced PROFINET Scanner modules.* An RX3i SoE system supports events from up to 640 SoE input points with a system storage buffer for up to 128,000 events at a maximum rate of 400 events per second per PNS101. Each PNS101 supports SoE recording with IRIG-B time synchronization of events accurate to 1ms and buffers up to 4000 events from up to four IC694MDL660 *32 Circuit Discrete Input* modules. Unmodulated IRIG-B time signals are decoded by the PNS101 using either an IC695HSC304 or IC695HSC308 *High-Speed Counter Module.* SoE recording is available in both simplex and redundant PROFINET systems.
- Users may program in Ladder Diagram, Structured Text, Function Block Diagram, or C. Refer to *PACSystems RX3i CPU Programmer's Reference Manual, GFK-2950.*
- Contains 64Mbytes of configurable data and program memory.
- Supports auto-located Symbolic Variables that can use any amount of user memory.
- Reference table sizes include 32k bits for discrete %I and %Q and up to 32k words each for analog %AI and %AQ. Bulk memory (%W), up to max user memory, is also supported for data exchanges.
- Supports up to 768 program blocks. The maximum size for a block is 128KB.
- For supported I/O, Communications, Motion, and Intelligent modules, refer to the *PACSystems RX3i System Manual*, GFK-2314.
- Ability to display the serial number and date code in PME *Device Information Details*.
- Coordinated Universal Time (UTC) and Day Light Savings Time (DST) support.
- Operating temperature range 0⬜C to 60⬜C (32 ⬜F to 140 ⬜F).

Current Release Information

IC695CPE330 *64MB CPU w/Ethernet* Firmware Release 10.80 adds support for Run Mode Store (RMS) to User Flash, SVC_REQ 63 Logic Driven Data Write to Non-Volatile Storage, and three diagnostic %S bits. This release also resolves the issues found in

Problems Resolved by this Revision.

Firmware Component		Version Number
Field Upgradable Using 41G2016-FW01-000-A23 Upgrade Kit	Primary	Release 10.80 Build ELGV
	OS Loader	Release 1.02 Build E4OC
	FPGA Primary	Release 2.50 Build 02A7
	Microcontroller Primary	Release 1.11 Build N/A
	BOC	Release 1.19 Build 43A1
	IC695ACC402 Energy Pack Base	Release 4.02 Build N/A
Not Field Upgradable	Microcontroller Boot	Release 1.2 Build N/A
	BIOS	Release 0ACEE007 19-MAR-2015

New Features and Enhancements

Features	Descriptions
Run Mode Store (RMS) to User Flash	Enables the user to make logic changes while in run mode that will be saved to both User RAM and Flash. User RAM and User Flash equality will be maintained.
SVC_REQ 63 Logic Driven Data Write to Non-Volatile Storage	Allows logic to write up to four regions of %R, %AI, or %AQ data to non-volatile storage up to 24 times in a 24-hour period. The data is reloaded to the data tables on power up.
%S53, %S54, and %S55 bits	• %S53: #LG_CFG_SRC_RAM – Set to 1 if CPU logic and HWC is retrieved from User RAM at powerup. • %S54: #DATA_SRC_RAM – Set to 1 if the CPU reference data is retrieved from User RAM at powerup. • %S55: #DATA_SRC_NV – Set to 1 if the CPU reference data is retrieved from any SVC_REQ 63 NV Storage locations at powerup.

Field Upgrades

Firmware version 10.80 is released to manufacturing for full production and as a web upgrade kit.

All versions of the CPE330 are field upgradeable to this firmware release using the upgrade kit listed below. The upgrade is available via download from the Emerson support website listed at the end of this document.

The firmware upgrade process may take up to four minutes to complete depending on the contents of the update. During the update, the RUN and OUTPUTS ENABLED LEDs to blink GREEN and the CPE330 may automatically reset one or more times. All LEDs will be off during the automatic reset. The IC695ACC402 Energy Pack (if present) may also be updated. The energy pack blinks all LEDs GREEN and performs an automatic reset following its update.

Do not manually power cycle the CPE330 or remove the cap pack from the energy pack base (if present) during the updates as this may place the CPE330 and energy pack in an unrecoverable and unusable state.

Release in line with software license compliance requirements.

Upgrade Kit: Part Number: 41G2016-FW01-000-A23

File Name: CPE330_FW10_80_41G2016-FW01-000-A23 .zip

Download: Follow the support links at the end of this document.

Release History

Catalog Number[2]	Bundled w/ACC402 Energy Pack	Date	Firmware Version (Build Number)							
			Field Upgradeable						Not Field Upgradeable	
			Primary	OS Loader	BOC	FPGA Primary	µController Primary	ACC402 EP Base	µController Boot	BIOS
IC695CPE330-AFAT	IC695CPK330	Feb 2023	10.80 (ELGV)	1.02 (E4OC)	1.19 (43A1)	2.50 (02A7)	1.11 (n/a)	4.02 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AFAT	IC695CPK330	Sept 2022	10.70 (EKPX)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.11 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AEAS	IC695CPK330	July 2022	10.30 (EJYQ)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ADAS	IC695CPK330	May 2021	10.15 (EGX2)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ADAS	IC695CPK330	Jan 2021	10.10 (EG67)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ADAS	IC695CPK330	Nov 2020	10.05 (EEJN)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ACAS	IC695CPK330	Aug 2020	10.05 (EEJN)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ACAS	IC695CPK330	Nov 2019	9.96 (ECTR)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ACAR	IC695CPK330	Sept2019	9.90 (EC93)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAQ[2]	IC695CPK330	April 2019	9.75 (EB8A)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAQ	IC695CPK330	Nov 2018	9.70 (EAKR)	1.02 (E4OC)	1.19 (43A1)	2.04 (37A2)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAP	IC695CPK330	Aug 2018	9.60 (EA7R)	1.02 (E4OC)	1.19 (43A1)	1.254 (37A9)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAN	IC695CPK330	May 2018	9.50 (E9LL)	1.02 (E4OC)	1.19 (43A1)	1.254 (37A9)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAM	IC695CPK330	Feb 2018	9.40 (E91K)	1.02 (E4OC)	1.19 (43A1)	1.254 (37A9)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAL	IC695CPK330	May 2017	9.21 (E7RG)	1.02 (E4OC)	1.19 (43A1)	1.254 (37A9)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAK	IC695CPK330	Mar 2017	9.10 (E7J9)	1.02 (E4OC)	1.19 (43A1)	1.254 (37A9)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15

IC695CPE330-ABAJ	IC695CPK330	July 2016	8.95 (E6FJ)	1.02 (E4OC)	1.19 (43A1)	1.241 (20A4)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-ABAH	IC695CPK330	May 2016	8.90 (E6AO)	1.02 (E4OC)	1.19 (43A1)	1.241 (20A4)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAG	IC695CPK330	Feb 2016	8.80 (E5RM)	1.02 (E4OC)	1.19 (43A1)	1.229 (38A8)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAF	IC695CPK330	Dec 2015	8.75 (B5O1)	1.02 (E4OC)	1.19 (43A1)	1.229 (38A8)	1.10 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAE	IC695CPK330	Nov 2015	8.70 (E5KG)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAD	IC695CPK330	Aug 2015	8.60 (E55G)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAC	IC695CPK330	June 2015	8.55 (E4YL)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAB	IC695CPK330	May 2015	8.50 (E4V9)	1.02 (E4OC)	1.19 (43A1)	1.171 (16A14)	1.6 (n/a)	2.20 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15
IC695CPE330-AAAA	IC695CPK330	Mar 2015	8.45 (E4P6)	1.02 (E4OC)	1.19 (43A1)	1.110 (11A12)	1.5 (n/a)	2.19 (n/a)	1.2 (n/a)	0ACEE007 19-Mar-15

Functional Compatibility

Compatibility Issue	Description	
	Feature	**Minimum Version of PME Required**
Programmer Version Requirements	Run Mode Store (RMS) to User Flash and %S53, %S54, & %S55	PACSystems RX3i CPE330 firmware revision 10.80 (or later). PAC Machine Edition 10.1 (or later) to configure Run Mode Store (RMS) to User Flash and view the new S bits.
	IC695CMM002/CMM004 Serial Module Support in the IC695PNS001-Bxxx/ PNS101 and IC695CEP001 PROFINET Scanners	PACSystems RX3i CPUs with firmware revision 10.30 (or later) support IC695CMM002/CMM004 Serial Modules in the IC695PNS001-Bxxx/PNS101 and IC695CEP001 when configured using PAC Machine Edition 10.00. (or later)
	Legacy Client/Server Protocol Memory Access	PACSystems CPUs with firmware revision 10.30 (or later) support Legacy Client/Server Protocol Memory Access when configured using PAC Machine Edition 10.00. (or later)

Compatibility Issue	Description	
	IC695PSD180 24VDC 80W Power Supply	Rack-based PACSystems CPUs with firmware revision 10.30 (or later) support configuration of the IC695PSD180 using PAC Machine Edition 10.00. (or later)
	OPC UA Non-Transparent Server Redundancy	PACSystems Hot Standby Redundancy RX3i CPUs with firmware revision 10.10 or later support OPC UA Non-Transparent Server Redundancy when configured using PAC Machine Edition 9.80 SIM 5 or later.
	OPC UA Server Logging	PACSystems RX3i CPUs with firmware revision 10.10 or later support OPC UA Server Logging when configured using PAC Machine Edition 9.80 SIM 5 or later.
	Produce EGD on Redundant IP	PAC Machine Edition Logic Developer PLC 9.80 SIM 5 or later is required to support EGD Production with the Redundant IP address.
	OPC UA Management and Security Provisioning	PAC Machine Edition Logic Developer PLC 9.50 SIM 16 or later is required to support OPC UA Secure (Encrypted) Connection provisioning.
	HSB CPU Redundancy with Single RMX Module	PAC Machine Edition Logic Developer PLC 9.50 SIM 14 and CPE330 R9.75, or later is required to support HSB CPU Redundancy with a Single RMX module.
	Increased Program Block Count	PAC Machine Edition Logic Developer PLC 9.50 SIM 13 and CPE330 R9.70, or later is required to support user programs with more than 512 blocks, up to a maximum of 768 blocks.
	Sequence of Events with IRIG-B	PAC Machine Edition Logic Developer PLC 9.50 SIM 7 or later is required to use Sequence of Events recording with IRIG B time synchronization.
	Hot Standby Redundancy with PROFINET IO using Embedded PROFINET Controller	PAC Machine Edition Logic Developer PLC 9.50 SIM 7, or later is required for the configuration of Hot Standby Redundancy with PROFINET IO using the CPE330 Embedded PROFINET Controller.
	SNTP Client Configuration OPC UA Server Configuration	PAC Machine Edition Logic Developer PLC 9.00 SIM 10, or 9.50 SIM 2, or later is required for SNTP Client & OPC UA Server configuration.

Compatibility Issue	Description	
	CPE330 Embedded Simplex PROFINET I/O Controller	PAC Machine Edition Logic Developer PLC 8.60 SIM 13 or 9.00 SIM 4 or later is required for the configuration of PROFINET on the CPE330.
	CPE330 Hot Standby Redundancy with PROFINET I/O using IC695PNC001 & Extended PROFINET Device Subslot Configuration	PAC Machine Edition Logic Developer PLC 8.60 SIM 8 or later is required for native configuration support of the CPE330 and its embedded Ethernet ports as an RX3i Hot Standby Redundancy CPU with PROFINET I/O using IC695PNC001 PROFINET Controllers. PME 8.60 SIM 8 or later is also required for Extended PROFINET Device Subslot Configuration
	CPE330 EGD Configuration – LAN2 Advanced Ethernet Configuration Parameters – LAN1 & LAN2	PAC Machine Edition Logic Developer PLC 8.60 SIM 5 or later is required for the configuration of EGD on CPE330 LAN2. This version is also required for advanced Ethernet configuration parameter support on both LAN1 and LAN2.
	CPE330 EGD Configuration – LAN1	PAC Machine Edition Logic Developer PLC 8.60 or later is required for the configuration of EGD on CPE330 LAN1. This version (without SIM5) does not support EGD on CPE330 LAN2 or advanced Ethernet configuration parameters for EGD.
	CPE330 Configuration	PAC Machine Edition Logic Developer PLC 8.60 or later is required for native configuration support of the CPE330 and its embedded Ethernet ports.
	CPU315, CPU320, & CRU320 Compatible Configuration	If the embedded Ethernet ports are not needed, older versions of PAC Machine Edition may be used to download a CPU315, CPU320, or CRU320 configuration to the CPE330. CPU315 configurations must first be migrated to CPU320, then downloaded to CPE330. Refer to "CPU315, CPU320, & CRU320 Configuration Compatibility" below.
C Toolkit Compatibility	Supported C Toolkit Versions	7.00, 7.10 or 9.00 and higher
	NOTE: The Series 90 Toolkit (IC641SWP709/719) is not compatible with PACSystems.	

Compatibility Issue	Description						
		Minimum Version Required					
	Feature	IC695CPE330	IC695PNC001-Ax	IC695PNC001-Bxxx	IC695PNS001-Axxx	IC695PNS001-Bxxx & PNS101	IC695CEP001
PROFINET IO Compatibility	IC695CMM002/CMM004 Serial Module Support in the IC695PNS001-Bxxx/PNS101 and IC695CEP001	10.30	N/A	3.20	N/A	3.35	2.80
	Applications using CPE330 Version 10.05 (or later) with a PNC001-Bxxx must also upgrade the PNC to Version 3.16 (or later) for compatibility with the controller.	10.05	N/A	3.16	N/A	N/A	N/A
	Redundantly controlled PROFINET IO (up to 32 devices, 20 of which may be redundant)	9.40	N/A	N/A	2.00	N/A	N/A
	Remote Get HART Device Information COMMREQ	8.95	2.26	3.00	2.41	3.10	2.60
	32 Simplex (non-redundantly controlled) PROFINET IO using Embedded PROFINET Controller	8.90	N/A	3.00	N/A	N/A	N/A
	Extended PROFINET Subslot Numbers	8.70	2.25	3.00	N/A	N/A	N/A
	255 PROFINET Redundant IO Devices using IC695PNC001	8.70	2.10	3.00	2.00	N/A	N/A
	Redundantly controlled PROFINET IO using IC695PNC001	8.70	2.00	3.00	2.00	N/A	N/A
	Simplex (non-redundantly controlled) PROFINET IO using IC695PNC001	8.45	2.00	3.00	N/A	N/A	N/A

Compatibility Issue	Description

Sequence of Events with IRIG-B	Sequence of Events recording with IRIG-B time synchronization is available when used with these SoE-enabled components:
	
	• Support for up to five IC695PNS101 Advanced PROFINET Scanner modules
	   ○ IC695CPE330 Release 10.15 or later
	   ○ IC695PNS101 Release 3.30 and GSDML-V2.3-IntelligentPlatformsLLC-RX3iPNS-20191010.xml or later
	• Support for up to four IC695PNS101 Advanced PROFINET Scanner modules
	   ○ IC695CPE330 Release 9.60 or later
	   ○ IC695PNS101 Release 3.10 and GSDML-V2.3-GEIP-RX3iPNS-20180724.xml or later
	• SoE_App C Block version 1.08 or later
	• Irig_Diag C Block version 1.00 or later
	• UDT IRIG_DIAG_DATA.UDT (no version)
	
	Sequence of Events is available through the CPE330's Embedded PROFINET Controller and is not supported by the IC695PNC001 PROFINET Controller module.

HART® Pass-Through	HART Pass-Through entails the usage of PC-based applications, RX3i Analog modules with HART functionality, and (optionally) supporting PROFINET products. HART Pass-Through operation is described in the *PACSystems HART Pass-Through User Manual*, GFK-2929.
Embedded PROFINET Controller HART Pass-Through Support	The CPE330 supports HART Pass-Through beginning with Release 8.50 using the *Embedded PROFINET Controller* or a stand-alone IC695PNC001 *PROFINET Controller* module. PACSystems HART Device Type Manager v1.1 and PACSystems HART Multiplexer v1.1 (or later) are required to use HART Pass Through on the CPE330's Embedded PROFINET Controller.
Remote Get HART Device Information COMMREQ	The Remote Get HART Device Information COMMREQ is supported by these products: • RX3i CPUs with version 8.95 or later • IC695PNC001 RX3i PROFINET Controller version 2.26 or later • IC695PNS001 RX3i PROFINET Scanner version 2.41 or later IC695PNS001 RX3i PROFINET Scanner GSDML-V2.3-GEIP-RX3iPNS-20160602.xml[4]
USB	CPE330 is compatible with USB 1.1 and USB 2.0 devices.
CFast	Cfast slot is not enabled in this release.

---

[4] IC695PNS001 RX3i PROFINET Scanner GSDML-V2.3-GEIP-RX3iPNS-20160602.xml is required to enable HART Pass Through Service Options settings in PME. Refer to the PACSystems RX3i System Manual, GFK-2314M or later, for more information.

Compatibility Issue	Description
RX3i Backplane Hardware Revision Compatibility	The following backplane hardware revisions MUST be used: IC695CHS012-BAMP IC695CHS016-BAMP IC695CHS012CA-BAMP IC695CHS016CA-BAMP or IC695CHS007-AA (or later) IC695CHS012-CA (or later) IC695CHS016-CA (or later) IC695CHS012CA-CA (or later) IC695CHS016CA-CA (or later)

Compatibility Issue	Description
Series 90-30 Module Compatibility	The following Series 90-30 modules are supported by the PACSystems RX3i:

<table>
<tr><td>Discrete Input Modules:</td><td>IC693ACC300,</td></tr>
<tr><td></td><td>IC693MDL230/231/240/241/250/260/632/634/ 635/645/646/648/654/655/660[5]</td></tr>
<tr><td>Discrete Output Modules:</td><td>IC693MDL310/330/340/350/390/730/731/732/ 733/734/740/741/742/748/752/753/754/758 /760/916/930/931/940</td></tr>
<tr><td>Discrete Combinational:</td><td>IC693MAR590, IC693MDR390</td></tr>
<tr><td>Analog I/O Modules:</td><td>IC693ALG220/221/222/223/390/391/392/442</td></tr>
<tr><td>High-Speed Counter:</td><td>IC693APU300</td></tr>
<tr><td>FANUC I/O Link:</td><td>IC693BEM320, IC693BEM321</td></tr>
<tr><td>Motion Control:</td><td>IC693DSM314, IC693DSM324</td></tr>
<tr><td>GENIUS:</td><td>IC693BEM331</td></tr>
<tr><td>Device Net Master:</td><td>IC693DNM200</td></tr>
<tr><td>Serial IO Processor:</td><td>IC693APU305</td></tr>
<tr><td>Temperature Control:</td><td>IC693TCM302, IC693TCM303</td></tr>
<tr><td>Power Transducer:</td><td>IC693PTM100, IC693PTM101</td></tr>
</table>

No other Series 90-30 modules are supported.

Compatibility Issue	Description
IC694 (blue) Module Compatibility	CPE330 supports all IC694 modules.[5,6]
IC695 (PCI) Module Compatibility	CPE330 supports all IC695 modules.

---

[5] IC693MDL660/IC694MDL660 firmware must be updated to version 1.10

[6] IC694MDL754 firmware must be updated to version 1.10

Compatibility Issue	Description
Series 90-30 Main Rack Compatibility	Series 90-30 Main Racks cannot be used in a PACSystems RX3i system. Series 90-30 CPUs do not operate in PACSystems RX3i Racks.
Isolated 24Vdc power	In applications that use the IC69xALG220/221/222, consult *PACSystems RX3i System Manual*, GFK-2314 for details of wiring the 24Vdc power.
Recommended IC200ALG240 revision	When a VersaMax™ system Genius™ Network Interface Unit (IC200GBI001) interoperates with a Genius Bus Controller located in a PACSystems PLC, and the VersaMax system contains an IC200ALG240 Analog Input Module, it is recommended that the IC200ALG240 firmware be updated to Revision 1.20 or later. Use firmware update kit 44A752313-G02.
Configuration of IC694MDL754	Always configure sixteen bits of module status when using this module. Configuring zero bits of module status will result in invalid data in the ESCP status bits of the module.
IC695CPE330 AC Power Supply Compatibility	For new installations using AC power supplies, the CPE330 requires an IC695PSA040H or IC695PSA140D (or higher) revision power supply to ensure compatibility. For retrofit installations using AC power supplies, the CPE330 may require an IC695PSA040H or IC695PSA140D (or higher) revision power supply depending on the total current load in the backplane. If the total current load exceeds the minimum current threshold of the existing power supply, no power supply change is required.
CPU315, CPU320, & CRU320 Configuration Compatibility	The CPE330 may be interchanged with a corresponding CPU320 or CRU320 with no upgrade to PAC Machine Edition (PME) software. Logic and configuration equality in PME is maintained when storing the same project to either a CPU320/CRU320 or a CPE330. The CPE330 ships from the factory configured for Normal (CPU320) compatibility mode. The compatibility mode must be switched to CRU320 mode before downloading a CRU320 application. (Refer to *PACSystems RX3i 64 MB CPU w/Ethernet IC695CPE330 Quick Start Guide,* GFK-2941D or later for instructions on changing the compatibility mode.) Changing the compatibility mode is not necessary if a CPU320/CRU320 application is changed to a CPE330 application with a version of PME that has native CPE330 support. Migration of CPU315 applications to the CPE330 is possible with no upgrade to PME by converting them to a CPU320 application and storing the project in the CPE330. Versions of PME with native CPE330 support allow either a CPU320/CRU320 or a CPE330 configuration to be stored in the CPE330. When a CPE330 is configured as a CPU320 or CRU320, Ethernet properties cannot be configured however, the embedded Ethernet ports may be used with the default IP Addresses.

Compatibility Issue	Description
Migration of CPU315, CPU320, & CRU320 Serial Applications to CPE330	Applications using the embedded serial ports of the CPU315, CPU320, & CRU320 should move serial functionality to the IC695CMM002 or IC695CMM004 Serial Communication Modules when migrating to the CPE330 since it does not have embedded serial ports.
Ethernet AUP File Support	The CPE330 does not support Advanced User Parameter (AUP) files for its Embedded Ethernet interfaces. Instead, use PAC Machine Edition to set the Ethernet configuration parameters for SNTP and advanced Ethernet Global Data applications. AUP files are supported for external IC695ETM001 Ethernet modules.
Service Request 56 & 57 *Logic Driven Read/Write to Flash* Support	The IC695ACC402 Energy Pack automatically saves all user memory to flash when the CPE330 is powered off and restores it to RAM when the CPE330 is powered on. Consequently, the CPE330 does not support Service Requests 56 & 57 *Logic Driven Read/Write to Flash*. The ENO output of the function block returns no power flow if these service requests are executed. When migrating a CPU320 application that uses Service Requests 56 & 57 to a CPE330, the IC695ACC402 Energy Pack needs to be attached.
Supported Browsers for CPE330 Firmware Update	The CPE330 supports secure firmware updates over Ethernet using a web browser. Supported browsers are listed below along with the minimum required version: • Chrome: 62.0.3202.94 (or later) • Firefox: 57.0.2 (or later) • Microsoft Edge 38.14393.1066.0 (or later) Safari: 11.0.2 (12604.4.7.1.6) (or later)
CIMPLICITY® OPC UA Client	PACSystems OPC UA servers support up to five concurrent sessions with up to ten concurrent variable subscriptions and up to 12,500 variables. The subscription limit is shared across all available sessions. When using CIMPLICITY OPC UA Client, ensure the total number of subscriptions does not exceed the maximum. CIMPLICITY OPC UA Client is configured to create one subscription for every 500 items by default. If, for example, a project contains 1000 monitored items, CIMPLICITY creates two subscriptions. The number of items per subscription may be modified from the Device Configuration Panel / OPC UA DA Configuration / Subscriptions / Max. Number of Monitored Items.

Compatibility Issue	Description
CPE330 vs CPU320 Power Requirements	When migrating a CPU320 application to a CPE330, the power consumption must be recalculated to ensure adequate power is available in the new system. The maximum power consumption of a CPE330 is 18W whereas the maximum consumption of a CPU320 is 9.3W. Depending on the total power available in the CPU320 system, additional RX3i power supplies may be required. Users may view the combined power consumption of an RX3i rack in PME by right-clicking the power supply whose icon has a power usage indicator and selecting properties. <table><tr><td></td><td>CPE330 Power Requirements</td><td>CPU320 Power Requirements</td></tr><tr><td>+3.3 Vdc:</td><td>0.0 A</td><td>1.0 A</td></tr><tr><td>+5.0 Vdc:</td><td>0.0 A</td><td>1.2 A</td></tr><tr><td>+24 Vdc Relay:</td><td>0.625 A without Energy Pack 0.750 A with IC695ACC402 Energy Pack</td><td>0.0 A</td></tr><tr><td>+24 Vdc Isolated:</td><td>0.0 A</td><td>0.0 A</td></tr></table>
PACSystems Energy Pack Compatibility	The only energy pack compatible with the IC695CPE330 is the IC695ACC402. The CPE330 is not compatible with the ICRXIACCEPK01 RXi Controller Energy Pack or the IC695ACC400 CPE305/310 Energy Pack. - It is not physically possible to connect the CPE330 and the IC695ACC400 CPE305/310 Energy Pack together. - However, it is possible to connect the CPE330 and the ICRXIACCEPK01 RXi Controller Energy Pack. Connecting the CPE330 to the RXi Energy Pack is not harmful. However, if power is applied, the CPE330 will continuously reset and not power up. Should this occur, turn the CPE330 off and disconnect the RXi Energy Pack. - It is possible to connect the ICRXIACCCPK01A RXi Capacitor Pack to the IC695ACC402 Energy Pack Base. If this occurs, the capacitor pack may take longer to charge and a battery fault may be logged. **Do not use the CPK01A RXi Capacitor Pack with the ACC402 Energy Pack Base.** It is also physically possible to connect the IC695ACC402 CPE330 Energy Pack and IC695ACC412 Capacitor Pack to an ICRXICTL000 controller. If this occurs no errors are logged. However, the capacitors will reach their end-of-life threshold faster than the RXi Capacitor Pack ICRXIACCCPK01. **Do not use the CPE330 Energy Pack or Capacitor Pack with the RXi Controller.**

Compatibility Issue	Description
Ethernet Station Manager Compatibility	Ethernet Station Manager utility Version 1.3 Build 2 or later is recommended for use with the CPE330. Earlier versions are compatible; however, they may not display all CPE330 Ethernet parameters after issuing a *parm all* command. Should this issue occur, pressing *enter*, or issuing another command will cause the station manager to display the remaining parameters.
Redundant IP Support	Redundant IP is supported by the SRTP Server, Modbus TCP Server, and EGD protocols. It is not possible to use Redundant IP with the OPC UA Server and the Ethernet firmware update web page.
Hot Standby Redundancy I/O Support	The CPE330 supports Hot Standby Redundancy with PROFINET IO using IC695PNC001 PROFINET controller modules and Hot Standby Redundancy with Ethernet (EGD) or Genius IO. Ethernet (EGD) and Genius IO may be used simultaneously. However, they may not be mixed with PROFINET IO in a single redundancy system.
Cimplicity and RX3i Subscription Size Incompatibility	The RX3i OPC UA server supports up to 10 subscriptions with up to 12,500 monitored items each. Some versions of the Cimplicity OPC UA driver support an unlimited number of subscriptions with a default limit of 500 monitored items per subscription, and a hard limit of 32,767 bits of data in a subscription. This means that it is not possible to subscribe to all 12,500 variables of the RX3i PLC with a Cimplicity HMI using those driver versions. The effectively monitored item limit in Cimplicity is dependent on the size of the data being subscribed to. Other OPC UA clients with a larger monitored item per subscription limit can subscribe to the entire address space of variables, such as UA Expert.
Network and Memory Performance Monitor PACS Analyzer Requirements	PACSystems RX3i CPUs with firmware revision 10.05 or later support Network and Memory Performance Monitoring when used with PACS Analyzer version 4.3 or later.

Compatibility Issue	Description
IO Module Firmware Upgrade	The CPE330 supports IO module firmware upgrade over Ethernet using a web browser and contains enhanced security features. (IO module firmware upgrade instructions are included in the CPE330 firmware upgrade kit: 41G2016-FW01-000-xx.) The IO module upgrade kits listed here are compatible with the CPE330's enhanced security. Older versions may not contain the necessary security features to allow them to work with the CPE330. Should you need to use an older version of an upgrade kit that is incompatible, contact Emerson Support listed at the end of this document. All future IO module firmware upgrade kits will be compatible with the CPE330.

Module	Version	File Name	Module	Version	File Name
ALG392	1.61	41G1289-MS10-000-A2.zip	MDL754	1.20	44A753028-G02.zip
PMM335	1.61		MDL660	1.10[7]	44A753029-G01.zip
ALG222	1.60	41G1444-MS10-000-A6.zip	ETM001	6.30	44A753032-G16.zip
ALG232	1.60		ETM001	6.21	44A753032-G15.zip
ALG223	1.60	41G1485-MS10-000-A2.zip*	ALG600	1.14	44A753049-G03.zip
ALG233	1.60		CMM002	1.34	44A753277-G06.zip
ALG442	1.61	41G1485-MS10-001-A2.zip	CMM004	1.34	44A753278-G06.zip
ALG542	1.61		ALG704	1.08	44A753281-G01.zip
MDL765	1.00	41G1485-MS10-002-A1.zip	ALG708	1.08	44A753282-G01.zip
MDL765	1.01		ALG728	1.01	44A753283-G01.zip
MDL664	1.00	41G1485-MS10-003-A1.zip	ALG306	1.02	82A1190-MS10-000-A2.zip
MDL664	1.01		ALG312	1.02	82A1191-MS10-000-A2.zip
APU300	1.10	41G1486-MS10-000-A2.zip	CMX128	1.07	82A1512-MS10-000-A4.zip
ECM850	1.00		RMX128	1.07	82A1558-MS10-000-A4.zip
RMX228	2.00	41G1486-MS10-001-A2.zip	ALG412	1.02	82A1726-MS10-000-A1.zip
EDS001	6.30		PRS015	1.04	82A1729-MS10-000-A1.zip
EIS001	6.30	41G1520-MS10-000-A0.zip	PNC001	2.11	82A1790-MS10-000-A9.zip
PBM300	1.04		PNC001	2.20	82A1790-MS10-000-B0.zip
		41G1520-MS10-000-A1.zip	CMX128	2.00	82A1844-MS10-000-A0.zip
			RMX128	2.00	82A1845-MS10-000-A0.zip
		41G1522-MS10-000-A0.zip			
		41G1522-MS10-000-A1.zip			
		41G1606-MS10-000-A2.zip			
		41G1836-MS10-001-A0.zip			
		41G1930-MS10-000-A0.zip			
		41G2060-MS10-000-A1.zip			
		41G2076-MS10-000-A1.zip			
		44A73033-G02.zip			

Problems Resolved by this Revision

Subject	ID code	Description
Cyber Security Updates	DE9617 SFDC 02002236	Added security enhancements to harden the product against a malicious actor.
User Memory Not Retained After Power Cycle with Energy Pack	DE9009 DE9470	CPE330 R10.80 and ACC402 Energy Pack R4.02 correct issues that may prevent the CPU from retaining its user memory after a power cycle when its *Logic/Configuration Power-up Source* or *Data Power-up Source* are set to *Always RAM* or *Conditional Flash*.

---

[7] *Version 1.20 is the currently shipping firmware version of the MDL660 however, 1.10 is the most recent version available as an upgrade kit.*

Restrictions and Open Issues

CPE330 CPU & Embedded Ethernet

Restriction/Open Issue	ID Code	Description
Firmware Update Login Timeout	DE196 DE205 DE2626	The CPE330 enforces a 2-minute login activity timeout on the *Firmware Update* web page. Selecting an update package on the *Firmware Update* page and pressing the *Upload File* button after the timer expires initiates a firmware update. However, instead of displaying the firmware update status, one of these scenarios may occur: • Another login page is presented. After entering the user name and password the update status is displayed. • The web browser loses connection with the CPE330 and is unable to display the update status because the CPU is automatically resetting while applying the firmware update. After the reset completes, pressing the refresh button in the browser shows the installed firmware version. • An error message is displayed indicating the firmware update was not successful however, returning to the firmware update home page shows that the new firmware version was installed. These timeout issues may be avoided by having the firmware file ready so that the firmware update can be initiated immediately after logging in.
Running applications with fatal faults from flash	DE86	If an application that generates a fatal fault (such as a watchdog timeout) is stored to flash, the controller is configured to power up from flash and go to RUN, and the RUN/STOP switch is disabled, the application may become stuck in an endless loop. (Power-up from flash, go to RUN, watchdog timeout, repeat.) It is recommended that users thoroughly test their application before writing it to flash and disabling the RUN/STOP switch. RX3i CPUs that experience this issue must be returned to Emerson for repair.

Restriction/Open Issue	ID Code	Description
Clear All clears PLC_BAT and masks Energy Pack failures	DE715	A *Clear All* operation clears the values of all %S bits. After this operation, the PLC_BAT status bit value may not reflect the actual status of the Energy Pack. For example, an Energy Pack in a failed state prior to the *Clear All* operation will remain in the failed state after the *Clear All*. Nonetheless, the PLC_BAT bit will indicate a good state as a result of the *Clear All* operation. Remove the Cap Pack and reinstall it to reassert the PLC_BAT status bit.
Using OEM Passwords with Enhanced Security Disabled	DE755	Single-character OEM passwords are not supported when enhanced security is disabled.
PME cannot display reference tables with Enhanced Security Enabled and OEM Locked	DE781	When Enhanced Security is enabled and OEM protection is engaged, only reference areas specified within the Access Control List can be viewed by a programmer, or HMI, regardless of privilege level. For example, if viewing %R memory from words 1 to 400 then the Access Control List must include read access to %R words 1 to 400. A custom reference view table with smaller reference sizes may also be used.
Controller Communication Window Timer settings below 10 ms are ignored	DE845	Normal sweep allows the configuration of the Controller Communications Window Timer for Limited operation and a time range from 0 to 255 ms (default 10 ms). However, the system is currently ignoring settings in the 0 to 9 ms range which results in an effective window time of 10 ms for this configuration range. This means a sweep impact of up to 10 ms may occur for some complex Controller Communication Window operations. If this operation is undesired then it is recommended to use a different sweep mode such as Constant Sweep or Constant Window.
Selecting Variable Publish State = Internal causes variable to be published in Address Space	DE1330	PME allows users to select a Variables Publish State to Internal. In some cases, this will cause the variable to be published in the OPC-UA address space. The manual states users should select *External Read/Write* or *External Read-Only* to publish to the address space. This is the recommended approach.

Restriction/Open Issue	ID Code	Description
Power Supply Loss of Module Fault After Configuration Download	DE2257 CR-6257	A *Loss of, or missing option module* fault may appear for any RX3i power supply configured in the main rack whenever a hardware configuration download is performed after a BOC update occurs. (A BOC update occurs during a firmware update when switching between different CPU models in a single backplane; also, the first time a particular CPU model is placed in a backplane. BOC updates are indicated by the RUN and Output Enabled LEDs blinking in unison briefly during power-up.) This issue does not affect normal operation and may be cleared by power cycling the CPU.
Missing *Addition of IOC* event, when ECM850 module restarts due to reason like reset push-button and SVC_REQ 24	DE1248	When ECM850 module RESET is triggered using SVC_REQ 24 or via the Reset pushbutton, PLC CPU does not report the *Addition of IOC* fault message in the Controller fault table, after the successful reset of the module.
Blink Code 1-2-1-8 After Power On	DE2017	Rarely, after powering on, the CPE330 may display blink code 1-2-1-8 on its LEDs, which indicates a backplane issue. Should this issue occur, power cycle the CPU. If the blink code does not re-occur, normal operation may be resumed. If the blink code does re-occur, turn the CPU off and remove all modules from the backplane. Inspect each module's backplane connector for damaged, bent, or recessed pins. Also, inspect each socket on the backplane for any signs of damage. Replace any modules or backplanes found to have damaged connectors, re-install the modules in the backplane, and restore power to the CPU.
Loss of I/O Modules in Expansion Rack	DE2336	Rarely, do I/O modules in an expansion rack may fail to reconfigure if the expansion rack is turned off and back on while the main rack remains powered on. If this occurs, turn the expansion rack off and back on again or, download the hardware configuration using PME.

Restriction/Open Issue	ID Code	Description
ALG616, ALG626, & ALG628 Terminal Block Present Status Bit	DE2422	IC695ALG616-Fx, IC695ALG626-Fx, and IC695ALG628-Fx (and later hardware revision) analog modules may not set the *terminal block present* status bit in their module status after a CPE330 firmware update completes, even if the terminal block is installed. Normal operation of the *terminal block present* status bit may be restored by performing one of the following operations: removing and reinstalling the terminal block, resetting the analog module using Service Request #24, or power cycling the rack.
CPE330 Logs Loss of IOC Fault for PNC001 on Power Down	DE3029	The CPE330 may log a "Loss of IOC" Fault for a configured IC695PNC001 PROFINET controller when the CPE330 is powered off.
CPE330 Logs Redundant Link Communication Failure on Power Down	DE3030	The CPE330 may log a "Redundant Link Communication Failure" Fault for a configured IC695RMX128 or IC695RMX228 Memory Xchange Module when the CPE330 is powered off.
Run Mode Store of EGD Causes Sequence Store Failure & CPU Software Event Faults	DE4130 SFDC00406176	Performing a RUN Mode Store of a project in which the total number of variables in EGD exchanges is near the maximum of 30,000 may result in a Controller Sequence Store Failure (Group: 137; Error Code 4) and CPU Software Event fault. (Group: 140; Error Code 145). If this occurs, the project may be successfully downloaded while the controller is in STOP Mode.
SRTP and Modbus TCP Client Retries	DE5687	SRTP and Modbus TCP Client COMMREQs may require multiple TCP retries to establish a connection when a gateway is configured on both LAN 1 and LAN 2. Once a TCP connection is established, client operations proceed normally. Client communications occur without multiple retries if only one of the LANs has a gateway configured or if there are no gateways configured.
PLC Fault Table Empty After Restart Due to Fatal Error	DE6573	PAC Machine Edition may not display any faults in the PLC fault table if it is connected to a controller when it encounters a fatal error that results in an automatic restart. (STOP/HALT) Should this occur, the fault table is empty and the PME Fault Table Viewer indicates zero faults out of X number of faults displayed. (EX: Displaying 0 of 11 faults, 11 Overflowed) Closing and re-opening the PME Fault Table View displays the faults correctly.

Restriction/Open Issue	ID Code	Description
PLC Fault Table Faults Not Shown in Chronological Order	DE6574	Faults in the PLC Fault Table may not be listed in chronological order following an automatic controller restart due to a fatal error.
PME Error Programmer already attached	DE8016	When connected to a target, there is a field called the request timeout, which can be up to 240s. If you are connected to PME via a LAN2 port, and you remove the ethernet cable and then re-attach it to a LAN2 port, reconnect to PME, and try to enter programmer mode, the operation will fail. In order to enter programmer mode, you must wait the request timeout amount of time to be able to enter programmer mode. You will see the following error in PME when trying to enter programmer before the request timeout has expired: Error 8085: Programmer already attached [{PC name}\\{user name}] To recover, you can wait for the request timeout amount of time, or you can restart the PLC. To avoid this issue, make sure you press "Disconnect" before removing the ethernet cable from the LAN2 port, or else, you will have to wait for the configured request timeout before you can re-enter the programmer mode.
OPC UA Server Non-Transparent Redundancy ApplicationDescriptions for Remote ServerURI Not Available On Local FindServers Request	DE8313	The OPC UA Server in PACSystems controllers with firmware versions 10.10 and later, on controllers that are configured for OPC UA Non-Transparent Redundancy (IC695CPE330, IC695CPE400, and IC695CPL410) and in a redundant server pair, do not populate the information necessary to automatically connect to the remote OPC UA server using the built-in OPC UA FindServers service. If configuring an OPC UA Client for Non-Transparent Redundancy to communicate with the PACSystems OPC UA servers on a redundant system, the DiscoveryURLs for both servers must manually be configured into the OPC UA Client. The default method of configuration with Cimplicity software is to manually configure both DiscoveryURLs for local and remote redundant servers and is not impacted by this defect. Some OPC UA clients may not offer manual configuration of both DiscoveryURLs and will have a compatibility issue when configuring for OPC UA Non-Transparent Redundancy with a PACSystems OPC UA server.

Restriction/Open Issue	ID Code	Description
Ethernet COMMREQs are not always delivered on the first logic sweep	ISS183540	In certain instances where User Logic is of sufficient size and a COMMREQ is issued on the first logic sweep, a race condition exists between the determination of the CPU Run/Stop state and logic-driven issuance of a COMRREQ which may cause the COMMREQ to be aborted before its transmission is attempted. To the user, it would appear as if the COMMREQ was never issued. The condition is much more observable on COMMREQs issued from the CPU's embedded Ethernet port. To avoid the possibility of encountering this condition, users should avoid issuing COMMREQs on the first logic sweep.
PMM335 loss is occasionally detected on the power down of the CPU. (Module is not lost on power-up.)	ISS182714	The PMM335 monitors power loss, independently of the CPU. The CPE305, CPE310, CPU315, CPU320, CRU320, and CPE330 are fast enough that they can occasionally detect and log the loss of the PMM335 just before the CPU itself powers down. No corrective action is required; This situation can be verified in two ways: (1) by inspecting the timestamp in the loss-of-module report one can correlate it with the power-down event, and (2) by performing a PME Show Status Details report one can see that the PMM335 is present after power-up.
Hot Swapping some Analog modules slowly result in modules not being recognized	CR-7365	Occasionally during a hot insertion (hot-swap) of IC695 Non-Isolated Analog Input Modules, input channels may take up to 2 seconds to reflect actual input values after the module ok bit is enabled in the module status word. This has only been seen when the hot insertion has been done slowly (i.e. approximately 1.5 seconds to insert the module).
Ethernet Disconnect During Word for Word Change	CR-2234	If the Ethernet connection is broken during a word-for-word change, the programmer may not allow a subsequent word-for-word change after reconnecting since it thinks another programmer is currently attached. To correct the issue, go offline and then back online again.
Simultaneous Clears, Loads, and Stores Not Supported	CR-3118 CR-3300	Currently, PACSystems CPUs do not support multiple programmers changing CPU contents at the same time. The programming software may generate an error during the operation. Simultaneous loads from a single PLC are allowed.
Hardware Configuration Not Equal After Changing Target Name	CR-3181	If the user stores a hardware configuration to flash that sets *Logic/Config Power-up Source* to *Always Flash* or *Conditional Flash* and then subsequently changes the name of the target in the programming software, the hardware configuration will go Not Equal and will not Verify as equal.

Restriction/Open Issue	ID Code	Description
PLC and IO Fault Tables may need to be Cleared Twice to Clear Faulted State	CR-3191	Both PLC and IO fault tables may need to be cleared to take the CPU out of Stop/Fault mode. If one of the tables contains a recurring fault, the order in which the tables are cleared may be significant. If the CPU is still in Stop/Fault mode after both tables are cleared, try clearing the fault tables again.
Setting Force On/Off by Storing Initial Value	CR-3317	Once a *Force On* or *Force Off* has been stored in the PLC, the user cannot switch from *Force On* to *Force Off* or vice-versa directly by downloading initial values. The user can turn off the force by doing a download, and then change the *Force On* or *Force Off* by another download.
Second programmer can change logic while in Test & Edit mode	CR-4223	While currently active in a Test and Edit session using Machine Edition on one PC, Machine Edition running on another PC is not prevented from storing new logic to the PLC.
Must have Logic If Powering-Up from Flash	CR-4633	If the application will configure the CPU to retrieve the contents of flash memory at power-up, be sure to include logic along with hardware configuration when saving to flash memory.
Two loss of module faults for Universal Analog Module	CR-5462	Occasionally, the hot removal of the Universal Analog Input Module (IC695ALG600) results in two *Loss of I/O Module* faults instead of one.
Power up of Series 90-30 HSC module may take as long as 20 seconds	CR-5666	As power is applied to a 90-30 High-Speed Counter, the *module ready* bit in the status bits returned each sweep from the module may not be set for as long as 20 seconds after the first PLC sweep, even though there is no *loss of module* indication. I/O data exchanged with the module is not meaningful until this bit is set by the module. Refer to pages 4-3 to 4-5 of *High-Speed Counter Modules for PACSystems RX3i and Series 90-30 User's Manual,* GFK-0293D.
Informational fault at power-up	CR-5850	Intermittently during power-up, an Informational non-critical CPU software fault may be generated with fault extra data of 01 91 01 D6. This fault will not affect the normal operation of the PLC. But, if the hardware watchdog timer expires after this fault and before power has been cycled again, then the outputs of I/O modules may hold their last state, rather than defaulting to zero.
Extended Memory Types for IO Triggers	CR-5952 CR-6319	%R, %W, and %M cannot be used as IO triggers.

Restriction/Open Issue	ID Code	Description
Possible PME inability to connect	CR-6067	Infrequently, an attempt to connect a programmer to a PLC via Ethernet will be unsuccessful. The normal connection retry dialog will not be displayed. Rebooting the computer that is running the programmer will resolve the behavior.
GBC30 may not resume operation after the power cycle	CR-6167	In rare instances, a GBC30 in an expansion rack may not resume normal operation after a power cycle of either the expansion rack or the main rack.
Configuration of 3rd Party Modules	CR-6207	When configuring a 3rd Party Module in PME, a non-zero reference length must be assigned to at least one reference type. For example, assign eight bits of %I. Do not specify a length of zero for all reference types since this will cause the module to not function properly in the system.
Power supply status after power cycling	CR-6294	Rarely, turning a power supply on or off may not result in an add or loss fault. Also, the slot will appear empty in the programmer's online status detail view. The power supply continues to operate normally. Power cycle to restore normal status reporting.
Don't use multiple targets	CR-6450	In a system in which the hardware configuration is stored from one target and logic is stored from a different target, powering up from flash will not work. The observed behavior is that, following a power-up from flash, PME reports hardware configuration and logic are *not equal*.
Missing Loss of terminal block fault	CR-6526	The IC695ALG600/608/616 analog input modules do not produce a *Loss of terminal block* fault when hardware configuration is stored or the module is hot-inserted, and the terminal block is not locked into place.

Restriction/Open Issue	ID Code	Description
Sequence Store Failure	CR-6586 ISS176888	When downloading projects with very large hardware configurations or which use large amounts of user memory, it is possible to encounter a *PLC Sequence Store Failure* error when writing the project to flash. To work around this error, either or both of the following actions may be helpful: 1. Perform an explicit clear of flash before performing the write. 2. Increase the operation timeout used by PME before performing the write. This is done by expanding the Additional Configuration in the Inspector window for the target controller and adjusting the Request Timeout. The timeout may need to be increased to as much as 60000 ms, depending on the amount of memory used and the condition of the flash memory.
IC695ALG600 Lead Resistance Compensation setting	CR-6689	A configuration store operation will fail if a channel is configured for 3-wire RTD and Lead Resistance Compensation is set to Disabled. A Loss of Module fault will be logged in the I/O Fault table at the end of the store operation. To recover the lost module, the configuration must be changed to enable Lead Resistance Compensation and the module must be power cycled.
C Toolkit PlcMemCopy Documentation Incorrect	CR-7082	This routine does allow the destination and source pointers to be outside of reference memory. If the destination points to discrete reference memory, overrides and transitions will be honored. Note that the header for PlcMemCopy has been updated in Release 3.50 of the C toolkit.
Logic and HWC not equal after power cycle	ISS168431	If the Hardware Config from Target 1, with Logic/Configuration Power-up Source and Data Source both set to *Always from Flash*, is stored in Flash, then Logic and Hardware Config from Target 2, with Logic/Configuration Power-up Source both set to *Always from RAM*, are stored to RAM and there is a good battery, then when power is cycled the programmer may show that Logic and Hardware Config are not equal. The remedy is to clear Flash and re-store the Logic and Hardware Config from Target 2.
Multiple Log Events	CR-2014	The Ethernet Interface sometimes generates multiple exception log events and PLC Fault Table entries when a single error condition occurs. Under repetitive error conditions, the exception log and/or PLC Fault Table can be completely filled with repetitive error messages.

Restriction/Open Issue	ID Code	Description
Spurious Ethernet Fault	CR-4104	In rare instances, after power cycle, the Ethernet Interface may log the following fault, Event = 28H, Entry 2 = 000eH. This fault can be safely ignored.
Clear of large hardware configurations may cause log event 08/20	CR-6577	A Log event 08/20 may occur when very large hardware configurations are cleared and transfers are active on other Server connections. This log event can be safely ignored.
PLC response timeout errors (8/08) in Ethernet exception log under extremely heavy SRTP traffic	ISS010006	Under extremely heavy SRTP traffic conditions, the Ethernet Interface may log an event in the Ethernet exception log (Event 8, Entry 2 = 08H) indicating an overload condition. This error terminates the SRTP connection. If this event appears, either the traffic load should be reduced, or the application should use an alternate communications method to verify that critical data transfers were not lost due to the overload.
SRTP channel transfers may take up to 20 seconds after power cycle	ISS155214	When SRTP communications are interrupted by a power cycle, the Ethernet interface may require up to 20 seconds to reestablish the TCP connection used for SRTP communications.
Intermittent Ethernet log event 8H/15H after power cycle	ISS163056	When starting after a power cycle, the Ethernet Interface may intermittently log an exception (entry 8H, Entry 2 = 15H, Entry 3 = 0000H, Entry 4 = 00aaH). This exception is benign and may be ignored.
Station Manager "PARM" command help text is wrong	ISS181788	Although the "parm v" Station Manager command works correctly, the "v" subsystem code (SRTP server) is not shown as supported by the online help.
RDSD upload / unintended OEM protection lock	ISS182099	When an OEM key is set in a controller, and the controller is unlocked, if an RDSD upload is performed, on rare occasions OEM protection will be unintentionally locked after the upload completes. To recover, enter the OEM password to unlock the project, then clear the user memory and flash memory.

CPE330 Embedded PROFINET Restrictions & Open Issues

Restriction/Open Issue	ID code	Description
IP Address changes to Embedded PNC May Cause Loss Of Communications with PNS & GCG	DE3423	Downloading a new hardware configuration with a different IP Address for the embedded PROFINET interface in the CPE330 to an already configured CPE330 may cause configured PNSs and GCGs to disconnect from the embedded PROFINET interface. This issue is observed when using both PME 8.6 SIM 12/13 and PME 9.0 SIM 4. If this issue occurs, disconnect PME from the CPU, remove the Energy Pack if one is attached to the CPU, and cycle power to the main rack. Then reconnect PME and download the hardware configuration again.

Restriction/Open Issue	ID code	Description
Embedded PNC indicates premature MRP Ring closure and logs extra Ring Closed/Ring Open faults when network cable reconnected	DE1461	Two scenarios can cause the Embedded PNC to indicate that an MRP Ring is closed when in fact it is still open. The scenarios are: 1. When either an RX3i PNS or PNC that participates in the MRP ring as an MRP Client communicating via Copper or Fiber SFPs is powered-up in the MRP ring, extra Ring Closed/Ring Open faults are logged in the I/O fault table. A Ring Closed fault occurs during the initial stage of the PNS/PNC power-up, followed by a Ring Open fault in the middle of the PNS/PNC power-up sequence, and finally a Ring Closed fault occurs when the PNS/PNC completes the power-up (OK LED on). 2. When the first of two MRP ring breaks is restored, extra Ring Closed/Ring Open faults are logged in the I/O fault table. Upon restoration of the first ring break, a Ring Closed fault occurs, followed by a Ring Open fault. Then upon restoration of the second ring break, a final Ring Closed fault occurs. The duration between faults is a function of the PNC's configured MRP Default Test Interval and Test Monitoring Count. When either of the two scenarios is invoked, the user sees extra Ring Closed/Ring Open faults in the IO Fault Table. The extra Ring Closed/Ring Open fault may be ignored.
Store of HWC may result in 3 IOC Software Faults.	DE1711	On very rare occasions, storing a very large PROFINET hardware configuration may result in 3 IOC Software faults. The faults tend to occur after a large number of changes are made to the hardware configuration or the current hardware configuration in the system is cleared before storing a new configuration. If the controller is Faulted, clear the I/O Fault Table to recover. Otherwise, no additional steps need to be taken and the faults may be ignored.

Restriction/Open Issue	ID code	Description
STXPNS001 Firmware revision is not displayed correctly when viewed using PME PROFINET Explorer	DE568 ISS182843	Firmware revision information for the STXPNS001 does not display correctly using PAC Machine Edition. The correct firmware revision information can be viewed on the module using HyperTerminal.
Loss of IOC and *Backplane Communications* Faults after Clearing CPE330 Hardware Configuration with Mismatched STXPNS001 Configuration	DE569 ISS182293	Clearing the CPE330's hardware configuration after downloading a mismatched RSTi STXPNS001 PROFINET Network Adapter configuration causes a *Loss of IOC* and a *Backplane communications with Controller fault; lost request* fault to be recorded in the fault table. Communication with PAC Machine Edition is also lost. If this issue occurs, power cycle both the CPE330 and STXPNS001. (When power cycling the CPE330, disconnect its energy pack if one is connected.) Then, correct the STXPNS001 hardware configuration in PME so that it matches the physical hardware in the IO node and download the updated hardware configuration to the CPE330.
Loss of IO Device following hot insertion of mismatched VersaMax I/O module	DE579	In very rare cases, the hot insertion of a mismatched VersaMax I/O module (i.e., MDL650 in a slot configured for an MDL640) into the VersaMax PNS can cause a loss of connection between the PNS and the Embedded PNC. No user action is required. When this behavior is seen, the Embedded PNC will automatically re-connect to the VersaMax PNS.
IOC SW Fault with large configurations	DE838	When storing a PROFINET configuration that is close to the upper limit of the CPE330's user memory the store may fail with an IOC Software Fault logged in the I/O Fault Table. Clearing the PLC's existing Hardware Configuration (and I/O Fault Table if the controller is Faulted) before attempting the store should allow the store to succeed.

Restriction/Open Issue	ID code	Description
Breaking & reconnecting an MRP ring by pulling either of the 2 MRM ports causes extra ring open/close faults	DE1140	In some cases, if the network is broken and repaired at either of the two ring ports of a CPE330 configured to be the MRM, extra "I/O Bus Fault-Redundant Ethernet network ring broken (open)" and "I/O Bus Fault-Redundant Ethernet network ring okay (closed)" faults are logged in both the I/O Fault Table and the PNC Local Log when the ring is repaired. These additional faults may safely be ignored as long as the last fault to be logged is "I/O Bus Fault-Redundant Ethernet network ring okay (closed)".
INFO CPU SOFTWR – CPU Software Event Fault	DE3792	Rarely, a CPE330, CPE400, or CPL410 may log an INFO_CPU_SOFTWR – CPU software event fault. (Group140; Error 430; Extra Data 01 28 0a 91 80 4a 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00) Should this issue occur, the CPE330, CPE400, or CPL410 continues to run normally. No additional action is required, and the fault may be cleared from the fault table.
Unintended operation of PNIO DEV COMM function block	ISS181379	The power flow output of the PNIO_DEV_COMM function block provides validation of the input parameters and confirms that the Embedded PNC has locally processed the configuration of the specified I/O Device. As currently implemented, the power flow output will not turn ON until after the Embedded PNC has made its first attempt to connect to the specified I/O Device. Therefore, we recommend the user not rely on power flow output for parameter validation.

Operational Notes

CPE330 CPU & Embedded Ethernet

Operational Note	Description
Default IP Addresses for CPE330 Embedded Ethernet	Initial Ethernet communication with the CPE330 may be accomplished using the default IP Addresses programmed at the factory: LAN1 (Top Ethernet Port) LAN2 (Bottom Two Ethernet Ports) IP Address: 192.168.0.100 10.10.0.100 Subnet Mask: 255.255.255.0 255.255.255.0 Gateway: 0.0.0.0 0.0.0.0
Connecting to CPE330 when IP Address not Known	When the CPE330 is shipped, both of its LANs are assigned a default IP address. (LAN1: 192.168.0.100; LAN2: 10.10.0.100) PAC Machine Edition may be used to re-program the addresses as needed. Once programmed, the addresses remain assigned until they are re-programmed using PME. If a CPE330's LAN1 and LAN2 IP addresses are not known, it is possible to re-program them by inserting an IC695ETM001 module with a known IP address into the backplane so that PME may connect to the CPU through this module. Once connected through the ETM, PME may be used to program the CPE330's LAN1 and LAN2 addresses to new values. The CPE330 does not support PME's Set IP tool.
Ethernet Event Log Not Preserved Across Power Cycle	The CPE330 Ethernet event log for its embedded Ethernet interfaces is not maintained across a power cycle. Ethernet log events will be reported in the PLC Fault Table as with other RX3i CPUs. The PLC Fault Table entries will be preserved if an energy pack is attached.
Station Manager Commands	The embedded Ethernet interfaces of the CPE330 support a subset of Station Manager Commands (monitor-only commands). Refer to *PACSystems TCP/IP Ethernet Communications Station Manager Manual,* GFK-2225, for details. Beginning with CPE330 R9.40, the *plcread* and *egdread* commands are no longer supported by the Ethernet Station Manager. PAC Machine Edition may be used to read data in reference memory and EGD exchanges.
Programmer Display of Module Information	The functionality to display module status in PAC Machine Edition Logic Developer will show *5CPE330A* when the CPE330 is configured as a CPU320.
RDSD / Programmer Interaction	When using RDSD, all PAC Machine Edition Logic Developer PLC connections must be in the *Offline* state for the RDSD to function properly.

Operational Note	Description
RDSD OEM / Password Protection of Former Uploads Incorrectly Maintained	When deleting an OEM key from a project, you must remove the Energy Pack and cycle power before writing to the RDSD. If this procedure is not followed there are rare occasions where the OEM key that had been deleted may be restored on the RDSD device and therefore could be unexpectedly downloaded to the CPU on a subsequent RDSD download.
Extra Option Module Fault after Downloading CPU320 Configuration to CPE330	An *Extra Option Module* fault is logged in the Controller Fault Table after downloading a CPU320 configuration to a CPE330. This indicates that the Embedded Ethernet interface did not receive a configuration. This fault is expected and does not interfere with normal controller operation.
CPE330 Power-up Time	The CPE330 requires more time to power up than the CPU320: • When an IC695ACC402 Energy Pack is not connected, the CPE330 requires approximately 30 seconds to complete power-up. The CPU OK, RUN, and OUT EN LEDs remain off for up to 30 seconds after power is applied. • When an energy pack is connected, the CPE330 requires up to 90 seconds to complete power-up. The power-up sequence of the CPE330 begins after the energy pack is fully charged. Charging may require up to 60 seconds depending on the capacitor pack's initial charge. (The energy pack's STAT LED blinks green while it is charging and turns solid green when charging is complete.)
Insertion of Cap Pack during controller power-up could cause failed battery fault	If the Energy Pack is powered on without a Cap Pack and a Cap Pack is then inserted during the power-up of the CPE330, the CPE330 could log a failed battery fault. The CPE330 expects the Energy Pack to report fully charged within a certain amount of time. This time limit may not be met if the Cap Pack is absent at power-up.
Avoid Overlapping IP Subnets when Configuring CPE330 IP Address and Subnet Mask	The CPE330 contains two LAN interfaces, each one supporting a unique IP Address. Care must be taken when assigning IP Addresses and subnet masks to each LAN so that an overlapping IP subnet is not created. Intermittent or no Ethernet communication may result if an overlapping IP subnet is created and the two interfaces are NOT connected (cabled) to the same physical network. By default, PME prohibits configuring both LAN interfaces on an overlapping IP subnet. (This may be changed by going to Controller General Options and changing the *CPE330 – LAN1, LAN2 On Same Subnet* to *Show as Warning*.)

Operational Note	Description
Avoid Overlapping Remote IP Networks when Configuring CPE330 IP Address and Subnet Mask	The CPE330 network interface behaves like a single ETM001 with two LANs / IP Addresses. (It is a multi-homed device.) Care must be taken when assigning IP Addresses and subnet masks to each LAN so that each network does not overlap any remote subnets in the network infrastructure. Intermittent or no Ethernet communication may result if the local networks on the CPE330 overlap a remote subnet.
CPE330 Ethernet Gateway Operation	The CPE330 allows the configuration of an Ethernet gateway on both LAN1 and LAN2. Since the CPE330 contains two LAN interfaces, each one supporting a unique IP Address, only one gateway is active at a time: • If a gateway is configured on only one of the two LAN interfaces and the other is not configured (0.0.0.0) then, the single gateway is shared by both interfaces. • If a gateway is configured on both LAN interfaces, then the LAN1 gateway is given priority over the LAN2 gateway as long as LAN1 is functional. If, for example, the LAN1 cable is disconnected then the CPE330 will use the LAN2 gateway as a backup.
LAN1 and LAN2 LED Network Speed Indicators	The LAN1 and LAN2 network speed indication LEDs embedded in the RJ-45 Ethernet ports of the CPE330 use different colors to indicate a 1 Gbps data rate. The LAN1 LED is Amber to indicate a data rate of 1 Gbps; the LAN2 LED is Green.
CPE330 Embedded Ethernet Protocols & Performance	The CPE330 has two independent Ethernet LANs with three auto-negotiating, full-duplex 10/100/1000 Ethernet Ports which allow support of two IP Addresses and the following protocols: • OPC UA Server with support for up to 5 concurrent sessions with up to 10 concurrent variable subscriptions and up to 12,500 variables • SRTP Server with support for up to 48 simultaneous connections • Modbus/TCP Server with support for up to 16 simultaneous server connections • SRTP and Modbus/TCP Client with support for up to 32 clients; each may be SRTP or Modbus/TCP • Ethernet Global Data (EGD) Class 1 Embedded Ethernet communication is managed by a dedicated processor core. Applications using Ethernet communication should be validated to ensure adequate throughput is available to meet the needs of the application. Additional IC695ETM001 Ethernet modules may be added to the system if additional throughput is required.

Operational Note	Description
CPE330 Multiple Consumptions of Multicast EGD Exchanges	If the Embedded LANs are physically connected to the same Ethernet network then any multicast EGD consumer exchanges may be consumed multiple times (once per each Ethernet interface) if the LAN interfaces use the same multicast IP addresses. These multiple consumptions occur because the CPU has more than one LAN interface and it is possible for the CPU to see duplicate multicast packets (one from each interface) and consume each. If this occurs, issuing a *stat g* station manager command shows that the multicast consumer exchange updates at a rate that is faster than the producer sends it. To avoid this issue, connect each Embedded LAN to physically separate Ethernet networks (i.e. no Ethernet switches in common).
PME Connection Lost After Configuration Download that Swaps IP Addresses Between LAN 1 & LAN 2	PAC Machine Edition may lose connection with a CPE330 that has PROFINET enabled on LAN 2 if a configuration that swaps the IP addresses between LAN 1 and LAN 2 is downloaded. Even though the connection is lost, the store operation completes successfully. Re-connecting using the newly configured IP addresses shows the hardware configuration and logic are equal.
Secondary CPE330 Redundancy CPU Power-up Wait Time	During power-up, when a CPE330 is configured as a secondary redundancy CPU, it waits up to 70 seconds to detect the primary unit. (All other redundancy CPUs wait 30 seconds.) If the primary unit is not detected within this wait time, the secondary unit assumes the primary unit is not present. In this case, if the second unit is configured to transition to Run on power-up, it becomes an active unit without a backup unit.
CPE330 / CRU320 Mixed-model Redundancy Operation	Because a CPE330 supports a CRU320 compatibility mode which allows a CRU320 configuration download to a CPE330, a mixed-model redundancy system can be created. It is not recommended to design a system with mixed models; however, this setup may be used to replace a failed redundant CPU until a matched replacement is available.
CPE330 / CRU320 Mixed-model Dual Synchronization	When a CPE330 and CRU320 are operating in a mixed-model redundancy system, Dual Synchronization at power-up cannot be guaranteed because of the power-up time differences between the two CPUs.

Operational Note	Description
STOP to RUN Transition in CPE330 Redundancy System with PROFINET I/O	A Primary CPE330 waits a maximum of 20 seconds during power-up for PROFINET device connections when there is no redundant link with the secondary unit. As soon as one PROFINET device connection is established (and no secondary PROFINET device connection exists) the Primary CPU can power up in RUN mode. Otherwise, the Primary CPU powers up in STOP mode. If a PROFINET connection is established after the timeout period expires, the standalone Primary CPU must be manually switched from STOP to RUN mode. In comparison, the CRU320 waits 3 seconds during power-up before attempting to go to RUN, which is not enough time to establish connections to its PROFINET devices. This means that a standalone Primary CRU320 always powers up in STOP mode.
Using OPC UA Server with Limited Communications Window	When running an OPC UA Server with a Limited Communications Window, the Server can process enough requests to use the entire window which will add that time to your PLC Logic sweep. For example, a 100 ms Limited Backplane Communications Window could add the full 100 ms to your PLC Logic Sweep. Caution should be taken to ensure the Communication Window is configured within the tolerances of the system.
Redundant Link Communication Failure Fault During Dual Synchronization	When both CPE330s in a redundant system are powered on at the same time and perform a dual synchronization, it is possible for the secondary unit to log *Redundant Link Communication Failure* faults if it completes power up before the primary unit. In this scenario, these faults occur because the primary unit is not yet online and do not indicate a redundant link failure. As soon as the primary unit completes power up it takes control and normal system operation begins with the primary controlling I/O and the secondary in standby mode.
Background Window does not Execute by Default when Redundancy is Enabled	PAC Machine Edition versions before 9.50 SIM 6 set the Background Window Timer to 0ms by default in CPE330 redundancy projects. This prevents the Background Window from running CRC memory tests on the user logic. It is recommended that the Background Window Timer be set to a minimum of 5ms in both the Primary and Backup CPE330 hardware configurations. The Background Window Timer setting may be found on the Scan Tab in the CPE330's hardware configuration. PAC Machine Edition versions 9.50 SIM 6 or later resolve this issue by generating a validation warning whenever the Background Window Timer is set to a value less than 5ms.

Operational Note	Description
RDSD USB Port Not Operational	Setting the *Universal Serial Bus* parameter in the CPE330's hardware configuration to *Disabled* enhances application security by disabling the USB port hardware and software resources, including *BusM*. This parameter may be disabled for applications that do not require Removable Data Storage Device (RDSD) functionality. If the *Universal Serial Bus* parameter is *Enabled*, a Controller CPU Software Fault with Error Code 216 and ASCII fault extra data text *BusM* may be recorded in the fault table. If this fault occurs, controller operation continues as normal; however, the RDSD USB port may not operate until the controller is power cycled.
Oversweep Alarm When Using SoE or DNP3 With Constant Sweep	PACSystems firmware version 10.10 and later adds additional synchronization between redundant controllers that support Sequence of Events or DNP3 Outstation protocol. The additional synchronization may result in a slightly higher sweep time (every sweep) when SoE, DNP3, or both are enabled. During a redundant role switch, controllers with DNP3 enabled may also experience a higher sweep time for the one sweep where the two controllers switch roles. This time is application dependent and is related to the amount of DNP3 that must be synchronized during the role switch. When upgrading to firmware version 10.10 or later, redundant applications that use Constant Sweep Mode may experience an Oversweep alarm if the actual sweep time is close to the configured Constant Sweep Timer setting. Should an Oversweep alarm occur, adjust the constant sweep timer to factor in the time necessary for the additional synchronization per sweep and, if DNP3 is enabled, perform a role switch.
Abrupt Power Down Fault	An abrupt power down detected at power-up fault is recorded in the CPE330's PLC Fault Table if both the "Logic/Configuration Power-up Source" and "Data Power-up Source" in the hardware configuration are set to "Always Flash" or "Conditional Flash" and the CPE330 is turned off without an energy pack connected. This fault indicates that user memory was not preserved across the power cycle and does not interfere with the normal operation because the application is already configured to power up from flash if there is no energy pack connected.

All RX3i CPUs

Operational Note	Description
OPC UA Client Commissioning	If an OPC UA client device fails to connect to an RX3i PLC due to an incorrect OPC UA security certificate, the PLC will add that device to its reject list. This will prevent any future communication between the client and the PLC. To get the PLC to communicate with that client in the future, you must generate a new private key for the client and re-provision it with the GDS, using the Security Console.
SRTP or Modbus Channel COMMREQ Error Response with Gateway	SRTP & Modbus TCP Channel commands on RX3i CPUs with embedded Ethernet (IC695CPE3xx) and the IC695ETM001 RX3i Ethernet module provide different COMMREQ error codes whenever a request is sent to an unreachable server. When an Ethernet gateway is configured, the COMMREQ returns error code 0290H; when a gateway is not configured, the COMMREQ returns error code AA90H.
Cannot Clear Controller Passwords Loaded in Flash	WARNING: Passwords loaded to Flash (including OEM Password) cannot be cleared using clear Flash or by downloading new firmware. Users MUST document the password as it is not possible for the user to restore a unit to the default, no passwords condition (NULL).
OEM Protection is not enforced on power-up from User Flash unless engaged before the power cycle.	The OEM Protection Lock must be explicitly set before power down to ensure the OEM lock will be set on power-up regardless of the type of security being used.
When passwords are set with Enhanced Security, connecting with PME or establishing SRTP connections can cause a temporary increase in sweep times.	Due to the complex math involved with Enhanced Security authentication, creating SRTP connections and changing privilege levels will take additional sweep time (several milliseconds) not required when passwords are set with legacy security. If consistent sweep time is important to the application, then it is recommended to configure the sweep mode for Constant Sweep. Alternately, Constant Window or a Normal Sweep with both Limited Backplane Window and Limited Controller Comm Windows can be configured. These sweep modes will limit the sweep impact of Enhanced Security authentication and result in authentication processing across multiple sweeps.
C Toolkit Application Compatibility	Beginning with Rel 7.00 of the C Toolkit writes to %S memory will now fail to compile where in previous releases a compilation warning was issued. This affects the use of the PACSystems C Toolkit macros Sw(), Si(), and Sd().

Operational Note	Description
RUN LED is not illuminated on the Series 90-30 power supply for an RX3i remote/expansion rack with input modules only	For firmware version 6.70 and later, the RUN LED for remote/expansion racks will reflect the current IO enable/disable state (even when there are no output modules in the expansion rack).
	RUN LED for remote/expansion rack with input modules only will work as follows for All versions prior to version 6.70:
	When a remote or expansion baseplate is used with the RX3i, the RUN LED on the Series 90-30 power supply for that baseplate is illuminated when the system is in Run mode only if the rack contains at least one output module. If the rack contains input modules only, the RUN LED is not illuminated. This is due to the way input modules are managed in the PACSystems design and does not indicate an error.
Undefined Symbols in C Blocks	In Release 5.00 or later, if an attempt is made to download a C block containing undefined symbols, the download will fail. Machine Edition will display the following message in the Feedback Zone: Error 8097: Controller Error – Controller aborted the request [0x05][0xFF]
	Prior to Release 5.00, C blocks containing undefined symbols could be successfully downloaded, but if they were executed the CPU would transition to Stop/Halt mode.

Slot numbering, power supply placement, CPU placement, and reference	1. The A/C Power-Supply (IC695PSA040) for the RX3i is a doublewide module whose connector is left-justified as viewed when installed in a rack. It cannot be located in Slot 11 of a 12-slot rack nor Slot 15 of a 16-slot rack. No latch mechanism is provided for the last (right-most) slot in a rack, therefore it is not possible to place the power supply in the second to last slot.

2. The doublewide RX3i CPUs are modules whose connector is right-justified as viewed when installed in a rack. They are referenced for configuration and by user logic applications by the leftmost slot that it occupies. For example, if one of these modules has its physical connector inserted into slot 4, which means it occupies slots 3 and 4, the CPU is referenced as being located in slot 3. The referenced location of the CPU is not determined by what slot the physical connector is located in, but rather by the left-most slot occupied by the entire module.

3. Due to item #2 above, a doublewide RX3i CPU may be located in Slot 0 of a rack (physical connector in Slot 1). In addition, the CPU cannot be located in Slot 11 of a 12-slot rack nor Slot 15 of a 16-slot rack, since doing so would require the physical connector to be located in the slot reserved for an expansion module.

4. When migrating a Series 90-30 CPU system to a PACSystems RX3i CPU, be aware that to maintain the Slot 1 location of the CPU, only a single-wide power supply may be used in Slot 0. Either DC power supply can be used (IC695PSD040 or IC695PSD140). Therefore, if the application using an existing Series 90-30 system must maintain a Slot 1 CPU and uses an AC power supply, the RX3i system must have the RX3i AC power supply located in a slot to the right of the RX3i CPU in Slot 1.

5. In deciding to place the CPU in slots other than Slot 1, the user should be aware of the possible application migration issues that could arise. The following lists the areas that could be affected when migrating an application from one CPU slot to another.

Item Affected		How Affected
User Logic	Service Request #15 (Read Last-Logged Fault Table Entry)	Location of CPU faults will not be the standard 0.1 location, but will reflect the slot the CPU is located in. User logic that decodes fault table entries retrieved by these service requests may need updating.
	Service Request #20 (Read Fault Tables)	
	Communications Request (COMMREQ)	COMMREQs directed to the CPU (e.g. those directed to the serial ports of the CPU) will need to be updated with the correct CPU slot reference.

Operational Note	Description		
	H/W Configuration	CPU Slot location	Slot location of the CPU must be updated in the HW Configuration to reflect the CPU's true location.
	Fault Tables	Faults logged for the CPU	The location of faults logged for the CPU in the fault table will not be the standard 0.1 (rack. slot) location but will reflect the CPU's actual slot.
	External Devices	Series 90 PLCs	
		Remote Series 90 PLCs that use SRTP Channels COMMREQs expect the CPU to be in slot 1. In order to support communications with Series 90 SRTP clients such as Series 90 PLCs using SRTP Channels, the RX3i internally redirects incoming SRTP requests destined for {rack 0, slot 1} to {rack 0, slot 2}, provided that the CPU is located in rack 0 slot 2 (and the remote client has not issued an SRTP Destination service on the connection to discover the rack and slot of the CPU). This special redirection permits Series 90-30 applications that expect the power supply to be located leftmost and the CPU to be located to the right of the power supply to function. Attempts to establish channels with CPUs in slots other than 1 or 2 will fail if initiated from Series 90 PLCs.	
		HMI and External Communication Devices	
		All external communication devices that interact with the CPU should be checked for compatibility with CPU slot locations other than slot 1. Problems may arise with, but are not limited to, initial connection sequences and fault reporting. Machine Edition View customers should select *SRTP* as their communications driver – it can communicate with a CPU in any slot.	
		Host Communications Toolkit (HCT)	
		Applications that utilize the Host Communications Toolkit may require updated drivers.	
LD-PLC operations	Machine Edition LD-PLC no longer supports a function that connects to the PLC, downloads, and then disconnects from the PLC. The connect and download functions are now separate. To perform a download to the PLC, you must first connect to the PLC.		

Operational Note	Description
Logic Executed in Row Major instead of Column Major	Logic execution in PACSystems RX3i is performed in row-major order (similar to the Series 90-30). This is different from the Series 90-70 which executes in column-major order. This means that some complicated rungs may execute slightly differently on PACSystems RX3i and Series 90-70. For specific examples, see the programming software online help.
NaN Handled Differently than in S90-30	The PACSystems RX3i CPU may return slightly different values for Not A Number as compared to Series 90-30 CPUs. In these exception cases (e.g., 0.0/0.0), power flow out of the function block is identical to Series 90-30 operation and the computed value is still Not A Number.
PID Algorithm Improved	The PID algorithm used in PACSystems has been improved and therefore PID will function slightly differently on PACSystems RX3i than on the Series 90-30. The differences are that the elapsed time is computed in 100 µS instead of 10 mS units. This smoothes the output characteristic, eliminating periodic adjustments that occurred when the remainder accumulated to 10mS. Also, previous non-linear behavior when the integral gain is changed from some value to 1 repeat/second was eliminated.
Some Service Requests different from 90-30 or no longer supported	- Service Requests 6, 15, and 23 have slightly different parameters. Refer to *PACSystems RX7i & RX3i CPU Programmer's Reference Manual,* GFK-2950. - PACSystems PLCs support Service Request 26/30 functionality via fault locating references. - Service Request 13 requires a valid value in the input parameter block (Refer to *PACSystems RX7i & RX3i CPU Programmer's Reference Manual,* GFK-2950 for details). On Series 90-30 and Series 90-70 the parameter block value was ignored. - Service Requests 48 and 49 are no longer supported (there is any auto-restart) because most faults can be configured to be *not fatal*.
IL and SFC	IL and SFC are not available.
DO I/O Instruction	The Series 90-30 Enhanced DO I/O instruction is converted to a standard DO I/O instruction (the ALT parameter is discarded and ignored.)
END Instruction	The Series 90-30 END instruction is not supported. Alternate programming techniques should be used.
Non-nested JUMP, LABEL, MCR, & ENDMCR Instructions	Non-nested JUMPs, LABELs, MCRs, & ENDMCRs are translated to the corresponding nested JUMPs, LABELs, MCRs, & ENDMCRs when converting from Series 90-30 to PACSystems RX3i.

Operational Note	Description
Changing IP Address of Ethernet Interface while Connected	Storing a hardware configuration with a new IP Address to the RX3i while connected via Ethernet will succeed, then immediately disconnect because the RX3i is now using a different IP Address than the Programmer. You must enter a new IP Address in the Target Properties in the Machine Edition Inspector window before reconnecting.
Timer Operation	Care should be taken when timers (ONDTR, TMR, and OFDTR) are used in program blocks that are NOT called every sweep. The timers accumulate time across calls to the sub-block unless they are reset. This means that they function like timers operating in a program with a much slower sweep than the timers in the main program block. For program blocks that are inactive for large periods, the timers should be programmed in such a manner as to account for this catch-up feature. Related to this are timers that are skipped because of the use of the JUMP instruction. Timers that are skipped will NOT catch up and will therefore not accumulate time in the same manner as if they were executed every sweep.
Constant Sweep	Constant Sweep time, when used, should be set at least 10 ms greater than the normal sweep time to avoid any over-sweep conditions when monitoring or performing online changes with the programmer. Window completion faults will occur if the constant sweep setting is not high enough.
Large Number of COMMREQs sent to Module in one sweep Causes Faults	A large number of COMMREQs (typically greater than 8) sent to a given board in the same sweep may cause Module Software faults to be logged in the PLC fault table. The fault group is MOD_OTHR_SOFTWR (16t, 10h) and the error code is COMMREQ_MB_FULL_START (2). When this occurs, the *FT* output of the function block will also be set. To prevent this situation, COMMREQs issued to a given board should be spread across multiple sweeps so that only a limited number (typically 8 or less) of COMMREQs are sent to a given board in each sweep. In addition, the *FT* output parameter should be checked for errors. If the *FT* output is set (meaning an error has been detected), the COMMREQ could be re-issued by the application logic.
C Block Standard Math Functions Do Not Set errno	In C Blocks, standard math functions (e.g. sqrt, pow, asin, acos) do not set errno to the correct value and do not return the correct value if invalid input is provided.
Hot Swap	Hot-Swap of power supplies or CPUs is not supported
Run Mode Store of EGD	RX3i peripheral Ethernet modules (IC695ETM001) must be running firmware version 6.00 or greater to utilize the *Run Mode Store of EGD* feature.
Reporting of Duplicate IP Address	The PACSystems RX3i does not log an exception or a fault in the PLC Fault Table when it detects a duplicate IP Address on the network.

Operational Note	Description
SRTP Connections Remain Open after IP Address Changed	The Ethernet Interface does not terminate all open SRTP connections before changing its IP Address. Once the local IP Address has changed, any existing open TCP connections are unable to normally terminate. This can leave SRTP connections open until their underlying TCP connections time out.
Send Information Report (COMMREQ 2010) requests may fail at minimum intervals of less than 200 ms from the embedded Ethernet port.	*Send Information Report* COMMREQ requests, with a minimum interval between host accesses of 200 ms or less, may fail if issued from the CPU's embedded Ethernet port. A COMMREQ Status Word value of 0290H, *Period expired before transfer completed; still waiting on transfer* indicates this condition occurred. To work around this issue, the user can set the *minimum interval between host accesses* to a value greater than 200 ms if issuing a *Send Information Report* COMMREQ from the embedded Ethernet port of the CPU.
Modbus/TCP Client Channels require at least a 10 ms delay between bulk channel close and bulk channel open processing	On CPUs with embedded Ethernet ports, a delay of at least 10 ms must occur between logic-driven attempts to close sixteen Modbus/TCP Channels simultaneously and then re-open sixteen Modbus/TCP Channels. This delay is necessary to provide external Modbus/TCP Servers sufficient time to close all channels before the Client issues channel open requests.
Lengthy CPE Backplane Operations	Some exceptionally lengthy CPE backplane operations, such as MC_CamTableSelect, Data Log, and Read Event Queue functions, will take longer to complete compared to other RX3i CPU models, and may delay backplane operations to IC695 modules. For example, when an MC_CamTableSelect function block is executed on the PMM335 module, the CPU's acknowledgment of the PMM335 module interrupt may be delayed. In this situation, you may see the following fault in the I/O Fault Table, even when the interrupt has not been dropped: Error initiating an interrupt to the CPU.
Incorrect COMMREQ Status for Invalid Program Name	The program name for PACSystems is always *LDPROG1*. When another program name is used in a COMMREQ accessing %L memory, an Invalid Block Name (05D5) error is generated.

Operational Note	Description
FANUC I/O Master and Slave operation	Scansets on the master do not work properly for the first operation of the scanset after entering RUN mode. They do work properly for subsequent scans. After downloading a new hardware configuration and logic, a power cycle may be required to resume FANUC I/O operation. Use PLCs of similar performance in FANUC I/O networks. If a master or slave is located in an RX3i system, the other PLCs should be RX3is or Series 90-30 CPU374s. Repeated power up/down cycles of an expansion rack containing FANUC I/O slaves may result in failure of the slaves' operation, with the RDY LED off.
Lost count at power-up for Serial IO Processor	The Serial IO Processor (IC693APU305) will lose the first count after every power-up or every time the module receives a config
COMMREQ Status Words Declared in Bit Memory Types must be Byte-Aligned	In releases before 3,50, the CPU allowed the configuration of COMMREQ Status Words in bit memory types on a non-byte-aligned boundary. Even though the given reference was not byte-aligned, the firmware would adjust it to the next-lowest byte boundary before updating status bits, overwriting the bits between the alignment boundary and specified location. To ensure that the application operates as expected, Release 3.50 requires the configuration of COMMREQ Status Words in bit memory types to be byte-aligned. For example, if the user-specified status bit location of %I3, the CPU aligns the status bit location at %I1. Release 3.50 firmware requires the user to specify the appropriate aligned address (%I1) to ensure that the utilized location is appropriate for their application. Note that the actual reference location utilized is not changed, but now is explicitly stated for the user.

Operational Note	Description
STOP and RUN Mode Transition Priority	The PACSystems CPU receives requests to change between the stop and run mode from many different sources. These include (but are not limited to) PAC Machine Edition, HMIs, the user application, and the RUN/STOP switch. Since there are many potential sources for a mode change request, it is possible to receive a new mode change request while another is already in progress. When this scenario occurs, the CPU evaluates the priority of the new mode change request with the mode change that is in progress. If the new mode change request has an equal or higher priority than the one already in progress, the CPU transitions to the new mode instead of the one in progress. If, however, the new mode change request has a lower priority than the one in progress, the new mode request is discarded and the CPU completes the mode change that is in progress. The sweep mode priorities are (listed from highest to lowest priority) STOP HALT, STOP FAULT, STOP, and RUN. (NOTE: The IO ENABLED/DISABLED state is not part of the mode priority evaluation.) For example, a CPU is in RUN IO ENABLED mode, and a Service request 13 function block is executed to place the CPU into STOP IO DISABLED mode. Before the transition to STOP IO DISABLED is completed, the RUN/STOP switch is changed from RUN IO ENABLED to RUN IO DISABLED. In this case, the CPU ignores the new request from the RUN/STOP switch to go to RUN IO DISABLED mode because it is already processing a request to go to STOP IO DISABLED mode and STOP mode has a higher priority than RUN mode.
Suspend IO Function Block does not Suspend EGD	In an S90-70 the SUSPEND_IO function block suspends EGD in addition to IO Scan. In PACSystems controllers the SUSPEND IO only suspends IO Scan.
Nuisance Faults Sometimes Logged for Missing Power Supply	If a power supply is missing or has some fault that makes it appear to be missing, the CPU may improperly report (upon download of configuration) more than one fault. Such additional faults may be safely ignored and will not occur in a properly configured rack (with no mismatches or missing modules),
Uploaded Controller Supplemental Files lose date and time	Controller Supplemental Files uploaded from the CPU are time-stamped as 8/1/1980 12:08 AM regardless of PC or PLC time.
CPU Parameters Reset to Default Values After Replacing CPU Module in PME	When replacing CPU modules in PAC Machine Edition, some parameters may be reset to default values. After replacing a CPU module, it is recommended that all parameters are evaluated for application compatibility including the *Controller Communication Window Mode*, *Controller Communications Window Timer*, *Backplane Communication Window Mode*, and *Backplane Communications Window Timer*.
OPC UA Sessions, Subscriptions, & Variables	PACSystems OPC UA servers support up to five concurrent sessions with up to ten concurrent variable subscriptions and up to 12,500 variables. The subscription limit is shared across all available sessions.

Operational Note	Description
LAN System Software Fault after Redundant Unit Role Switch when using Redundant IP	In a redundant system, when Redundant IP is configured on either the CPU's Embedded Ethernet interface or an ETM001, a *LAN System Software Fault; Resuming* message may be logged in the fault table when a role switch occurs between the *Active* and *Backup* units. This fault indicates that SRTP connections on the previously active Ethernet interface were terminated due to the role switch. This fault does not impact the normal operation and no additional action is necessary should this occur.

CPE330 Embedded PROFINET Controller

Operational Note	Description
Copying PROFINET Configuration with PME	PAC Machine Edition provides a PROFINET configuration *cut/copy/paste* function to facilitate application portability between rack-based IC695PNC001 PROFINET Controllers and the CPE330's Embedded PROFINET Controller. Configuration may be copied from a PNC001 to the CPE330 and from the CPE330 to a PNC001. This function is available in PME by right-clicking an *IC695PNC001* or CPE330 *PROFINET Controller* node in the *Navigator* and selecting *cut/copy/paste*.
Default IC695PNC001 *SFP Cage 3* & *SFP Cage 4* Setting After Copying PROFINET Configuration	The IC695PNC001 PROFINET Controller's *SFP Cage 3* and *SFP Cage 4* settings may not be restored to their default *No SFP Device Configured* value after copying a PROFINET configuration from a CPE330 Embedded PROFINET Controller to the PNC001 using PAC Machine Edition. If this occurs, simply change the configuration value to the desired setting.
PROFINET Command Line Interface	The CPE330 Embedded PROFINET Controller does not support the Command Line Interface. (CLI)

All RX3i PROFINET Controllers

Operational Note	Description
PROFINET IO Device Loss/Add Faults for 3rd Party IO Devices May Occur on Hardware Configuration Store in Some Large Network Configurations	When storing hardware configurations with more than 64 PROFINET IO devices that include multiple PROFINET controllers and 3rd Party PROFINET IO devices on a single network, occasional Loss/Addition of IO Device faults may be logged for some 3rd Party PROFINET IO Devices. The devices should operate normally after being reacquired by their controlling PROFINET controller and the Loss/Addition faults can be disregarded.
PROFINET DCP – Direct Connection indicates that "no valid Ethernet adapters are available for PROFINET DCP discovery (must run PME as Administrator to use this feature)"	The PME PROFINET DCP tool requires elevation to administrator privilege to run when it is launched by right-clicking on a PNC. Since the PME installation does not set up PME or any of its internal tools to run at the administrator privilege level, you will have to inform Windows that you want it to run PME as an administrator. There are two ways to do this: 1. Right-click on the PME icon (and any other shortcuts associated with PME) and select properties. Then select the Compatibility tab and check the checkbox for "Run this program as an administrator." 2. Right-click on the PME icon and select properties. Then select the Advanced button and check the checkbox "Run as administrator." This method shows "Run as administrator" in **bold** when you right-click on the icon in the future. You may also launch the PROFINET DCP tool from the Utilities tab menu in PME. However, this launch method does not provide the full functionality of the tool. That is, it does not compare I/O devices found to any configuration in the PME Project. Also, if PME was not launched as an administrator, this method of launching the DCP tool requests the user's permission to elevate access to administrator privilege.
PNIO_DEV_COMM Function Block Usage	The *PNIO_DEV_COMM* function block may require multiple logic scans to return the status of an I/O device. It must continue to receive power flow until: • The *ENO* output turns on indicating that the function block's parameters are successfully validated and the PNC completed its first attempt to connect to the specified I/O device or; • The *OK* output turns on indicating the PNC is successfully communicating with the I/O device

Monitoring Remote IO Device Availability	Applications using PROFINET IO should monitor the availability of remote IO devices and take appropriate action if the device becomes unavailable due to a network connectivity issue, power failure at the remote device, etc. PROFINET IO device status is available by monitoring the Controller's *All Devices Connected* status bit, using the *PNIO_DEV_COMM* function block, or monitoring the CPU's IO Fault Table for *Loss of Device* faults. Individual IO modules within a PROFINET IO device should also be monitored so that appropriate action may be taken if the IO module becomes unavailable. The status of input modules may be monitored by enabling point faults and monitoring the fault contact within the application. Outputs may be monitored by looping critical points to an input module and verifying the output value.
Loss / Add of IO Device during dual power up	If both IO Controllers of a PNSR system are powered up at the same time and attempt to connect to redundant PROFINET IO devices at the same time, the second of the two connection attempts will be rejected until the first connection completes. This rejection will cause a Loss of IO Device fault. When the retry is attempted, it will succeed, and an Addition of IO Device fault will be issued. This is an expected operation. If one system is powered on slightly before the other, this condition does not occur.

Product Documentation

PACSystems RX3i 64MB CPU w/Ethernet IC695CPE330 Quick Start Guide	GFK-2941
PACSystems RX3i & RSTi-EP CPU Reference Manual	GFK-2222
PACSystems RX3i & RSTi-EP CPU Programmer's Reference Manual	GFK-2950
PACSystems RX3i System Manual	GFK-2314
PACSystems RX3i PROFINET IO Controller User Manual	GFK-2571
PACSystems RXi, RX3i, RX7i & RSTi-EP Controller Secure Deployment Guide	GFK-2830
PACSystems RX3i & RSTi-EP TCP/IP Ethernet Communications User Manual	GFK-2224
PACSystems TCP/IP Ethernet Communications Station Manager Manual	GFK-2225
PROFINET I/O Devices Secure Deployment Guide	GFK-2904
PACSystems HART Pass-Through User Manual	GFK-2929
PACSystems Hot Standby CPU Redundancy User Manual	GFK-2308
PACSystems Memory Xchange Modules User's Manual	GFK-2300
C Programmer's Toolkit for PACSystems User's Manual	GFK-2259
PACSystems RX3i Sequence of Events User Manual	GFK-3050

User manuals, product updates, and other information sources are available on the Emerson support website. Please see the support link provided at the end of this document.

Support Links

Home link: http://www.Emerson.com/Industrial-Automation-Controls

Knowledge Base: https://www.Emerson.com/Industrial-Automation-Controls/Support

Customer Support and Contact Information

Americas

Phone:	1-888-565-4155
	1-434-214-8532 (If toll-free option is unavailable)
Customer Care (Quotes/Orders/Returns):	customercare.mas@emerson.com
Technical Support:	support.mas@emerson.com

Europe

Phone:	+800-4444-8001
	+420-225-379-328 (If toll-free option is unavailable)
	+39-0362-228-5555 (from Italy - if the toll-free 800 option is unavailable or dialing from a mobile telephone)
Customer Care (Quotes/Orders/Returns):	customercare.emea.mas@emerson.com
Technical Support:	support.mas.emea@emerson.com

Asia

Phone:	+86-400-842-8599
	+65-6955-9413 (All other countries)
Customer Care (Quotes/Orders/Returns):	customercare.cn.mas@emerson.com
Technical Support:	support.mas.apac@emerson.com

Any escalation request should be sent to: mas.sfdcescalation@emerson.com

Note: If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

Emerson reserves the right to modify or improve the designs or specifications of the products mentioned in this manual at any time without notice. Emerson does not assume responsibility for the selection, use, or maintenance of any product. Responsibility for proper selection, use, and maintenance of any Emerson product remains solely with the purchaser.

EMERSON