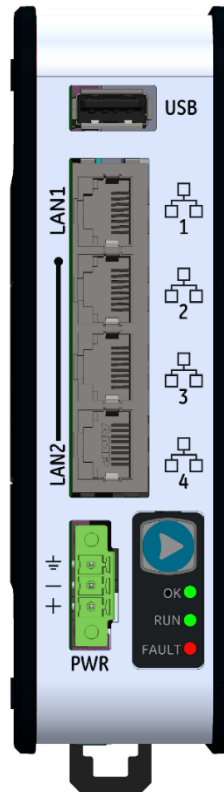


# PACSystems™ RSTi-EP

## CONTROLLER FIRMWARE RELEASE 10.92

### EPSCPE100-ACAH<sup>1 2</sup>

### EPSCPE115-ABAE<sup>1 2</sup>



<sup>1</sup> The last two characters of the catalog number suffix may not increment with every firmware release beginning with EPSCPE100-ACAH and EPSCPE115-ABAE 9.98.

<sup>2</sup> Includes conformal coat and low temperature module variants, if available.

## Caution & Warning 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.

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### **CAUTION**

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

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**Notes:** 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.

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# Overview

The controller firmware release 10.92 resolves the issues listed in the RSTi-EP PLC: Problems Resolved in Release 10.92. Before a firmware upgrade process is initiated, please pay special attention to all CAUTION instructions mentioned in the Firmware upgrade instructions document which is part of upgrade kit.

## Upgrade Strategy

Do not power down or reset the controller in operation until after the firmware update process is completed. This is required to minimize the possibility of the controller going into an unrecoverable state

EPSCPE100 firmware version v9.35(E8VE) or later is required before this upgrade kit can be applied. Visit our Customer Center Support website to download firmware, links to the related Landing Pages are provided below. Contact the technical support team if you need assistance.

Do not apply this upgrade kit if the EPSCPE100 controller in operation is running firmware versions v9.15(E707) or v9.30(E884) as this may place the controller in an unrecoverable state.

If the EPSCPE100 controller firmware version is prior to v9.35(E8VE), the upgrade requires a 2-step process:  
 Step 1 – Install firmware update kit that upgrades the controller to firmware version v9.35(E8VE).  
 Step 2 – Install firmware version v10.06(EET3) or above

If the EPSCPE100 / EPSCPE115 controller firmware version is v9.62(EAAL) OR later, the firmware can be upgraded directly to firmware version v10.06(EET3) or above – this controller does not require a 2-step process.

Note: Firmware version information can be found on PACSystems RSTi-EP Controller’s homepage (e.g. <http://192.168.0.100>).

### CPE100

Part Number: 41G2393-MS10-000-A12  
 File Name: 41G2393-MS10-000-A12.zip  
 Download Link: [https://emerson-mas.force.com/communities/en\\_US/Article/EPSCPE1xx-Landing-Page](https://emerson-mas.force.com/communities/en_US/Article/EPSCPE1xx-Landing-Page)

### CPE115

Part Number: 41G2556-MS10-000-A9  
 File Name: 41G2556-MS10-000-A9.zip  
 Download Link: [https://emerson-mas.force.com/communities/en\\_US/Article/EPSCPE1xx-Landing-Page](https://emerson-mas.force.com/communities/en_US/Article/EPSCPE1xx-Landing-Page)

## RSTi-EP PLC: New Features and Enhancements in Current Release

Subject	Description
N/A	N/A

## Current Release Information

Catalog Number <sup>1</sup>	Date	Firmware Version (Build Number)	Comments
EPSCPE100-ACAH EPSCPE115-ABAE	Jan 2024	10.92 (ENB6)	Resolved Customer Case SFDC# 02016781, 02004019 and Added security enhancements to harden the product against a malicious actor.

## Release History

Catalog Number <sup>1</sup>	Date	Firmware Version (Build Number)	Comments
EPSCPE100-ACAH EPSCPE115-ABAE	Nov 2022	10.70(EKPX)	Security Enhancements and new features. Resolved Customer Case SFDC# 01831240
EPSCPE100-ACAH EPSCPE115-ABAE	Dec 2021	10.17(EHYJ)	Resolved Cases # 01844278, #1852691
EPSCPE100-ACAH EPSCPE115-ABAE	Feb 2021	10.10(EG67)	OPC UA server and security enhancements
EPSCPE100-ACAH EPSCPE115-ABAE	July 2020	10.06(EET3)	Initial release of conformal coated versions EPSCPE100CA-ACAH and EPSCPE115CA-ABAE
EPSCPE100-ACAH EPSCPE115-ABAE	June 2020	10.05(EEJN)	Security Enhancements and new features
EPSCPE100-ACAH	Feb 2020	9.98(ED8F)	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality.
EPSCPE115-ABAE	Feb 2020	9.98(ED8F)	
EPSCPE100-ABAG	August 2019	9.85(EC3E)	C Blocks, Serial IO & resolved multiple customer issues
EPSCPE115-AAAD	August 2019	9.85(EC3E)	C Blocks, Serial IO & resolved multiple customer issues
EPSCPE100-ABAF	Nov 2018	9.71(EANF)	Resolved Case# CS0219107
EPSCPE115-AAAC	Nov 2018	9.71(EANF)	Resolved Case# CS0219107
EPSCPE100-ABAE	Sep 2018	9.62(EAAL)	Resolved Case# CS0219107
EPSCPE115-AAAB	Sep 2018	9.62(EAAL)	Resolved Case# CS0219107
EPSCPE115-AAAA	Apr 2018	9.45(E99P)	New CPU model
EPSCPE100-ABAD	Apr 2018	9.45(E99P)	New Features
EPSCPE100-ABAC	Dec 2017	9.35 (E8VE)	Resolve Case#: 00485554
EPSCPE100-ABAB	Aug 2017	9.30 (E884)	Added MRP
EPSCPE100-ABAA	June 2017	9.15 (E7O7)	Hardware Enhancements
EPSCPE100-AAAA	April 2017	9.15 (E7O7)	Initial Release

## RSTi-EP PLC: Functional Compatibility

Subject	Description	
	Feature	Minimum Version of PME Required
PAC Machine Edition Programmer Version Requirements	IC695CMM002/CMM004 Serial Module Support in the IC695PNS001-Bxxx/PNS101 and IC695CEP001 PROFINET Scanners	CPE100 and CPE115 CPUs with firmware revision 10.70 (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	CPE100 and CPE115 CPUs with firmware revision 10.70 (or later) support Legacy Client/Server Protocol Memory Access when configured using PAC Machine Edition 10.00. (or later)
	CPE115 functionality including Embedded Simplex PROFINET I/O Controller.	PAC Machine Edition (PME) 9.5 SIM 7 or later is required in order to create a new target configuration using a CPE115 Hardware Configuration
	DNP3 Outstation configuration using PME(CPE115 only)	PAC Machine Edition (PME) 9.7 / 9.8 SIM 2 or later is required
	CPE100 functionality including Embedded Simplex PROFINET I/O Controller.	PAC Machine Edition (PME) 9.5 SIM 1 or later is required in order to create a new target configuration using a CPE100 Hardware Configuration.
	OPCUA GUI Management	PAC Machine Edition Logic Developer PLC 9.80 SIM 5 and PACSystems firmware version 10.06 or later is required to support the OPCUA GUI Management Interface in PME.
	OPC UA Server Logging	PACSystems EPXCPE 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.
Backwards Compatibility	To convert an existing project which uses any other PLC, use the Family Conversion feature in PME. Be aware of the constraints involved, as will be notified in PME. For instance, the first PROFINET Controller in an RX3i CPU320 application will be assigned to the embedded PROFINET Controller feature of the CPE100/CPE115.	
SNTP support	SNTP feature is supported on CPE115 model only	

Subject	Description				
PROFINET IO Compatibility	<b>Feature</b>	<b>Minimum Version of CPE100 Required</b>	<b>Minimum Version of CPE115 Required</b>	<b>Minimum Version of 3iPNS Required</b>	<b>Minimum Version of CEP001 Required</b>
	IC695CMM002/CMM004 Serial Module Support in the IC695PNS001-Bxxx/PNS101 and IC695CEP001	10.70	10.70	3.35 (PNS001-Bxxx & PNS101)	2.80
	SVC_REQ 20 Read Extended IO Fault Table with Remote Fault Record	9.45	9.45	N/A	N/A
	Remote Get HART Device Information COMMREQ <sup>3</sup>	9.35	9.45	2.41	2.60
	Extended PROFINET Subslot Numbers <sup>4</sup>	9.35	9.45	N/A	N/A
	Simplex (non-redundantly controlled) PROFINET IO <sup>5</sup>	9.35	9.45	N/A	N/A
Ethernet AUP File Support	The CPE100/CPE115 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 advanced Ethernet Global Data applications.				
Service Request 56 & 57 Logic Driven Read/Write to Flash Support	<p>The internal super capacitor allows to save user memory to non-volatile storage when the CPE100 is powered off, and restores it to RAM when the CPE100 is turned on. Consequently, the CPE100 does not support Service Requests 56 &amp; 57 Logic Driven Read/Write to Flash. The service request function block's ENO output returns no power flow if these service requests are executed.</p> <p>Whenever an application that uses service requests 56 &amp; 57 is being migrated to a CPE100, the service requests should ideally be removed as the service requests themselves will have no effect.</p>				
HART <sup>®</sup> Pass Through	CPE400 supports HART pass through. HART Pass Through entails 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	HART Pass Through support is available on the CPE100 and CPE115 with PACSystems HART Device Type Manager v1.1 and PACSystems HART Multiplexer v1.1.				
Remote Get HART Device Information COMMREQ	<p>The Remote Get HART Device Information COMMREQ is supported by these products:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> RX3i CPUs with version 8.95 or later.</li> <li><input type="checkbox"/> EPSCPE100 Standalone controller with version 9.35 or later.</li> <li><input type="checkbox"/> EPSCPE115 Standalone controller with version 9.45 or later</li> <li><input type="checkbox"/> IC695PNC001 RX3i PROFINET Controller version 2.26 or later</li> <li><input type="checkbox"/> IC695PNS001 RX3i PROFINET Scanner version 2.41 or later</li> <li><input type="checkbox"/> IC695PNS001 RX3i PROFINET Scanner GSDML-V2.3-GEIP-RX3iPNS-20160602.xml</li> </ul>				

<sup>3</sup> Refer to the PACSystems RX3i System Manual, GFK-2314M or later for COMMREQ details.

<sup>4</sup> With this feature, it is possible to configure 3rd party PROFINET devices that use subslot numbers up to 21845.

<sup>5</sup> Refer to the PACSystems RX3i & RSTi-EP PROFINET IO Controller User Manual, GFK-2571G or later, for operational details.

Subject	Description
Supported Browsers for CPE100/115 Firmware Update	<p>The CPE100/115 supports secure firmware update over Ethernet using a web browser. Supported browsers are listed below along with the minimum required version:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Firefox: 95.0 (or later)</li> <li><input type="checkbox"/> Chrome: 96.0.4664.93 (or later)</li> <li><input type="checkbox"/> Microsoft Edge: 95.0.1020.40 (or later)</li> <li><input type="checkbox"/> Safari: 15.0 (15612.1.29.41.4, 15612) (or later)</li> </ul>
PACSystems Energy Pack Compatibility	<p>CPE100/115 does not support any kind of external Energy Packs, but it comes with the replaceable pack of internal Super Capacitors. This pack of Super Capacitors can be ordered separately using the below details:  Part Number: EPSACC001.  Description: RSTi-EP Standalone CPE100 Replacement Super Capacitor.  Refer to the Quick Start Guide of RSTi-EP CPE100/CPE115, GFK-3012/GFK-3039 or GFK-2741F and follow the instructions in order to replace the pack of internal Super Capacitors.</p>
Ethernet Station Manager Compatibility	<p>Ethernet Station Manager Utility Version 1.3 Build 2 or later is recommended for use with the CPE100/115. Earlier versions are compatible; however, they may not display all CPE100/115 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. CPE100/115 supports monitor only commands.</p>
Hot Standby Redundancy IO Support	<p>The CPE400 supports Hot Standby Redundancy with PROFINET IO and Hot Standby Redundancy with Ethernet (EGD) IO. Ethernet (EGD) IO may not be mixed with PROFINET IO in a single redundancy system.</p>
RDSD Support	<p>RDSD support using a USB memory stick or a micro SD card is not available. The CPE100/115's USB ports and micro SD card slot are not active at this time.</p>
Set Temporary IP Address not supported	<p>The Set Temporary IP Address tool in PME is not supported by the CPE100/115</p>
Serial Ports	<p>CPE100/115 supports both RS-232 and RS-485 communications. The RS-485 port supports only two modes of operations; 2-Wire and 4-Wire. The serial ports are located on the underside of the controller and do not provide any type of isolation. It is recommended to use a suitable commercial-off-the-shelf device if an application demands additional port isolation.</p>
Hot Standby Redundancy	<p>Hot Standby Redundancy is not available on the CPE100/115</p>
Interrupt Blocks	<p>CPE100/115 does not support Interrupt Blocks at this time.</p>
Network and Memory Performance Monitor PACS Analyzer Requirements	<p>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.</p>

Subject	Description
Minimum RX3i PNS GSDML Version for ALG600	<p>IC695PNC001-Bxxx PROFINET IO Controllers after version 3.25 and Embedded PROFINET IO Controllers after CPU version 10.86 verify the maximum record length specified in the PROFINET Device GSDML files when using PME 10.3 or later. The RX3i IC695PNS001/101 GSDML did not provide the correct maximum record length to support the IC695ALG600 module until GSDML-V2.3-IntelligentPlatformsLLC-RX3iPNS-20210817. (This GSDML version shipped with RX3i PNS firmware version 3.35 and contains support for IC695PNS001-Axxx, IC695PNS001-Bxxx, and IC695PNS101.)</p> <p>Applications using an ALG600 that are updated to the aforementioned (or later) PROFINET IO Controller and PME versions must also update the RX3i PNS GSDML to the specified (or later) version so that the PROFINET controller and PROFINET scanner will connect.</p>

## RSTi-EP PLC: Problems Resolved in Release 10.92

Subject	ID code	Description
Cyber Security Updates	DE8728 DE9500 DE9617 DE10331	Added security enhancements to harden the product against a malicious actor.
CPU Logic block containing faulty logic that generate excessive amounts of PLC Fault alarms may restart CPU into Stop Faulted State	DE9790	When a CPU Logic block containing a faulty logic that generate excessive amounts of PLC Fault alarms can increase CPU Logic execution time, this may trigger the Software Watchdog timer to timeout and cause the CPU to reboot into STOP HALTED state. As a work-around if such logic is necessary for bench testing, the user can increase the Software Watchdog configured value.
Failure To Publish All Expected Variables to OPC UA Address Space	DE9888 SFDC# 02016781	Variables with their "Publish" property set to "Internal" are incorrectly counted against the CPU's OPC UA address space limit but not actually published. This causes some variables with their "Publish" property set to "External Read/Write" or "External Read-Only" to not be present the OPC UA address space. If variables do not have their "Publish" property set to "Internal", or if an internally published variable comes alphabetically after any externally published variables, then this issue does not occur.
Incorrect Data for "Application Information" Variable "Address Space Status" in OPC UA Address Space	DE9900	In the OPC UA address space folder "Application Information" the "Address Space Status" can incorrectly state that "All Elements Published to Address Space" when they were not. This may occur when the total number of internal and external published variables exceeds the externally published variable limit for the controller.
OPC UA Server Sessions May Not Expire Correctly When PLC Clock Set to Date Prior to Year 2010	DE9942 SFDC# 02004019	If the PLC Clock is set to a day prior to the year 2010, the OPC UA server will negotiate session timeouts during session creation, but if the attached OPC UA client stops responding to the OPC UA protocol the session timeout will not be enforced, consuming a session incorrectly. Restarting the OPC UA server will reclaim the abandoned sessions. If the PLC clock is set to any date in the year 2010 or later, including the correct time/date, the problem will not occur.



Subject	ID code	Description
Embedded PROFINET Controller remains DISABLED until power cycled	DE10084	If LAN 2 had a Profinet net configuration downloaded and then LAN 2 was disabled and subsequently re-enabled without any changes to IP, subnet or gateway from the original Profinet configuration. LAN 2 will be inoperable. Potential workarounds are: 1. Power cycle the unit and Profinet will work again. 2.If the interface has been disabled, set the interface to ethernet and download, then set the interface to Profinet and download. 3.If the interface has been disabled, set the interface to Profinet at a different IP address and download.
Local and Remote Port numbers wrong in Station Manager 'log' output	DE10095	If a Station Manager 'log' entry provided local or remote port information about a TCP/UDP port, the port number was byte swapped. This has been corrected. Other commands such as 'stat v' were previously correct.
An unintended fault has been logged in the fault table	DE8858	During the power-up process, if there is an IP conflict with LAN2 of the controller while it is configured as PROFINET, it has been observed that an unintended fault has been logged in the fault table (IOC Software Fault – Type5: Module Firmware Fault).

## RSTi-EP PLC: Restrictions and Open Issues

### CPE100/115 CPU & Embedded Ethernet

Subject	ID code	Description
Synchronize CPU to Host from more than a year out will be 1 hour off with DLS set	DE10291	If the date on the PLC is set to a date that is more than one year in the past, and the user performs a "Synchronize CPU to Host" operation, the time on the PLC may be set one hour earlier than the time on the host computer. To correct this, simply click the "Synchronize CPU to Host" button again, and the time on the PLC will be set to match the exact time on the host computer.
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 switch port, and you remove the ethernet cable and then re-attach it to a switched 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 in order 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 the request timeout amount of time, or you can reboot the PLC. To avoid this issue, make sure you press "Disconnect" before removing the ethernet cable from the switched port, or else, you will have to wait for the configured request timeout before you can re-enter programmer mode.
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 that 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.

Subject	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.
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.
LLDP does not work when CPE100/115 is power cycled.	DE4177	LLDP is not working when CPE100/115 powers up with stored configuration. Work around: After power cycle clear and re-download the configuration to start LLDP.
Ethernet COMMREQs not always delivered on the first logic sweep	ISS18354 0 / DE3753	In certain instances, where User Logic is of sufficient size and a COMMREQ is issued on first logic sweep, a race condition existing between determination of the CPU Run/Stop state and logic-driven issuance of a COMMREQ 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 first logic sweep.
Occasionally PME gets disconnected during download.	DE3798	Occasionally PME may get disconnected after downloading the hardware configuration to the controller. User can reconnect to the programmer incase PME gets disconnected to the controller.
Firmware Update Login Timeout	DE196 DE205 DE2626	The CPE100/115 enforces a 2-minute login activity timeout on the <i>Firmware Update</i> web page. Selecting an update package on the <i>Firmware Update</i> page and pressing the <i>Upload File</i> button after the timer expires initiates a firmware update. However, instead of displaying the firmware update status, one of these scenarios may occur: <ul style="list-style-type: none"> <li>• Another login page is presented. After entering the user name and password the update status is displayed.</li> <li>• The web browser loses connection with the CPE100/115 and is unable to display 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.</li> <li>• 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.</li> </ul> These timeout issues may be avoided by having the firmware file ready so that the firmware update can be initiated immediately after logging in.
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.

Subject	ID code	Description
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.
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.
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.
Sequence Store Failure	CR-6586 ISS17688 8	When downloading projects with very large hardware configuration or which use large amounts of user memory, it is possible to encounter a <i>PLC Sequence Store Failure</i> 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 prior to performing the write. Increase the operation timeout used by PME prior to 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.
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.
SRTP channel transfers may take up to 20 seconds after power cycle	ISS15521 4	When SRTP communications are interrupted by a power cycle, the Ethernet interface may require up to 20 seconds to reestablish TCP connection used for SRTP communications.
Station Manager <i>parm</i> command help text is wrong	ISS18178 8	Although the <i>parm v</i> Station Manager command works correctly, the “v” subsystem code (SRTP server) is not shown as supported by the online help.

## CPE100/115 Embedded PROFINET Controller Restrictions & Open Issues

Subject	ID code	Description
Failed Hot Insertion and No Alarms on PROFINET Device	DE10014	Using GCG or PNIO Asynchronous Read/Write commreqs during a hot insertion on a PROFINET device may cause the hot insertion to fail and alarms to stop on that PROFINET device until either the device is reset or the connection is reset depending on the PROFINET device.

Subject	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 Hardware Configuration with Mismatched STXPNS001 Configuration	DE569 ISS182293	Clearing the CPU'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 CPU and STXPNS001. (When power cycling the CPU, 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 CPU.
IOC SW Fault with large configurations	DE838	When storing a PROFINET configuration that is close to the upper limit of the CPU'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.
Watchdog timer elapses when Target is uploaded in run mode with MRP make & brake test scenario.	DE4353/ DE4727	When a CPE100/115 watchdog timer is configured to 200mSec and running System test (Full load test on both the LAN interfaces running PROFINET with MRP, MODBUS/TCP, SRTP, & EGD) and executing MRP make & break test scenario, now if user performs the target upload in run mode, the CPU occasionally goes into STOP HALT mode due to watchdog timer elapse. It also logs a Fatal fault in the fault table stating Watchdog Timer Elapsed. A similar issue has been observed when using PROFINET communications with PAC Motion VFD units during power-cycling of the VFD. Work around: Set the configuration of Watchdog timer to appropriate value. For example, in the above scenario this issue is not observed when configured to 500mSec.
FW upgrading issue for CPE100 when upload is slow	DE4751	On rare occasions, the CPU may fail to complete firmware upgrade when update is done remotely with slow network speeds. Work around: Make sure either module directly connected, if there is a non-direct connection make sure the network speed is appropriate.

## Operational Notes: CPE100/115 CPU & Embedded Ethernet

Subject	Description												
Default IP addresses for CPE100 /115 Embedded Ethernet	<p>The default IP addresses programmed at the factory are:</p> <table border="1" data-bbox="695 407 1195 600"> <thead> <tr> <th></th> <th>LAN1</th> <th>LAN2</th> </tr> </thead> <tbody> <tr> <td>IP Address:</td> <td>192.168.0.100</td> <td>0.0.0.0</td> </tr> <tr> <td>Subnet Mask:</td> <td>255.255.255.0</td> <td>0.0.0.0</td> </tr> <tr> <td>Gateway:</td> <td>0.0.0.0</td> <td>0.0.0.0</td> </tr> </tbody> </table> <p><b>Note:</b> LAN2 will not be operational unless it is configured from the programmer with a valid IP address.</p>		LAN1	LAN2	IP Address:	192.168.0.100	0.0.0.0	Subnet Mask:	255.255.255.0	0.0.0.0	Gateway:	0.0.0.0	0.0.0.0
	LAN1	LAN2											
IP Address:	192.168.0.100	0.0.0.0											
Subnet Mask:	255.255.255.0	0.0.0.0											
Gateway:	0.0.0.0	0.0.0.0											
Configuring Temporary IP address of CPE100/115	<p>Setting of the temporary IP address from within PME does not work. Powering up CPE100 /115 with the push button pressed and waiting until the OK LED flashes twice forces the CPE100/115 to use default IP address of 192.168.0.100.</p> <p><b>⚠ CAUTION</b></p> <p>Resetting to the default IP address using the above procedure also erases the stored hardware configuration, logic, privilege level passwords and contents of the backup RAM.</p>												
Station Manager Commands	<p>The embedded Ethernet interfaces of the CPE100/115 support a subset of Station Manager Commands (monitor only commands). Refer to PACSystems TCP/IP Ethernet Communications Station Manager Manual, GFK-2225, for details.</p>												
CPE100/115 Power-up Time	<p>The CPE100/115 requires at a minimum 35 to 40 seconds to complete power-up. When power is applied, all the Ethernet Port LEDs blink once. When power up is complete, the OK LED turns on and remains steady whereas the RUN LED indicates the current run mode.</p> <p>Whenever the internal super capacitors are completely discharged, the CPE100 might take approximately 105 seconds to complete the power-up sequence. Typically, this occurs when the unit is without power for a few days.</p>												
Avoid Overlapping IP Subnets when Configuring CPE100/115 IP Address and Subnet Mask	<p>The CPE100/115 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.</p> <p>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 Multiple Embedded LANs on Same Subnet to Show as Warning.)</p>												
Avoid Overlapping Remote IP Networks when Configuring CPE100/115 IP Address and Subnet Mask	<p>The CPE100/115 contains multiple 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 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 CPE100/115 overlap a remote subnet.</p>												

Subject	Description
CPE100/115 Ethernet Gateway Operation	<p>The CPE100/115 allows configuration of an Ethernet gateway on both LAN1 and LAN2. Since the CPE100/115 contains two LAN interfaces, each one supporting a unique IP Address, only one gateway is active at a time:</p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p>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 CPE100/115 will use the LAN2 gateway as a backup.</p>
CPE100/115 Multiple Consumptions of Multicast EGD Exchanges	<p>In the event that 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.</p> <p>This multiple consumption occurs 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 producer sends it.</p> <p>To avoid this issue, connect each Embedded LAN to physically separate Ethernet networks (i.e. no Ethernet switches in common).</p>
PME Connection Lost After Configuration Download that Swaps IP Addresses Between LAN 1 & LAN 2	<p>PAC Machine Edition may lose connection with a CPE100 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.</p>
CPE100/115 LAN Interface Status Bits	<p>The CPE100/115 uses the similar LAN Interface Status Bit definition as the IC695CPE330. Refer to Section - Monitoring the Ethernet Interface Status Bits in PACSystems RX7i, RX3i and RSTi-EP TCP/IP Ethernet Communications User Manual, GFK-2224 for additional information.</p>
Reserved IP Subnet 192.168.180.x	<p>The IP subnet 192.168.180.x is reserved on the CPE100/115. It is not available for configuration on any of the CPU's Ethernet ports.</p>
CPE100/115 Modbus TCP & SRTP Client COMMREQ Function Block SYSID & TASK	<p>The CPE100/115 supports both Modbus TCP Client and SRTP Client Channels. Set the COMMREQ SYSID to 0x0000 and TASK to 0x10000 in order to use these functions on the CPE100.</p>
NaN Handled Differently in CPE100/115	<p>Mathematical operations resulting in Not A Number will always be a positive NaN.</p>
LED Operation During Firmware Update	<p>During a firmware update, the CPE100/115 does not blink any of the module LEDs. The firmware upgrade status is shown on the web page only.</p>
Constant Sweep Mode Performance	<p>In the CPE100/115, an individual sweep time may occasionally exceed the configured constant sweep value by up to 5 ms. A fault will be reported only when the configured constant sweep time is exceeded by more than 5ms in an individual sweep.</p>
Modbus / SRTP Performance with PROFINET slaves	<p>Modbus / SRTP performance and data transfer rates gets impacted when PROFINET slaves are added.</p>

Subject	Description
Supercap Life Expectancy	The super capacitor's life is based on unit's ambient temperature. If the unit's ambient temperature is maintained between 25°C and 45°C, the super capacitor is expected to last 12 to 15 years. Every 10°C increase in the unit's ambient temperature above 45°C decreases the super capacitor life expectancy. For additional information please refer to section 2.4.5 of PACSystems RX7i, RX3i and RSTi-EP CPU Reference Manual GFK-2222Z.
Recovery from HALT mode	To recover CPE100/115 from STOP-HALT mode, for CPE100 please refer to section 9 in QSG document (GFK-3012) and for CPE115 please refer to section 9 in QSG document (GFK-3039).
LAN2 usage with MRP	When CPE100/115 is configured for MRP only Ethernet Port2 & Port3 of LAN2 can be used to form a ring. Ethernet Port4 of LAN2 can still be used to connect either Programmer, simplex PROFINET device or any other supported Ethernet protocols.
Firmware downgrade from current 9.62 release is not allowed	Any attempt to downgrade the firmware from current 9.62 release will fail with the module left in boot mode To recover the board, the user must perform a factory reset for the downgraded firmware to be effective. It's been recommended to use firmware version 9.62 or later on failed module.
In Profinet networking , it's been recommended to use Switch instead of hub	In all of the Profinet network topologies( star, ring, line), it's been recommended to use Switch device between CPU and Profinet node.
Watchdog time out setting for maximum protocol load	When CPE100/115 is exposed to maximum Ethernet traffic and if the controller experiences incoming ethernet packet rate greater than 4000 packets/sec, then it's strongly recommended to increase the WDT time out to 500ms. Customer can determine incoming ethernet packet rate by reviewing the ethernet trend data(i.e max_pkt_rate[LAN1], max_pkt_rate[LAN2] parameters) collected using PAC Analyzer 4.3 and above, for more details on trend data parameters refer station manager manual GFK#2225

## Operational Notes for All PACSystems CPUs

Subject	Description
The following apply generically to any PACSystems CPU:	
SRTP or Modbus Channel COMMREQ Error Response with Gateway	SRTP & Modbus TCP Channel commands on RX3i CPUs with embedded Ethernet (IC695CPE3xx and IC695CPE4xx and EPSCPE1xx) 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	<p><b>⚠ WARNING</b></p> <p>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).</p>
OEM Protection not enforced on power-up from User Flash unless engaged before power cycle.	The OEM Protection Lock must be explicitly set before power down in order 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.
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.
IL and SFC	IL and SFC are not available.
Changing IP Address of Ethernet Interface while Connected	Storing a hardware configuration with a new IP Address to the RX3i / RSTi-EP while connected via Ethernet will succeed, then immediately disconnect because the RX3i / RSTi-EP 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	<p>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 of time, the timers should be programmed in such a manner as to account for this catch up feature.</p> <p>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.</p>



Subject	Description
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 on-line changes with the programmer. Window completion faults will occur if the constant sweep setting is not high enough.
Proper IP Addressing is Always Essential	<p>The PACSystems Ethernet Interface must be configured with the correct IP Address for proper operation in a TCP/IP Ethernet network. Use of incorrect IP Addresses can disrupt network operation for the PACSystems and other nodes on the network. Refer to PACSystems RX7i, RX3i and RSTi-EP TCP/IP Ethernet Communications User Manual, GFK-2224 for important information on IP Addressing. When storing a new HW configuration to the RX3i, be sure that the HW configuration contains the proper Ethernet addressing data (IP Address, Subnet Mask, and Gateway IP Address) for the RX3i.</p> <p><b>Note:</b> Machine Edition programming software maintains the target IP Address (used to connect the programmer to the target) independent of the contents of the HW Configuration for that target). The target IP Address is set in the Target Properties in the Machine Edition Inspector window. Storing a HW Configuration whose Ethernet addressing data contains an IP Address that is different from the RX3i target IP Address will change the IP Address used by the target RX3i as soon as the Store operation is completed; this will break the Programmer connection. Before attempting to reconnect the Programmer, you must change the target IP Address in the Target Properties in the Machine Edition Inspector window to use the new IP Address. To regain communication at the former IP Address, use the manual corrective action described above. Storing a HW Configuration containing an incorrect Ethernet addressing data to the PACSystems RX3i will result in loss of the Programmer connection and will require manual corrective action as described above.</p>
Network Architecture and Overload	<p>The hub or switch connections in an Ethernet network must form a tree and not a ring; otherwise duplication of packets and network overload may result. In this situation, the RX3i Ethernet modules will continually reset.</p> <p><b>⚠ CAUTION</b></p> <p>The hub or switch connections in an Ethernet network must form a tree and not a ring; otherwise duplication of packets and network overload may result.</p> <hr/>
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.
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 less than 200 ms from 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.

Subject	Description
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.
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.
COMMREQ Status Words Declared in Bit Memory Types must be Byte-Aligned	In previous releases, the CPU allowed 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 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 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.
STOP and RUN Mode Transition Priority	The PACSystems CPU receives requests to change between stop and run mode from many different sources. These include (but are not limited to) PACMachine 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.)
Uploaded Controller Supplemental Files lose date and time	Controller Supplemental Files uploaded from the CPU are time stamped as 8/1/1980 12:08AM 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.

## Operational Notes: CPE100/115 Embedded PROFINET Controller

Subject	Description
Update rates supported by Embedded PROFINET Controller	To prevent overloading of the Embedded PROFINET Controller, the recommended update rate to be used with I/O devices is 16ms. Using update rates lesser than 16ms is not recommended and it may have an adverse impact on the overall performance of CPE100/115.
Configuring Ethernet & Embedded PROFINET Controller Operation with CPE100 /115 LAN 2 Mode	<p>The CPE100/115's LAN 2 Ethernet ports may be configured either for Ethernet or PROFINET controller operation using the LAN 2 Mode parameter on the CPE100/115 hardware configuration Settings tab in PME.</p> <p>When LAN 2 is configured for Ethernet, these ports support SRTP Client/Server, Modbus TCP Client/Server, and EGD. All PROFINET controller services (Including Explore PROFINET Networks) are disabled when LAN 2 is configured for Ethernet. Configuring LAN 2 for PROFINET retains standard Ethernet operation and enables PROFINET controller services.</p>
Embedded PROFINET Controller Duplicate IP Address	<p>The CPE100/115's Embedded PROFINET Controller is able to detect that a network device has the same IP Address as its own. When a duplicate IP Address is detected, the Embedded PROFINET Controller behaves as follows.</p> <p>In each case, the system has an active PROFINET network with a PROFINET Controller connected to at least one PROFINET Device:</p> <ol style="list-style-type: none"> <li>1. If a second PROFINET Controller with an identical IP Address to the active PROFINET Controller is added to the network, the second controller will not enter the network and will log a Duplicate IP Detected fault. The first Controller will maintain all device connections.</li> <li>2. If a device with an identical IP Address to an active PROFINET Controller is added to the network, the Controller will log a Duplicate IP Detected fault and maintain all device connections.</li> <li>3. If a device with an identical IP Address to an active PROFINET Device is added to the network, the Controller will log a Duplicate IP Detected fault and maintain all device connections.</li> </ol>

Subject	Description																
IC695GCG001 Genius Communication Gateway COMMREQs	<p>The Embedded PROFINET Controller is able to send Communication Requests (COMMREQs) to the IC695GCG001 RX3i Genius Communication Gateway. When sending requests to the GCG001, the COMMREQ function block inputs must be set as follows:</p> <table border="1" data-bbox="396 449 1446 1016"> <thead> <tr> <th data-bbox="396 449 656 499">COMMREQ Input</th> <th data-bbox="656 449 1446 499">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="396 499 656 579">(enable)</td> <td data-bbox="656 499 1446 579">Permissive logic that controls power flow to the COMMREQ function block.</td> </tr> <tr> <td data-bbox="396 579 656 726">IN</td> <td data-bbox="656 579 1446 726">The memory location of the Command Block containing the specific COMMREQ command information. The Command Block may be located in any word-oriented area of memory (%P, %L, %R, %AI, %AQ, or %W).</td> </tr> <tr> <td data-bbox="396 726 656 936">SYSID</td> <td data-bbox="656 726 1446 936">                     A two-byte hex value that gives the rack and slot location of the Embedded PROFINET Controller.                     <table border="1" data-bbox="724 806 1354 936"> <thead> <tr> <th data-bbox="724 806 870 886">Rack#</th> <th data-bbox="870 806 1016 886">Slot#</th> <th data-bbox="1016 806 1354 886">Resulting SysID Hex Word Value</th> </tr> </thead> <tbody> <tr> <td data-bbox="724 886 870 936">0</td> <td data-bbox="870 886 1016 936">0</td> <td data-bbox="1016 886 1354 936">0000h</td> </tr> </tbody> </table> </td> </tr> <tr> <td data-bbox="396 936 656 1016">TASK</td> <td data-bbox="656 936 1446 1016">The task is always “20084h” (hexadecimal) for the Embedded PROFINET Controller.</td> </tr> </tbody> </table>	COMMREQ Input	Description	(enable)	Permissive logic that controls power flow to the COMMREQ function block.	IN	The memory location of the Command Block containing the specific COMMREQ command information. The Command Block may be located in any word-oriented area of memory (%P, %L, %R, %AI, %AQ, or %W).	SYSID	A two-byte hex value that gives the rack and slot location of the Embedded PROFINET Controller. <table border="1" data-bbox="724 806 1354 936"> <thead> <tr> <th data-bbox="724 806 870 886">Rack#</th> <th data-bbox="870 806 1016 886">Slot#</th> <th data-bbox="1016 806 1354 886">Resulting SysID Hex Word Value</th> </tr> </thead> <tbody> <tr> <td data-bbox="724 886 870 936">0</td> <td data-bbox="870 886 1016 936">0</td> <td data-bbox="1016 886 1354 936">0000h</td> </tr> </tbody> </table>	Rack#	Slot#	Resulting SysID Hex Word Value	0	0	0000h	TASK	The task is always “20084h” (hexadecimal) for the Embedded PROFINET Controller.
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PROFINET Command Line Interface	The CPE100/115 Embedded PROFINET Controller does not support the Command Line Interface (CLI) at this time.																
Embedded PROFINET Controller Duplicate IP Address	<p>The Embedded PROFINET Controller is able to detect that a network device has the same IP address as its own. When a duplicate IP address is detected, the Embedded PROFINET Controller behaves as follows.</p> <p>In each case, the system has an active PROFINET network with a PROFINET Controller connected to at least one PROFINET Device:</p> <ol style="list-style-type: none"> <li>1. If a second PROFINET Controller with an identical IP address to the active PROFINET Controller is added to the network, the second controller will not enter the network and will log a Duplicate IP Detected fault. The first Controller will maintain all device connections.</li> <li>2. If a device with an identical IP address to an active PROFINET Controller is added to the network, the Controller will log a Duplicate IP Detected fault and maintain all device connections.</li> <li>3. If a device with an identical IP address to an active PROFINET Device is added to the network, the Controller will log a Duplicate IP Detected fault and maintain all device connections.</li> </ol>																
Minimum IO Update Rates for Bumpless Operation in a Ring Topology	<p>If your application requires the PROFINET IO to operate bumplessly (no Loss of Device faults and no defaulting of IO) through a break in the ring, then the IO Update Rates of all of the devices in that ring must be no smaller than the Minimum IO Update Rate.</p> <p>Refer to section 6.1.6 of GFK-2571 for more details on this topic.</p>																

Subject	Description						
<p>Third-party MRP Manager Use with Embedded PROFINET Controller as MRP Client</p>	<p>When using a third-party MRP Manager, it is recommended to set the MRP Manager Test Monitoring Interval and Count to 10 ms and 2 respectively and/or connect the PROFINET Controller client directly to a device that provides fast link down detection.</p> <p>Failure to follow these recommendations may result in degraded MRP Ring update performance for bumpless operation, due to the speed at which ring breaks are detected. Use the table below as a guide when choosing to disregard these recommendations.</p> <table border="1" data-bbox="415 512 1429 638"> <thead> <tr> <th colspan="2" data-bbox="415 512 1429 575"><b>Bumpless Operation Using Third-party MRP Manager Without Recommended Test Monitoring Interval/Count</b></th> </tr> <tr> <th data-bbox="415 575 769 606">Ring Port Connection</th> <th data-bbox="769 575 1429 606">Minimum Recommended I/O Update Rate</th> </tr> </thead> <tbody> <tr> <td data-bbox="415 606 769 638">100Mbps</td> <td data-bbox="769 606 1429 638">16ms</td> </tr> </tbody> </table>	<b>Bumpless Operation Using Third-party MRP Manager Without Recommended Test Monitoring Interval/Count</b>		Ring Port Connection	Minimum Recommended I/O Update Rate	100Mbps	16ms
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<p>MRP Ring Ethernet Traffic Storm Prevention</p>	<p>The CPE100's LAN 2 Ethernet ports may be used as a MRP Ring Manager. (MRM) The physical ring must not be connected until a MRM configuration is stored to any Ethernet node on the ring including the CPE100/115.</p> <p>Failure to have an active MRM configured in an Ethernet ring will result in an Ethernet traffic storm caused by the ring's network loop topology. The Ethernet traffic storm will prevent communication to all Ethernet nodes connected to the ring until the ring is broken or a MRM is configured.</p> <p>If the CPE100/115 had been previously configured as a MRM, it maintains its MRM status after a hardware configuration clear and a power-cycle. However, after clearing hardware configuration, and before power-cycling, it is always a best practice to break the ring by physically disconnecting an Ethernet port on any network node in the ring.</p>						

## Operational Notes: All PACSystems PROFINET Controllers

Subject	Description
<p>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)”</p>	<p>The PME PROFINET DCP tool requires elevation to administrator privilege to run when it is launched by right-clicking on a PROFINET Controller. Since the PME installation does not setup 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 do this:</p> <ol style="list-style-type: none"> <li>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.”</li> <li>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.</li> </ol> <p>You may also launch the PROFINET DCP tool from the Utilities tab menu in PME. However, this launch method does not provide 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.</p>
<p>PNIO_DEV_COMM Function Block Usage</p>	<p>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:</p> <ol style="list-style-type: none"> <li>a) The ENO output turns on indicating that the function block’s parameters are successfully validated and the PROFINET Controller completed its first attempt to connect to the specified I/O device or;</li> <li>b) The OK output turns on indicating the PROFINET Controller is successfully communicating with the I/O device</li> </ol>
<p>Storing Updated Media Redundancy Protocol (MRP) Configurations to Large Operating MRP Ring Networks with Fast IO Update Rates Configured Can Result in PROFINET IO Device Loss/Add Faults</p>	<p>When storing Media Redundancy Protocol (MRP) configuration updates to an operating MRP ring network, users may infrequently observe one or more pairs of Loss of Device and subsequent Addition of Device faults regarding PROFINET IO Device faults on the network. This is expected behavior and is more likely to occur on ring networks with a large number of PROFINET IO Devices acting as Media Redundancy Clients (MRC) with very fast IO Update Rates configured.</p> <p>Because changing MRP configuration settings requires each MRC to break and reconnect its own connections to the ring network, IP packets on the network may be lost as this flurry of connection breaks/ reconnects occur on the network. A PROFINET IO Device is considered lost if it misses three consecutive IO data transactions. Thus, whenever three consecutive IO data packets from a particular PROFINET IO Device are lost due to network reconfiguration, the device will appear to be lost to the PROFINET Controller and a Loss of IO Device is logged. When the network stabilizes, the PROFINET Controller will be able to reestablish connection with the lost IO Device and an Addition of IO Device fault will be logged.</p>

## Product Documentation

PACSystems RSTi-EP EPSCPE100 CPU Quick Start Guide	GFK-3012
PACSystems RSTi-EP EPSCPE115 CPU Quick Start Guide	GFK-3039
PACSystems RX3i and RSTi-EP CPU Reference Manual	GFK-2222
PACSystems RX3i CPU Programmer's Reference Manual	GFK-2950
PACSystems RX3i System Manual	GFK-2314
PACSystems RX3i and RSTi-EP TCP/IP Ethernet Communications User Manual	GFK-2224
PACSystems RX3i & RSTi-EP PROFINET IO Controller User Manual	GFK-2571
PACSystems RXi, RX3i and RSTi-EP Controller Secure Deployment Guide	GFK-2830
PACSystems TCP/IP Ethernet Communications Station Manager Manual	GFK-2225
PROFINET I/O Devices Secure Deployment Guide	GFK-2904
PACSystems RSTi-EP Controllers Performance Evaluation	GFK-3086
PACSystems DNP3 Outstation User Manual	GFK-3103

User manuals, product updates and other information sources are available on the Emerson support website, <https://www.emerson.com/Industrial-Automation-Controls/support>.

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

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