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

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

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

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

Features

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

- Two serial ports: RS-485 and RS-232.
- CPU and module firmware upgrades via Winloader through CPU's RS-232 or RS-485 serial port.
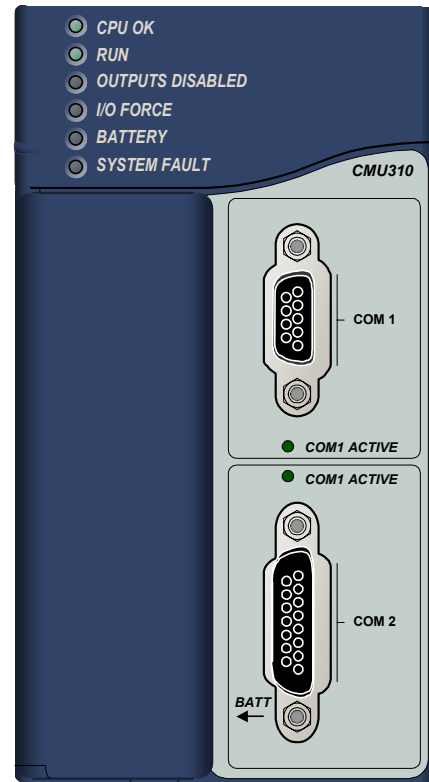
Ordering Information

Description	Catalog Number
PACSystems RX3i Max-ON CPU	IC695CMU310
Lithium Battery Pack	IC698ACC701
Auxiliary Battery Module (optional)	IC693ACC302
RX3i Power Supply, 40 Watt High Capacity Universal AC Power Supply	IC695PSA040
RX3i Power Supply, 40 Watt High Capacity 24 VDC Power Supply	IC695PSD040
RX3i Multi-Purpose Power Supply, 40 Watt High Capacity Universal AC	IC695PSA140
RX3i Multi-Purpose Power Supply, 40 Watt High Capacity 24 VDC	IC695PSD140
[Optional] RS-232 Cable	IC200CBL001
Rx3i Standard 12 Slot Backplane	IC695CHS012
Rx3i Standard 16 Slot Backplane	IC695CHS016

Note: For Conformal Coat option, please consult the factory for price and availability.

Specifications

Battery: Memory retention	For estimated battery life under various conditions, refer to the *PACSystems CPU Reference Manual,* GFK-2222.
Program storage	Up to 10 Mbytes of battery-backed RAM 10 Mbytes of non-volatile flash user memory
Power requirements	+3.3 VDC: 1.25 Amps nominal +5 VDC: 1.0 Amps nominal
Operating Temperature	0 to 60°C (32°F to 140°F)
Floating point	Yes
Boolean execution speed	0.195ms per 1000 Boolean contacts/coils, typical
Time of Day Clock accuracy	Maximum drift of 2 seconds per day
Elapsed Time Clock (internal timing) accuracy	0.01% maximum
Embedded communications	RS-232, RS-485
Serial Protocols supported	Modbus RTU Slave, SNP, Serial I/O
Backplane	Dual backplane bus support: RX3i PCI and 90-30-style serial
PCI compatibility	System designed to be electrically compliant with PCI 2.2 standard
Program blocks	Up to 512 program blocks. Maximum size for a block is 128KB.
Memory	*%I and %Q:* 32Kbits for discrete *%AI and %AQ:* configurable up to 32Kwords *%W:* configurable up to the maximum available user RAM Symbolic: configurable up to 10 Mbytes
Programmer	Proficy Machine Edition Logic Developer Release 5.5 SIM 1 or later is required to enable use of the RX3i NIU.

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

Battery

A three-cell lithium battery pack (IC698ACC701) maintains data memory when power is removed and operates the calendar clock. For maximum battery life, do not connect the battery for the first time until the CPU is installed in the backplane and the backplane is powered on. The battery may then be attached to either of the two terminals in the battery compartment as shown at right. Program and initial values load from flash when the CPU powers up. When

replacing the battery, be sure to install a new battery before disconnecting the old one.

To avoid loss of RAM memory contents, maintenance procedures should include scheduled replacement of the battery pack. For information on estimating battery life, refer to the *PACSystems CPU Reference Manual,* GFK-2222. **Disposal of lithium batteries must be done in accordance with federal, state, and local regulations.** Be sure to consult with the appropriate regulatory agencies before disposing of batteries.

Run/Stop Switch

Operation of the CPU can be controlled by the three-position RUN/STOP switch or remotely by an attached programmer and programming software. Program and configuration data can be locked through software passwords.
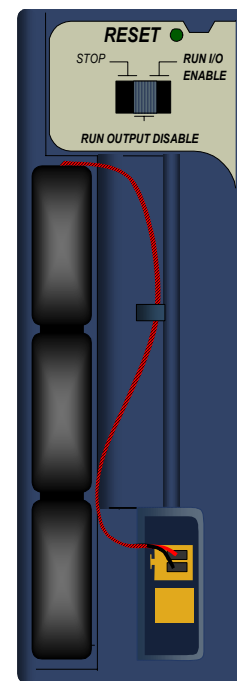
LEDs

CPU status is indicated by the CPU LEDs on the front of the module. The following table lists the LED functions during normal operation (after initialization is complete).

CPU OK (Green)	On	CPU has passed powerup diagnostics and is functioning properly.
	Off	CPU problem. See below.
RUN (Green)	On	CPU is in Run mode
	Off	CPU is in Stop mode.
OUTPUTS ENABLED (Green)	On	Output scan is enabled.
	Off	Output scan is disabled.
CPU OK, OUTPUTS ENABLED, RUN	Blink in unison	CPU is in boot mode and is waiting for a firmware update through serial port.
	Blink pattern	If CPU OK is off and RUN and OUTPUTS ENABLED blink in an error code pattern, report the condition and blink codes to your technical support representative for troubleshooting.
I/O FORCE	On (Yellow)	Override is active on a bit reference.
BATTERY	Blinking	Battery is low.
	On (Red)	Battery is dead or not attached.
SYSTEM FAULT	On (Red)	CPU is in Stop/Faulted or Stop/Halted mode.
COM1 COM2	Blinking	Signal activity on port.

Serial Ports

The CPU has two independent, on-board DCE (data communications equipment) serial ports, accessed by connectors on the front of the module.

Both ports support RTU slave, SNP slave, Serial I/O* Message Mode (C Runtime Library Functions: serial read, serial write, sscanf, sprintf). Either port can be used for firmware upgrade wth the RX3i in STOP/No I/O mode.

Both ports provide communications at: 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K baud for all protocols except when upgrading firmware with Winloader. In that case, 1200 baud is not available.

Port 1

Port 1 (COM1) is RS-232 compatible. It has a 9-pin, female, D-sub connector with a standard pin out. Port 1 allows a simple straight-through serial cable to connect with a standard AT-style RS-232 port. Maximum cable length from the CPU to the last device attached to the serial cable is 15 meters (50 ft). This connection can be made with the IC200CBL001 cable kit, or with a custom cable. Use of shielded cable is optional. The COM1 Active LED provides the status of serial port activity.

Pin	Signal	Description
1*	NC	No Connection
2	TXD	Transmit Data
3	RXD	Receive Data
4	DSR	Data Set Ready
5	0V	Signal Ground
6	DTR	Data Terminal Ready
7	CTS	Clear To Send
8	RTS	Request to Send
9	NC	No Connection

*   Pin 1 is at the bottom right of the connector as viewed from the front of the module.

Port 2

Port 2 (COM2) is RS-485 compatible. Port 2 has a 15-pin, female D-sub connector and supports the RS-485 to RS-232 adapter (IC690ACC901). Maximum cable length from the CPU to the last device attached to the serial cable is 1200 meters (4000 ft). Shielded cable is required. The COM2 Active LED provides the status of serial port activity.

Pin	Signal	Description
1*	Shield	Cable Shield
2	NC	No Connection
3	NC	No Connection
4	NC	No Connection
5	+5VDC	Logic Power**
6	RTS(A)	Differential Request to Send
7	0V	Signal Ground
8	CTS(B')	Differential Clear To Send
9***	RT	Resistor Termination
10**	RD(A')	Differential Receive Data
11	RD(B')	Differential Receive Data
12	SD(A)	Differential Send Data
13	SD(B)	Differential Send Data
14	RTS(B)	Differential Request To Send
15	CTS(A')	Differential Clear To Send

*   Pin 1 is at the bottom right of the connector as viewed from the front of the module.

** Pin 5 provides isolated +5VDC power (300mA maximum) for powering external options.

*** Termination resistance for the RD A' signal should be connected on units at the end of the line. To make this termination, connect a jumper between pins 9 and 10 inside the 15-pin D-shell.

Programmer Connection

The programmer can communicate with the CPU via serial port 1, serial port 2, or the backplane-based Ethernet interface. Connecting a programmer via an Ethernet TCP/IP network requires a CAT5 standard Ethernet cable with RJ-45 connectors. Before connecting the programmer and CPU to the Ethernet TCP/IP network, set the IP address using the Initial IP Address software tool. After setting the IP address, connect the RX3i and the computer running the programming software to the Ethernet Interface. For detailed information on programmer connection via Ethernet TCP/IP, refer to the *TCP/IP Ethernet Communications for PACSystems User's Manual,* GFK-2224.

Installation

It is the responsibility of the OEM, system integrator, or end user to properly install the control system equipment for safe and reliable operation.

Installation should not be attempted without referring to the *PACSystems RX3i Hardware and Installation Manual,* GFK-2314.

1.   Make sure that backplane power is off.

2. Install the CPU module in RX3i backplane 0. The CPU requires two slots and can use any slots except the highest numbered (rightmost) slot. More information on slot selection follows. Be sure the mounting screws are tightened to completely secure the CPU to the backplane.

3. Turn on power. The CPU should power up. When the CPU has successfully completed initialization, the OK LED stays on and the RUN and EN LEDs are off. The CPU is now ready to be programmed.

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

Backplane Locations for the CPU

The Max-ON CPU IC695CMU310 is a doublewide module whose connector is right-justified as viewed when installed in a backplane. The CPU is referenced for configuration and application logic by the leftmost slot occupied by the entire module, not by the slot the physical connector is located in. For example, if the CPU has its physical connector inserted in slot 3, the module occupies slots 2 and 3 and the CPU is referenced as being located in slot 2. The CPU may be located in slot 0 with its connector in slot 1. The CPU cannot be located in slot 11 of a 12-slot backplane or in slot 15 of a 16-slot backplane, because its connector cannot be installed in the slot reserved for an expansion module.

The RX3i AC Power Supply (IC695PSAx40) is a doublewide module whose connector is left-justified as viewed when installed in a backplane. It cannot be located in slot 11 of a 12-slot backplane or slot 15 of a 16-slot backplane. No latch mechanism is provided for the last (rightmost) slot in a backplane, so it is not possible to place the power supply in the second to last slot.

Locating the CPU in Slot 1

Installing the CPU in slot 1 means that only a singlewide power supply may be used in slot 0. Either DC power supply can be used (IC695PSD040 or IC695PSD140). If the application must maintain a slot 1 CPU and uses an AC power-supply, the RX3i AC power-supply must be located in a slot to the right of the RX3i CPU in slot 1.

Locating the CPU in a Slot Other than 1

Before deciding to place the CPU in a slot other than slot 1, it is important to consider possible issues that could arise, as explained below.

Communications: For Service Request #15 (Read Last-Logged Fault Table Entry) and Service Request #20 (Read Fault Tables), the location of CPU faults is not the standard 0.1 location, but the slot the CPU is located in. Logic that decodes fault table entries retrieved by these service requests may need updating.

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.

Hardware Configuration: The slot location of the CPU must be updated in the hardware configuration to reflect the CPU's true location.

Fault Tables: Faults logged for the CPU in the fault table will reflect the CPU's actual slot.

Remote Series 90 PLCs that use SRTP Channels COMMREQs expect the CPU to be in slot 1 or slot 2. 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 {backplane 0, slot 1} to {backplane 0, slot 2}, provided that the CPU is located in backplane 0 slot 2 (and the remote client has not issued an SRTP Destination service on the connection to discover the backplane 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.

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 users should select "GE SRTP" as their communications driver – it can communicate with a CPU in any slot.

Installation in Hazardous Locations

- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS LOCATIONS ONLY

- WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;

- WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND

- WARNING - EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.

Configuration

The Max-ON CPU and RX3i system are configured with Machine Edition PLC-Logic Developer programming software.

The CPU verifies the actual module and backplane configuration at power-up and periodically during operation. The actual configuration must be the same as the programmed configuration. Deviations are reported to the CPU alarm processor function for configured fault response. Refer to the *Proficy Machine Edition Logic Developer-PLC Getting Started Manual,* GFK-1918 and the online help for a description of configuration functions.

The redundancy application is configured using the Max-ON configuration tool located in *Max-ON 3i Tools*. It is launched by double-clicking on a file located in the Proficy ladder project. The configuration tool is used to define the redundancy parameters such as Ethernet IP addresses, device status addresses, and module locations. The Max-ON configuration tool also defines the synchronized data groups that will be transferred from the Master PLC to the Backup PLC if needed.

Ethernet Global Data (EGD)

Each RX3i CPU supports up to 255 simultaneous Ethernet Global Data (EGD) exchanges across all Ethernet interfaces in the PLC. EGD exchanges must be configured in the programming software and stored into the CPU. The EGD configuration can also be loaded from the CPU into the programming software. Both produced and consumed exchanges can be configured. RX3i CPUs support using only part of a consumed EGD exchange, and EGD exchange production and consumption to the broadcast IP address of the local subnet.

The RX3i CPU supports 2msec EGD exchange production and timeout resolution. RX3i EGD exchanges can be configured for a production period of 0, indicating the exchange is to be produced every output scan. These "as fast as possible" exchanges are not produced more often than 2msec. RX3i CPUs support enhanced EGD freshness, providing better EGD timeliness.

Release History

Catalog Number	FW Revision	Comments
IC695CMU310-AA	3.51	Initial Release

Known Restrictions for this Release

Subject	Description
Max-ON software	1. Automatic detection of reference address overlaps, module rack/slot overlaps, and synchronized data overlaps is not available. 2. This release does not monitor the quantity of configuration memory allocated for the project. Configuration memory is used to define Genius I/O devices and analog input scaling. Configuration memory is limited to approximately 1000 devices and/or scaled groups. 3. Automatic report generation is not available. A temporary work-around is to use the information that is displayed in the Status Window. The text may be selected and copied and pasted into another application.
Battery installation	When installing a new battery, if no battery is currently installed, the new battery must be installed while the CPU has power. Failing to follow this procedure could result in the CPU not powering up. Recommendation: remove the battery, power-cycle the CPU, then re-install the battery.
CPU sweep time impacted when high temperature warning is active	When the processor temperature is above the high temperature-warning threshold (at which point a fault is logged), the sweep time may be impacted (i.e. periodically the sweep may be extended). It is important to note that the processor is still running at full speed. The sweep impact is a result of delays in the interface between the CPU and the temperature-sensing part.
Ethernet Disconnect During Word for Word Change	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. Recommendation: go offline and then back online again.
Simultaneous Clears, Loads and Stores Not Supported	Multiple programmers may not change CPU contents at the same time. The programming software may generate an error during the operation. Simultaneous loads from a single CPU are allowed.
Power Cycle During Write to Flash	The CPU is configured to power up from flash and if is power-cycled while writing to flash, a fault is generated on power up.

Subject	Description
Hardware Configuration Not Equal After Changing Target Name	If a hardware configuration is stored to flash that sets "Logic/Config Power up Source" to "Always Flash" or "Conditional Flash" and the name of the target is subsequently changed in the programming software, the hardware configuration will go Not Equal and will not Verify as equal.
PLC and IO Fault Tables May Need to be Cleared Twice to Clear Faulted State	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 is cleared may be significant. Recommendation: 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	After a force on or force off has been stored to the CPU, it cannot be switched from force on to force off or vice-versa by downloading initial values. Recommendation: turn off the force by doing a download, and then change the force on or off by another download.
Number of Active Programs Returned as Zero	The SNP request Return Controller Type and ID currently returns the number of active programs as zero.
Serial I/O Failure at 115K During Heavy Interrupt Load	Rarely, data corruption errors occur during serial communications when running at 115K if there is a heavy interrupt load on the CPU. Recommendation: under heavy load applications, restrict serial communications to 57K or lower.
SNP ID not always provided	The CPU's SNP ID does not appear in the Machine Edition programmer Show Status display. Service Request 11 will always return zeros.
Second programmer can change logic while in Test & Edit mode	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 CPU.
CPU may not detect low-battery condition	A battery with very low capacity may still have a terminal voltage high enough to report that it is a good battery. When the battery starts supplying the memory power (battery backup), the battery voltage quickly drops to unacceptable levels, and it may fail. Recommendation: replace batteries in accordance with the guidelines provided in the *CPU Reference Manual*, GFK-2222. In addition, logic and hardware configuration can be saved to flash.
Two loss of module faults for Universal Analog Module	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 up to 20 seconds	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 CPU sweep, even though there is no "loss of module" indication. I/O data exchanged with the module is not meaningful until the module has set this bit.
Info fault at power up	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 has no effect on normal operation of the CPU. But if the hardware watchdog timer expires after this fault and before power has been cycled again, the outputs of I/O modules may hold their last state, rather than defaulting to zero.
Extended Memory Types for I/O Triggers	%R, %W and %M cannot be used as I/O triggers.
Possible ME inability to connect	Infrequently, an attempt to connect a programmer to an CPU via Ethernet is unsuccessful. The normal connection retry dialog is not displayed. Recommendation: Reboot the computer that is running the programmer.
SNP Update Datagram message	If an Update Datagram message requests 6 or fewer bits or bytes of data, the CPU returns a Completion Ack without Text Buffer. The protocol specifies that the returned data should be in the Completion Ack message, but it may not be.
GBC30 may not resume operation after power cycle	In rare instances, a GBC30 in an expansion backplane may not resume normal operation after a power cycle of either the expansion backplane or the main backplane.
Configuration of third-party modules	Do not specify a length of 0 in the configuration of a third-party module. The module will not work properly in the system.
Power supply status after CPU firmware update	The CPU reports a "Loss of or missing option module" fault for the IC695PSD140 RX3i power supply following an update of CPU firmware. The slot appears empty in the programmer's online status detail view. The power supply continues to operate normally. Recommendation: Power cycle to restore normal status reporting.
Power supply status	Rarely, turning a power supply on or off may not result in an add or loss fault. Also, the slot will

Subject	Description
after power cycling	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	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, ME reports hardware configuration and logic "not equal".
Missing "Loss of terminal block" fault	The IC695ALG600/608/616 analog input modules do not produce a "Loss of terminal block" fault if the hardware configuration is stored or the module is hot-inserted when the terminal block is not locked into place.
Sequence Store Failure	Writing a very large hardware configuration to flash may cause a "PLC Sequence Store Failure" error. To work around this error, either: 1. Perform an explicit clear of flash prior to performing the write. 2. Increase the operation timeout used by ME prior to performing the write.
IC694MDL754: Must configure module status bits	Always configure 16 bits of module status when using this module. Configuring 0 bits of module status will result in invalid data in the module's ESCP status bits.
PID algorithm	If bit 2 is set to 1 and bit 0 is set to 1, the product will operate in a manner opposite to the description in user manual GFK-2222D or earlier. The derivative term is added when it should be subtracted.
IC695ALG600 Lead Resistance Compensation setting	A configuration store operation fails if a channel is configured for 3-wire RTD with Lead Resistance Compensation set to Disabled. A Loss of Module fault is logged in the I/O Fault table at the end of the store operation. Recommendation: to recover the lost module, change the configuration to enable Lead Resistance Compensation and power-cycle the module.
C Toolkit PlcMemCopy Documentation Incorrect	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 are honored.
Genius Device I/O Enable LED Does Not Illuminate If No Output Module Present on Genius Bus	If a Genius Bus contains no output Genius devices, the I/O Enable LEDs for the input Genius devices do not illuminate when the CPU is placed in RUN Mode. The modules function properly even though the status LED is not lit. If an output Genius device is present on the Genius bus, the I/O Enable LED will illuminate for all input and output Genius devices when the CPU is placed in RUN Mode as expected.

Operating Notes

Subject	Description
LD-PLC operations	The connect and download functions are now separate in Machine Edition LD-PLC. To perform a download to the CPU, you must first connect to the CPU.
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, that 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 on-line help.
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.
Duplicate Station Address for Modbus Will Conflict with Other Nodes	The default serial protocol for the RX3i is Modbus RTU. The default Station Address is 1. If the CPU is added to a multi-drop network, care must be taken that the CPU is configured with a unique Station Address. Nodes with duplicate Station Addresses on the same network will not work correctly.
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. 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 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 not accumulate time as though they were executed every sweep.

Subject	Description
Large Number of COMMREQs Sent to Module in One Sweep Causes Faults	A large number of COMM_REQs (typically more than 8) sent to one module 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). The "FT" output of the function block is also set. Recommendation: Spread multiple COMMREQs to the same module across multiple sweeps so that fewer (typically 8 or less) are sent to the module in each sweep. Also, check the FT output parameter for errors. If the FT output is set (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 an invalid input is provided.
Hot Swap	Hot Swap of power supplies or CPUs is not supported in this release
Serial Port Configuration COMMREQs	In the following combination of circumstances, serial communications with the CPU may become impossible: ▪ User configuration disables the Run/Stop switch ▪ User configures the power up mode to Run or Last ▪ Logic is stored in FLASH and user configures CPU to load from FLASH on power up ▪ User application issues COMMREQs that set the protocol on both of the serial ports to something that does not permit communications to the ME programmer.
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.
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 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 CPUs of similar performance in FANUC I/O networks. If a master or slave is located in an RX3i system, the other CPUs should be RX3is or Series 90-30 CPU374s. Repeated power up/down cycles of an expansion backplane 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 configuration.

RX3i Max-ON CPU Functional Compatibility

C Toolkit Compatibility	C Toolkit Release 3.50 Build 34A1 is required for PACSystems RX3i Max-ON CPU (Release 3.51)
COMMREQ to PBM300	The behavior of the COMMREQ fault output on a COMMREQ sent to the PROFIBUS master module IC695PBM300 is compatible with the Series 90-30 CPU366 PROFIBUS Master.
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 to update the IC200ALG240 firmware to Revision 1.10 or later. Use firmware update kit 44A752313-G01, available in Knowledge Base Article i023269 at globalcare.gefanuc.com.
Configuration of IC694MDL754	Always configure 16 bits of module status when using this module. Configuring 0 bits of module status will result in invalid data in the module's ESCP status bits.