April 1, 2004
GFK-2266B

IMPORTANT PRODUCT INFORMATION

READ THIS INFORMATION FIRST

Product: PACSystems™ RX7I Ethernet Module with Firmware Version 1.6

IC698ETM001-AC

This document contains information that is not available in any other publication; therefore, we recommend you save it for future reference. This document discusses the features of the PACSystems RX7i Ethernet Interface Module version 1.6, which corrects the problems described on page 3.

The Ethernet Interface module provides:

- Data exchange using Ethernet Global Data (EGD)
- TCP/IP communication services using SRTP
- Full control system programming and configuration services
- Comprehensive station management and diagnostic tools
- Two full-duplex 10BaseT/100BaseT/TX (RJ-45 Connector) ports with an internal network switch providing auto-negotiated network speed, duplex mode, and crossover detection.

Hardware Identification

The following table shows the revision level of the circuit boards used in this release of the RX7i Ethernet Interface Module.

Catalog Number	Circuit Board ID
IC698ETM001-AC Carrier Card	NE8A1_F2_R02
IC698ETM001-AC Ethernet	EX8A1_F2_R03

Firmware Identification

Catalog Number	Ethernet Firmware Revision
IC698ETM001-AC	Main: 1.60 (13A2) Boot: 1.50 (46A1)

Ethernet Programmable Parts:

Part ID	Revision
PLD	6006_U6_PLD_A.jed

Updates

IC698ETM001-AA and IC698ETM001-AB are field upgradeable to IC698ETM001-AC. To upgrade an RX7i Ethernet Interface module to firmware version 1.6, you must order field upgrade kit 44A752256-G02 or download it at no charge from the web at http://www.geindustrial.com/cwc/gefanuc/support/ControllersIO/psrx7i-u.htm.

Product Documentation

PACSystems RX7i CPU Reference Manual, GFK-2222

PACSystems RX7i Installation Manual, GFK-2223

TCP/IP Ethernet Communications for PACSystems RX7i, GFK-2224

Station Manager for the PACSystems RX7i, GFK-2225

PACSystems RX7i User's Guide to Integration of VME Modules, GFK-2235

CIMPLICITY® Machine Edition Getting Started, GFK-1868

CIMPLICITY Machine Edition Logic Developer – PLC Programming Software Getting Started, GFK-1918

Datasheet, PACSystems RX7i E-net Module, GFK-2227

Important Product Information, RX7i Ethernet Module, GFK-2266B (this document)

Ethernet Functional Compatibility

Subject	Description
RX7i Does Not Support SRTP Client ("Channels")	The Ethernet Interface does not support the SRTP Client operation ("SRTP Channels") that was provided in the Series 90-70 Ethernet Interface (IC697CMM742).
SRTP and EGD Performance Differs from Series 90-70	SRTP and EGD performance in the RX7i differs slightly from the Series 90-70. Each RX7i Ethernet Interface supports a greater number of SRTP connections and EGD exchanges. Please also note that the RX7i currently has several SRTP and EGD operational restrictions when compared to the Series 90-70. When migrating Series 90-70 Ethernet applications to the RX7i, please carefully read the *Ethernet Operational Notes* section on page 5.
Series 90-70 LAN Interface Modules (IC697CMM741 or IC697CMM742) Not Supported by RX7i	Please note that the Series 90-70 LAN Interface Modules (IC697CMM741 or IC697CMM742) are not supported by the RX7i and should not be placed in an RX7i rack. The RX7i CPU contains an embedded Ethernet Interface. If additional Ethernet Interfaces are required, the RX7i Ethernet Module (IC698ETM001) should be used.

Ethernet Problems Resolved by this Revision (1.60)

Subject	*Description*
EGD Data Resumes Production and Consumption After Power Cycle	In applications with long CPU power up times, due to heavy IO load or slow IO module power up times, EGD will no longer fail to resume production and consumption after power cycle.

Ethernet Problems Resolved by Revision 1.50

Subject	*Description*
Station Manager Parameters Need not be Entered in Uppercase	For the CHSOSW command, the pl_parity, pl_flow_control, and time_sync parameters values no longer need to be in UPPER CASE and enclosed in double quotes (“ “).
Pressing Ethernet Restart During Firmware Upgrade	Pressing the Ethernet Restart pushbutton during firmware upgrade will correctly cause the firmware upgrade to fail. The upgrade process will need to be restarted.
Double Push of Ethernet Restart Pushbutton	If the user presses the Ethernet restart pushbutton twice, very rapidly, the Ethernet Interface will restart and regain communication with the CPU.
Invalid Gateway In BOOTP Command	An error message is now generated when an invalid gateway is specified for the BOOTP Station Manager command. The command is rejected. The user should reissue the command with the correct gateway value.
TCP Connections on RX7i Server if Client is Lost	If an SRTP client with open connections to an RX7i server is power cycled or reset, the server’s TCP connection will no longer remain open for a long time (until the server’s TCP keep-alive timer expires) once the client is restarted and attempts to reopen the communication.
Station Manager DIR and RENAME Commands	The Station Manager command DIR now functions correctly when a specific filename is used as a parameter. In addition, the RENAME command no longer generates an error message.
Exception When Store is Aborted by Programmer	The Ethernet Interface no longer logs the following exception when Programmer aborts a store sequence: Entry = 02H, Events 2-6 = 0006H 0000H 0000H 0002H 1017H, scode = 8006001fH This error was a nuisance exception log event that did not affect Ethernet performance.
Restart Reason Logged After Quick Powercycle	Following a quick powercycle, the Ethernet Interface will now properly set the restart reason to indicate a CPU commanded reset occurred. The restart reason value (as displayed in exception log Event 1, Entry 3) was previously set to unknown reason code ffH. This error does not affect Ethernet operation. (Please note: This problem is fixed in Release 1.50 Ethernet Boot firmware and cannot be corrected by upgrading from Release 1.00 to Release 1.50 Ethernet Primary firmware.)
EGD Exchange Status After Store of Hardware Configuration	The EGD status words for both Produced and Consumed exchanges are now not updated after a store of hardware configuration when the CPU is still in Stop I/O Disabled mode. This means that the reference table containing the EGD status words will not go unequal after the store of hardware configuration.
EGD Consumed Exchange on First Scan	EGD Consumed Exchanges are now written into reference memory on the first scan of the PLC.
EGD Status in Stop Mode	EGD Status on produced exchanges will now get updated correctly, even when the PLC is in stop mode.
EGD Consumer Exchanges After Store of Configuration with I/O Enabled	Storing a hardware configuration containing consumed EGD exchanges which also configures the CPU to Stop mode with I/O enabled will now cause the PLC to begin consuming EGD exchanges. Previously, exchanges would be produced, but not consumed, if the CPU was previously in Stop I/O disabled mode.
EGD Production in Stop Mode I/O Enabled	EGD exchanges are now produced when the PLC is in Stop Mode I/O enabled.

Ethernet Restrictions and Open Issues

Subject	Description
Number of SRTP Requests Tallied May Vary	When running multiple SRTP client channels, the number of requests, as reported by the client and the server, may differ between the connections.
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. If quicker recovery of the SRTP connection is needed, modify the “wkal_idle” Advanced User Parameter to reduce the TCP keep alive timer down to the desired maximum time for holding open the broken connection. Refer to *TCP/IP Ethernet Communications for the PACSystems RX7i,* GFK-2224, for details.
Reporting of Duplicate IP Address	The RX7i does not log an exception or a fault in the PLC Fault Table when it detects a duplicate IP address on the network.
REPP Does Not Save Results of Aborted PING	The station manager REPP command does not retain the results of a PING that is aborted due to error. The PING results are reported when the PING is aborted, but subsequent REPP commands give the results of the last successfully terminated PING.
Multiple Log Events	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.
Intermittent SNTP Loss of Synchronization	Under moderately heavy EGD traffic load, the Ethernet Interface may occasionally lose synchronization with its SNTP time server and generate exception log event 29, entry 2=bH.
Reduced EGD Consumption with Large Numbers of Produced Exchanges	When large numbers of EGD exchanges are produced at a rapid rate, some consumed EGD exchanges may exhibit lower rates of consumption than expected. To better balance produced and consumed EGD exchange performance, reduce the number or frequency of the produced exchanges configured at this Ethernet Interface.
SRTP Communication Delays	Average latency of communications on SRTP channels may vary considerably due to TCP retransmissions. SRTP client applications should be designed to take this variance into account. In particular, SRTP client applications migrating from Series 90-70 SRTP Servers to RX7i may need to lengthen SRTP timeout parameters.
Spurious Ethernet Failure Error	On rare occasions, the error “Module hardware fault” may be reported on the Ethernet daughterboard in the station manager log. This fault is a nuisance fault and may be ignored.
Pushing Ethernet Restart Button Multiple Times	Pushing the Ethernet Restart button multiple times rapidly without letting the Ethernet module complete the restart may cause the PLC to go lights out. The user should power cycle the CPU to recover.
SNTP Errors Logged	In very rare instances, the Ethernet interface may log SNTP server errors even though SNTP is not currently enabled.
Ethernet Exceptions Logged When Passwords Enabled	When password protection is enabled for levels 2 - 4, the Ethernet interface logs two exception events at powerup or restart. The exceptions are Event = 2, Entry 2 = 0030H and Event 8, Entry 2 = 000bH
Ethernet Port Labels Do Not Match	The Ethernet interface identifies the Ethernet ports as "Port 1" and "Port 2", instead of "Port 1A" and "Port 1B"as labeled on CPU and ETM hardware modules.
EGD Status Not Updated as in Series 90	1. With a configured timeout value, an EGD consumed exchange reports timeout status only once; timeout status is not updated as in Series 90. 2. Without a configured timeout value, an EGD consumed exchange does not report "no new data" status, as in Series 90, but instead maintains last consumption status value.
Spurious Ethernet Fault	In rare instances, after power cycle, the Ethernet Interface may log the following fault, Event = 28H, Entry 2 = 000eH. This fault can be safely ignored.

Ethernet Operational Notes

Subject	Description
Configuration of IP Address is Required Before Using Ethernet Communications	The Ethernet Interface cannot operate on a network until a valid IP address is configured. The necessary Ethernet addressing information must be configured prior to actual network operation. Use one of the following methods to assign an IP address: ■ Assign the IP address using hardware configuration in the CIMPLICITY ME programming software. Store the configuration to the RX7i. ■ Connect a serial terminal to the Station Manager port of the Ethernet Interface module. Then use the CHSOSW command to enter the desired IP address. For details, see *Station Manager for the PACSystems RX7i*, GFK-2225. ■ The Ethernet Interface automatically obtains a temporary IP Address from a BOOTP server on the network. For details, see *TCP/IP Ethernet Communications for the PACSystems RX7i,* GFK-2224.
Proper IP Addressing is Always Essential	The Ethernet Interface Module 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 RX7i and other nodes on the network. Refer to *TCP/IP Ethernet Communications for the PACSystems RX7i,* GFK-2224 for important information on IP addressing. When storing a new HW configuration to the RX7i, be sure that the HW configuration contains the proper Ethernet addressing data (IP Address, Subnet Mask, and Gateway IP Address) for the RX7i. **Note:** CIMPLICITY 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 CME Inspector window. Storing a HW Configuration whose Ethernet addressing data contains an IP Address that is different from the RX7i target IP address will change the IP address used by the target RX7i 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 CME 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 default (0.0.0.0) or incorrect Ethernet addressing data to the PACSystems RX7i will result in loss of the Programmer connection and will require manual corrective action as described above.
Default IP Address (0.0.0.0) Attempts to Set IP Address via BOOTP	The default IP address value (0.0.0.0), whether obtained from HW Configuration or backup configuration, causes the Ethernet Interface to request a temporary IP address from a BOOTP server device on the network.
LAN Must be Tree, Not Ring	The two Ethernet network ports on the PACSystems RX7i Ethernet Interface must not be connected, directly or indirectly, to the same network device. 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 RX7i Ethernet modules will continually reset.
Reporting of Duplicate IP Address	The PACSystems RX7i does not log an exception or a fault in the PLC Fault Table when it detects a duplicate IP address on the network.
EGD Performance Information	Users requiring detailed EGD performance information should contact their Application Engineer and request the EGD Performance Application Note for the RX7i (Marketing Bulletin number H-06-03-01).

Subject	Description
Multiple Zero Period EGD Exchanges May Not Produce Similar Numbers of Samples	If more than one EGD produced exchange is configured for a production period of zero, the exchanges may not produce similar numbers of samples. Due to the way that scheduling occurs when multiple exchanges are scheduled “as fast as possible”, some zero period exchanges may produce significantly more samples than others. For more consistent EGD production, configure the produced EGD exchanges with non-zero production periods.
Changing IP Address While SRTP Connection Open May Generate Log Events	Open SRTP Server connections established with a remote SRTP client are not terminated as expected when the RX7i’s IP address is changed (typically by storing a new HW Configuration to the RX7i). A Series 90 SRTP client (“SRTP channels”) reports either a 9690H or 0190H status; the SRTP connection may remain open until the connection is terminated as a result of a client timeout.
Series 90-70 Datagrams are Not Supported	Series 90-70 datagrams are not supported. This means that Series 90-70 - format variable list requests from Host Comm Toolkit applications will fail. (Series 90-30 – format datagrams are supported, but cannot access %P or %L memory in the RX7i.)
Heavy Load Can Block Station Manager	As explained in *TCP/IP Communications for PACSystems Station Manager Manual*, GFK-2225, Chapter 1, a heavy EGD and/or SRTP load can block Station Manager operation.
AUP Parameter Should Not be Changed	The Advanced User Parameter “wsnd_buf” should not be changed by the user. Changing the value of this parameter may cause the LAN led to go out and the Ethernet Interface to drop connection.

Apter Power