MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

GE 90-30 SERIES PLC

IC693CPU374-BF

CPU 374 PLUS CONTROLLER

Used with the applicable Series 90-30 controllers configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: IC693CPU374-BF.pdf

IMPORTANT PRODUCT INFORMATION

READ THIS INFORMATION FIRST

Product: IC693CPU374 CPU Module with Ethernet Interface

IC693CPU374-BD (and later) with CPU Firmware Release 11.02

Introduction

This document contains information that is not available in any other publication; therefore, we recommend you save it for future reference.

This release of the Series 90™-30 PLC CPU374 makes the following changes to the CPU firmware. There are no changes to the Ethernet daughter board firmware or the hardware. The following problems are corrected by this upgrade (for details see page 6):

- "CPU374 Program Block Checksum Failure after Power-cycle and Stop to Run Transition with C."
- "CPU374 Clears All Memory after Run to Stop Transition with Multiple Power Cycles."
- "CPU374 Clears Memory when Power is Lost in Run Mode with C."

Hardware Identification

The following table shows the revision level of the circuit boards used in this version of the IC693CPU374.

CPU Model (Version)	Circuit Board ID	Circuit Board Version
IC693CPU374-BD and later	CY3A1 (CPU)	44A747988-G01R04
	E35A1 (Ethernet)	44A747984-G01R04 (and later)

Firmware Identification

CPU Catalog Number	Revision	
	CPU Firmware	Daughterboard Firmware
IC693CPU374-AC and later	Main: 11.02 (51A1) Boot: 11.00 (10A2)	Main: 1.01 (20A1) Boot: 1.00 (15A2)

Note: The new firmware is compatible with all previous firmware and hardware versions of the IC693CPU374.

Firmware Upgrade

To upgrade a CPU374 to the latest firmware version (11.02), you must purchase the field upgrade kit 44A751579-G02 or download it at no charge from the web (http://www.gefanuc.com/support/plc/r-s9030.htm). Firmware upgrades require the IC690ACC901 Miniconverter and Cable Kit.

Documentation

GFK- 0356, Installation and Hardware Manual
GFK-0467, PLC CPU Instruction Set Reference Manual
GFK-1541, TCP/IP Ethernet Communications for the Series 90 PLC User's Manual,
GFK-1186, TCP/IP Ethernet Communications for the Series 90 PLC Station Manager Manual

CPU Operational Notes

Battery Backup Limitations

The battery on the CPU374 has an expected life of 1.2 months, if used continuously. If a longer battery backup period is required, the external battery module (IC693ACC302) is available. The extended battery module provides a battery backup period of 15 months for the CPU374. For additional information, see the External Battery Pack datasheet, GFK-2124.

Overrides Not Stored to Flash or EZ Program Store Device

When storing reference data to flash or the EZ Program Store Device, overrides are not stored. This means that after the reference data is read back from flash or the EZ Program Store Device and subsequently the PLC is put into Run Mode, the logic may execute differently. Therefore, overrides should not be used if reference data is stored to flash or to the EZ Program Store Device. If overrides are used, particular care should be taken to prevent loading reference data from flash at power up. If this precaution is not observed, unexpected operation may occur upon power cycle.

Writing Flash Using a Serial Programmer

When writing very large programs to flash memory, you may need to increase the request timeout value in the programming software to avoid receiving a request timeout message. An upper bound of 25 seconds is typically satisfactory. For further details, see the item “Store of Program or Reference Tables to Flash may Cause Loss of Ethernet Communications” in “Ethernet Operational Notes” on page 3.

Storing Large Configurations

The IC693CPU374 PLC supports a maximum of 20 DSM314 modules in a system. This number is reduced by other modules in the system, such as APM and GBC modules. It can also be further reduced by having datagrams set up to read the reference or fault tables. If the configuration and user program are stored at the same time, the presence of either C blocks within the LD program, or a C logic program also affects the number of DSM314 modules that can be included in a system. If the store fails, it may be possible to store the configuration to the system by first storing the logic program, and then storing the configuration on a separate store request. The number of modules supported is further reduced by the memory available to the user.

Simultaneous Load and Store

When operating with multiple programmers attached, if a store operation is initiated by one programmer while a load operation is already in progress, the load request will fail.

Transition Tables are not Cleared when the Reference Tables are Cleared

The transition tables are not cleared upon clearing the reference tables through the programmer.

Upgrading Firmware with Modules in Rack

The process of upgrading the PLC firmware with the WinLoader utility may fail when multiple IO modules are in the main, remote or expansion racks, due to the time it takes to power cycle the PLC. If the upgrade process fails, move the PLC to a rack without IO modules and restart the upgrade process.

PID Integral Contribution

The PID Integral Contribution is not calculated correctly with an integral rate of zero or one.

IC693CPU374 Data

Controller Type	Single slot CPU module with embedded Ethernet Interface
Processor	
Processor Speed	133 MHz
Processor Type	Embedded 586
Execution Time (Boolean Operation)	0.15 µsec per boolean instruction
Type of Memory Storage	RAM and Flash
Memory	
User Memory (total)	240KB (245,760) Bytes. **Note:** Actual size of available user program memory depends on the amounts configured for %R, %AI, and %AQ configurable word memory types.
Discrete Input Points - %I	2,048 (fixed)
Discrete Output Points - %Q	2,048 (fixed)
Discrete Global Memory - %G	1,280 bits (fixed)
Internal Coils - %M	4,096 bits (fixed)
Output (Temporary) Coils - %T	256 bits (fixed)
System Status References - %S	128 bits (%S, %SA, %SB, %SC - 32 bits each) (fixed)
Register Memory - %R	Configurable 128 to 32,640 words
Analog Inputs - %AI	Configurable 128 to 32,640 words
Analog Outputs - %AQ	Configurable 128 to 32,640 words
System Registers - %SR	28 words (fixed)
Timers/Counters	>2,000 (depends on available user memory)
Hardware Support	
Battery Backed Clock	Yes
Battery Back Up (Number of months with no power)	1.2 months for internal battery (installed in the power supply) 15 months with external battery (IC693ACC302)
Load Required from Power Supply	7.4 watts of 5VDC. High Capacity power supplies recommended.
Hand Held Programmer	CPU374 does not support Hand Held Programmer
EZ Program Store Device	Yes
Total Baseplates per System	8 (CPU baseplate + 7 expansion and/or remote)
Software Support	
Interrupt Support	Supports the periodic subroutine feature.
Communications and Programmable Coprocessor Compatibility	Yes
Override	Yes
Floating Point Math	Yes, Hardware Floating Point Math
Programming Support	VersaPro™ 2.03 or later. CIMPLICITY® Machine Edition Logic Developer 2.60 or later. Control software version 2.50 or later.
Communications Support	
Built-in Serial Ports	No serial ports on CPU374. Supports RS-485 port on power supply.
Protocol Support	SNP and SNPX on power supply RS-485 port
Built-in Ethernet Communications	Ethernet (built-in) – 10/100 base-T/TX Ethernet Switch
Number of Ethernet Ports	Two, both are 10/100baseT/TX ports with auto sensing. RJ-45 connection
Number of IP Addresses	One
Protocols	SRTP and Ethernet Global Data (EGD). No channel support.
Web Server Support	None
Environmental and Agency Specifications	
Operating Temperature	0 to 60°C (32 to 140°F) ambient
Storage Temperature	-40°C to +85°C
Agency Approvals	UL508, C-UL (Class I, DIV II, A, B, C, D), CE Mark
Low Temperature (LT) Testing	Yes. The CPU374 is available for -40° to 60°C operation.