INSTRUCTIONS FOR UPGRADING
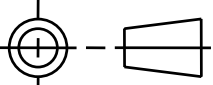## IC693CPU374 WITH NEW FIRMWARE

The Series 90™-30 PLC CPU has operating firmware stored in FLASH memory. The firmware upgrade and WinLoader update utility for these CPUs are provided on the upgrade disk or in the upgrade ZIP file downloaded from the Web. (Not all upgrade kits are available for Web download.) The WinLoader update utility is a Windows-based program that controls downloading the new firmware from the upgrade disk to the FLASH memory on the PLC CPU. WinLoader requires Windows 95/98/ME, Windows NT 4.0, Windows 2000, or Windows XP. The hardware required to run these operating systems is also adequate to run WinLoader.

NOTE: The instructions provided outline a specific procedure that MUST be followed in sequence. If the procedure for some reason is not followed, please contact the GE FANUC Hotline for help in upgrading the PLC CPU.

PLEASE READ ALL INSTRUCTIONS COMPLETELY PRIOR TO STARTING THE FIRMWARE UPDATE PROCEDURE.

TO INSTALL THE NEW FIRMWARE, PERFORM THE FOLLOWING STEPS:

1. Save or backup any programs or data resident in the PLC CPU before performing the firmware update.

2. Place the PLC in STOP/NOIO Mode.

3. Set the Memory Protect/Run Stop Key Switch to the "OFF/STOP" position.

4. Clear the configuration in the PLC CPU. This will setup the Power Supply Serial Port for 19200 baud, 8 bits per char, odd parity, and 1 stop bit. If the serial port is already set to these default values then this step is not necessary.

5. Clear any faults in the PLC.

6. Close any applications (including PLC programming applications) that may be using the COM ports of your PC.

7. Connect the serial port of your computer to the Power Supply Serial Port on the PLC CPU. (See the section entitled "CABLES REQUIRED FOR UPGRADING" at the end of this document for a list of the required cables.)

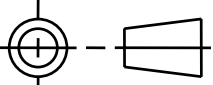| UNLESS OTHERWISE NOTED	SIGNATURES	DATES				
DIMENSIONS ARE IN INCHES/MM	DRAWN B.METTS	02/27/06				
TOLERANCES ON: 2 PL DECIMALS 3 PL DECIMALS ANGLES= FRACTIONS=	CHECKED		TITLE			
	ENGRG T.BINGLER	02/27/06		**INSTALLATION INSTRUCTIONS**		
THIRD ANGLE PROJECTION	ISSUED T.BINGLER	02/27/06				
	DIST 621		SIZE **A**	GEGS NO	DWG NO	**44A751629**
	VERSION LEVEL		SCALE		SHEET 1	OF **1**

8.   a)   <u>Ordered Upgrade Kit:</u>

         If you ordered an upgrade kit, unzip all of the files in the upgrade ZIP file located on the upgrade diskette to a new directory on your hard drive. Then, execute the upgrade software from that location on your hard drive. The upgrade cannot be executed directly from the upgrade diskette because the uncompressed size of the update files is larger than the capacity of a floppy disk.

       b)   <u>Downloaded Upgrade from Web:</u>

         If you downloaded the upgrade kit from the Web (Not all upgrade kits are available for Web download.), unzip all of the files in the upgrade ZIP file to a new directory on your hard drive and execute the upgrade software from that location.
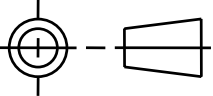
9.   Invoke the WinLoader ("WinLoader.exe") software package by double clicking on its icon in the location determined by the previous step.

10.   Select the serial port on your computer you are using to communicate with the PLC CPU. (ex: "COM1")

11.   Begin the firmware upgrade by single clicking the "Update" button. When the upgrade begins, the "OK" and "RUN" LEDs on the PLC CPU's Power Supply blink in unison. These LEDs continue to blink in unison while the PLC CPU firmware is being updated. When the PLC CPU firmware update completes, the "OK" and "RUN" LEDs on the power supply briefly turn off, then the "OK" LED flashes for a short period of time and then comes on solid. Now, the "EOK," "LAN," and "STAT" LEDs on the PLC CPU blink in unison. At this point the update to the PLC CPU firmware is complete and the WinLoader utility automatically begins the update of the Ethernet Interface firmware. WinLoader's status bar shows the update status during the entire update process.

12.   Upon successful completion of the update, the "OK" and "RUN" LEDs on the PLC CPU's Power Supply and the "EOK," "LAN," and "STAT" LEDs on the PLC CPU turn off. Then, the "OK" and "EOK" LEDs flash for a short period of time and then come on solid. The WinLoader utility also displays a dialog indicating the final status of the update. If the update was successful, and you have no other units to update, indicate that another device is NOT to be updated by clicking the "No" button. If you do have additional units to update, click the "Yes" button and follow this procedure again. If the update was not successful, see the "Common Causes of Failure" section below to determine how to correct the problem.

13.   If you ordered an upgrade kit, place the upgrade label on the PLC CPU ensuring no vents or other labels are covered.

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	DIST 621		SIZE **A**	GEGS NO	DWG NO **44A751629**
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	REVISIONS		
REV	DESCRIPTION	DATE	APPROVED

COMMMON CAUSES OF FAILURE

1. **PLC is not in STOP/NOIO mode**. SIDE EFFECTS: A WinLoader dialog box appears stating there is a "CPU State Mismatch". REMEDY: WinLoader asks if it's OK to clear fault tables and place PLC in STOP/NOIO mode. Click Yes and proceed.

2. **Connected to wrong serial port.** SIDE EFFECTS: A WinLoader dialog box appears stating the "Firmware Update Failed." It lists several possible reasons why the firmware update failed. REMEDY: Make sure the serial cable is connected to the Power Supply Serial Port and the correct COM port of the PC (should match COM port indicated on WinLoader screen), turn the PLC CPU off and back on, and start the process again.

3. **COM port on computer already in use.** SIDE EFFECTS: A WinLoader dialog box appears stating the " Firmware Update Failed " and the selected COM port is either busy or does not exist. REMEDY: Close any other applications (including PLC programming applications) and ensure the serial cable is connected to correct COM port on the PC and start the upgrade process again.

4. **Memory Protect/Run Stop Key Switch in the "ON/RUN" position.** SIDE EFFECTS: A WinLoader dialog box appears stating the "Firmware Update Failed." It lists several possible reasons why the firmware update failed. REMEDY: Set the Memory Protect/Run Stop Key Switch to the "OFF/STOP" position, turn the PLC CPU off and back on, and start the process again.

5. **Upgrading Firmware with Many Modules in the PLC.** SIDE EFFECTS: After a successful start of the upgrade process, a WinLoader dialog box appears during step 11 stating the "Firmware Update Failed" and that Winloader "Cannot connect to the target device." REMEDY: Wait until the "EOK," "LAN," and "STAT" LEDs on the PLC CPU begin to blink in unison and then click the Retry button on the error dialog box. Alternatively, move the PLC CPU to a rack without I/O modules and restart the upgrade process.

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RESTARTING AN INTERRUPTED FIRMWARE UPGRADE

A. Turn the PLC CPU off and back on.

B. If a partial or erroneous download was performed, the PLC CPU may power up with either the "OK" and "RUN" LEDs on the PLC CPU's power supply flashing in unison, the "EOK," "LAN," and "STAT" LEDs on the PLC CPU blinking in unison, or both. If any of the above conditions are true, begin again at step six of the installation instructions; otherwise begin again at step one.

CABLES REQUIRED FOR UPGRADING

Either of the two options below may be used to connect your PC to your PLC CPU to perform a firmware upgrade.

Option 1

Catalog Number	Description
IC690ACC901	RS-422/RS-485 to RS-232 Miniconverter Kit

Option 2

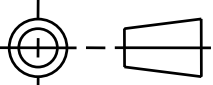| Catalog Number	Description
IC690ACC900	RS-422/RS-485 to RS-232 Converter (also requires cable IC690CBL303 and either IC690CBL702 or IC690CBL705 below)
IC690CBL303	15-pin RS-442 Serial Cable
IC690CBL702	9-pin RS-232 Serial Cable
IC690CBL705	25-pin RS-232 Serial Cable

(IC693CPU374 *Plus* models ONLY)
TO INSTALL THE NEW WEB FILES, PERFORM THE FOLLOWING STEPS:

To upgrade the web files, transfer the appropriate files into the PLC via FTP. A general procedure for transferring web files via Windows FTP is described below. Note that a commercial FTP program may also be used to perform this web file upgrade.

NOTE: The web files are transferred to the PLC over Ethernet rather than through the serial port. Be sure the PLC CPU's Ethernet interface is operating normally, configured with a valid IP address, and is accessible by the PC on which the FTP program is running.

1. At the PC, open a Windows DOS box.

2. Change to the directory where the upgrade files were unzipped using the 'cd' command (the following examples use C:\plc_upgrade\ for illustration purposes). When the upgrade ZIP file was unzipped as described in the firmware upgrade instructions above, a new sub-directory was created named "web_files". Change to this directory by also using the 'cd' command.

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	VERSION LEVEL		SCALE		SHEET 4	OF 4

```
C:\> cd plc_upgrade\web_files
```

3. Optionally verify communication between the PC and the PLC CPU by issuing the 'ping' command.

```
C:\plc_upgrade\web_files> ping <IP address>
```

4. Establish an FTP connection between the PC and the PLC CPU by entering 'ftp' followed by the URL or IP address of the PLC as shown below:

```
C:\plc_upgrade\web_files> ftp <URL or IP address of Ethernet interface>
```

5. The FTP utility will prompt for a login name and password as shown below. The default FTP password is "system".

```
Connected to 10.0.0.1
220 VxWorks (5.4.2) FTP server ready
User (10.0.0.1:(none)): user
331 Password required
Password: system
230 User logged in
```

NOTE: The FTP server in the PLC CPU does not support multiple levels of login (i.e. there are no distinct 'anon' or 'user' logins).

NOTE: Once successfully logged on, the commands are executed on the PLC CPU, not on the PC. For example, changing directories via the 'cd' command will change the directory in the file system on the PLC CPU, not on the PC.

6. Set the FTP file transfer type to binary as follows:

```
ftp> binary
200 Type set to I, binary mode
```

7. Change to the root directory in the PLC CPU as follows:
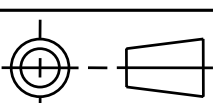
```
ftp> cd /ffs/
```

8. Transfer the files from the PC to the PLC CPU. This may be accomplished in two ways.

The first method to transfer the files is to transfer each file individually by executing the 'put' command for each file as follows:

```
ftp> put <file name>
```

The following is an example of the display as the file is transferred to the PLC CPU:

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```
200 Port set okay
150 Opening BINARY mode data connection
226 Transfer complete
ftp: 341471 bytes sent in 6.41Seconds 53.30Kbytes/sec.
```

The second method to transfer the files is to transfer the files collectively with a single command. Note that this command will transfer all files of the type specified that exists in the current working directory on your PC. Therefore, it is important to be in the directory where the web files are located, accomplished via the 'cd' command as described above in step 2. Transfer the files as follows:

```
ftp> mput *
```

For each file to be transferred, a prompt appears asking if the file should be transferred. Pressing <enter> is the same as pressing y<enter>, and results in the transfer of that file. Pressing n<enter> will result in the file not being transferred. An example of the output displayed is shown below:
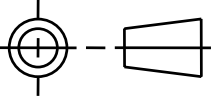
```
mput reference_tables.htm? y
200 Port set okay
150 Opening BINARY mode data connection
226 Transfer complete
ftp: 341471 bytes sent in 6.41Seconds 53.30Kbytes/sec.
```

9. Verify all files are properly transferred by typing in 'dir' or 'ls'. This returns a list of the files located at the current directory on the PLC CPU.

10. Quit the FTP session by typing in 'quit' or 'bye'.

COMMON CAUSES OF WEB FILE UPGRADE FAILURE

1. **FTP password set to a non-default value**. SIDE EFFECTS: When attempting to login over FTP, login fails. REMEDY: The default FTP password may be changed via Advanced User Parameter 'tpassword'. Check the configuration in the PLC CPU to identify the password and re-attempt the FTP login with the non-default password.
2. **421 Session limit reached.** If you receive this error when attempting to login over FTP, it is likely that the number of FTP connections is set to zero. Connect with the programmer, and download a configuration to the 374 that allows 2 FTP connections. If this selection is not visible on the CPU Ethernet tab, replace the 374 in the configuration. This will give you access to the latest parameters for the 374 Plus.

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