SLC 5/03™ and SLC 5/04™ Processors Firmware/Operating System Upgrade

Introduction

Enclosed in this package is a firmware/operating system upgrade for your SLC 5/03 or SLC 5/04 processor. Take anti-static precautions when upgrading the firmware.

ATTENTION	The Flash EPROMs are electrostatic sensitive devices. Do not handle without proper grounding precautions. Do not install PROM with power applied to the SLC 5/03 or SLC 5/04 processor.

If you upgrade an SLC 5/03 or SLC 5/04 processor, you receive anomaly fixes as well as added functionality. During the upgrade, the ladder logic program inside the processor is erased. Therefore, the first step in upgrading the firmware/operating system is to save the processor's ladder logic program.

This product is CE compliant for all applicable directives when product or packaging is marked.

Installation Procedure

Follow these instructions carefully. Refer to page 3 for component placement information.

1. Save the current user program to your hard drive using your programming software, to a memory module, or to a 1747-PSD Program Storage Device.

IMPORTANT	The user program is cleared as part of the firmware/operating system upgrade process. You must restore your program after loading the upgrade. Also, all communication ports are returned to the default parameters.

2. Remove the communication cable between the processor and your programming terminal.

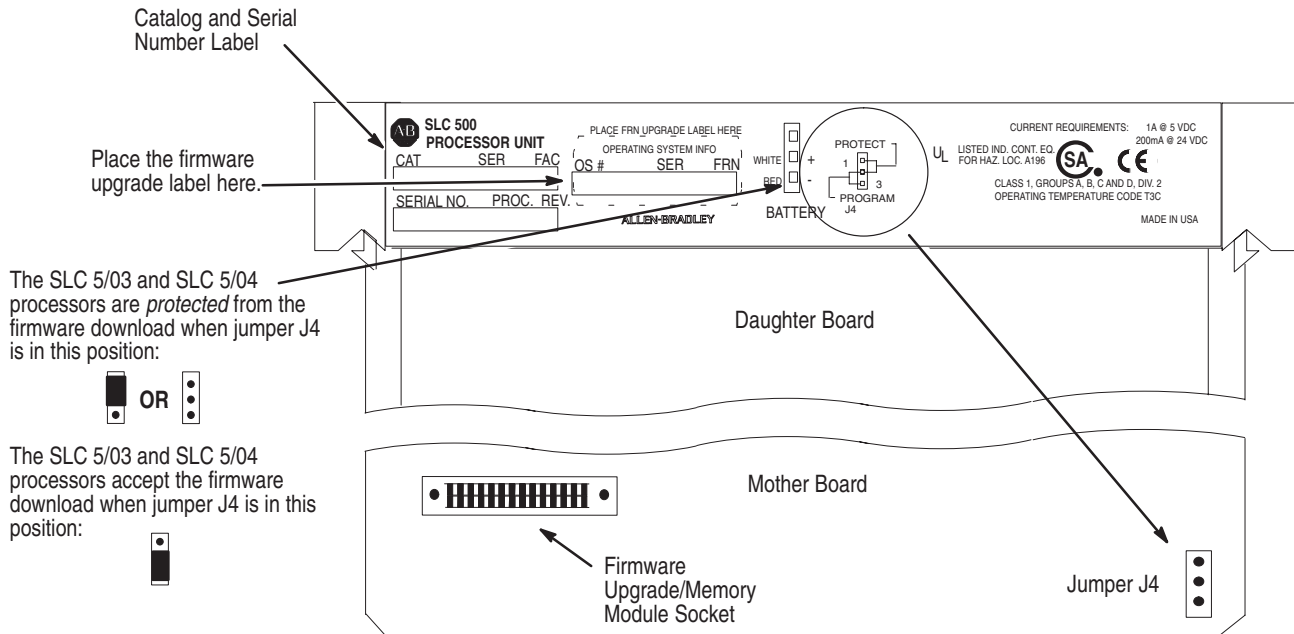**3.** Remove power from the chassis containing the processor.

ATTENTION	Do not remove the processor from the SLC 500 chassis until all power is removed from the SLC 500 power supply.

4. Remove the processor from the chassis.

5. Plug the firmware/operating system upgrade pack into the memory module socket.

6. Move the operating system write-protect jumper (J4) to the unprotected, or program, position.

IMPORTANT	Jumper J4, located in the bottom right corner of the motherboard, provides write protection from any download of a new operating system. The "out of the box" position of this jumper is "PROTECT," or write protect. Without the jumper, the processors are write protected.

Figure 1 Component Placement Information

7. Firmly seat the processor back into the chassis.

8. Apply power to the chassis containing the processor while watching the LED display. All the LEDs should turn on and then turn off. The download process of the firmware takes up to 2.5 minutes. While the download is in progress, the RUN and FLT LEDs remain off. The other four LEDs – RS232, DH485 (DH+on the SLC 5/04), FORCE, and BATT – turn on and off in a walking bit sequence. If the download is successful, these four LEDs remain on together. If the FLT LED turns on and a combination of LEDs flash on and off indicating an error condition, refer to the troubleshooting information on page 4.

9. After completing the download, remove power from the chassis containing the processor.

> **ATTENTION**
>
> Do not remove the processor from the SLC 500 chassis until all power is removed from the SLC 500 power supply.

10. Remove the processor from the chassis.

11. *Carefully* remove the firmware upgrade pack and place it in the anti-static packaging it was shipped in.

12. Move the operating system write-protect jumper (J4) back to the protected position (see diagram on page 3).

> | **IMPORTANT** | Failure to return the J4 jumper to the protected position results in an error (0x3D Hex) on the power cycle following the download of a valid program to the processor. This error condition prevents the module from going to run and causes Channel 0 communication settings to return to their defaults. To properly clear the error, place the J4 jumper in the protected position, and then re-download a valid user program to the processor. |
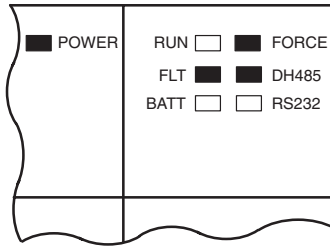> | --- | --- |

13. Apply the enclosed firmware upgrade label to the processor nameplate.

14. Firmly seat the processor back into the chassis.

15. Attach the communication cable between the processor and your programming terminal.

16. Apply power to the chassis containing the processor while watching the LED display. All the LEDs should flash on and then turn off except for the FLT LED which should remaining flashing. If the FLT LED turns on and a combination of LEDs flash on and off indicating an error condition, refer to the troubleshooting information in this document.

17. Restore your program.

Identifying Processor Errors While Downloading Firmware

The download process of the firmware/operating system takes up to 2.5 minutes. While the download is in progress, the RUN and FLT LEDs remain off. The other four LEDs – RS232, DH485 (DH+on the SLC 5/04), FORCE, and BATT – turn on and off in a walking bit sequence. If the download is successful, these four LEDs remain on together.
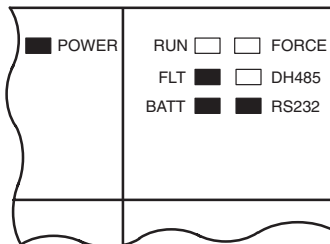
If the download is not successful, the FLT LED turns on and a combination of LEDs flash on and off indicating an error condition. The following LED diagrams and tables provide information regarding error messages, possible cause(s) for the error, and recommended action(s) to take to resolve the error.
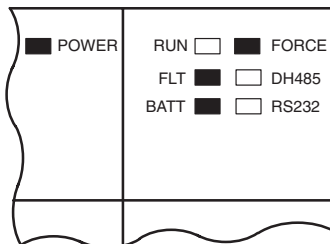
If the LED's indicate:[1]

```
┌─────────┬─────────────────┐
│ ■ POWER │ RUN □  ■ FORCE  │
│         │ FLT ■  ■ DH485  │
│         │ BATT □ □ RS232  │
│         │                 │
```

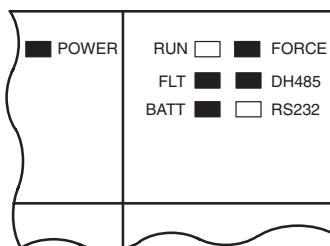| The Following Error Exists	Probable Cause	Recommended Action
Fatal Hardware Error	Major hardware failure due to noise, improper grounding, or poor power source.	Cycle power and see if the error repeats itself. If the error clears, you should be able to download the firmware. If the error persists, contact your Rockwell Automation representative.

If the LED's indicate:[1]

```
┌─────────┬─────────────────┐
│ ■ POWER │ RUN □  □ FORCE  │
│         │ FLT ■  □ DH485  │
│         │ BATT ■ ■ RS232  │
│         │                 │
```

| The Following Error Exists	Probable Cause	Recommended Action
Corrupted Operating System Memory Module	The operating system on the Flash EPROM is corrupt.	Cycle power and see if the error repeats itself. If the error persists, either contact your Rockwell Automation representative for a new operating system upgrade cartridge, or download the old operating system, if available.

If the LED's indicate:[1]

```
┌─────────┬─────────────────┐
│ ■ POWER │ RUN □  ■ FORCE  │
│         │ FLT ■  □ DH485  │
│         │ BATT ■ □ RS232  │
│         │                 │
```

The Following Error Exists	Probable Cause	Recommended Action
Flash EPROM Failure	The processor flash EPROM is corrupt.	Cycle power and see if the error repeats itself. If the error clears, you should be able to download the firmware. If the error persists, contact your Rockwell Automation representative.

If the LED's indicate:[1]

```
┌─────────┬─────────────────┐
│ ■ POWER │ RUN □  ■ FORCE  │
│         │ FLT ■  ■ DH485  │
│         │ BATT ■ □ RS232  │
│         │                 │
```

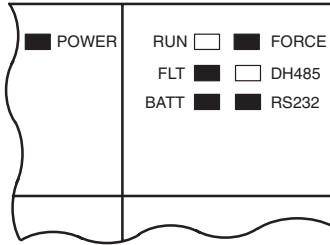| The Following Error Exists	Probable Cause	Recommended Action
Corrupt or Missing Operating System	The operating system is missing or has been corrupted.	Cycle power. If error clears, you should be able to download the firmware. If the error persists, contact your Rockwell Automation representative for a new operating system.

Refer to the following key to determine the status of the LED indicators:

☐ Indicates the LED is OFF.

■ Indicates the LED is ON.

(1) The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

If the LED's indicate:[1]

POWER	
RUN ☐	■ FORCE
FLT ■	☐ DH485
BATT ■	■ RS232

| The Following Error Exists	Probable Cause	Recommended Action
Downloadable Operating System Failure	Failure during transmission of downloadable operating system.	Download the operating system.

If the LED's indicate:[1]

POWER	
RUN ☐	☐ FORCE
FLT ■	■ DH485
BATT ■	☐ RS232
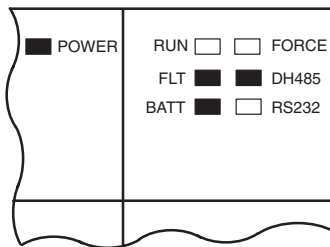
The Following Error Exists	Probable Cause	Recommended Action
Incompatible Platform	The upgrade of the operating system is incompatible with the processor hardware.	Use an operating system that is compatible with your processor hardware.

If the LED's indicate:[1]

POWER	
RUN ☐	☐ FORCE
FLT ■	■ DH485
BATT ■	■ RS232
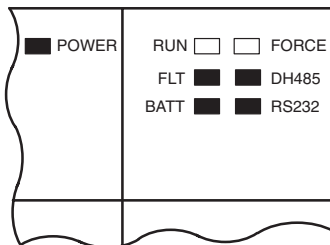
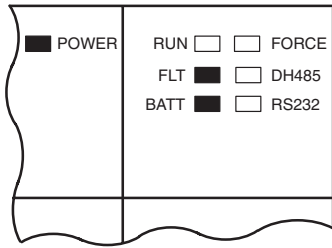| The Following Error Exists	Probable Cause	Recommended Action
Memory Write Protected	An attempt was made to download the operating system onto write-protected memory.	Change the J4 jumper of the SLC 5/03 and SLC 5/04 processors to the program position.

Refer to the following key to determine the status of the LED indicators:

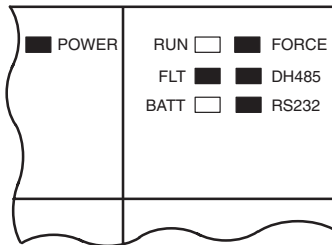☐   Indicates the LED is OFF.

■   Indicates the LED is ON.

(1)   The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

If the LED's indicate:[1]

```
POWER    RUN ☐   ☐ FORCE
         FLT ■   ☐ DH485
         BATT ■  ☐ RS232
```

The Following Error Exists	Probable Cause	Recommended Action
NVRAM error	Major hardware failure due to noise, improper grounding, or poor power source.	Cycle power and see if the error repeats itself. If the error clears, you should be able to download the firmware. If the error persists, contact your Rockwell Automation representative.

If the LED's indicate:[1]

```
POWER    RUN ☐   ■ FORCE
         FLT ■   ■ DH485
         BATT ☐  ■ RS232
```

The Following Error Exists	Probable Cause	Recommended Action
Hardware Watchdog Time-out	Major hardware failure due to noise, improper grounding, or poor power source.	Cycle power and see if the error repeats itself. If the error clears, you should be able to download the firmware. If the error persists, contact your Rockwell Automation representative.

Refer to the following key to determine the status of the LED indicators:

☐ Indicates the LED is OFF.

■ Indicates the LED is ON.

(1) The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect Support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Installation Assistance

If you experience a problem with a hardware module within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your module up and running.

United States	1.440.646.3223 Monday – Friday, 8am – 5pm EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning, it may need to be returned.

United States	Contact your distributor. You must provide a Customer Support case number (see phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for return procedure.

www.rockwellautomation.com

PN 40071-093-01(3)