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Harsco Track Technologies

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SERVICE BULLETIN
MAINTENANCE OF WAY EQUIPMENT

DATE: 5-20-2003 **BULLETIN NO:** 03-008

TITLE: SLC 503 CPU OPERATING SYSTEM UPGRADE KIT #200713

RATING:

- ☐ **DIRECTIVE** (Action Is Required)
- ☐ **ALERT** (Potential Problem)
- ☒ **INFORMATION** (Action Is Optional)
- ☐ **PRODUCT IMPROVEMENT** (Enhance Product)

PRODUCT SERIES / MODEL: RGH8 Series A Rail Grinders

SERIAL NO: All RGH8 Models A1 / A2 / A3 / A4 / A5

SUMMARY: Our vendor (Allen-Bradley) has obsoleted the existing M11 memory module #F026079 that is used on the SLC 503 CPU Module and replaced it with a new M13 memory module #200684. While the existing M11 module will work on all existing operating systems OS300, OS301, OS302A, OS302B and OS302C, the new M13 module requires an operating system OS302C or higher.

OPERATIONAL IMPACT: If the existing M11 module #F026079 is ordered as a repair part, it will be superceded by the new M13 module #200684. The new M13 module will work only on operating system OS302C or higher.

ACTION: Verify operating system OS302C or higher before ordering new M13 memory module to replace existing M11 memory module. If other than Operating System OS302C is currently installed, order Operating System Upgrade Kit #200713. See Identifying Instructions and Ordering Instructions in this Service Bulletin.

CONTACT: If you have any questions or if we can be of any service, please contact the Service Department at the Columbia, SC. facility, (803) 822-9160.

SAFETY INFORMATION

- **FOLLOW APPLICABLE RAILROAD LOCKOUT - TAGOUT PROCEDURE TO REMOVE ALL ENERGY SOURCES FROM MACHINE. FAILURE TO COMPLY COULD RESULT IN SEVERE BODILY INJURY.**

IDENTIFYING EXISTING CPU OPERATING SYSTEM - See Figure 1 and Figure 2

1. Remove all power from machine.
2. Open Rear Left Upper Soffit Panel (Rear Right Upper when facing rearward) on machine. Locate existing CPU Module in Rear Left Upper Soffit Compartment.
3. Depress top and bottom locks on CPU Module and pull module straight out of rack.
4. Look at Operating System data label on side of CPU Module. The Operating System is identified as OS300, OS301, OS302A, OS302B or OS302C.
   - 4.1 If Operating System is OS302C, this Operating System will support new M13 Memory Module #200684 and/or existing M11 Memory Module #F026079. Go to Step 18.
   - 4.2 All other Operating Systems other than OS302C require Operating System Upgrade Kit #200713 to support new M13 Memory Module #200684. Go to Step 5 to install new Operating System OS302C.

INSTALLING NEW CPU OPERATING SYSTEM OS302C - See Figure 1 and Figure 2

Note: Follow all anti-static procedures when removing or installing Memory Modules. For Vendor Information on anti-static procedures, LEDs, error conditions, etc.; refer to attached Vendor's Upgrade Instructions at end of this Service Bulletin.

5. Remove existing M11 Memory Module #F026079 from socket on CPU Module.
6. **Important:** Move jumper from "PROTECT" to "PROGRAM" on CPU Module.
7. Remove Upgrade Module #FOR007526 from shipping package. Install Upgrade Module in socket on CPU Module.
8. Install CPU Module into rack by aligning module with guide slots and pushing in gently until top and bottom lock tabs click.
9. Restore power to machine.
10. Turn on PASS (Precision Automated Stone Sequencing) System to boot-up PLC.
11. The Operating System will start upgrading. Watch LEDs on front of CPU Module as Operating System is being upgraded. LEDs will flash on and off indicating status of upgrade. See attached Vendor’s Upgrade Instructions - Step 8 for sequencing of these LEDs for a successful upgrade or an error condition.
12. After Operating System has been successfully upgraded in approximately 2-1/2 minutes, four LEDs (RS232 - DH485 - FORCE - BATT) on front of CPU Module will remain On steady as shown in Figure 1.

99-142B-2

FIGURE 1
SLC 503 CPU MODULE - FRONT VIEW

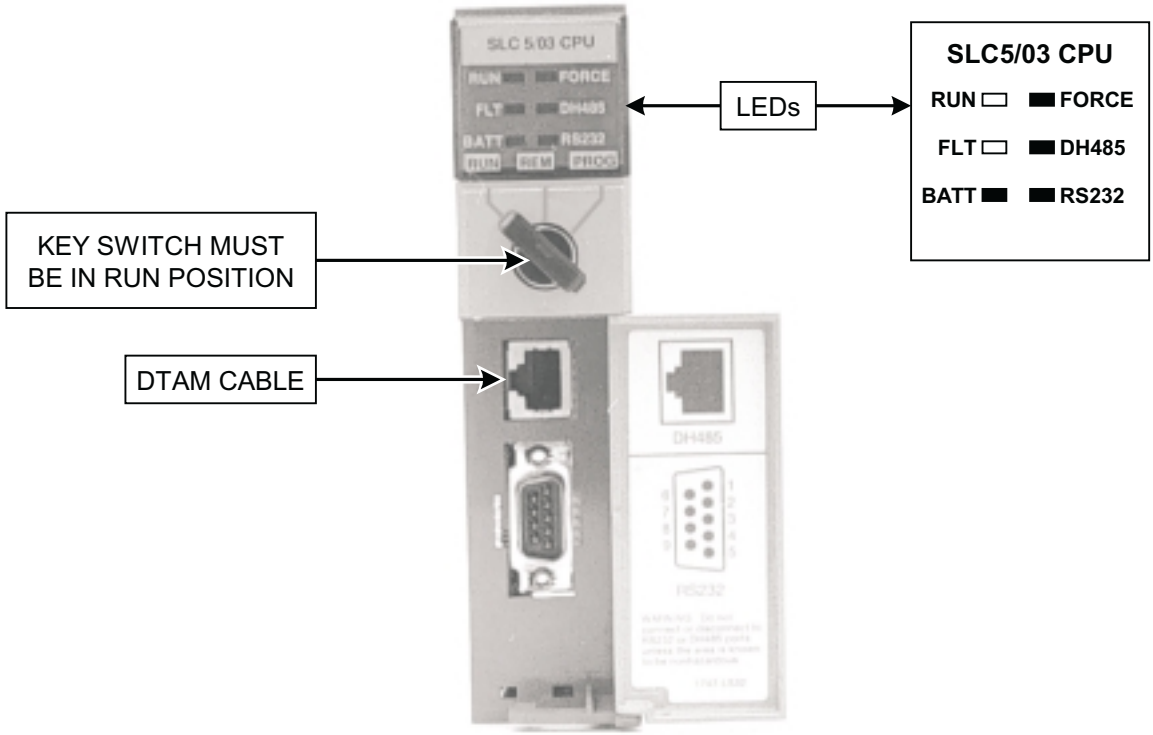

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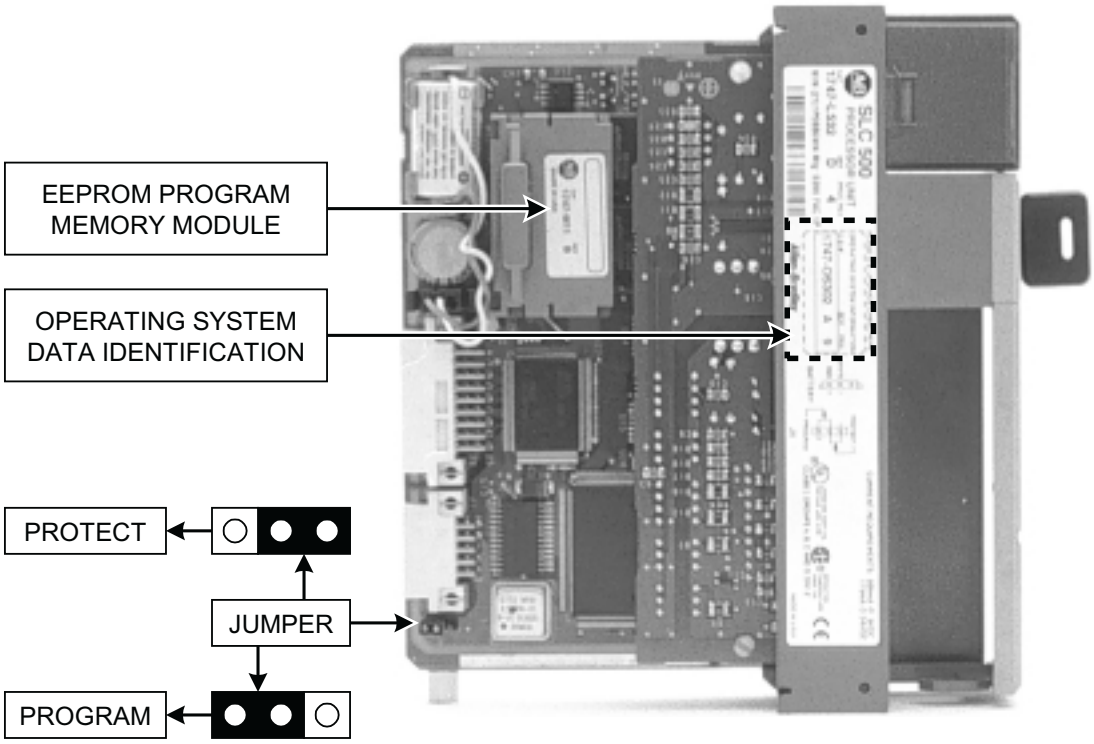
FIGURE 2
SLC 503 CPU MODULE - SIDE VIEW



INSTALLING NEW CPU OPERATING SYSTEM OS302C - See Figure 1 and Figure 2

13. Remove all power from machine.
14. Depress top and bottom locks on CPU Module and pull module straight out of rack.
15. Remove Upgrade Module #FOR007526 from socket on CPU Module. Re-package Upgrade Module in original shipping package.
    Note: Upgrade Module #FOR007526 can be returned to HTT at Fairmont, MN. Facility for credit, if so desired.
16. Install new Operating System OS302C data identification label on CPU Module.
17. **Important:** Move jumper from "PROGRAM" to "PROTECT" on CPU Module.
18. Install existing M11 Memory Module #F026079 (with existing program) or new M13 Memory Module #200684 (with new program) in socket on CPU Module.
19. Install CPU Module into rack by aligning module with guide slots and pushing in gently until top and bottom lock tabs click.
20. Go to Step 21 - Loading Program.

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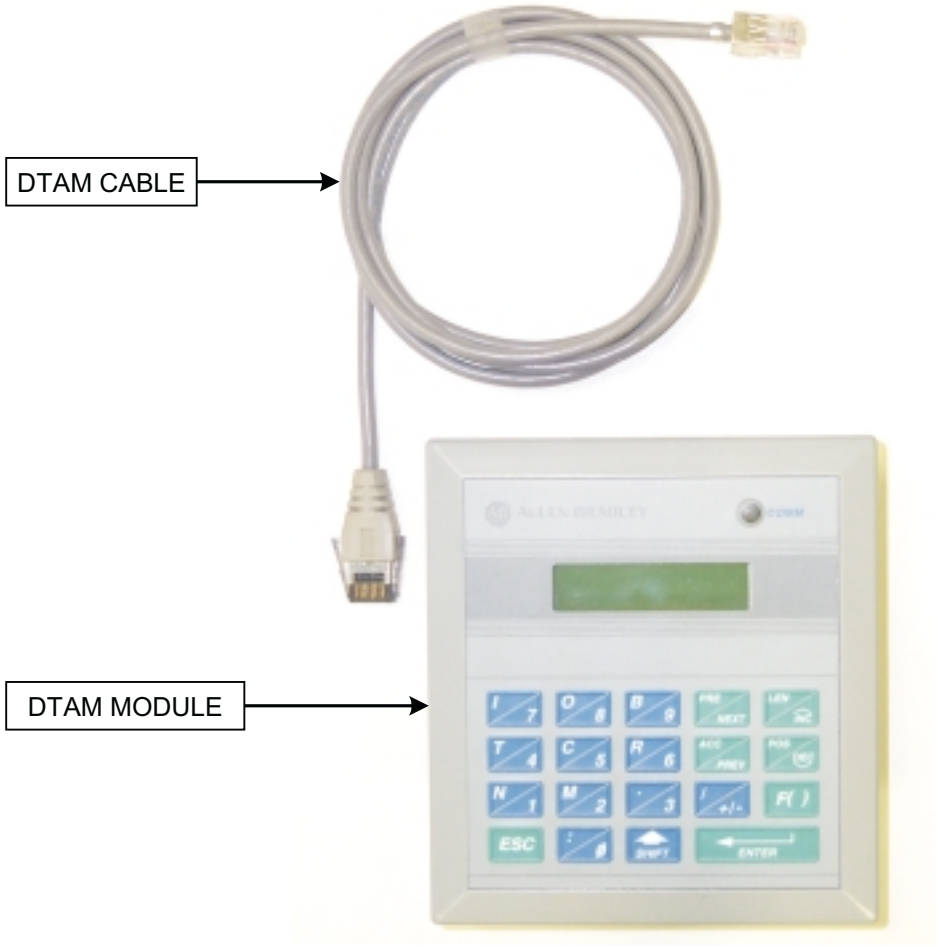
FIGURE 3
SLC 500 DTAM MODULE AND CABLE



LOADING PROGRAM - See Figure 3 and Figure 5

21. Open access door on front of CPU Module.
22. Install appropriate end of DTAM Cable in socket of DTAM Module and other end of Cable in socket of CPU Module (see Figure 1) by aligning lock tab with notch and pushing in gently until lock tab clicks.
23. **Important:** Before loading program, rotate key switch on front of CPU Module (see Figure 1) to REM (Remote) position.
24. Restore power to machine.
25. Turn on PASS (Precision Automated Stone Sequencing) System to boot-up PLC.
26. After PLC boots up, DTAM Module should display “RDY 1 FAULT” screen #1 as illustrated in Figure 5.
    Note: If any other screen is displayed on DTAM Module after boot-up other than screen illustrated, consult factory for assistance.
27. See Figure 5 - Loading Program Instructions for “RDY 1 FAULT” screen #1 displayed to load program.
28. **Important:** After loading program, rotate key switch on front of CPU Module (see Figure 1) to “RUN” position.
29. Be sure to record program number in spaces provided in Figure 4 of this Service Bulletin for future reference before disconnecting DTAM Module.
30. Remove all power from machine.
31. Disconnect DTAM Cable from CPU Module by depressing lock tab and pulling cable straight out. Repackage DTAM Module and Cable #F025901 in original shipping package.
    Note: DTAM Module and Cable #F025901 can be returned to HTT at Fairmont, MN. Facility for credit, if so desired.
32. Close access door on front of CPU Module.
33. Close Rear Left Upper Soffit Panel on machine.

PROGRAM INFORMATION - See Figure 4

34. The CPU Module type, program and version will need to be known when contacting factory for assistance.
35. After PLC boots up, DTAM Module will display "RDY 1 RUN" screen illustrated in Figure 4. Record program information displayed on this screen in Figure 4.

FIGURE 4
PROGRAM INFORMATION

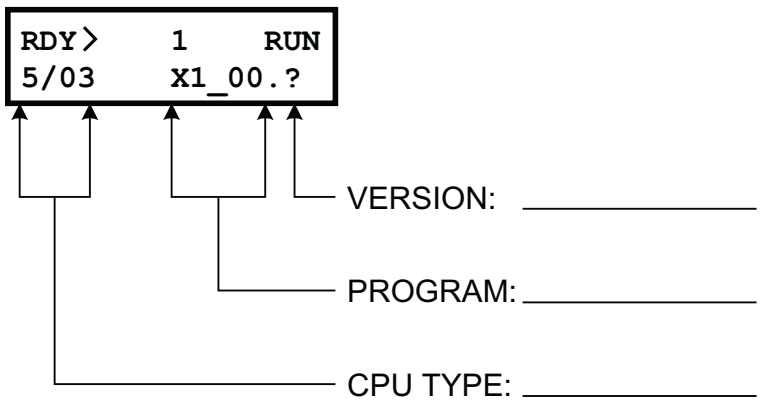
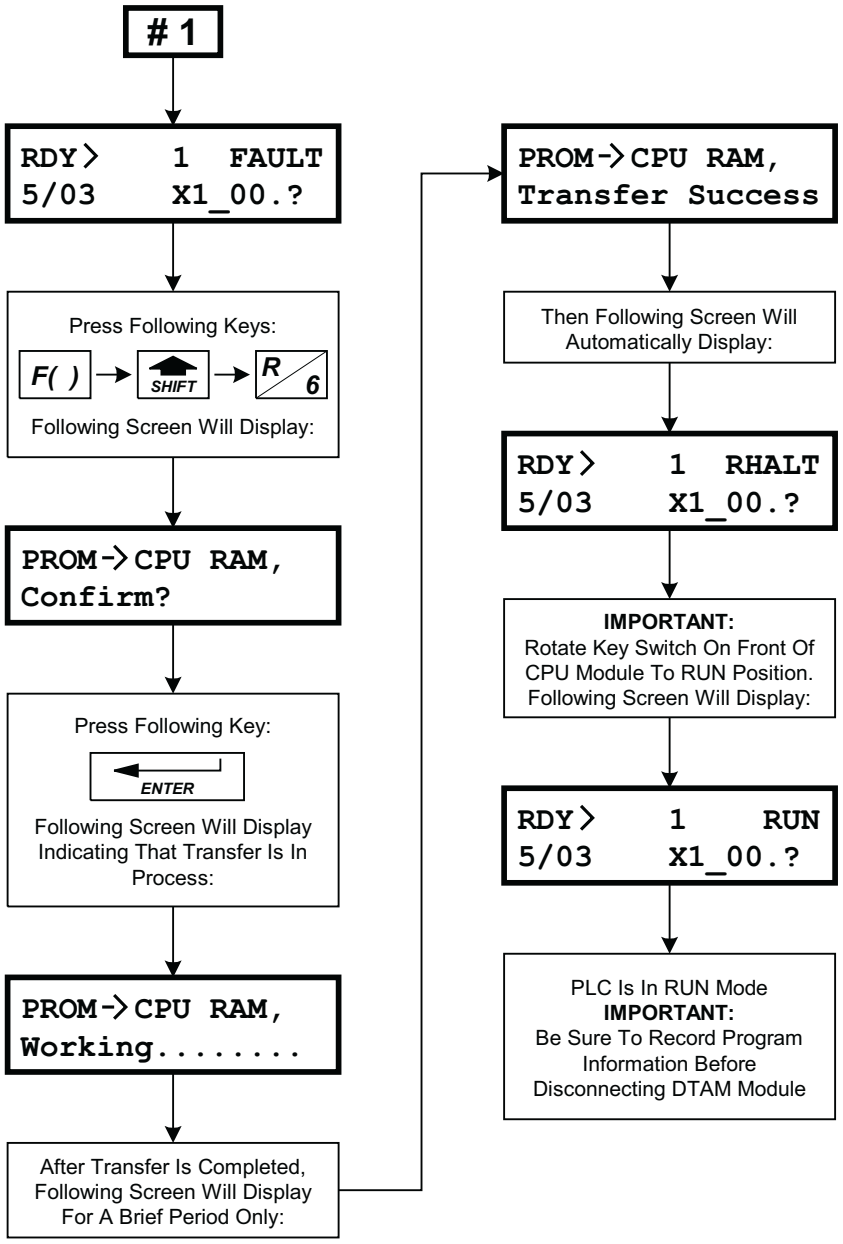


FIGURE 5
LOADING PROGRAM INSTRUCTIONS



ORDERING INFORMATION

1. To upgrade to Operating System OS302C and replace existing M11 Memory Module with new M13 Memory Module, order Operating System Upgrade Kit #200713 and M13 Memory Module #200684.

2. To upgrade to Operating System OS302C only, order Operating System Upgrade Kit #200713. Existing M11 Memory Module will work.

3. To replace existing M11 Memory Module with new M13 Memory Module only, order M13 Memory Module #200684 only.

PARTS LIST

Note: The quantities listed are for one machine.

	ITEM	PART NO	DESCRIPTION	QTY
		200713	SLC 503 OPERATING SYSTEM UPGRADE KIT	1
*	1	F025901	Programmer, DTAM and Cable (Return for Credit) . . .	1
+	2	FOR007526	Upgrade Module, OS302C (Return for Credit)	1

* Programer DTAM and Cable can be returned to HTT at Fairmont, MN. facility for credit, if so desired. Programmer must be returned in original shipping package.

\+ Upgrade Module can be returned to HTT at Fairmont, MN. facility for credit, if so desired. Module must be returned in original shipping package.

	ITEM	PART NO	DESCRIPTION	QTY
*	3	200684	Memory Module, M13 (w/ New Program)	1

* When ordering M13 Memory Module, customer must inform HTT of Program currently installed on machine.

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Printed In U.S.A.

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.

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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.

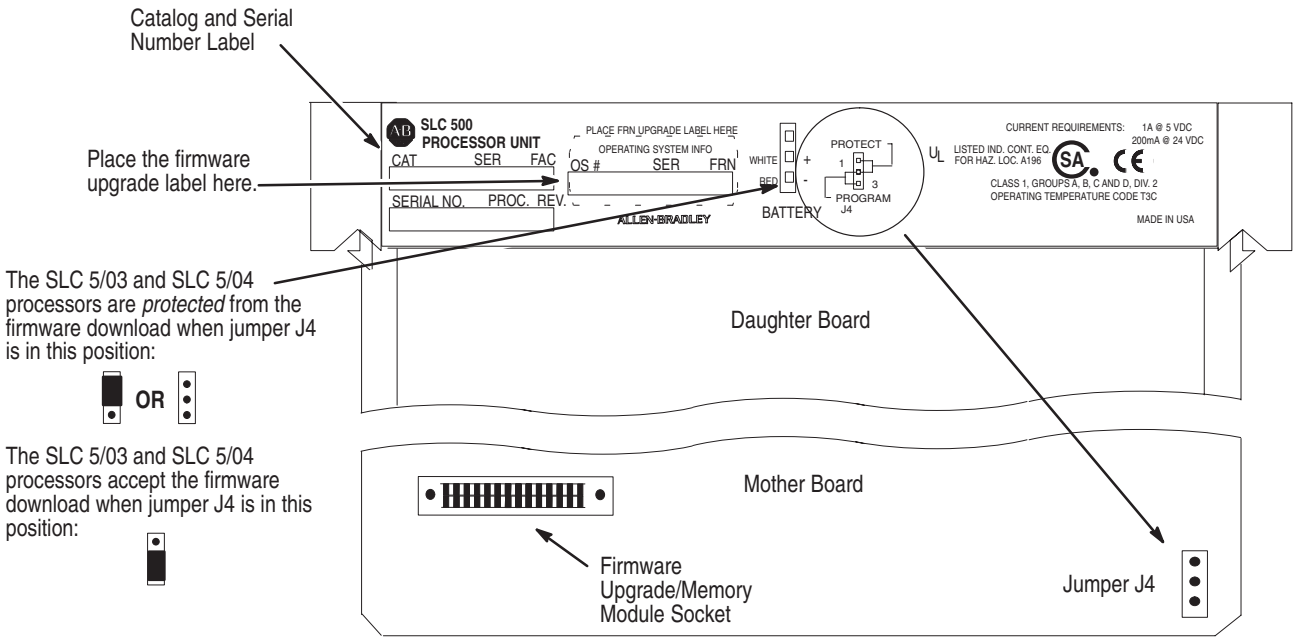
4. Remove the processor from the chassis.

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.

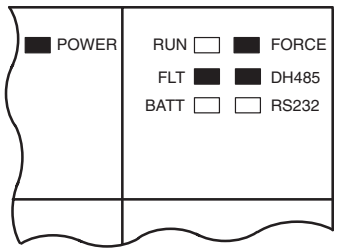
17. Restore your program.

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.

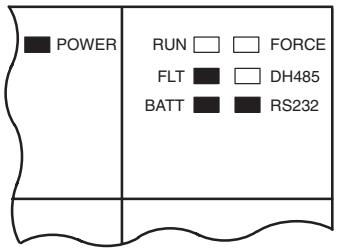
If the download is not successful, the FLT LED turns on and a combination of LEDs flash on and off indicating an error condition. The following LED diagrams and tables provide information regarding error messages, possible cause(s) for the error, and recommended action(s) to take to resolve the error.

If the LED's indicate:(1)



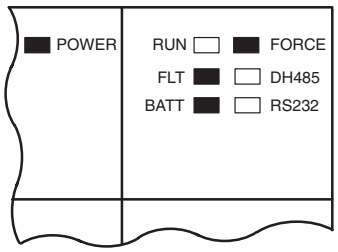
The Following Error Exists	Probable Cause	Recommended Action
Fatal Hardware Error	Major hardware failure due to noise, improper grounding, or poor power source.	Cycle power and see if the error repeats itself. If the error clears, you should be able to download the firmware. If the error persists, contact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

If the LED's indicate:(1)



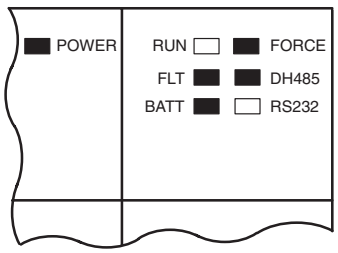
The Following Error Exists	Probable Cause	Recommended Action
Corrupted Operating System Memory Module	The operating system on the Flash EPROM is corrupt.	Cycle power and see if the error repeats itself. If the error persists, either contact your Rockwell Automation representative for a new operating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

If the LED's indicate:(1)



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)



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.

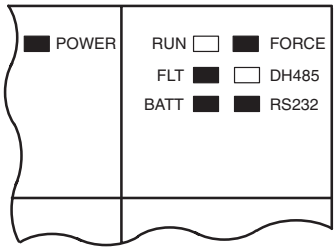
Refer to the following key to determine the status of the LED indicators:

Indicates the LED is OFF.

Indicates the LED is ON.

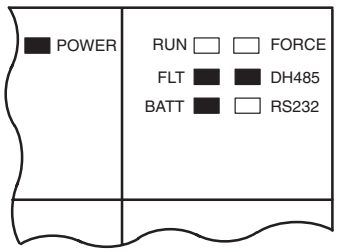
(1) The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

If the LED's indicate:(1)



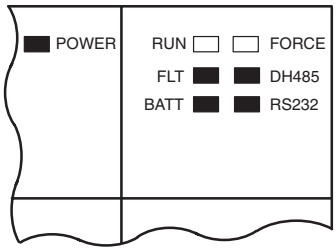
The Following Error Exists	Probable Cause	Recommended Action
Downloadable Operating System Failure	Failure during transmission of downloadable operating system.	Download the operating system.

If the LED's indicate:(1)



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)



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.

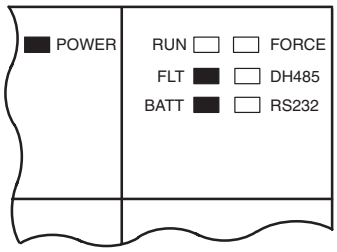
Refer to the following key to determine the status of the LED indicators:

Indicates the LED is OFF.

Indicates the LED is ON.

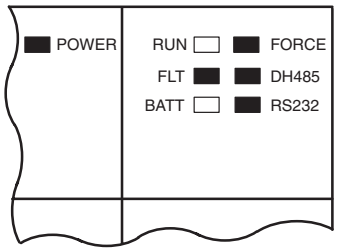
(1) The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

If the LED's indicate:(1)



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)



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.

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