



Harsco Track Technologies

Harsco

www.harscotrack.com

SERVICE BULLETIN MAINTENANCE OF WAY EQUIPMENT

DATE: 4-14-2003 **BULLETIN NO:** 03-005

TITLE: 200685 SLC 503 CPU OPERATING SYSTEM AND MEMORY UPGRADE KIT
200714 SLC 500 DTAM FIRMWARE UPGRADE KIT

RATING: **DIRECTIVE** (Action Is Required) **ALERT** (Potential Problem)
 INFORMATION (Action Is Optional) **PRODUCT IMPROVEMENT** (Enhance Product)

PRODUCT SERIES / MODEL: W96 Series E and F Spike Drivers
RMC306 Series C Anchor Boxers

SERIAL NO: All W96 Models E1 / E2 / E3 and Models F1 / F2
All RMC306 Models C1

SUMMARY: Our vendor (Allen-Bradley) has obsoleted the existing M11 memory module part # F026079 that is used on the SLC 503 CPU Module and replaced it with a new M13 memory module part # 200684. The new M13 module requires an operating system OS302C or higher and DTAM-E with firmware FRN 3.00 or higher while the existing M11 module will work on all existing operating systems OS300, OS301, OS302A, OS302B and OS302C and DTAM or DTAM-E with any firmware.

OPERATIONAL IMPACT: If the existing M11 module part # F026079 is ordered as a repair part, it will be superceded by the new M13 module part # 200684. The new M13 module will work only on operating system OS302C or higher and DTAM-E with firmware FRN 3.00 or higher.

ACTION: Verify operating system OS302C or higher and DTAM-E with firmware 3.00 or higher before ordering new M13 memory module to replace existing M11 memory module. 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.**

RECORD EXISTING DTAM VALUES

1. Restore power to machine.
2. Turn on (boot-up) PLC.
3. Record all existing DTAM values for following: It is necessary to re-enter all DTAM values after program is installed.
 - 3.1 W96E / F Spike Drivers
 - a. Drivers: Feed - Spot - Release
 - b. Nipper: Jaw Close - Partial Retract
 - c. Gauger: Must Be Re-Calibrated
 - 3.2 RMC306C Anchor Boxers
 - a. Work-head: Swing Out - Swing In - Feed
 - b. Work-head: Down - Spot - Up
 - c. Timers: Pre-Squeeze - Head Release - Feed - Clamp

IDENTIFYING EXISTING DTAM FIRMWARE - See Figure 1 and Figure 2

4. Remove all power from machine.
5. Locate DTAM Module in Control Box on machine.
6. Remove screws and swing face panel of Control Box out to view rear of DTAM Module.
7. Look at data identification label on rear of DTAM Module. The DTAM Module is identified as DTAM or DTAM-E and the firmware is identified as FRN 0.00.
 - 7.1 If data identification label is DTAM-E and FRN 3.00 or higher, this DTAM Module will support new M13 Memory Module # 200684. Go to Step 8.
 - 7.2 If data identification label is DTAM and/or FRN 2.99 or lower, this DTAM Module requires DTAM Firmware Upgrade Kit # 200714 to support new M13 Memory Module # 200684. Go to Step 10 to install DTAM Firmware Upgrade.
8. Swing face panel of Control Box in and re-secure with screws.
9. Go to Step 24 to verify existing Operating System.

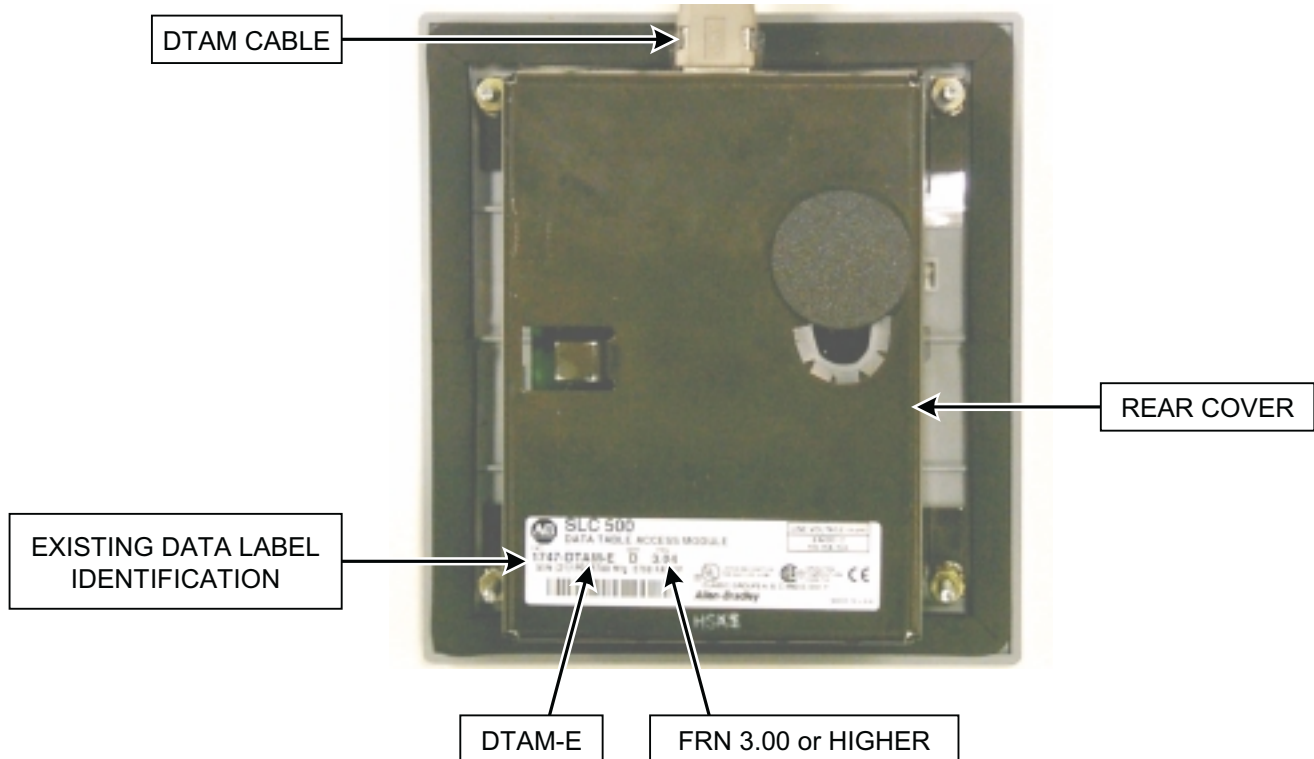
03-153

FIGURE 1
SLC 500 DTAM MODULE - FRONT VIEW



03-154-2

FIGURE 2
SLC 500 DTAM MODULE - REAR VIEW



INSTALLING NEW DTAM FIRMWARE - See Figure 3 and Figure 4

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

- 10. Disconnect DTAM Cable from DTAM Module by depressing lock tab and pulling Cable straight out.
- 11. Remove four outer nuts (A) to remove DTAM Module from face panel of Control Box.
- 12. Remove four inner nuts (A) to remove cover from rear of DTAM Module.
- 13. Remove existing Firmware Module from socket on DTAM Module.
- 14. Remove Upgrade Firmware Module # FOR007528 from shipping package. Install Upgrade Firmware Module in socket on DTAM Module.

Note: Align module with socket so notch is towards bottom of DTAM Module.

- 15. Re-install cover on rear of DTAM Module and secure re-using four nuts (A).
- 16. Install new firmware FRN 3.04 data identification label on rear of DTAM Module.
- 17. Re-install DTAM Module in face panel of Control Box and secure reusing four nuts (A).
- 18. Install DTAM Cable in socket of DTAM Module by aligning lock tab with notch and pushing in gently until lock tab clicks.
- 19. Swing face panel of Control Box in and re-secure with screws.
- 20. Restore power to machine.
- 21. Turn on (boot-up) PLC.
- 22. PLC should boot up normally and "ENTER DISPLAY #" screen should be displayed on DTAM Module as illustrated to right.

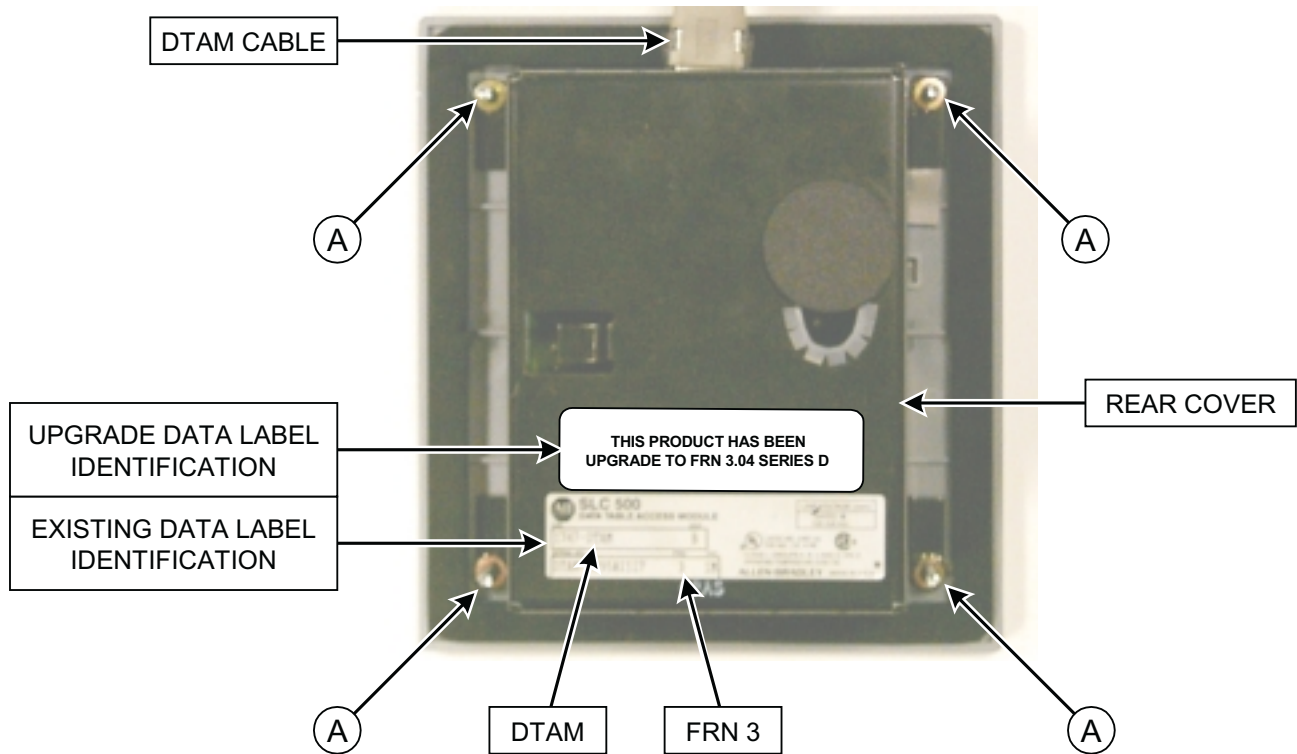


Note: If any other screen is displayed on DTAM Module after boot-up other than screen illustrated, consult factory for assistance.

- 23. Go to Step 24 to verify existing Operating System.

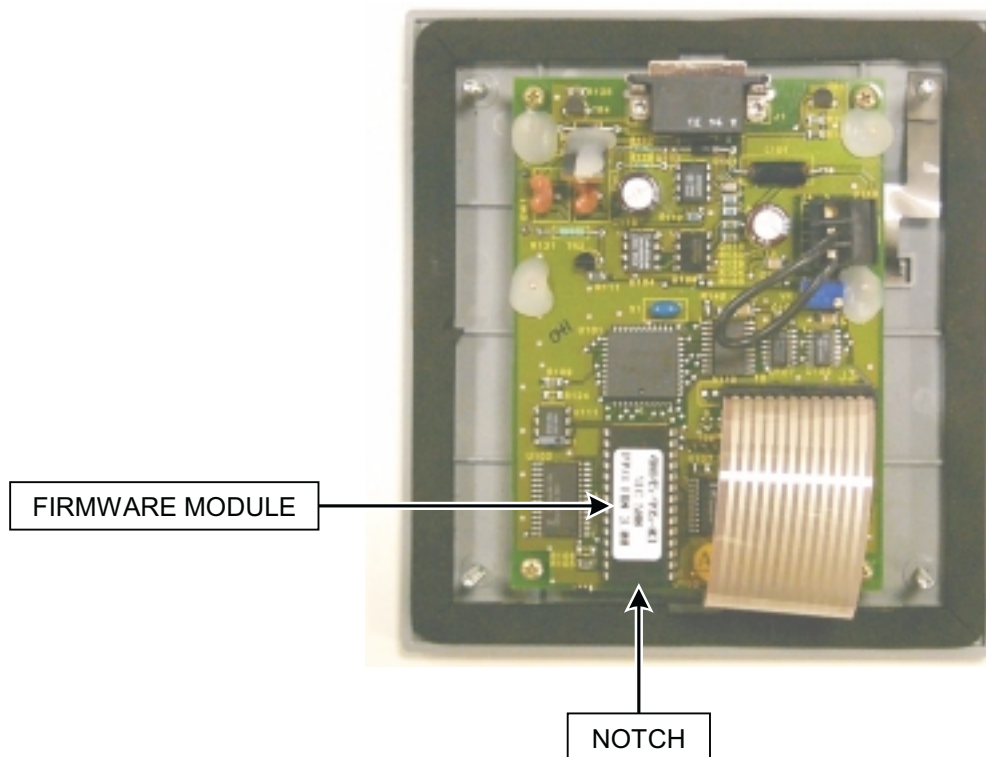
03-159-2

FIGURE 3
SLC 500 DTAM MODULE - REAR VIEW



03-155-2

FIGURE 4
SLC 500 DTAM MODULE - INSIDE VIEW



IDENTIFYING EXISTING CPU OPERATING SYSTEM - See Figure 5 and Figure 6

24. Remove all power from machine.
25. Locate existing CPU Module in CPU Box on machine.
26. Open access door on front of CPU Module.
27. Disconnect DTAM Cable from CPU Module by depressing lock tab and pulling cable straight out.
28. Depress top and bottom locks on CPU Module and pull module straight out of rack.
29. Look at Operating System data label on side of CPU Module. The Operating System is identified as OS300, OS301, OS302A, OS302B or OS302C.
 - 29.1 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 42.
 - 29.2 All other Operating Systems other than OS302C require Upgrade Module # FOR007526 to support new M13 Memory Module # 200684. Go to Step 30 to install new Operating System OS302C.

INSTALLING NEW CPU OPERATING SYSTEM OS302C - See Figure 5 and Figure 6

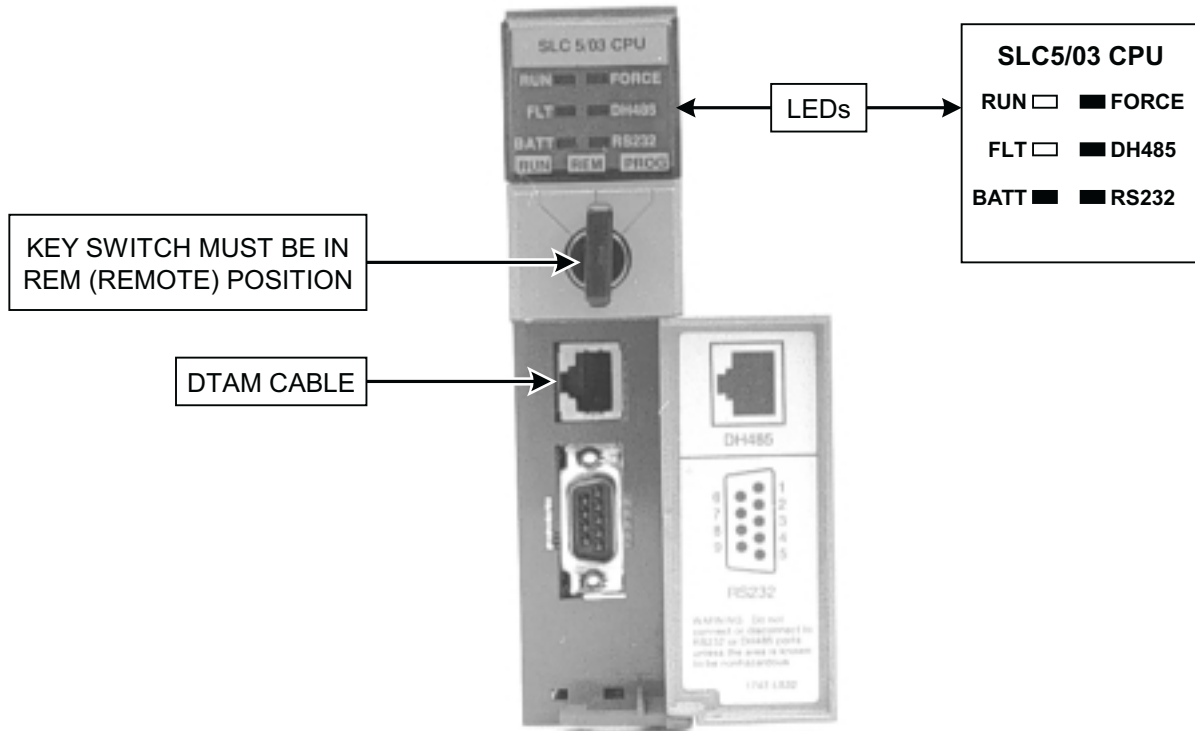
Note: Follow all anti-static procedures when removing or installing Memory Modules. For Vendor Information on anti-static procedures, LEDs, error conditions, etc.; refer to attached Vendor's Upgrade Instructions at end of this Service Bulletin.

30. Remove existing M11 Memory Module # F026079 from socket on CPU Module.
31. **Important:** Move jumper from "PROTECT" to "PROGRAM" on CPU Module.
32. Remove Upgrade Module # FOR007526 from shipping package. Install Upgrade Module in socket on CPU Module.
33. Install CPU Module into rack by aligning module with guide slots and pushing in gently until top and bottom lock tabs click.
34. Restore power to machine.
35. Turn on (boot-up) PLC.
36. 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.
37. 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 5.
38. Repeat Steps 24 thru 28 to remove CPU Module. Then go to Step 39.
39. 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.
40. Install new Operating System OS302C data identification label on CPU Module.
41. **Important:** Move jumper from "PROGRAM" to "PROTECT" on CPU Module.
42. Install existing M11 Memory Module # F026079 (with existing program) or new M13 Memory Module # 200684 (with new program) in socket on CPU Module.

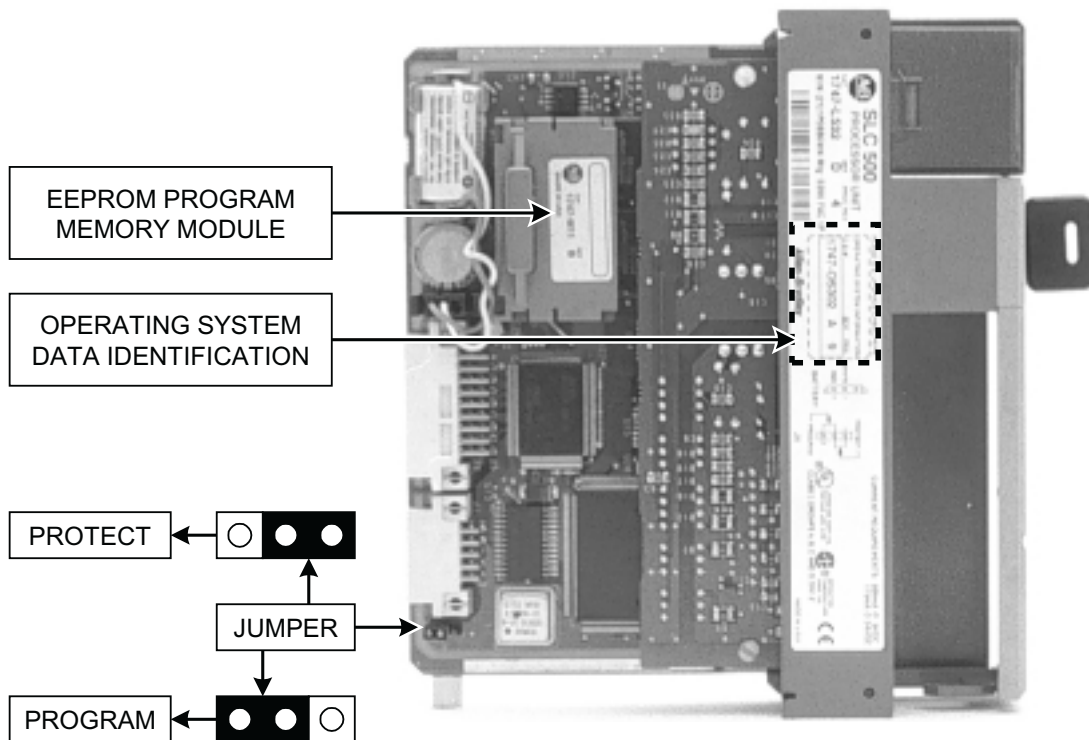
99-142-2

FIGURE 5
SLC 503 CPU MODULE - FRONT VIEW



99-143-2

FIGURE 6
SLC 503 CPU MODULE - SIDE VIEW



INSTALLING NEW CPU OPERATING SYSTEM OS302C - See Figure 5 and Figure 6

- 43. Install CPU Module into rack by aligning module with guide slots and pushing in gently until top and bottom lock tabs click.
- 44. Install DTAM Cable in socket of CPU Module by aligning lock tab with notch and pushing in gently until lock tab clicks.
- 45. Close access door on front of CPU Module.
- 46. Go to Step 47 - Loading Program.

LOADING PROGRAM - See Figure 1 and Figure 8

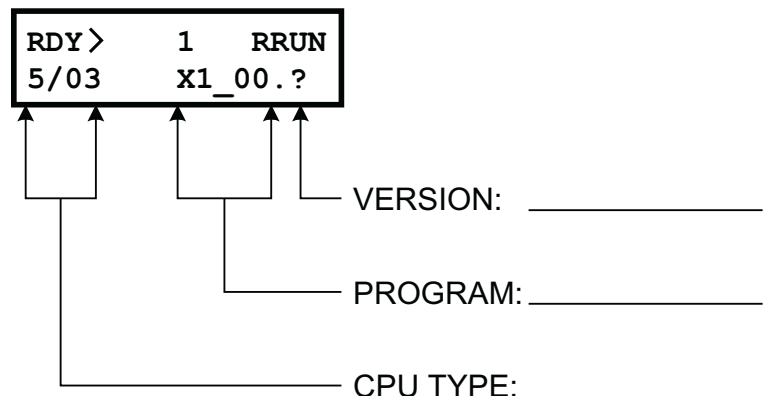
- 47. Restore power to machine.
- 48. Turn on (boot-up) PLC.
- 49. After PLC boots up, note screen displayed on DTAM Module . DTAM Module should display one of following screens illustrated in Figure 8.
 - #1 "ENTER DISPLAY #" Screen
 - #2 "RDY 1 FAULT" Screen
 - #3 "Incompatible Program" Screen

Note: If any other screen is displayed on DTAM Module after boot-up other than screens illustrated, consult factory for assistance.
- 50. See Figure 8 - Loading Program Instructions for appropriate screen #1 or #2 displayed to load program.
- 51. After loading program, be sure to record program number in spaces provided in Figure 7 of this Service Bulletin for future reference.
- 52. **Important:** Re-enter all recorded DTAM values for following:
 - 52.1 W96E / F Spike Drivers
 - a. Drivers: Feed - Spot - Release
 - b. Nipper: Jaw Close - Partial Retract
 - c. Gauger: Must Be Re-Calibrated
 - 52.2 RMC306C Anchor Boxers
 - a. Work-head: Swing Out - Swing In - Feed
 - b. Work-head: Down - Spot - Up
 - c. Timers: Pre-Squeeze - Head Release - Feed - Clamp

PROGRAM INFORMATION - See Figure 7

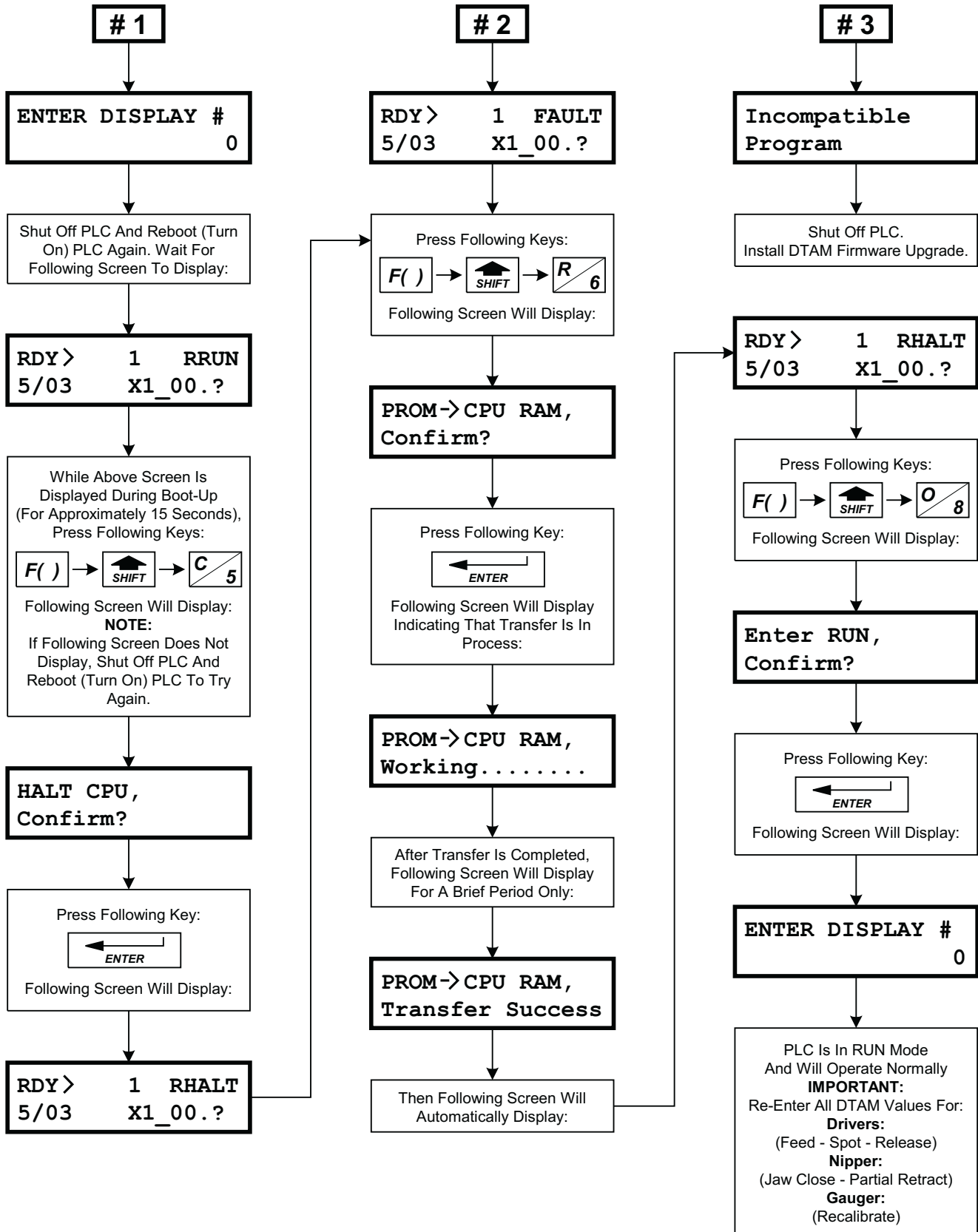
- 53. The CPU Module type, program and version will need to be known when contacting factory for assistance.
- 54. As PLC is booting up, DTAM Module will display "RDY 1 RRUN" screen illustrated in Figure 7 for approximately 15 seconds. Record program information displayed on this screen in Figure 7.

FIGURE 7 PROGRAM INFORMATION PROGRAM 1



SCREEN 3

FIGURE 8
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 and Memory Upgrade Kit part # 200685.
2. To upgrade to Operating System OS302C only, order Upgrade Module part # FOR007526 only. Existing M11 Memory Module will work.
3. To replace existing M11 Memory Module with new M13 Memory Module only, order M13 Memory Module part # 200684 only.
4. To upgrade DTAM Firmware to 3.04, order DTAM Firmware Upgrade Kit part # 200714. Existing M11 Memory Module will work.

PARTS LIST

Note: The quantities listed are for one machine.

ITEM	PART NO	DESCRIPTION	QTY
	200685	SLC 503 CPU OPERATING SYSTEM AND MEMORY UPGRADE KIT	1
* 1	200684	Memory Module, M13 (with New Program)	1
+ 2	FOR007526	Upgrade Module, OS302C (Return for Credit)	1

- * When ordering M13 Memory Module, customer must inform HTT of Program currently installed on machine.
- + 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
	200714	SLC 500 DTAM FIRMWARE UPGRADE KIT	1
1	FOR007528	Upgrade Module, Firmware 3.04	1

© 2003 HARSCO TRACK TECHNOLOGIES, HARSCO CORPORATION

415 North Main Street
Fairmont, MN
56031-1837
Tel: (507) 235-3361
Fax: (507) 235-7370

2401 Edmund Road, Box 20
Cayce-West Columbia, SC
29171-0020
Tel: (803) 822-9160
Fax: (803) 822-7471

200 South Jackson Road
Ludington, MI
49431
Tel: (231) 843-3431
Fax: (231) 843-4830



1747-DTAM UPGRADE PROCEDURE

1. Before removal procedure is done on the DTAM, power to the panel that it is mounted on should be disconnected. If it is not practical in your installation to remove power on the panel to which your DTAM is mounted, use extreme care when performing this upgrade if live parts are present.

ATTENTION: Working on and around live equipment exposes you to increase risk of electrical shock.

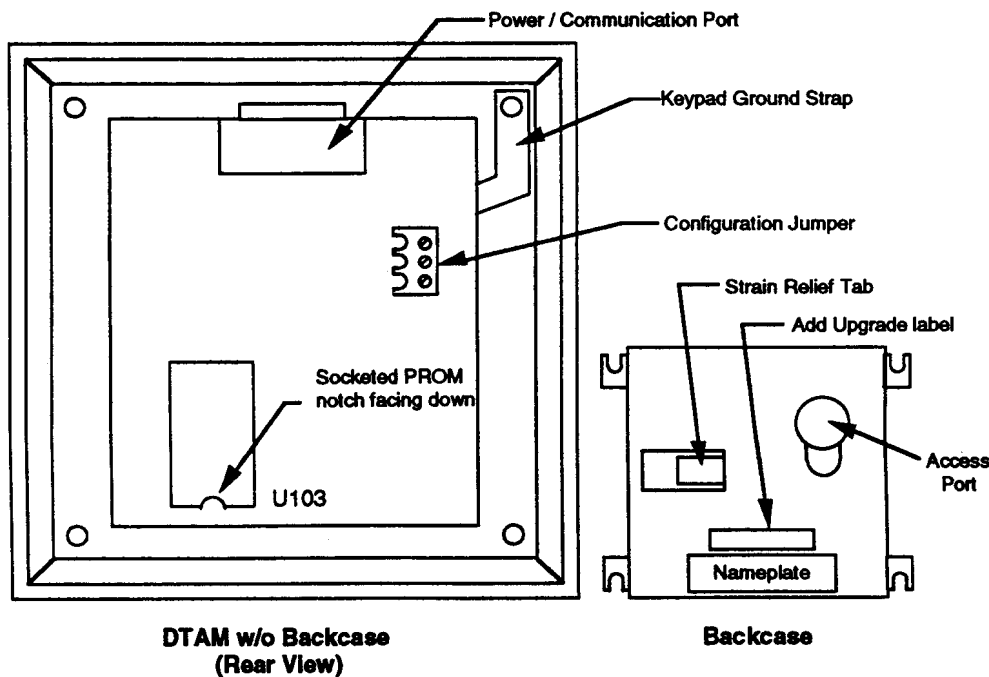
Do not remove the replacement PROM from its protective package until the current PROM has been removed from the DTAM.

2. With the back of the panel exposed, the communication/power cable connected to the DTAM should be removed at the end that is supplying power (SLC500 processor or Link Coupler) first. You may then remove the cable from the top of the DTAM. If the cable is held in place by the strain relief tab provided on the back of the DTAM enclosure, you may have to lightly pry at the end of the tab in order to remove the cable. If you have installed your own keyswitch thru the access port on the backcase you will want to remove that connection.
3. Now, with access to the back of the DTAM you will need a 5/16 inch nutdriver to remove the 4 lockwashers/nuts that hold the DTAM to the panel. Be careful to not allow the nuts to drop onto another device if the panel has not been powered down. There are retaining tabs on either side of the DTAM backcase that hold the DTAM on the panel when all four nuts have been removed. A slight pressure to both tabs will allow the DTAM to be pulled off the panel.
4. Place the DTAM face down on a soft flat surface to prevent scratching. Remove the 4 lockwashers/nuts that hold the back case to the front panel assembly with a 5/16 inch nutdriver. Remove the DTAM backcase so that the socketed PROM can be viewed. See illustration 1.

ATTENTION: Before proceeding, care should be taken in the removal and insertion of the PROM. Make sure that you are electrostatically discharged to prevent electrical damage to circuit components. Avoid contact with the PROM leads to prevent physical damage or possible contamination.

5. To remove the PROM from the socket use a PROM puller or CAREFULLY pry the part out of the socket by placing a small slot-head screwdriver between the PROM and socket. With the old PROM removed, take the upgrade part out of the package. Place the part in the socket with the notch facing down (see illustration 1 for correct orientation).
6. After the upgrade PROM has been placed in the socket, power up the DTAM to insure that it is functioning properly. If the DTAM powers up correctly, disconnect power and reassemble the product. The backcase should be placed on the front panel assembly and the 4 lockwashers/nuts torqued down to 7 inch lbs. Place the "FRN upgrade label" on the backcase of the DTAM, while being careful not to cover any portion of the nameplate. See illustration 1.
7. Place the DTAM back on the panel and torque down the remaining 4 lockwashers/nuts to 7 inch lbs. Connect the cable to the connector at the top of the DTAM, and loop the cable thru the strain relieve on the backcase if desired. If you are using an external switch rewire the connection to the DTAM terminal block thru the back access port at the back of the DTAM.
8. The DTAM with upgrade firmware should now be ready to operate in your application.

Illustration 1





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

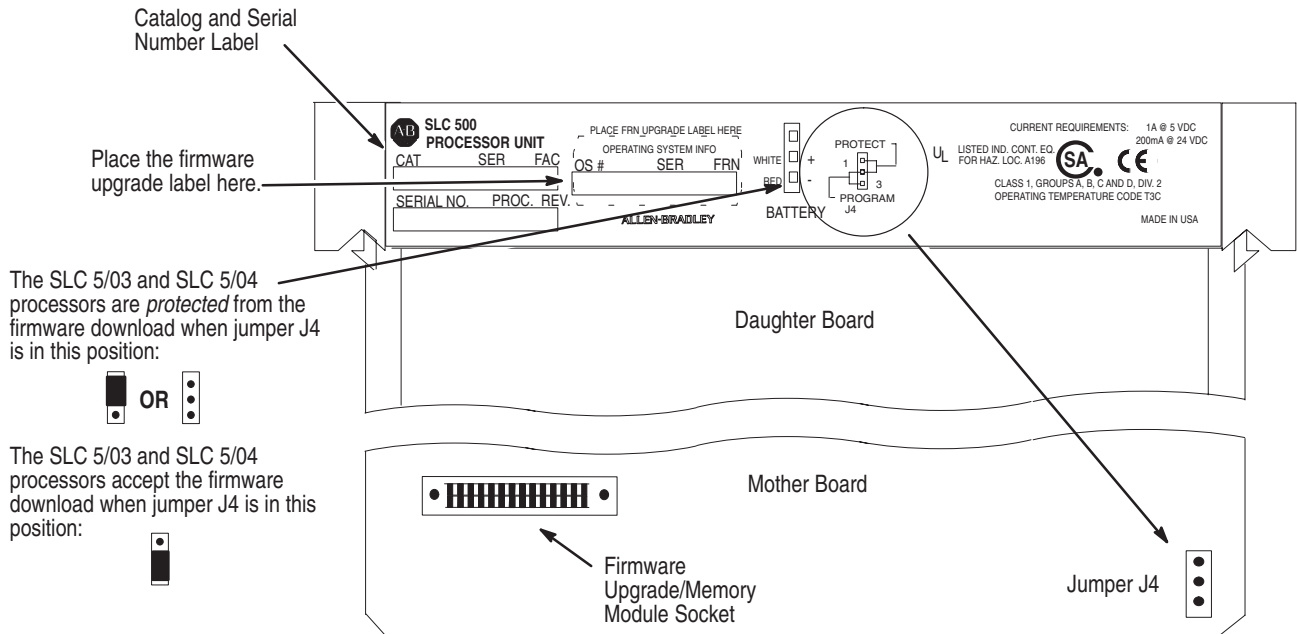


Do not remove the processor from the SLC 500 chassis until all power is removed from the SLC 500 power supply.

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.

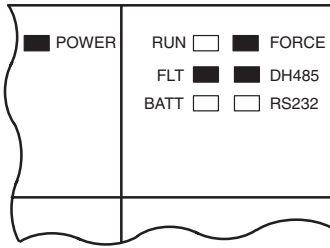
13. Apply the enclosed firmware upgrade label to the processor nameplate.
14. Firmly seat the processor back into the chassis.
15. Attach the communication cable between the processor and your programming terminal.
16. Apply power to the chassis containing the processor while watching the LED display. All the LEDs should flash on and then turn off except for the FLT LED which should remain 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.

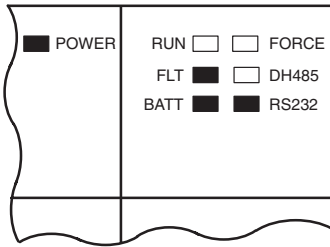
If the download is not successful, the FLT LED turns on and a combination of LEDs flash on and off indicating an error condition. The following LED diagrams and tables provide information regarding error messages, possible cause(s) for the error, and recommended action(s) to take to resolve the error.

If the LED's indicate:⁽¹⁾



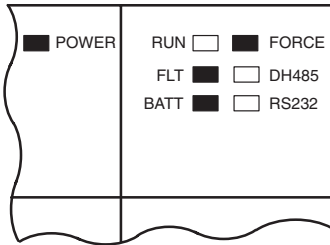
The Following Error Exists	Probable Cause	Recommended Action
Fatal Hardware Error	Major hardware failure due to noise, improper grounding, or poor power source.	Cycle power and see if the error repeats itself. If the error clears, you should be able to download the firmware. If the error persists, contact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

If the LED's indicate:⁽¹⁾



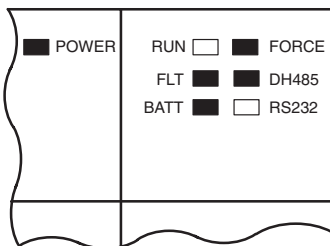
The Following Error Exists	Probable Cause	Recommended Action
Corrupted Operating System Memory Module	The operating system on the Flash EPROM is corrupt.	Cycle power and see if the error repeats itself. If the error persists, either contact your Rockwell Automation representative for a new operating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

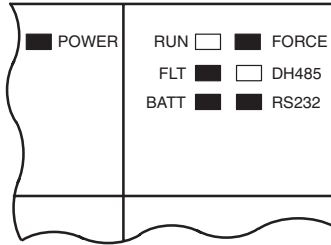
Refer to the following key to determine the status of the LED indicators:

 Indicates the LED is OFF.

 Indicates the LED is ON.

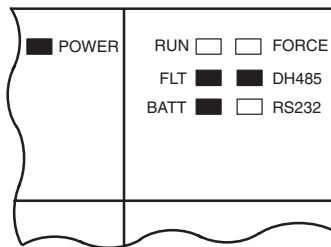
(1) The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

If the LED's indicate:⁽¹⁾



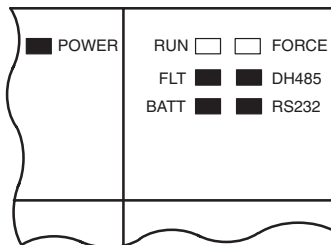
The Following Error Exists	Probable Cause	Recommended Action
Downloadable Operating System Failure	Failure during transmission of downloadable operating system.	Download the operating system.

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.

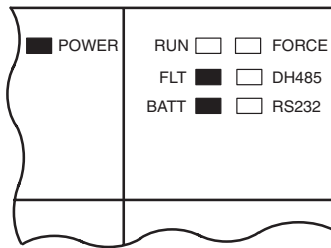
Refer to the following key to determine the status of the LED indicators:

 Indicates the LED is OFF.

 Indicates the LED is ON.

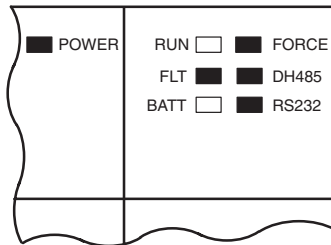
(1) The DH485 LED on the SLC 5/03 processor is labeled DH+ on the SLC 5/04 processor.

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.

www.rockwellautomation.com

Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433

Europe/Middle East/Africa: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741

Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356-9077, Fax: (65) 6356-9011

Publication 1747-IN007C-EN-P - October 2002

Supersedes Publication 1747-IN007B-EN-P - October 2001

PN 40071-093-01 (3)

Copyright © 2002 Rockwell Automation. All rights reserved. Printed in the U.S.A.