

K-02b

ELECTRICIAN TRAINING

SKILL DEVELOPMENT GUIDE

DUTY K: PLC (Modicon)

K-02b: Back Up Software

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Task Preview

Back Up Software

PLC machine programs need to be backed up when a program is modified, a new program is installed, or anytime a backup copy does not exist for a program in case the processor goes bad. When using the P230 programmer, you must back up software from the PLC to the C: drive. When using the P190 programmer, you must back up software from the PLC to the tape drive. Performing this task incorrectly could result in backing up the wrong program, potentially leading to a wreck when reloading this program onto the PLC.

How your skills will be checked

The Skill Check will require you to back up software. All tools, materials, and resources will be available. The Evaluator will verify that your demonstration meets the skill objective by observing or measuring each task standard. You must demonstrate safe work practices during the Skill Check. Contact your Evaluator whenever you are ready for the Skill Check.



Skill Objective

Upon notification of a new machine program, a newly installed controller, or no back up copy exists for a controller program, back up the software.

Task Standards

1. Backup results in the program being accessed from a tape to the P190.
2. Backup is complete for the P190 when the verification process returns to the Controller Operations screen with no error messages.
3. Backup results in the program being accessed from the hard drive on the P230.
4. Backup on the P230 is complete when the Modsoft Main Menu reappears and no error messages occur during the backup

What You Will Need

This section contains the safety information, tools, and resources you will need before backing up software.



- Follow all Caterpillar Facility Safety Standards when performing this task in the plant.
- Use caution when working around the PLC; high voltage is present on the inside of the PLC cabinet door and near the I/O chassis.
- Wear safety glasses and hearing protection in assembly and production areas



- P190 programmer (Typically used with the 184, 384, 484, 584, 884, and 984 processors.)
- P230 programmer (Used with the 984 processor and the 184, 384, 484, 584, and 884 processors in the P190 emulator mode.)
- PLC communication cable
- Tape loader tape (P190 only)
- Blank or “old” program tape (P190 only)
- Modicon Bus Plus (Used with all processors.)



- Basic Help Keys; which are available on programmer software
- Modsoft Programmer User's Manual (GM-MSFT-001 Rev. F)
- Modicon P230 Quick Key reference card
- Modbus Plus Data Highway Chart



Task Steps

Back Up Software

P190 PROGRAMMER

- 1. Locate the PLC number on the Modbus Plus Data Highway Chart.**
 - The Modbus Plus Data Highway Chart is usually located next to the machine print taped on the work cabinet door.
- 2. Power up the unit.**
- 3. Insert the tape loader tape.**
 - When the “Insert Tape” prompt displays, insert the tape.
- 4. Attach the programmer to the unit.**
 - Enter the unit number from the Modbus Plus Data Highway Chart on the numeric pad.
 - Press the <attach unit> software label key.
 - The AR: prompt should read the unit number that you entered.
- 5. Press the <### operations> (Controller #; i.e., 184,584,984) software label key. See Figure 2-1.**

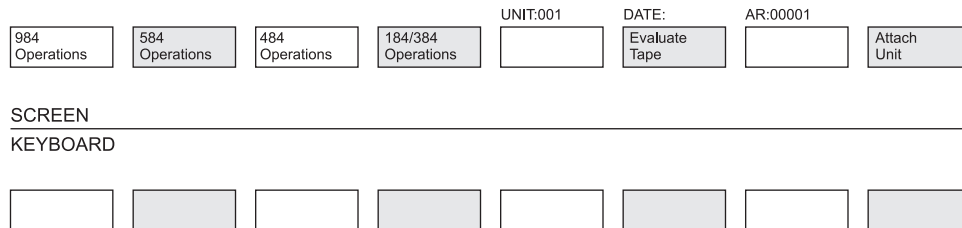


Figure 2-1
PLC Operations Software Label Keys

6. **Verify that the MEMORY PROTECT KEYLOCK is in the “On” position on the controller.**
7. **Press the <Controller Operations> software label key. See Figure 2-2.**

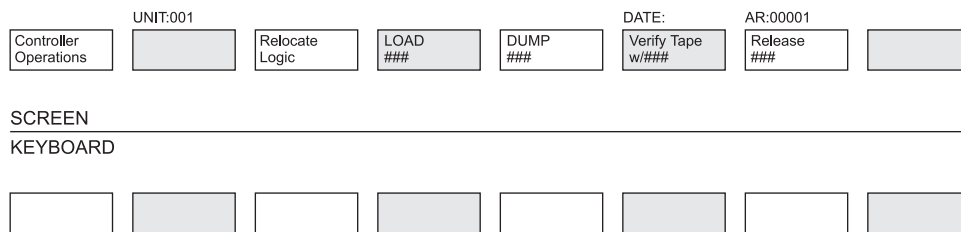


Figure 2-2
Specific Controller Operations Software Label Keys

8. **Press the <stop> key (optional).**
 - The prompt should read “stop controller requested”.

Note: You may perform this procedure without stopping the controller.
9. **Press the <Proceed> software label key.**
 - Verify that the “Run” light goes out on the PLC.
10. **Remove the tape loader tape.**
11. **Verify that the blank or old tape is not in the write protect setting by checking the tab on the tape. Then, insert the tape.**
12. **Press the <DUMP ###> (###=Controller #) software label key.**
13. **Type in the title of the program and the date for reference on the tape (Optional).**
14. **Press the <Proceed> software label key.**
 - Wait until the program is saved.
 - Notice that the numbers below the Address heading change as the program saves.

15. **Verify the back up.**
 - Press the <Verify tape> software label key.
16. **Press the <Controller Operations> software label key.**
17. **Press the <START ###> (Controller #) software label key.**
18. **Press the <Proceed> software label key.**
 - Verify that the “Run” light is illuminated.
19. **Press the <Release ###> (Controller #) software label key.**

WARNING! Failure to press this key will result in other machines being blocked from communicating with the PLC.

20. **Remove the tape and slide the write protect bar into place.**
21. **Write the name of the program on the back up tape case.**

P230 PROGRAMMER

1. **Power up the unit.**
2. **Verify that the MEMORY PROTECT KEYLOCK is in the on position.**
3. **Enter the Modsoft directory.**
 - Use the arrow keys to highlight the Modsoft directory.
4. **Enter the Modsoft.exe file.**
 - Use the <tab> key and move the cursor to the files area.
 - Use the up and down arrow keys to move the cursor to the “Modsoft.exe” file.

5. Press <Enter>.

- When the Modsoft default screen appears, press <Enter>. See *Figure 2-3*.

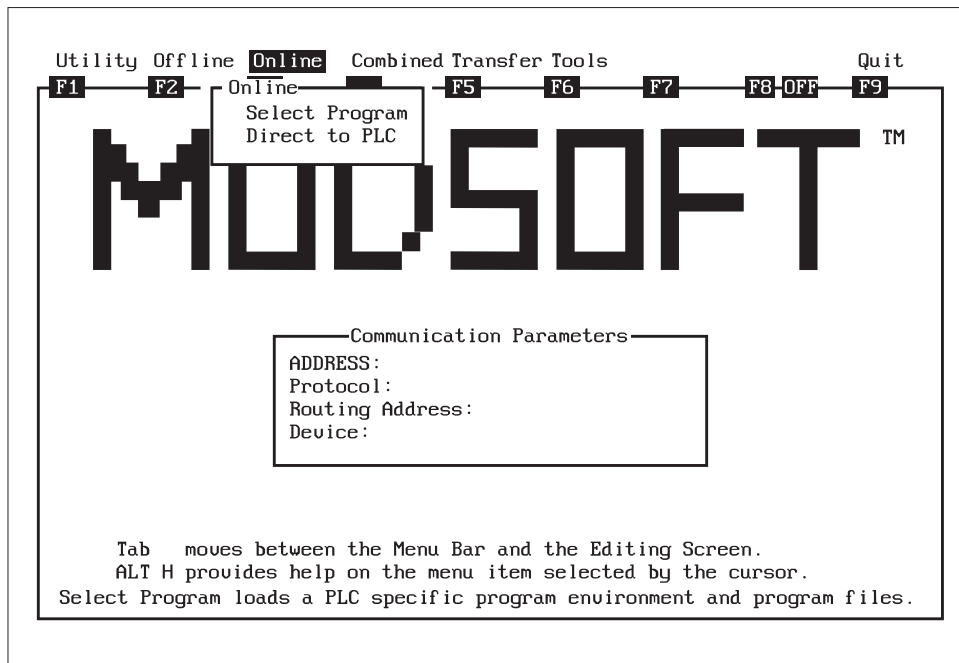
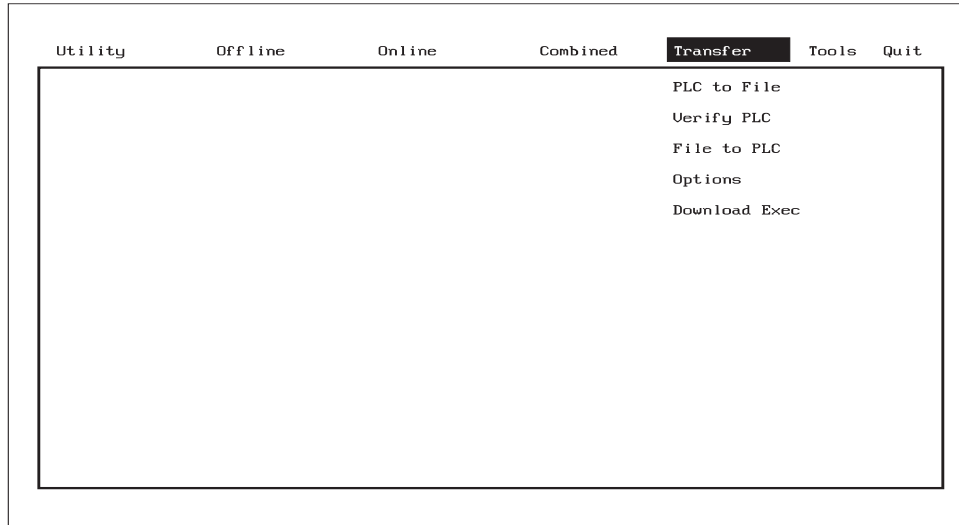


Figure 2-3
Modsoft Default Screen

6. Enter the Transfer menu.

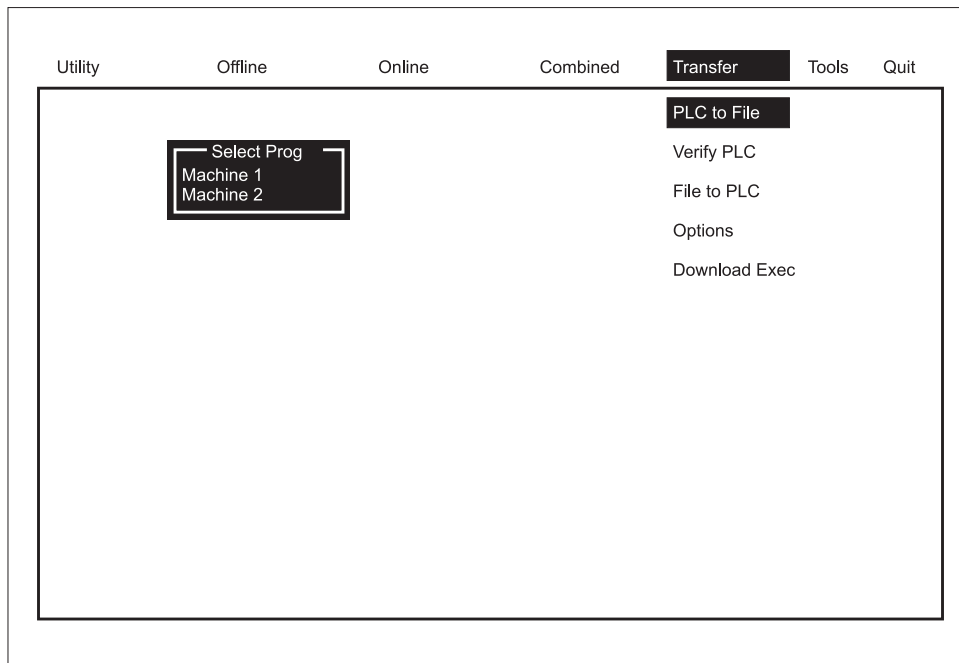
- Use the right arrow key to highlight the “Transfer” menu. *See Figure 2-4.*



**Figure 2-4
Transfer Menu**

7. Enter the “PLC to File” option.

- Press <Enter> when “PLC to File” is highlighted. *See Figure 2-5.*



**Figure 2-5
PLC to File Option**

- Highlight “Select Program” or “New Program” and press <Enter>.
- 8. Back up the program.**
- Use the arrow keys to highlight the program and press <Enter> to save.
- 9. Press the <Esc> key or the <F9> function key to quit.**
- 10. Press the <Y> key to exit.**



Concept Check

Back Up Software

Answer the following questions to check your understanding of backing up software. Circle the correct answer in each question. Then compare your responses with the answers at the bottom of this page. Some of the questions may have more than one correct answer. If you have difficulty answering a question, review the Skill Development Guide or ask your Trainer for assistance.

1. When saving a program, you must stop the controller.
 - a. True
 - b. False
2. When using the P190 programmer, you must release the controller from the programmer or what will happen?
 - a. The program will not be saved.
 - b. The program will not run.
 - c. Communication with other programmers will be blocked.
 - d. The PLC will lock up.
3. The blank or old tape must be in the write protect setting in order to back up.
 - a. True
 - b. False
4. From what menu in Modsoft do you back up software?
 - a. Combined
 - b. Offline
 - c. Online
 - d. Transfer

5. The option you must choose to perform a back up in Modsoft is
- a. PLC to File.
 - b. File to PLC.
 - c. Verify PLC.
 - d. PlcOps.

Answers: (1. b 2. c 3. b 4. d 5. a)

Next Step

If you are ready to demonstrate the task now, ask your Evaluator or Trainer to schedule the Skill Check. However, if you need to practice some of the steps first, continue to the next section.



Practice

The following practice will help prepare you for the Skill Check. Ask your Trainer to set up the practice for you. After you complete a practice, ask your Trainer to check your work.

Practice 1

Practice backing up a PLC program with your Trainer's supervision using the P190 programmer. Perform this task without stopping the controller so that there will be no downtime for the respective machine. Be prepared to discuss safety issues related to this task.

Practice Objective 1

You should back up a PLC program using the P190. You should perform a tape verification to verify that the program is backed up properly. You should discuss the appropriate safety issues.

Practice 2

Practice backing up a PLC program with your Trainer's supervision using the P230 programmer. Perform this task without stopping the controller so that there will be no downtime for the respective machine. Be prepared to discuss safety issues related to this task.

Practice Objective 2

You should back up a PLC program using the P230. If you encounter any error messages during the backup, then you should rectify the problem with your Trainer's help and try to back up the program again.

Next Step

Continue to practice until you are ready for the Skill Check. When you are ready to demonstrate the task, ask your Evaluator or Trainer to schedule the Skill Check.