

K-03a

ELECTRICIAN TRAINING

SKILL DEVELOPMENT GUIDE

**PLC (Allen-Bradley)
K-03a: Load Program**

Issued 01/01/98



Task Preview

Load Program

PLC programs are restored after program modification, when a new processor has been installed, or if a faulty processor has been replaced. If a program was modified offline, you must use the FILE UTILS screen to copy the program from the floppy disk to the hard drive. Before loading or restoring a program, you change the processor's mode from the Rem RUN mode to the Rem PROG Mode. After the processor's memory is cleared, you then load or restore the program.

Failure to load a program or loading the wrong file could result in excessive downtime, unpredictable machine control, or injury to personnel.

How your skills will be checked

The Skill Check will require you to load program. 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

After an offline program modification, a processor replacement, or a new installation, load the PLC program.

Task Standards

1. The processor operates without displaying fault messages.
2. Output cards are not active if the machine is in the PROG mode; output cards are active if the machine is in either the REM or RUN modes.
3. The machine operates within specifications and meets production requirements.

What You Will Need

This section contains the safety information, tools, and resources you will need before loading a program.



- 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 input/output (I/O) chassis.
- Be careful when working near moving or rotating machinery.
- Wear safety glasses and hearing protection in assembly and production areas.



- PC equipped with PLC software (DEK if loading from the Ethernet; Laptop or PC equipped with 1784 KT Card; Allen-Bradley programming Terminal)
- PLC
- PLC program on floppy disk
- Interconnect cable
- Processor Keyswitch Key (if the processor is not in the REM position)
- Password (if necessary)



- Plant Engineering Standards
- Electrical Standards



Task Steps

Load Program

1. **Using the interconnect cable, connect the PC to the PLC.**
 - When connecting to a 5/15 or 5/25 - Connect the PC cable to the PEER COMM INTFC communication port (that is for the programming terminal) on the front panel of the PLC.
 - When connecting to a 5/40 - Connect the PC cable to the Data Highway+ communication port Channel 1A on the front panel on the PLC. If communication is not established, connect to the Channel 2A.
2. **Turn the PC power on.**
 - The ALLEN-BRADLEY MAIN MENU INTERFACE screen displays.
 - If the PC boots up to DOS, perform these steps: At the C:\ prompt, type **cd\ipds**. Press <Enter>. Type **abmenu** and then press <Enter>. The ALLEN-BRADLEY MAIN MENU INTERFACE screen displays.

- If you are only restoring the program from the hard drive, go to Step 9. If you will be loading the program from a floppy disk, press the <File Util> function key. Press the <To/From Floppy> function key. The COPY TO/ FROM FLOPPY screen displays. Press the <From Floppy> function key. See *Figure 3-1*.

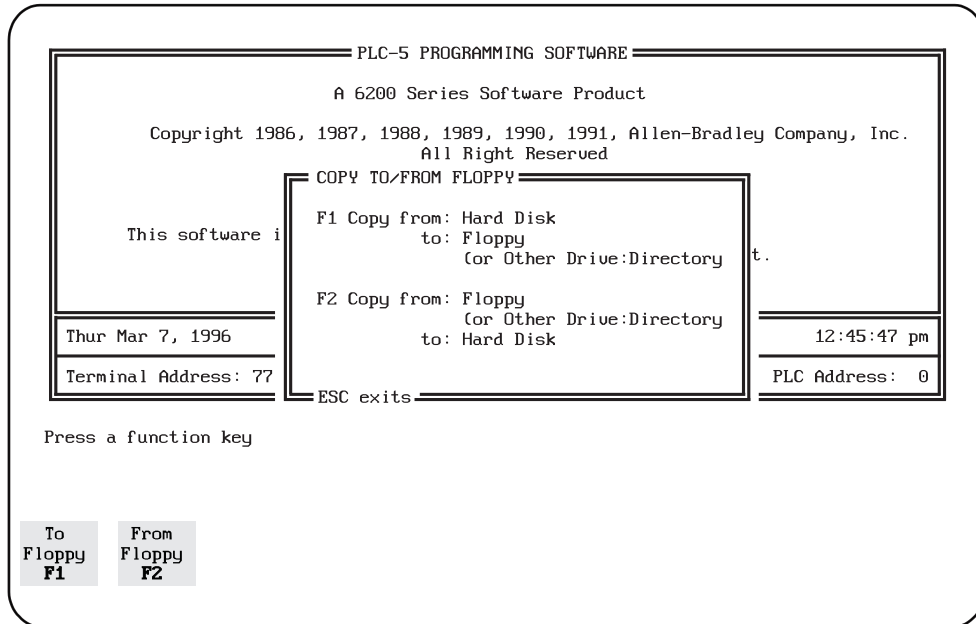


Figure 3-1
COPY TO/FROM FLOPPY Screen

3. Load the floppy disk into the PC.
4. Press the <All F1, 2, 3, F4> function key. The screen displays two dialog boxes.
5. Move the cursor to the file you want and press the <Select Source> function key.
6. Verify that the floppy drive is correct and then press the <Begin Oper> function key.
7. If the screen says that the file already exists, press the <Yes> function key.

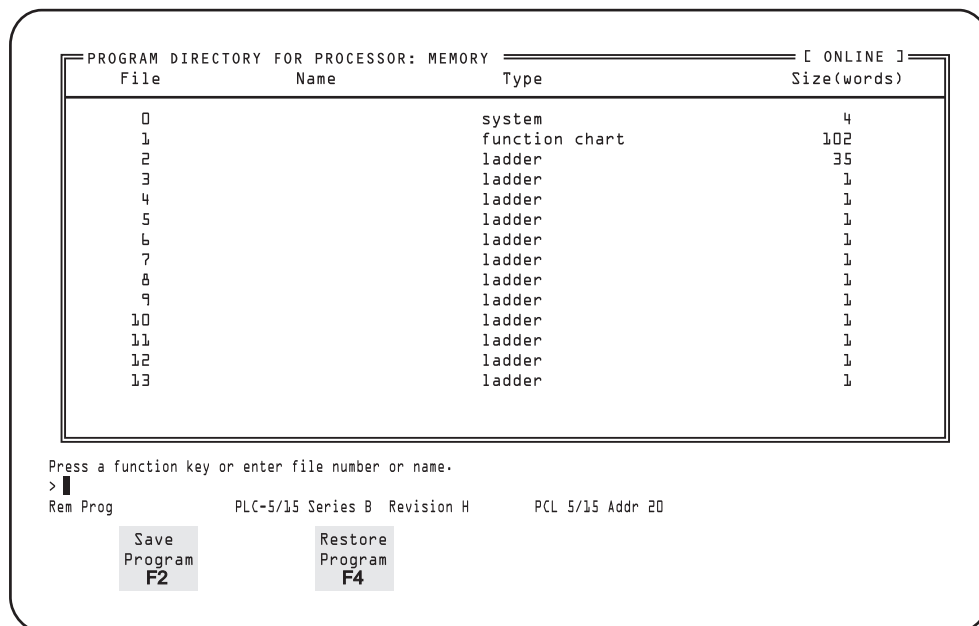
- 8. After the program loads, press <ESC> twice.**
 - The PLC-5 PROGRAMMING SOFTWARE screen displays.
- 9. You are at the MAIN MENU, go on-line.**
 - The system displays the PLC-5 PROGRAMMING SOFTWARE screen. This is the main menu for the programming software.
 - There are two paths for connecting to the PLC. You can go through the “WHO” screens or go directly online to the PLC station. When you are operating at a stand-alone station, you can go directly online. Electricians frequently use the “WHO” screens when the PC is connected to a data highway. If the PC is connected to a highway, go to step 10. If not, go to step 12.
- 10. Press the <Who> function key.**
 - The DH+ NETWORK MENU displays.
- 11. Press the <Who Active> function key.**
 - The WHO ACTIVE - Active Station Identification screen displays the stations on the highway.
- 12. Select the desired PLC station.**
 - Cursor to the PLC station you need to connect to, using the arrow keys.
 - Press the <Online Program> function key. The “Working” message flashes. The PROGRAM DIRECTORY FOR PROCESSOR [NAME] screen displays. “ONLINE” appears on the top line, to the right of the processor’s name. You are now connected to the PLC.
- 13. Change to the PROG mode.**
 - Press the <Proc Functns> function key.
 - Press the <Change Mode> function key.
 - Press the <Program Mode> function key. The screen prompt will ask “Change Processor Mode to PROGRAM?”
 - Press the <Yes> function key.

14. Press the <Esc> key twice.

- The screen is displayed to Change Mode. The screen display changes from Rem RUN to Rem PROG.

15. Press the <Save Restore> function key.

- The “Save and Restore” screen displays. *See Figure 3-2.*



**Figure 3-2
Save and Restore Screen**

- The screen prompt will ask you if you want to save the program or restore the program. If you are restoring a new program and the current program is operating correctly, make sure the current program has been saved.

16. Load the program.

- Press the <Restore Program> function key. All the PLC files are listed.
- Select the file you want to reload.
- Press the <Begin Restore> function key. The “CONNECTING TO PROCESSOR” message displays.
- The dialog box displays the file summary information.

17. Press any key to continue.

18. Return the processor to the RUN Mode.

- Press the <Proc Function> function key.
- Press the <Change Mode> function key.
- Press the <Run Mode> function key. The screen prompt asks you whether or not you want to change modes.
- Press the <Yes> function key. The screen message “REM Run” displays.

19. Press the <Esc> key once.

- The PROGRAM DIRECTORY FOR PROCESSOR screen displays.

20. Press the <Monitor File> function key to monitor the ladder logic to ensure the program is operating.

21. Exit the PLC-5 software.

- Press the <Return to Menu> function key. The PLC-5 PROGRAMMING SOFTWARE screen displays.
- Press the <Exit Sys> function key. The ALLEN-BRADLEY MAIN MENU INTERFACE screen displays.

22. Disconnect the PC from the PLC processor.

- Power down the PC.
- Remove the interconnect cable from the PLC communication port.



Concept Check

Load Program

Answer the following questions to check your understanding of loading a program. 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 the processor memory is cleared, all the files are deleted.
 - a. True
 - b. False
2. The screen you must use for transferring a file from the PLC to the hard disk is the
 - a. PLC-5 SAVE UTILITY screen.
 - b. SAVE PROG screen.
 - c. PROGRAM DIRECTORY FOR PROCESSOR screen.
 - d. FILE UTILITIES screen.
3. The machine should be in the Rem PROG mode when you are loading a program.
 - a. True
 - b. False
4. To verify the name of the file you have selected to save, the system displays the name of the file
 - a. on the Command Line.
 - b. in the SAVE PROCESSOR FILE dialog box.
 - c. on the top line of the screen.
 - d. a and c

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

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

Practice loading a program. Your Trainer will designate a PLC location and will provide you with a PLC program on a floppy disk. Your Trainer will ask you to load a program from the floppy disk to the PLC. After you have loaded the program, you will run the program to verify that the program is loaded and operational.

Be prepared to demonstrate safe work practices during this activity.

Practice Objective

You should load the program and cycle the machine. The processor should operate without displaying fault messages. You should demonstrate safe work practices.

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.