

# K-01a

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## ELECTRICIAN TRAINING

### SKILL DEVELOPMENT GUIDE

PLC (Allen-Bradley)

**K-01a: Connect and Operate Programmer**

Issued 01/01/98



## Task Preview

### Connect and Operate Programmer

Connecting and operating the Programmable Logic Controller (PLC) involves connecting the PC to the PLC and then establishing communication with the PLC program. The Data Highway+ Network (DH+) main menu allows you to select from the processors linked to the network. Once you are online, you can access the various functions to enable you to complete such tasks as monitoring or editing the current program and saving or restoring the memory.

### How your skills will be checked

The Skill Check will require you to connect and operate a programmer. 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 determining a need to communicate with a PLC program, connect and operate the programmer.

### **Task Standards**

1. You establish communication with the programmer when the PROGRAM DIRECTORY FOR PROCESSOR screen displays for the machine you need to access.
2. Operation of the PLC results in accessing the screens that display the processor's functions.

## What You Will Need

This section contains the safety information, tools, and resources you will need before connect and operate a programmer.



- 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
- PLC
- Interconnect cable
- Processor Keyswitch Key (if the processor is not in the REM position)
- Password (if necessary)



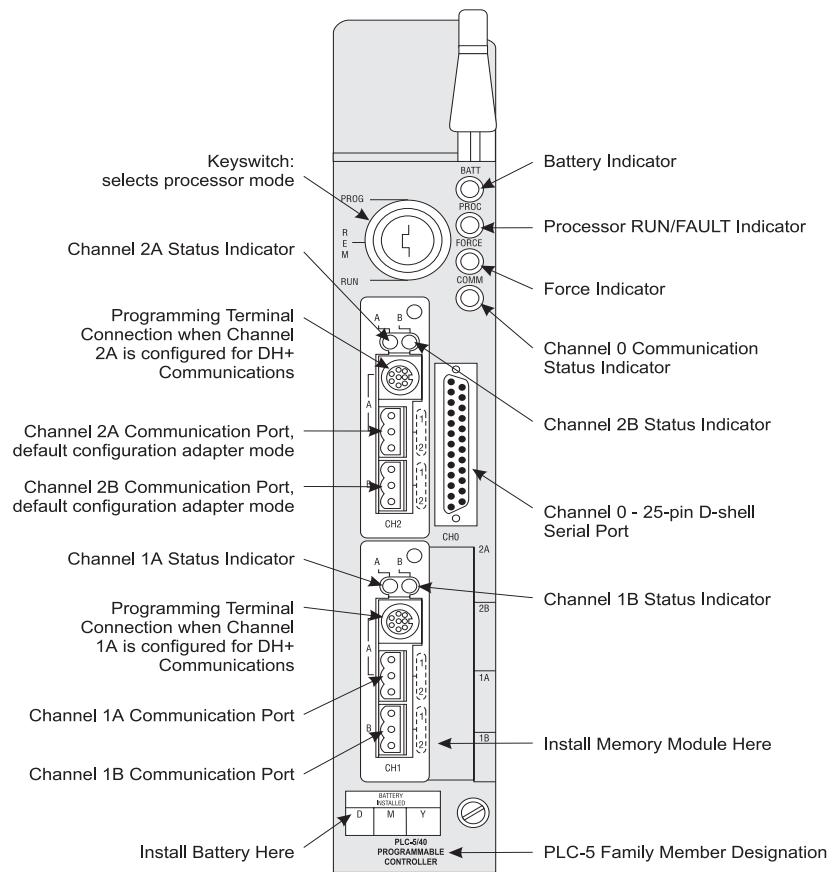
- Allen-Bradley Installation Manual Publication 1785 - 6.6
- Allen-Bradley PLC-5 Programming Software 6200 - 6.4.6
- PLC Processor Manual Publication 1785 - 2.1 Allen-Bradley PLC-5 Programming Software 6200 - 6.4.6
- PLC Processor Manual Publication 1785 - 2.1



## Task Steps

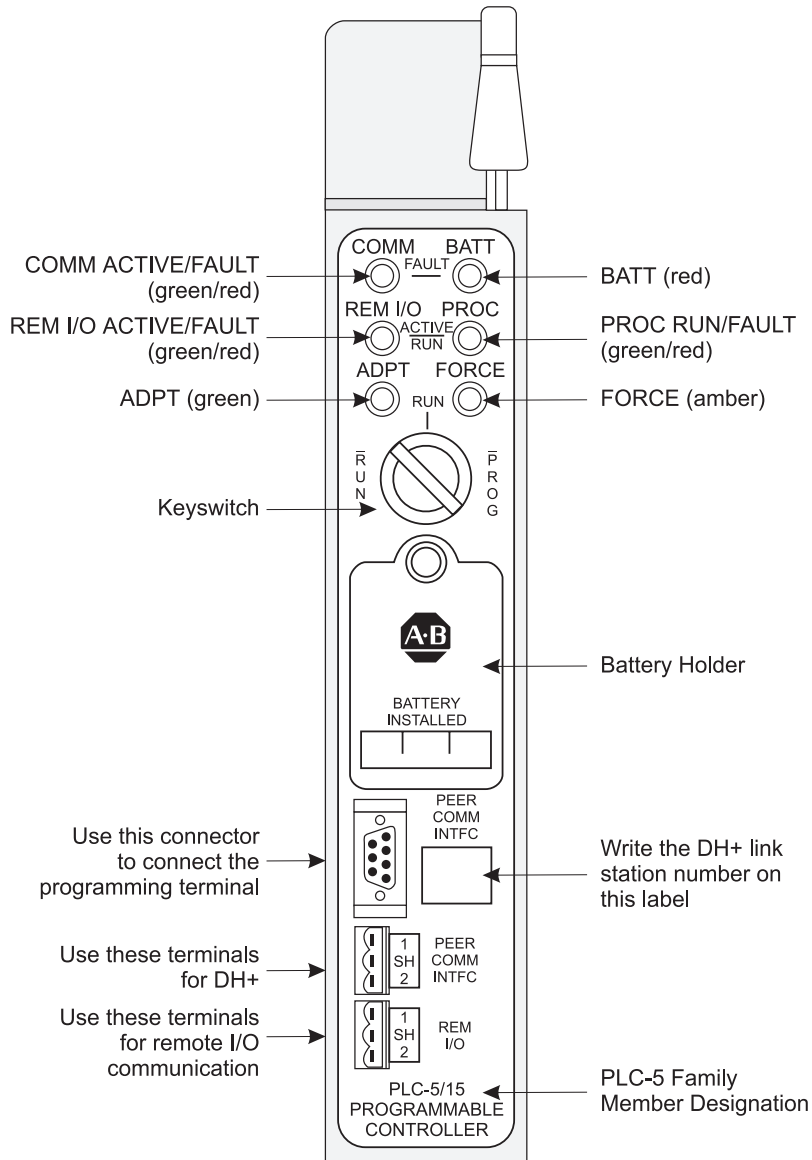
### Connect and Operate Programmer

1. **Using the interconnect cable, connect the PC to the PLC.**
  - If connecting to a 5/40, go to the next page.
  - If 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. *See Figure 1-1.*



**Figure 1-1**  
**PLC 5/15 Front Panel**

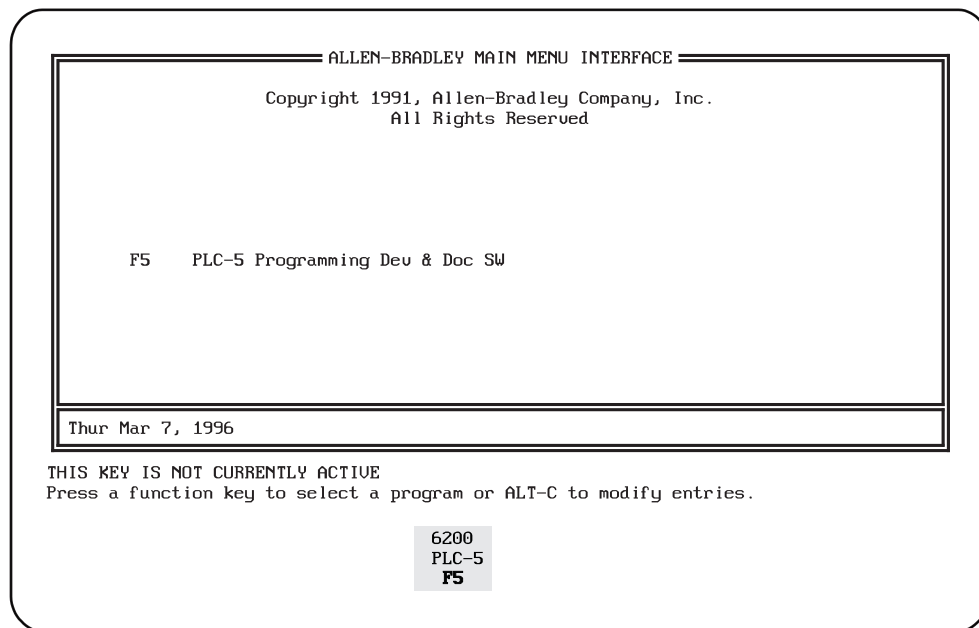
- When connecting to a 5/40 - Connect the PC cable to the Data Highway+ communication port Channel 1A on the front panel of the PLC. If communication is not established, connect to Channel 2A. See Figure 1-1a.



**Figure 1-1a**  
**PLC 5/40 Front Panel**

**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**, then press <Enter>. The ALLEN-BRADLEY MAIN MENU INTERFACE screen displays. See *Figure 1-2*.

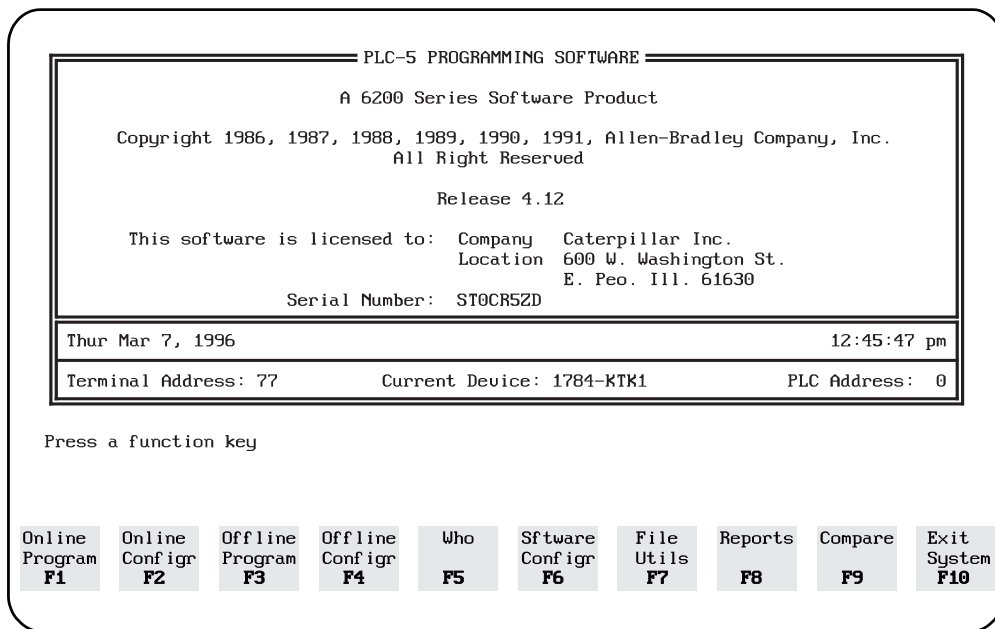


**Figure 1-2**

***ALLEN-BRADLEY MAIN MENU INTERFACE Screen***

**3. Press the <PLC-5> function key.**

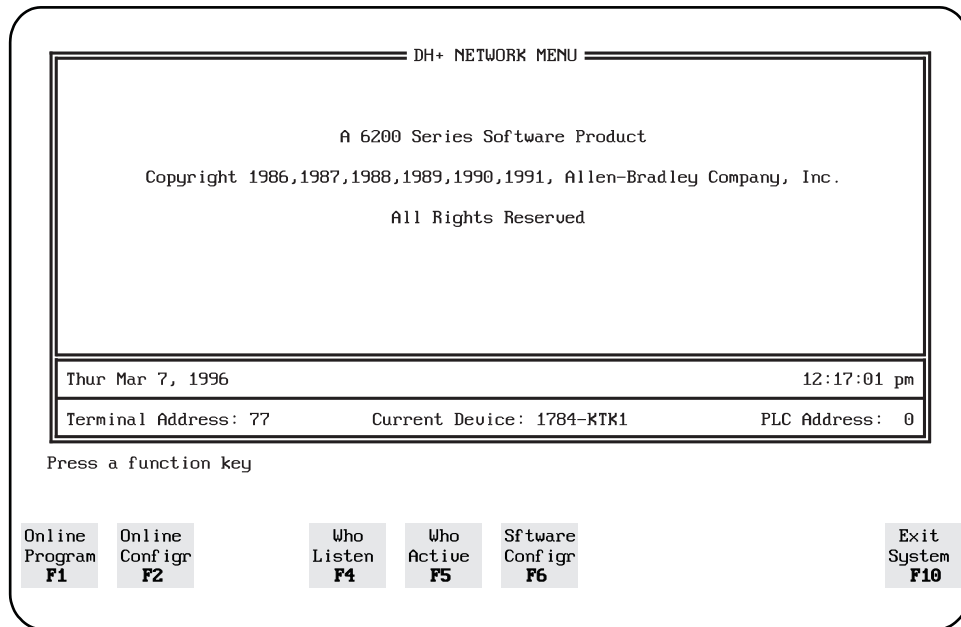
- PLC-5 PROGRAMMING SOFTWARE screen displays. *See Figure 1-3.*
- There are two paths for connecting to the PLC. You can go through the WHO screens, or go directly online to the PLC Station. When you are operating at a stand-alone station, you can go directly “online”. Electricians frequently use WHO screens when connected to a data highway. If the PC is connected to a highway, go to step 4. If not, go to step 6.



**Figure 1-3**  
**PROGRAMMING SOFTWARE Screen**



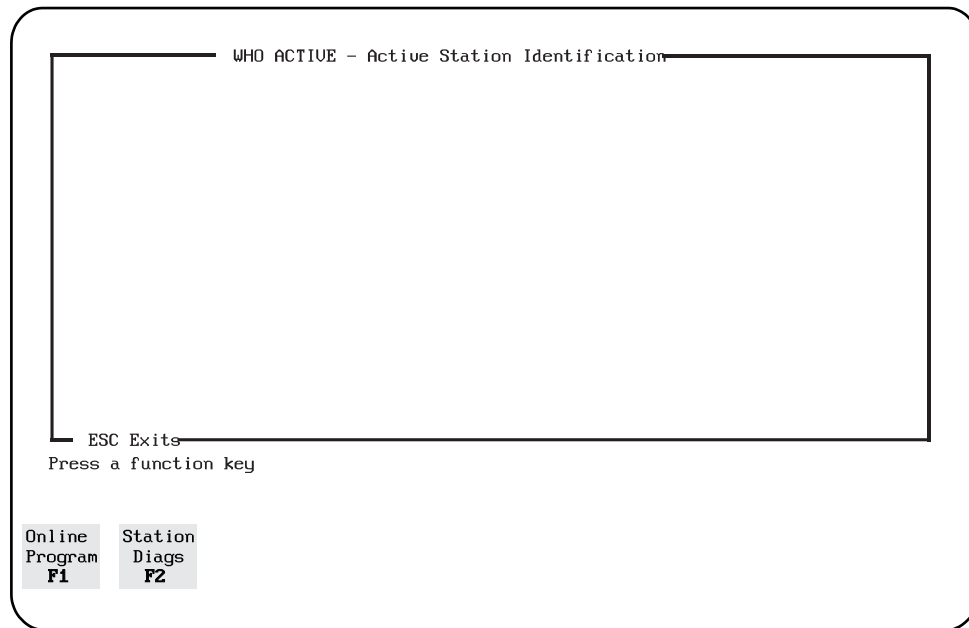
4. Press the <Who> function key.
- DH+ NETWORK MENU displays. See Figure 1-4.



**Figure 1-4**  
***DH+ NETWORK MENU Screen***

5. Press the <Who Active> function key.

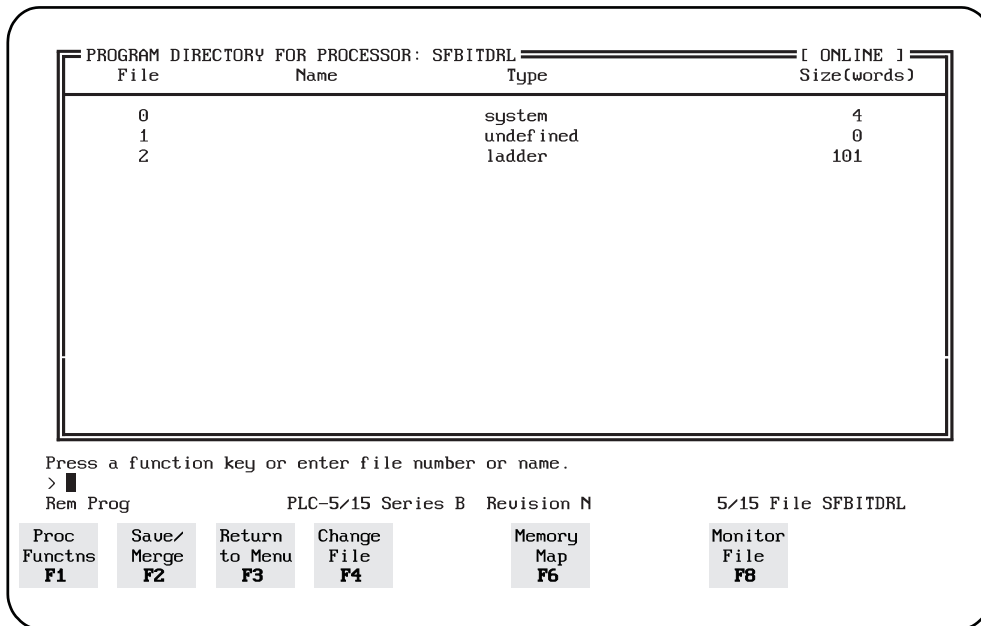
- WHO ACTIVE - Active Station Identification screen displays the stations on the highway. See Figure 1-5.



**Figure 1-5**  
**WHO ACTIVE - Active Station Identification Screen**

**6. Go online.**

- 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 the following: type of processor, series, program version, terminal address, and processor name. You are now connected to the PLC. See Figure 1-6.

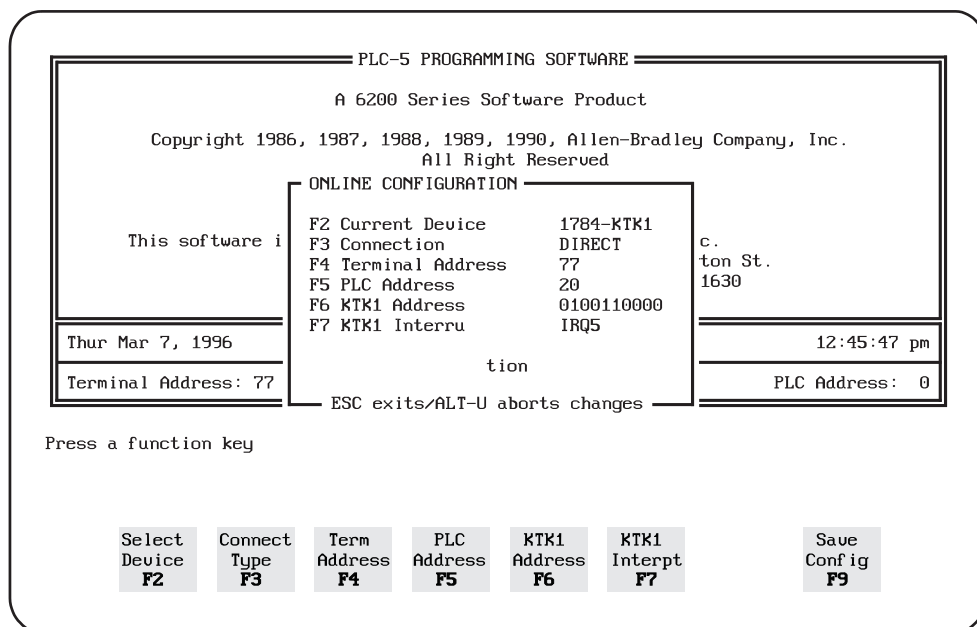


**Figure 1-6**

**PROGRAM DIRECTORY FOR PROCESSOR [NAME] Screen**

- Several functions you can perform from this screen include:
  - a. Change the processor mode (RUN Mode, PROGRAM Mode, or TEST Mode)
  - b. Upload and download programs

- You may not perform the following functions from this screen:
  - a. Edit Program
  - b. Monitor Program
  - c. Troubleshoot Program
- To check the online configuration, press the <Online Configuration> function key. The ONLINE CONFIGURATION dialog box displays. *See Figure 1-7.*



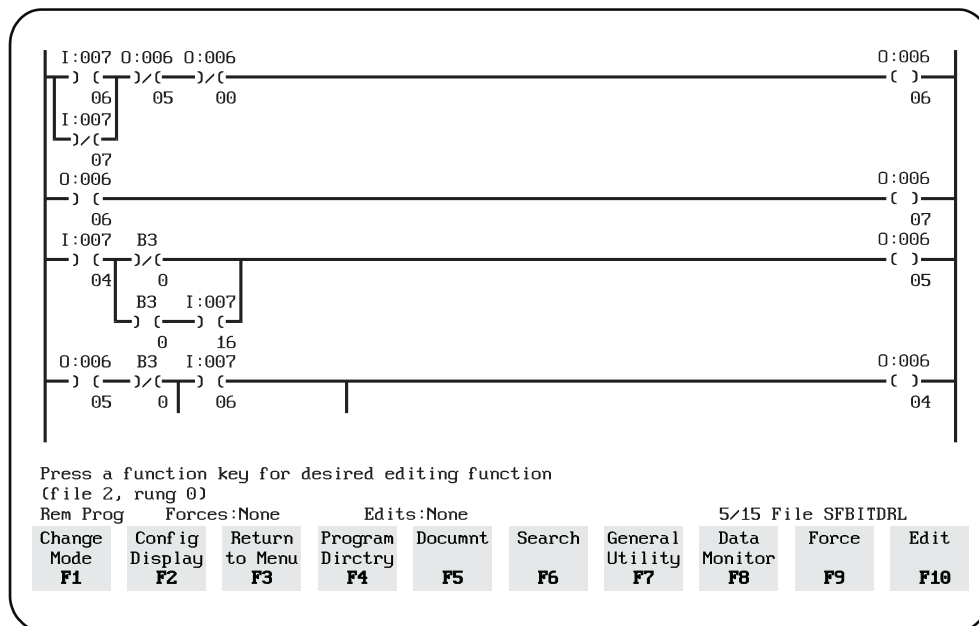
**Figure 1-7**

### Online Configuration Screen

- You have several options for changing the configuration. Refer to the Allen-Bradley Manual Publication 6200 - 6.4.6 for assistance or call an Electrician or Engineer.
- 7. Using the arrow keys, select a file.**

**8. Press the <Monitor File> function key.**

- The ladder logic for the selected file displays.
- You can edit, monitor, and troubleshoot the PLC program using this screen. However, you cannot upload or download a program at this screen. See *Figure 1-8*.



**Figure 1-8**  
**Example of a Ladder Logic File**

**9. 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.

**10. Disconnect the PC from the PLC processor.**

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



## Concept Check

### Connect and Operate Programmer

Answer the following questions to check your understanding of connecting and operating a programmer. 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. To attach to a different processor, use which screen?
  - a. Online Program Directory
  - b. PLC Programming Software
  - c. WHO Active
  - d. WHO Menu
  
2. The port on the PLC front panel most commonly configured for Data Highway+ communication is:
  - a. Channel 1A.
  - b. Channel 2A.
  
3. You have attempted to go online with a PLC station, and an error message occurs, to check the configuration, you should press which function key?
  - a. <File Utils>
  - b. <Software Config>
  - c. <Online Program>
  - d. <Online Config>

*Answers: 1. c 2. a 3. 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 connecting to the processor and accessing the screens. Your Trainer will designate a PLC location and ask you to connect the PC to the PLC. You must then navigate through the screens to access specific functions.

If you perform the task online, the Trainer must observe the practice. Be prepared to demonstrate safe work practices during this activity.

### **Practice Objective**

Communication must be established between the PC and the PLC. You must use the programming software and function keys to demonstrate your ability to move through the screens used for performing the tasks associated with connecting and operating the programmer.

## **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.