

# **K-01b**

---

## **ELECTRICIAN TRAINING**

### **TRAINER'S GUIDE**

**DUTY K: PLC (Modicon)**

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

**Issued 01/01/98**

## **Instructions To The Trainer**

1. The Learner will contact you when ready to practice connecting and operating a programmer.
2. Be prepared to demonstrate the steps for this task.
3. Ask the Learner to contact the Evaluator when ready for the Skill Check.



## **Skill Objective**

Upon notification of any task requiring communication with a PLC, connect and operate either the P190 or P230 programmer.

### **Task Standards**

1. Connection of the programmer results in communication between the programmer and the required PLC. Communication is established when the unit number of the PLC is entered and the programmer prompt allows the Learner to continue without an error message.
2. Operation of the programmer results in the Learner having access to the required machine program. Access to the program is established when the Segment Status screen is displayed.
3. You should be able to identify all the interfaces between the 984 and 184, 384, 484, and 584.

## What The Learner Will Need

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



- Follow all Caterpillar Facility Safety Standards when performing this task in the plant.
- You will perform this task online. Perform the steps carefully; mistakes could result in injury to personnel or damage to the equipment.
- 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.
- Avoid having liquids near the programmer keyboard.



- P190 programmer (Typically used with the 184, 384, 484, 584, 884, and 984 processors.)
- P230 programmer (Used with the 984 processors and the 184, 384, 484, 584, and 884 processors in the P190 emulator mode.)
- PLC communication cable
- Tape Loader Tape and Program Loader Tape (P190 only)
- Modicon Bus Plus (Used with all processors.)



- Basic Help Keys, available on programmer software
- Modsoft Programmer User's Manual (GM-MSFT-001 Rev. F)
- Ladder Diagram printout
- Modbus Plus Data Highway Chart
- Machine Print



## **Practice Set-Up**

The Learner may perform the following practice to help prepare for the Skill Check. Set up the practice for the Learner. Assist the Learner during the practice, if necessary; answer any questions concerning the task; and be prepared to demonstrate the task to the Learner. Make sure the Learner follows safe work practices while practicing the task.

### **Practice 1**

Have the Learner locate all PLCs in the shop, observe all Modicon PLC types (184, 384, 584, 884, and 984), and learn where the data communication cable plugs into each controller. The Learner should also determine which controllers are already connected to a programmer and which ones will need programmers supplied.

### **Practice Objective 1**

The Learner should become familiar with the location of all PLC units in the shop. The Learner should be familiar with the various types of Modicon PLCs in the shop including the 184, 384, 484, 584, 884, and 984 and be able to show where the data communication cables connect.

### **Practice 2**

Ask the Learner to practice connecting and operating both types of programmers. Have the Learner connect a P190 on the job site under your supervision at a location in which a programmer is not already connected. The Learner should connect the P190 to the various PLC units so the communication cable required for each unit is identified.

### **Practice Objective 2**

The Learner should be able to identify the data cables required to hook a P190 up to all PLCs. The Learner should verify the connections by accessing the PLC program. The Learner must leave the MEMORY PROTECT KEYLOCK in the ON position. The Learner should be able to discuss safe work practices associated with connecting and operating a programmer.

### **Practice 3**

Have the Learner practice identifying remote addresses on the MODBUS + data highway chart. Have the Learner identify a machine's controller that is not accessible from the programmer from which you are working. The Learner should note the address for this machine's controller and call up this program from the "ONLINE" menu in MODSOFT, on a P230 programmer. Have the Learner use the routing procedure.

### **Practice Objective 3**

The Learner should be able to locate a remote address in the "ONLINE" mode for accessing machine programs. The Learner should know how to use the routing procedure. When the Segment Status Screen is displayed, the Learner should recognize that he or she has successfully reached the remote machine program.

### **Next Step**

Allow the Learner to continue practicing and developing skills needed to demonstrate the task. The Learner should ask the Evaluator to schedule a Skill Check whenever he or she is ready to demonstrate the task unaided and meet all the task standards and safe work practices.

