

K-06b

ELECTRICIAN TRAINING

TRAINER'S GUIDE

**Duty K: PLC (Modicon)
K-06b: Troubleshoot I/O Module**

Issued 01/01/98

Instructions To The Trainer

1. The Learner will contact you when ready to practice troubleshooting I/O module.
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 a machine device communication problem, troubleshoot the I/O module.

Task Standards

1. The Learner identifies the problem and suggests a corrective action.
2. Corrective action results in the machine performing according to specification.

What The Learner Will Need

This section contains the safety information, tools, and resources you will need before troubleshooting an I/O module.



- 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)
- Program Loader Tape (P190 only)
- Modicon Bus Plus (Used with all processors.)
- Wiggy voltage tester



- Basic Help Keys, available on programmer software
- Modsoft Programmer User's Manual (GM-MSFT-001 Rev. F)
- Modicon P230 Quick Key reference card
- 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 practice troubleshooting an output board that has failed. You should set up this practice activity by performing one of the following set-up options to simulate a fault in the output board. Either remove the power supply from the module, turn the device off in the Ladder Diagram, or simulate a fault in the program. Contact the Operator in advance to schedule a convenient time for the Learner to practice. Ask the Learner to perform the troubleshooting steps for output modules and determine the cause for the output board failure.

Practice Objective 1

The Learner should have performed all of the troubleshooting steps, in sequence, and determined the cause for the output board failure. The Learner should be able to determine what you did to set up the practice. Verify that the machine is returned to its original state when the practice session is over.

Practice 2

Select a device on a machine for the Learner to identify. Ask the Learner to locate that device on the machine print. Have the Learner enter the Ladder Diagram for that machine to practice turning specific devices off and on. Ask the Learner to point out the communication lights on the I/O module that correspond with that device. Ask the Learner to discuss safe work practices that are associated with troubleshooting an I/O module.

Practice Objective 2

Communication must be established between the PC and the PLC. The Learner must use the programming software and function keys to demonstrate the ability to connect and operate the programmer.

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.

