

K-08b

ELECTRICIAN TRAINING

SKILL DEVELOPMENT GUIDE

DUTY K: PLC (Modicon)
K-08b: Troubleshoot Peripheral

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Task Preview

Troubleshoot Peripheral

At Caterpillar, sometimes a peripheral will stop working and require troubleshooting. The peripherals most often associated with this task include the SMART Screen and the Panel Mate. Typical peripheral problems include a blank screen or screen lock-up, peripheral keyboards not functioning, or an error message displaying.

If the Learner is unable to determine the cause of the problem, after following the troubleshooting steps, then he or she must contact the Electrical Engineer and clearly describe the problem.

How your skills will be checked

The Skill Check will require you to troubleshoot a peripheral. The Evaluator will arrange the availability of all the tools, materials, and resources you will need to demonstrate the task. 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 peripheral device problem, troubleshoot the peripheral.

Task Standards

1. You identify the problem and determine a corrective action.
2. The corrective action results in the peripheral functioning within specifications.
3. If corrective action fails to resolve the peripheral problem, you clearly describe the problem to the Electrical Engineer.

What You Will Need

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



- Follow all Caterpillar Facility Safety Standards when performing this task in the plant.
- This task poses an electrical hazard. Use caution when working around the peripheral.
- Wear safety glasses and hearing protection in assembly and production areas.



- SMART Screen
- Panel Mate
- Voltmeter
- Flat head screwdriver



- None



Task Steps

Troubleshoot Peripheral

1. **Open the peripheral panel door and go to the back of the screen.**
2. **Locate the 120-volt AC terminal block.**
3. **Verify that 120-volt AC is present from the power line to the neutral line.**
 - The voltmeter should read 120 volt AC.
 - If 120 volt AC is not present, then determine where the power loss is by following the power supply from the Panel Mate or SMART Screen to the power source.
4. **If the voltmeter reads 120 volts, then check the data communication port.**
 - Verify that the cord is secured in the data port.
 - Check both ends of the data cord to verify connection.
5. **Cycle power to the Panel Mate.**
 - Turn the power switch off.
 - Wait five seconds.
 - Turn the unit back on.
6. **Cycle power to the SMART Screen.**

WARNING! Do not touch the orange reset button. Leave this button on RUN! Pressing reset will cause the SMART Screen to erase its memory!

- Remove the fuse. Wait five seconds.
 - Replace the fuse. This will cycle the power.
7. **Contact an Electrical Engineer if problems with the peripheral are still occurring.**



Concept Check

Troubleshoot Peripheral

Answer the following questions to check your understanding of troubleshooting a peripheral. 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. If 120 volt AC is not present at the SMART Screen or Panel Mate, then how do you determine where the power loss is located?
 - a. By going directly back to the 440-volt AC shut-off
 - b. By tracing from the peripheral power supply back to the source
 - c. By following the PLC power supply to the power source
2. To cycle power on the Panel Mate, you should remove the fuse, wait five seconds, and replace the fuse.
 - a. True
 - b. False
3. To cycle power on the SMART Screen, you should turn the power switch off for at least five seconds before restoring power.
 - a. True
 - b. False
4. When cycling power, you should reset the memory on the SMART Screen by pressing the orange reset button.
 - a. True
 - b. False

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

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 troubleshooting the Panel Mate. Your Trainer will arrange to have a Panel Mate available for you to practice on and will modify the screen for you to troubleshoot. Be prepared to discuss the safety issues associated with performing the task.

Practice Objective 1

You should perform all of the troubleshooting steps, in sequence, and determine the cause for the Panel Mate failure. You should determine what the Trainer did to temporarily disable the Panel Mate and restore the screen back to its normal operating specifications.

Practice 2

Practice troubleshooting the SMART Screen. Your Trainer will arrange to have a SMART Screen available for you to practice on and will modify the screen for you to troubleshoot. Be prepared to discuss the safety issues associated with performing the task.

Practice Objective 2

You should perform all of the troubleshooting steps, in sequence, and determine the cause for the SMART Screen failure. You should determine what the Trainer did to temporarily disable the SMART Screen and restore the screen back to its normal operating specifications.

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.