

# K-07a

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## ELECTRICIAN TRAINING

### SKILL CHECK GUIDE

Duty K: PLC (Allen-Bradley)

K-07a: Replace I/O Module

Issued 01/01/98

## **Rationale**

This Skill Development Guide provides the knowledge a Learner needs to replace an I/O module. Knowing how to select, configure, and safely install the replacement module helps to ensure that the PLC program will operate properly when the machine is cycled. If the Learner selects the wrong module for installation, the module or the device the module is driving could be damaged.

It is also important for the Learner to know the possible consequences of not removing power from the I/O chassis before beginning the task. Injury to personnel, damage to equipment, or unexpected machine movement could occur. Also, understanding the hazards associated with ESD is essential to the task. Module damage could occur if the Learner does not observe ESD precautions.

## **Skill Check Set-Up**

Select a PLC location for the Skill Check. Contact the Operator where the PLC is located to schedule a convenient time for the Skill Check. Install a faulty Intelligent I/O module in the PLC for the replacement task. Check the crib to make sure that there is a replacement I/O module available.

Check the configuration of the module that the Learner will replace. Set the DIP switches and/or PC jumpers on the replacement unit so the settings are not identical to the switch settings on the original unit. Ask the Learner to configure the module as a part of the Skill Check.

After the Learner installs the replacement unit, ask him or her to cycle the machine to ensure that the module is operating properly.

You must make available the tools, materials, and resources needed to demonstrate the task.

## What The Learner Will Need

This section contains the safety information, tools, and resources you will need before replacing 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.
- Be careful when working near moving or rotating machinery.
- Wear safety glasses and hearing protection in assembly and production areas.
- Guard against ESD damage. Remain in contact with an approved ground point while handling the module. Do not touch the backplane connector or connector pins.
- The main disconnect must be OPEN. You must not remove I/O modules from or insert them into the I/O chassis when the primary AC power is applied to the power supply. Doing so could result in injury to personnel, damage to circuitry, or unexpected machine movement.



- Basic electrical hand tools
- Replacement module
- PLC location
- Electrostatic Grounding Device



- User's Manual for I/O module



## Skill Check

If the I/O module is faulty or when new circuitry has been added to the PLC, replace the I/O module.

Needs  
Mastered Practice

### Safe Work Practices

- |       |       |  |
|-------|-------|--|
| _____ | _____ | 1. Follow all Caterpillar Facility Safety Standards when performing this task in the plant.  |
| _____ | _____ | 2. 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.   |
| _____ | _____ | 3. Be careful when working near moving or rotating machinery.  |
| _____ | _____ | 4. Wear safety glasses and hearing protection in assembly and production areas.  |
| _____ | _____ | 5. Guard against ESD damage. Remain in contact with an approved ground point while handling the module. Do not touch the backplane connector or connector pins.  |
| _____ | _____ | 6. The main disconnect must be OPEN. You must not remove I/O modules from or insert them into the I/O chassis when the primary AC power is applied to the power supply. Doing so could result in injury to personnel, damage to circuitry, or unexpected machine movement. |

### Task Standards

- |       |       |  |
|-------|-------|--|
| _____ | _____ | 1. The replacement I/O module's Catalog Number and Series information matches the original unit.                               |
| _____ | _____ | 2. If the replacement I/O module is an Intelligent I/O module, the Learner configures the unit identical to the original unit. |
| _____ | _____ | 3. The machine operates within specifications and meets production requirements.   |



## Evaluator's Sign-Off

The Learner has demonstrated safe work practices and competent performance of the task.

Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Learner: \_\_\_\_\_ Clock No: \_\_\_\_\_