

# K-07a

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## ELECTRICIAN TRAINING

### TRAINER'S GUIDE

**Duty K: PLC (Allen-Bradley)**

**K-07a: Replace I/O Module**

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## **Instructions To The Trainer**

1. The Learner will contact you when ready to practice replacing an 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**

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

### **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 replacement unit to be identical to the original unit.
3. The machine operates within specifications and meets production requirements.

## 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



## 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

Designate a PLC location to practice replacing an Intelligent I/O module. Place a known bad module into the I/O chassis for the practice. Check the crib to make sure that there is a replacement unit available for the faulty unit you install in the PLC for the practice.

Look at the configuration of the DIP switches and PC jumpers on the I/O module that the Learner will remove. Set the DIP switches on the replacement I/O module so that they do not match the I/O module that the Learner will remove.

Check to ensure that the power to the I/O chassis is off before the Learner removes the faulty module. After the Learner installs the I/O module, him or her to cycle the machine to verify that the PLC is operating correctly.

Ask the Learner to demonstrate the safe work practices while performing this task.

### Practice Objective

The Learner should have replaced the I/O module with a compatible unit. After replacement, the machine should operate within specifications. The Learner should demonstrate safe work practices.

## 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.