

PLC126 LAB 1.1: ALLEN BRADLEY SLC-500 HARDWARE LAB EXERCISE

Student Name: _____

Student ID: _____

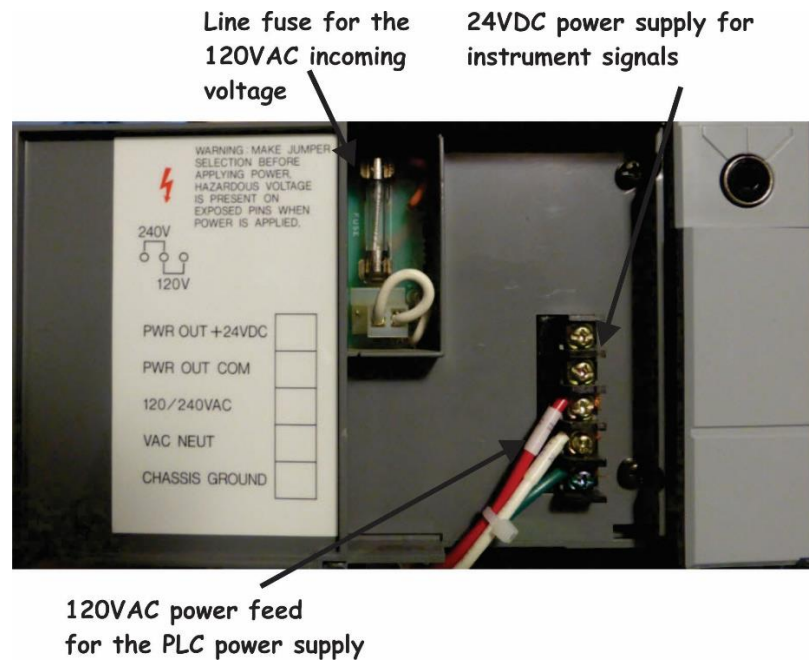
LAB OUTCOMES:

1. Identify the hardware on the SLC-500 training units
2. Safely remove the processor unit and reinsert it into the I/O chassis
3. Remove the battery from a 5/05 processor
4. Reset the memory of a SLC-5/05 processor
5. Replace a 16 point I/O module on an SLC-500 modular system
6. Use the processor key switch to reset a low-level fault
7. Identify the communication ports on an SLC-5/05 processor

LAB PROCESS:

****Safety Issue** – It is important to understand that the portable PLC training units have exposed wires in different areas (PLC P/S, I/O modules, field devices, etc.) so students have access to voltage measurements for testing and troubleshooting. Do not touch any of these wires when the power switch that energizes the unit is turned on.

1. Identify the hardware on the SLC-500 training unit.
 - a. Locate the power switch that energizes the SLC-500 training unit.
 - b. Locate the DC power supplies on the training board.
What are the ratings on the power supplies (Volts and Amps)?
Measure the incoming voltage and the output voltage on each power supply with a DVM.
 - c. The following diagram is the components inside the SLC-500 power supply.



2. Open the terminal covers or remove the module from each slot. Write down the part number for each module & processor, and the name on the front of the module.

Slot 0 _____

Slot 1 _____

Slot 2 _____

Slot 3 _____

Slot 4 _____

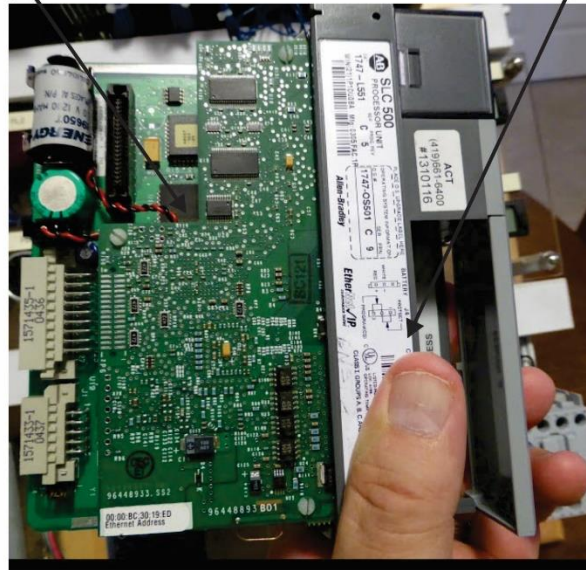
Slot 5 _____

Slot 6 _____

3. Go to www.ab.com, to find the cut sheets for each module and processor.
4. Reset (clear) the memory of the PLC processor.
 - a Power down the PLC training unit (similar to powering down a control panel on a machine).
 - b Remove the SLC-500 processor from the I/O chassis. Be careful to only touch the plastic casing and not the components on the board, due to electric static discharge (ESD).

Programmable Memory Components
Static Sensitive

Touch only the plastic housing
of the Processor



- c Remove the battery connector (3 pin) from the processor board. Be careful not to touch the printed circuit board with your hand.

Next to the battery will be a capacitor. The purpose of this device is to keep the memory chips powered, in order to retain the PLC program in the processor when the battery is unplugged.

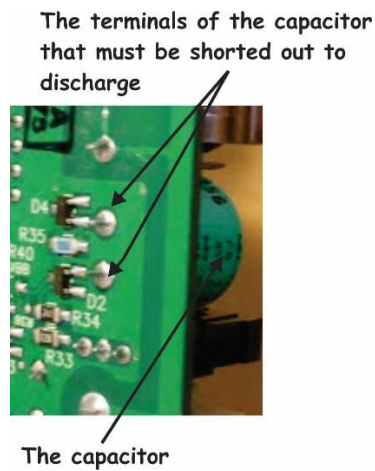
The battery in the SLC-500
processor

The capacitor that powers
the memory chips when battery
is removed



The battery connector that
plugs into processor board

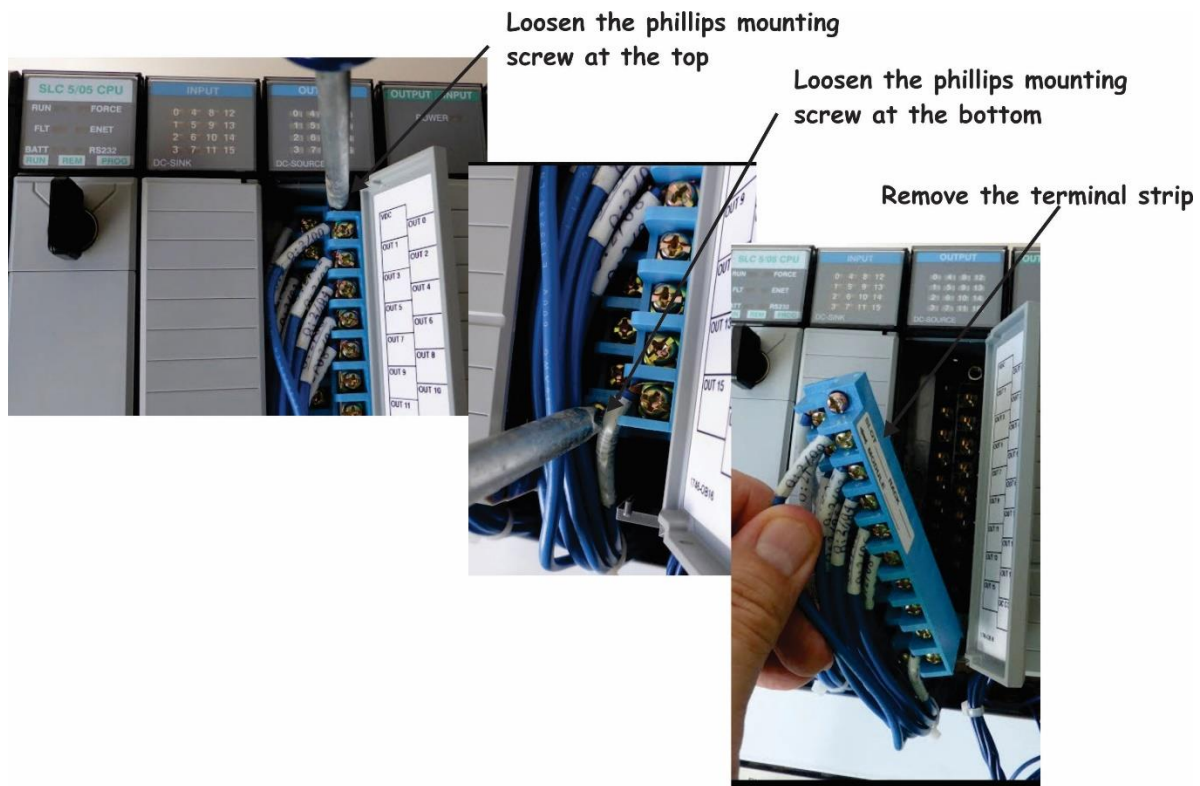
- d With the battery unplugged, the next step is to short out the capacitor with a screwdriver in order to discharge it so that the PLC program will be erased (completely dumping the memory). Keep the capacitor shorted for a few seconds.



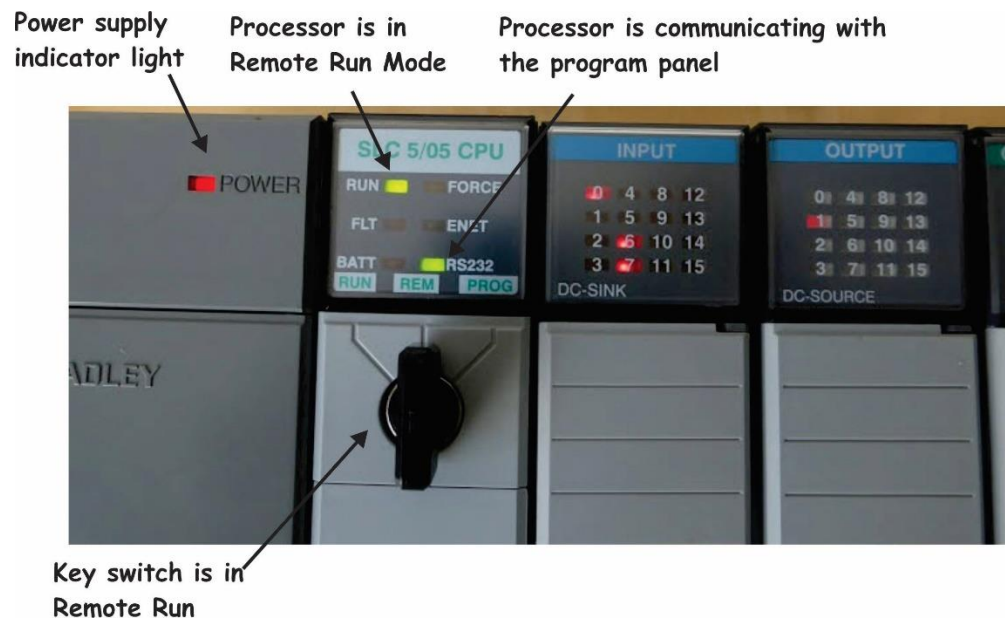
- e Plug the battery connector back in then insert the processor back into the chassis. Power up the unit. What diagnostic indicator lights are on, on the processor?

Explain what the indicator means.

5. ****Important** - With the assistance of the instructor or lab assistant, download a program that was designed for the student training unit, and put the controller into the Run Mode to continue to the next portion of the lab.
6. Replacing an I/O module on the SLC-500 unit.
 - a. Power down the SLC-500 training unit.
 - b. Locate the discrete DC output module.
 - c. Open the cover door and remove the removable terminal block.



- d. Remove the module, inspect it, and then reinsert the module.
 - e. Reconnect the removable terminal block.
 - f. Repower the PLC unit.
7. Resetting a low-level processor fault
 - a Make sure the SLC-500 has a program in it, and it is in the Remote Run Mode. Also make sure there is a key in the key switch of the processor.

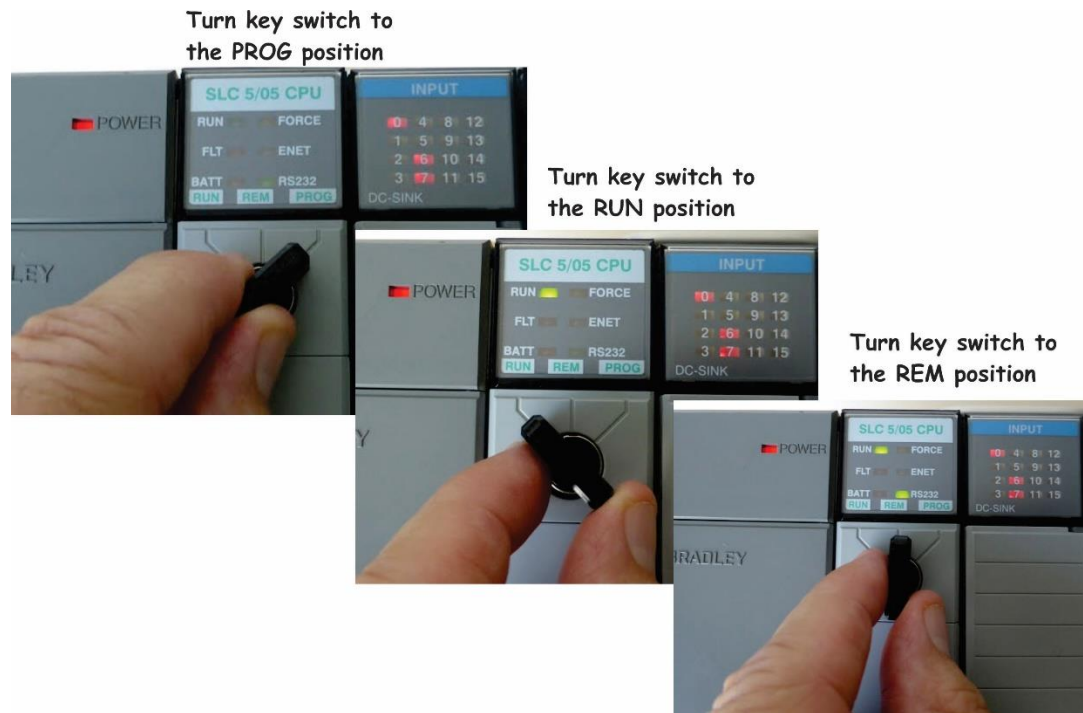


- b Gently remove (unseat) the discrete DC output module and reinsert into the backplane connector.
- c How does the processor respond? Is the unit faulted out? Will the machine run?

Fault light is flashing, which means the Processor is in a minor fault



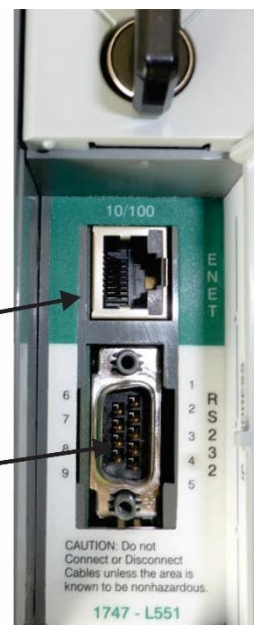
- d Reset the fault with the processor key switch. Move it to the PROG position, then back to the RUN position, then back to the REM position. This will clear the fault, put the processor back into the Remote Run mode, which means the program panel can change the mode of the processor.



8. The following is a graphic showing the communications ports on the SLC-5/05 processor

RJ-45 connector, 8 pin,
Ethernet communication
port, 10/100 MBPS

9 pin, D-shell connector
is Channel 0, an RS-232
communication port



9. The communication ports will be used in all of the following labs. More to come.

Questions:

1. What slot number on the I/O chassis is the processor located in?
2. What slot number on the I/O chassis is the discrete output module located in?
3. What is the advantage of having the key switch on the processor in the REM position?
4. What is the name of the RS-232 port on the front of the SLC-500 processor?
5. Explain what happens if an I/O module is reseated while the processor is running?
6. What does a flashing FLT light indicate on the front of the processor?
7. How is a low-level fault cleared on a modular SLC-500 system?
8. What is the purpose of the battery in an SLC-500 processor?
9. What is the purpose of the capacitor in the SLC-500 processor?
10. What are the first two indicators to look for when troubleshooting an SLC-500 system?
11. What is the purpose of the PLC power supply on an SLC-500 system?
12. Will a machine continue to run if the PLC that is controlling it is put into the Program mode?

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

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