

PLC125 LAB 1.2: WIRING AND TROUBLESHOOTING A SEQUENCE START/STOP CONTROL CIRCUIT

Student Name: _____

Student ID: _____

LAB OUTCOMES:

Upon completion of this lab procedure, the student should be able to:

1. Wire a sequence start/stop control circuit
2. Measure the voltage at various test points in the controls circuit
3. Explain the operation of a sequence start/stop control circuit.
4. Troubleshoot a sequence start/stop control circuit.

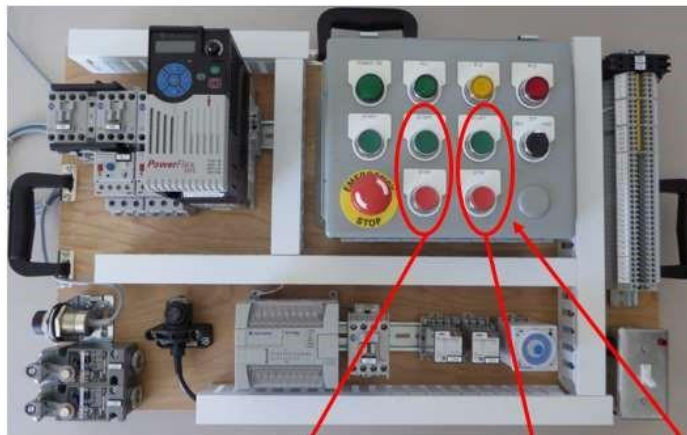
LAB PROCESS:

Set up NSCC 120VAC wiring board. Setup the unit on its base, or lay flat on the work table.

Connect the power cord and turn off the power input switch to make sure the unit is not powered.

Part 1:

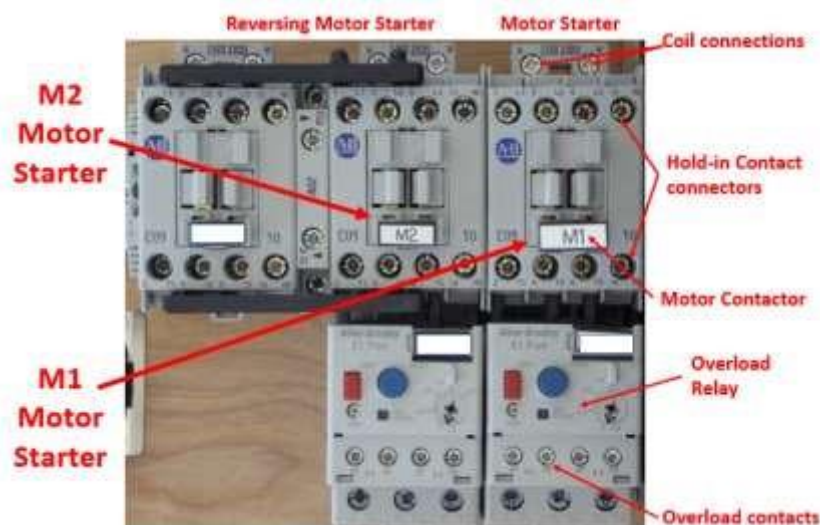
1. Make sure power is removed from the wiring board. Identify the IEC motor starter that will be used in this lab as M1. Use one of the contactors from the reversing motor starter as M2. This lab will involve wiring only the control circuit.



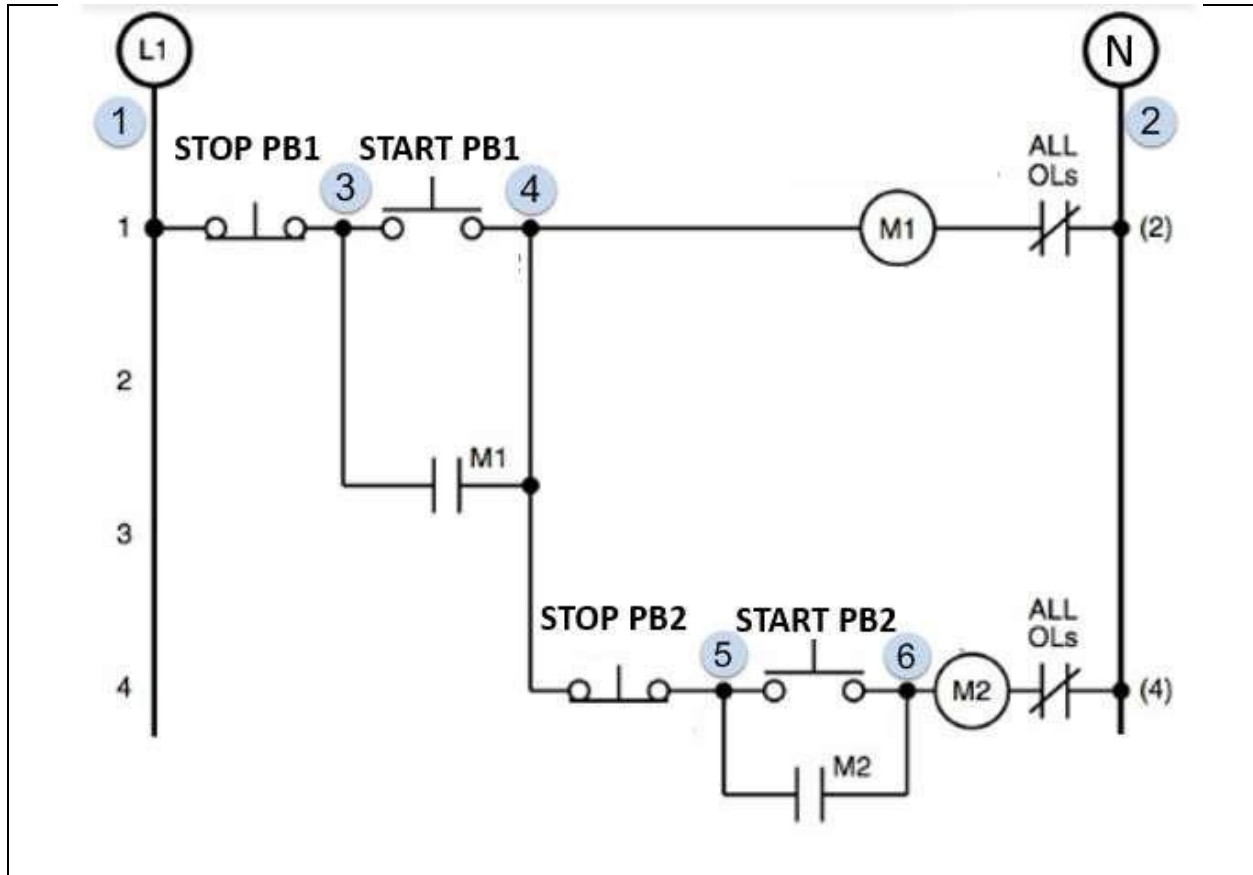
A sequence start/stop circuit will require that one motor starter must be on before the other can be started



Use these four Pushbuttons on the wiring board to simulate two pushbutton stations



2. Use the wire numbers and red MTW wire to construct the following circuit on the NSCC wiring board. Apply 120VAC power to the board to perform the lab.



3. Measure the voltage between electrical nodes 1 & 2 on the terminal strip.

What is the measured value? _____

4. With the both motor starters off, what is the voltage that is measure between the following electrical nodes:

a. Voltage between 3 & 2? _____

b. Voltage between 4 & 2? _____

c. Voltage between 5 & 2? _____

- d. Voltage between 6 & 2? _____
5. Press the START PB2 pushbutton and release. Does M2 motor starter pull in?
- Explain.
6. Press the START PB1 pushbutton and release. Does the M1 motor starter pull in and stay pulled in?
7. With the M1 motor starter on, what is the voltage that is measured between the following electrical nodes:
- a. Voltage between 3 & 2? _____
 - b. Voltage between 4 & 2? _____
8. Press the START PB2 pushbutton and release. Does the M2 motor starter pull in and stay pulled in?
9. With the M2 motor starter on, what is the voltage that is measured between the following electrical nodes:
- a. Voltage between 4 & 2? _____
 - b. Voltage between 5 & 2? _____
 - c. Voltage between 6 & 2? _____
10. Press the STOP PB1 pushbutton. Which starter drop out?
- Explain.

11. Disassemble the circuit and return the lab equipment to its storage area.

Questions:

1. Can M2 motor starter start, if M2 is not on?
2. Can M1 motor starter start, if M2 is not on?
3. Explain an application where this circuit could be used?
4. If M1 motor starter overload, will M2 motor starter shut off?.
5. If M2 motor starter overloads, will the M1 motor starter shut off?
6. Explain how the control circuit could be modified, that if either M1 or M2 overloaded, both M1 and M2 would automatically shut off.

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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