

PLC122 LAB 2.1: WIRING A 120VAC START_STOP CIRCUIT

Student Name: _____

Student ID: _____

LAB OUTCOMES:

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

1. Identify all components on the NSCC wiring boards.
2. Measure the continuity of all the switches mounted behind the pushbutton heads.
3. Measure the resistance of the coil and contacts of an Allen Bradley relay.
4. Wire a 120VAC start/stop, 3-wire control circuit with a control relay.
5. Wiring a circuit using the proper wire colors and wire numbers.
6. Troubleshoot a faulty start/stop control circuit

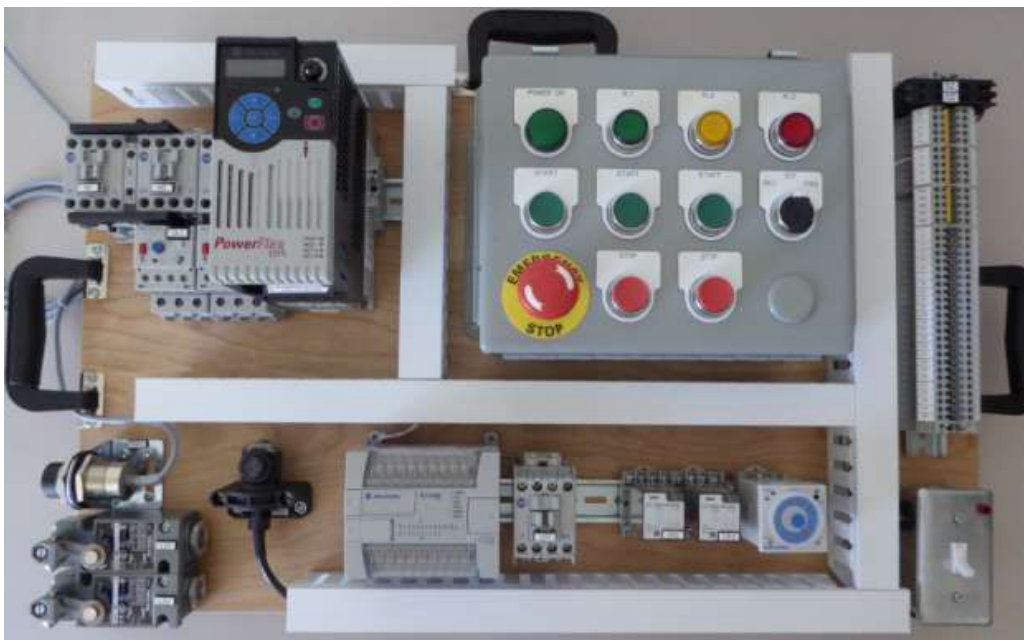
Lab Process:

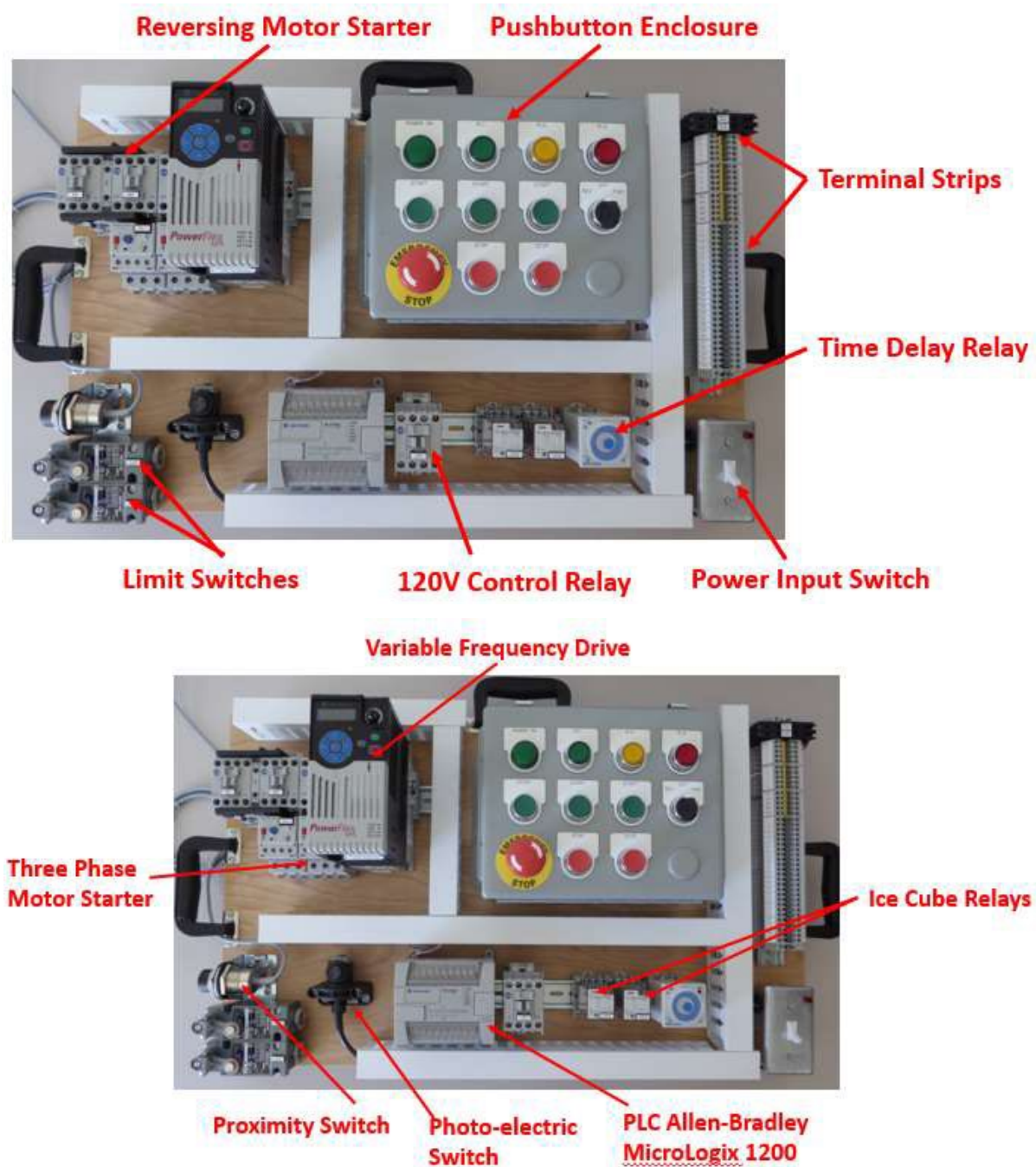
Find an NSCC 120VAC wiring board. Setup the unit on its base, or lay flat on the work table.

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

Part 1

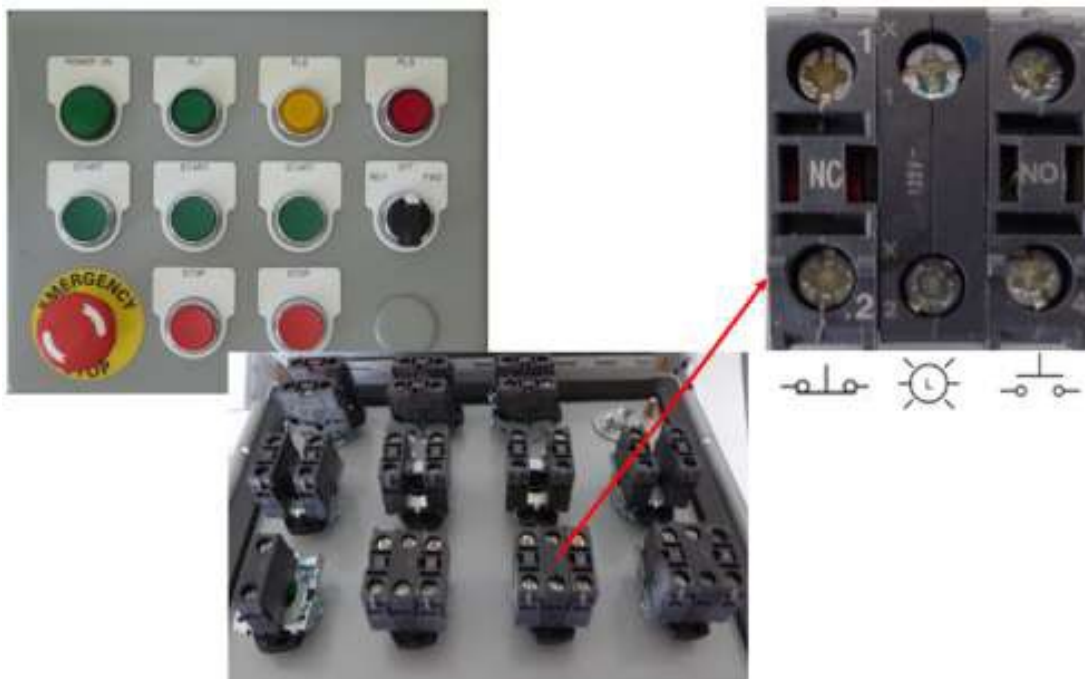
Become familiar with the NSCC wiring boards.



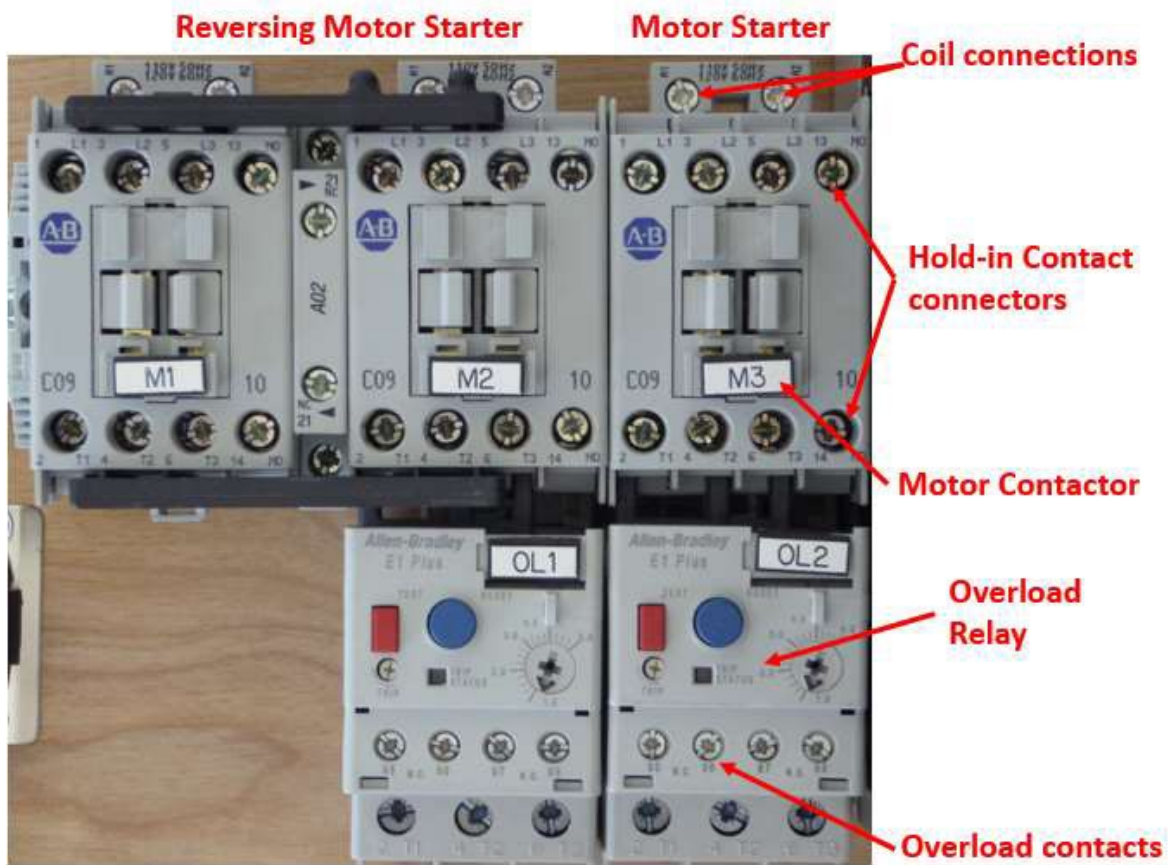


1. Find the power switch. Connect the 120VAC power cord to verify power “red indicator light”.
2. Find the 120V control relay. Identify the coil (marked as A1 & A2). Check the continuity of the coil. Check the continuity of the relay contacts. Manually engage the relay to see the resistance measurement after the change of state (manually engaged).

- a. How many poles (contacts) are on the relay?
 - b. How many of the contacts and N.O.?
 - c. How many of the contacts are N.C.?
3. Find the terminal strips. Locate the black, white and green wires that go from the power switch up to the terminal strips. All electrical nodes should be numbered and represented on the terminal strip.
 4. Identify all components on the wiring board. Students will be individually tested on what each device is.
 5. Get familiar with the pushbutton enclosure, and how to identify and check the continuity of the N.O. and N.C. contacts, as well as the pilot lights.



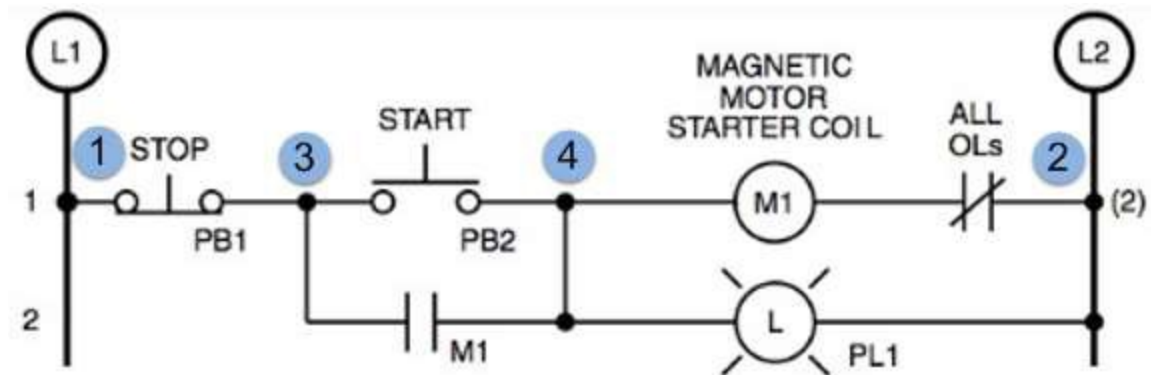
Part 2



1. Take a resistance check of the motor starter coil. Measure resistance = _____
2. Check the resistance of the contacts on the contactor portion of the motor starter.
 - a. How many contacts are on the contactor?
 - b. How many are control versus power contacts?
 - c. Do they measure N.O. or N.C.?
3. Check the continuity of the contacts on motor starter overload relay. These are the contacts marked as "OL" on a print.

Part 3

Wire the following circuit on the NSCC wiring board. Use the wire numbers and red MTW wire to construct the circuit.



1. Make sure you have proper eye protection on. Power up the circuit.
2. Press the Start pushbutton.
 - a. Does the motor starter pull in?
 - b. Does the starter remain pulled in when the start button is released?
3. Use the DMM as an AC voltmeter.
 - a. Measure the voltage from wire 3 to 2 = _____
 - b. Measure the voltage from wire 4 to 2 = _____
4. Press the Stop pushbutton to shut off the motor starter.
5. Manually engage the motor starter. Does the motor starter stay pulled in? Explain.
6. Power off the "Power Input" switch to power off the training unit.

Questions

1. What is the designation of the white wire on the NSCC wiring boards?

2. What would the color of the control wiring be for a DC control circuit?
3. What is the resistance of the pilot light in this circuit?
4. If the Motor Starter is de-energized, and no pushbuttons were actuated, what voltage is read across the stop pushbutton? Explain.
5. If the Motor Starter is de-energized, and no pushbuttons were actuated, what voltage is read across the start pushbutton? Explain.

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: _____

DOL DISCLAIMER:

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