PLC200
Module 5
Maintenance & Troubleshooting

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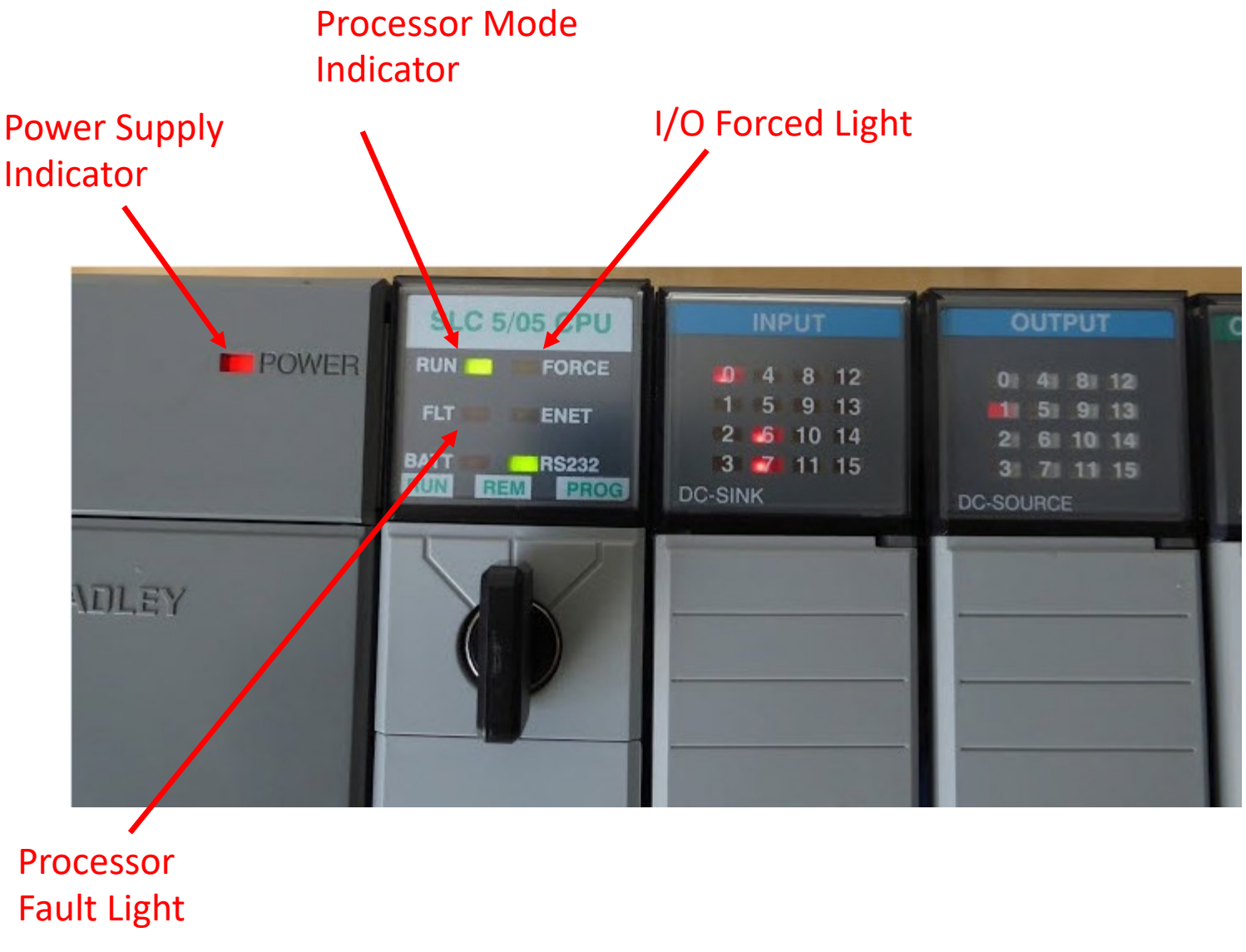
On 4/2/16

Module Objectives:

- Interpret the diagnostic indicators on the SLC-500 processor
- Diagnosing a failed output on a PLC system
- Utilizing the Search commands in RSLogix500
- Apply forces to I/O on the SLC-500
- Understand the basic of Online Programming with RSLogix500



If the BATT light is on, the battery is dead or needs to be replaced.

The ENET light will be flashing if there is data communication on the Ethernet port. It will flash periodically to show it is active.

The RS232 light will be flashing if there is data communication on the RS-232 port. It will flash periodically to show it is active.

If the RUN light is on, the processor is in Run or Remote Run mode. If it is off, it is in Program or Remote Program mode.

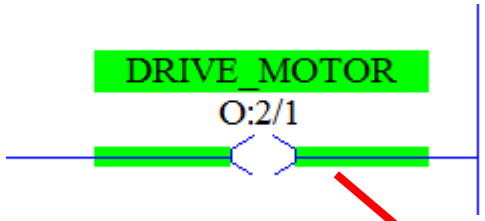
If the FORCE light is off, there is on forces present. If it is flashing, there are forces, but they are not enabled. If it is on solid, there are forces and they are enabled.

The FLT indicator on the SLC-500 Processor

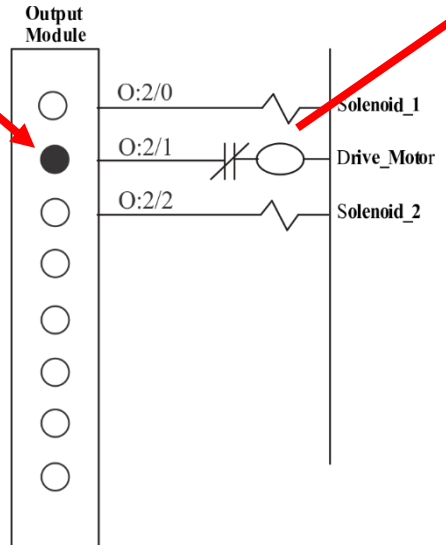
- Fault Light
  - Solid on indicated a fatal error – may need to replace the processor
    - Could be caused if the processor loses its memory due a spike
    - Processor is still good if the user can communicate with processor with RSLinx
  - Blinking, indicates a major error in the processor
    - Could be caused when a module is pulled while the processor is running.
    - Could be caused when a timer experiences a negative number
    - Could be caused when the scan is lost in the program – watchdog timer times out
    - An easy way to reset this is to cycle the mode switch to program, to run, and back to remote
    - If this does not do it, go online with RSLogix500, and go to fault code from the online tool bar.
  - Off, is the normal operation

Drive Motor Output Indicator light on a DC output module in slot 2

OTE instruction of O:2/1 located in the PLC program, will control the Drive Motor Starter



The electrical print that shows the output connected output 1, on the module in slot 2



The Drive_Motor motor starter

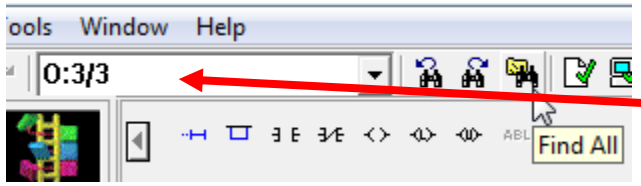
When an output fails, it is important that the technician get the print and find the output on the print that has failed. This will give them the address, in order to find the output indicator, to see if it is on or off.

If the output should be on and is not, and the output indicator is off, the technician needs to find the output instruction in the program that controls the output to see if it is highlighted. This will be done with Search commands.

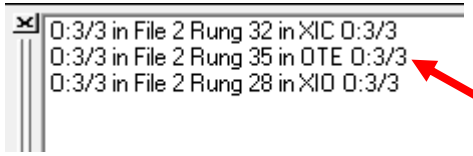
If the output indicator on the output module is on, and the output is not on, use a voltmeter to measure the output to determine if it is bad.

Searching in RSLogix500

- It is important to know how to use the Search commands in PLC programming software when troubleshooting a system.
- If an output fails the technician will need to find the PLC address of the output, in order to determine the location of the output indicator light on the output module.
- Once this is located, if it is on, check the output voltage with a meter. If there is power coming out, the output is probably bad (coil is open).
- If there is no output indicator light, go online to the PLC, search for the output address, and determine what turns on the output from the program.

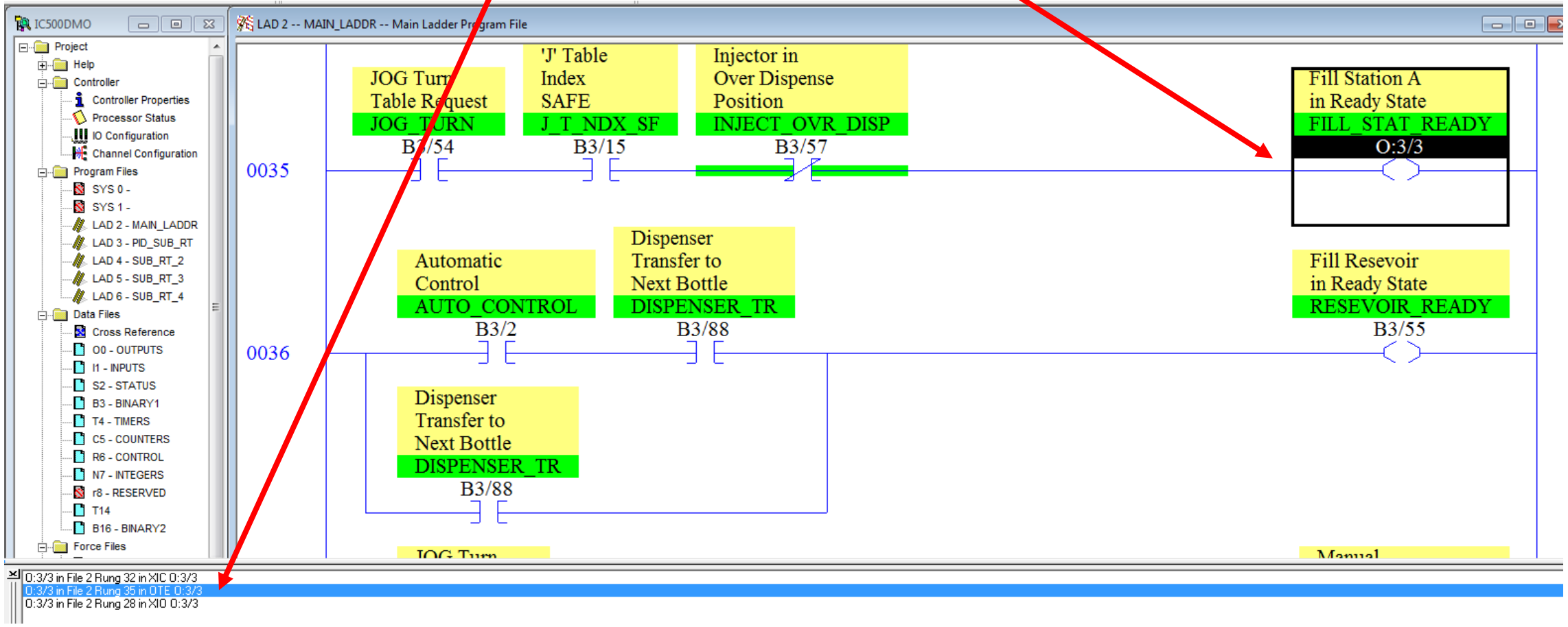


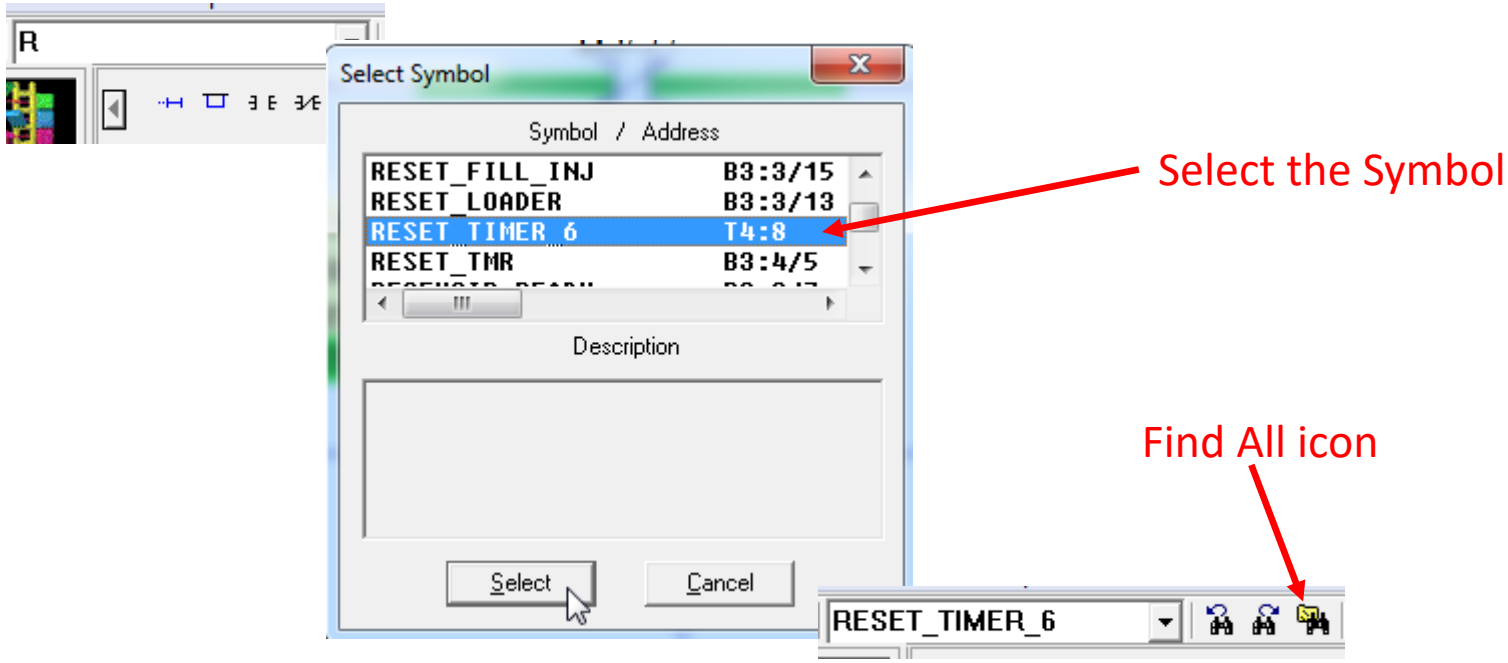
In the Search box at the top of the RSLogix500 screen, key in the address to search for



The OTE instruction was found in File 2, Rung 35

Click on the search result instruction that the user wishes to navigate to, and RSLogix500 will go to that rung

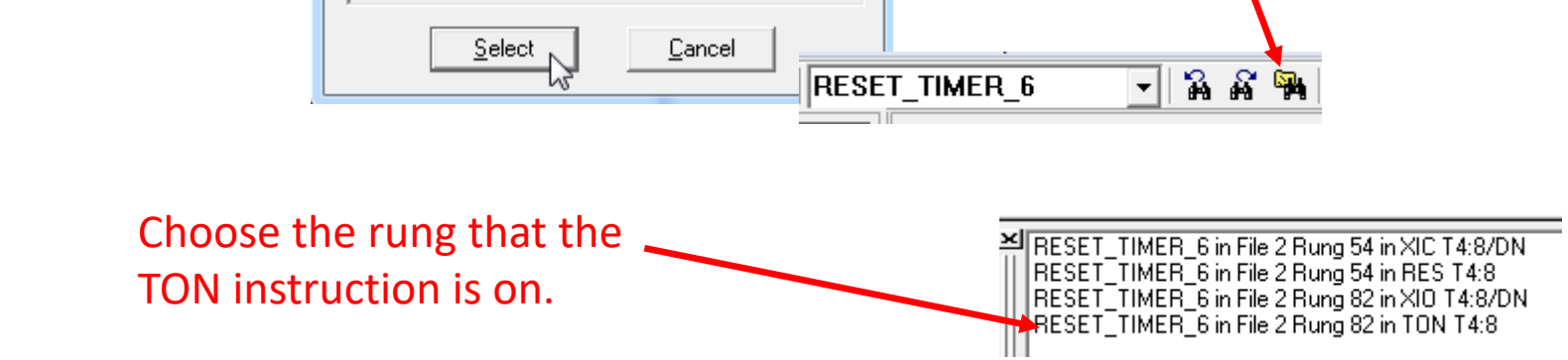


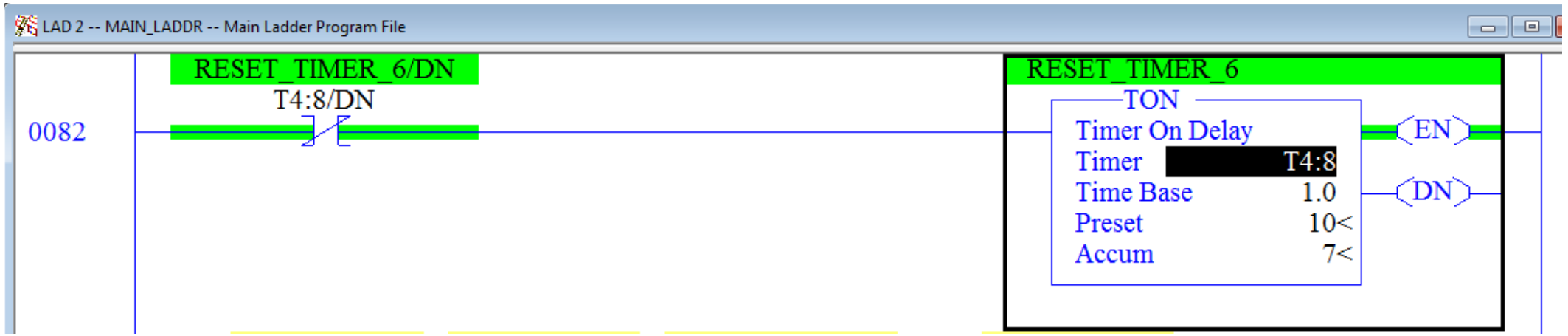


A user can also search by Symbol. In the search window, type in the first letter of a Symbol, and press the INSERT key on the keyboard. A list will appear. Choose the Symbol and click the Select key.

Click the Find All icon on the toolbar. The results will be shown.

Click on the rung that has the TON instruction. The software will navigate to that rung (2:82).





Forcing I/O in an SLC-500 system

- Inputs and outputs are the only memory bits that can be forced.
- If an output is forced on, it stays on and will not shut off until the force is removed. This is dangerous, because the program no longer controls the output.
- If an output is forced off, it will never come on.
- Inputs can be forced as well. If an input is forced on, it over rides in input, as if the input was on in the image table.
- There is a separate force table that the forces are stored in, which will over ride the image tables. These force tables must be enabled to activate the forces.

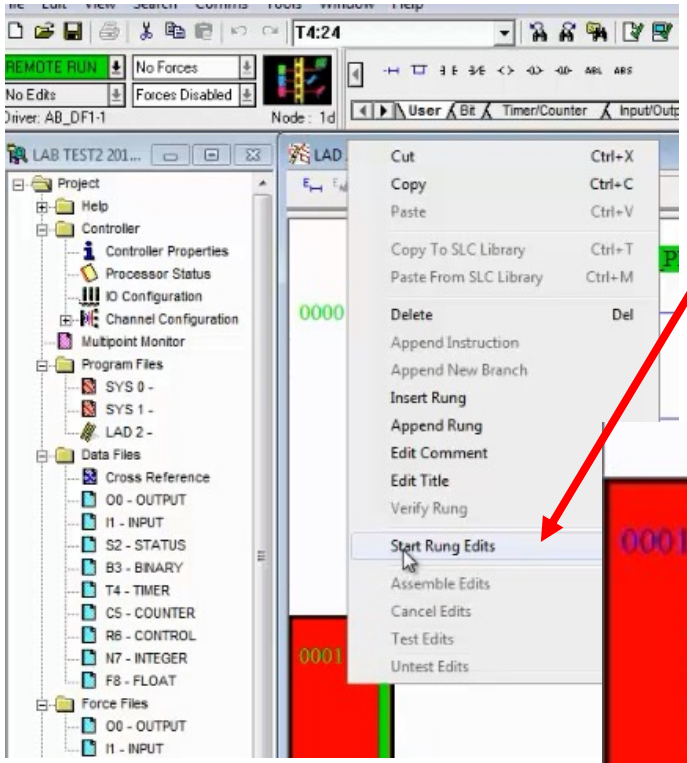
Online Programming

- RSLogix500 will allow the users to change a PLC program online, while the processor is in the Remote Run Mode.
- The purpose in this is that in some plants, the PLC cannot be shut down due to a continuous duty process.
- If a program is modified offline, then downloaded, the download will require that PLC be put into program mode, which will shut the machine down.
- If a change is made to the program when the user is online, the program is different from the offline program, and the user must upload the program to save it.

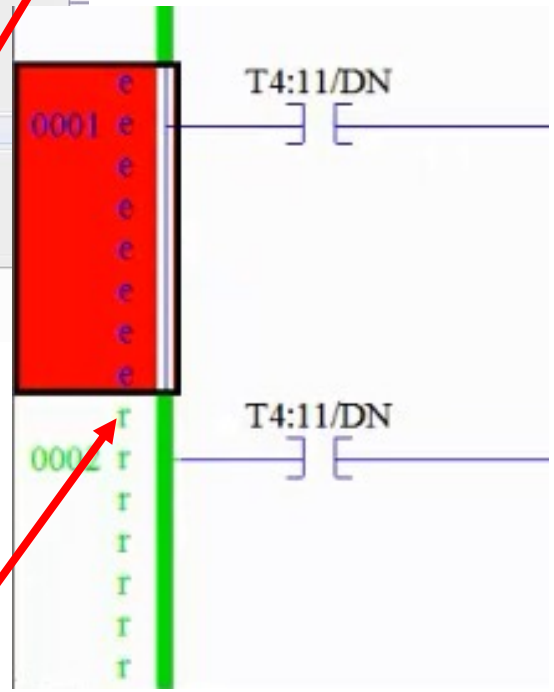
Online Programming cont.

- The step to doing an online programming change is as follows:
  - Right click on the rung and start rung edits. The rung will be duplicated, with the scan remaining on one, and other can be edited.
  - After changing the edit rung, accept the changes. The changes are then written into the processor.
  - The next step is the Test the Rung Edits. The scan will then move to the edit rung (and not on the duplicated rung) so the user verify that the edit will work.
  - Once the change is acceptable, the user must Assemble Edits. This will remove the duplicate rung and the modified rung replaces it in the processor.
  - The steps for an Online Programming Change: Go Online, Start Rung Edits, Accept Edits, Test Edits, Assemble Edits.

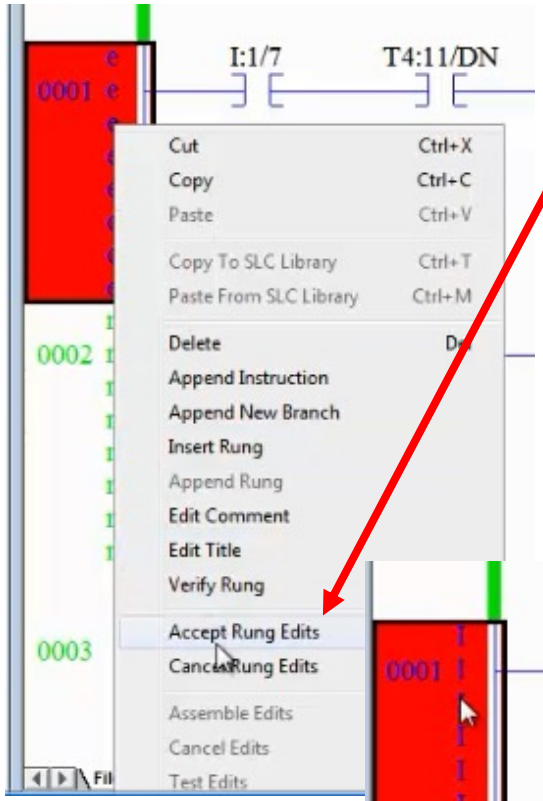
Online Programming Steps



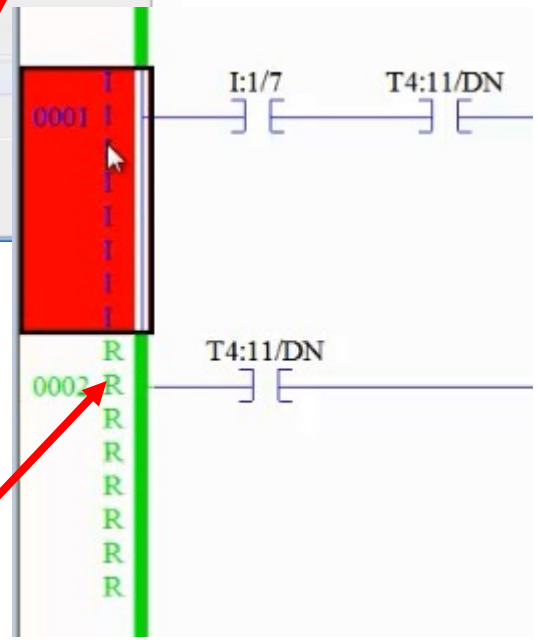
1. Right click on the edge of the rung that will need to be changed while online



2. The rung will be duplicated. The original will have the scan on it, with lower case “r”. The user can edit the other rung which will have the lower case “e”

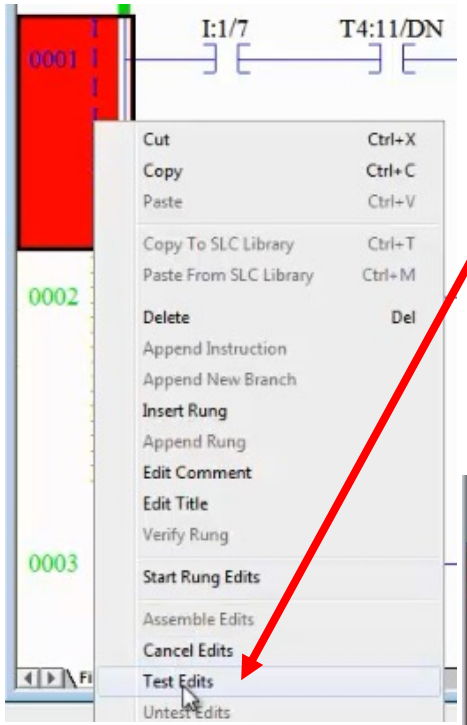


3. After the edits, right click on the edited rung and choose Accept Rung Edits. This will write the change into the processor. The letters on the rung edge will change to capital letters.

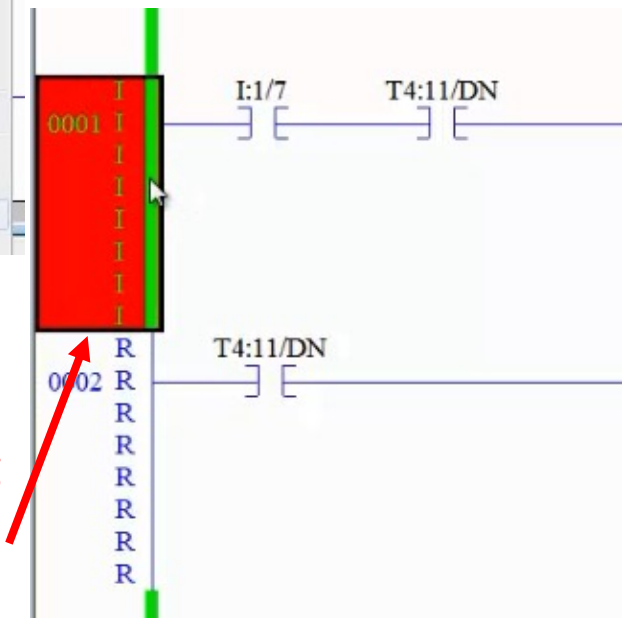


4. The Is appears on the edge of the edited rung. This means insert. The scan is still on the original.

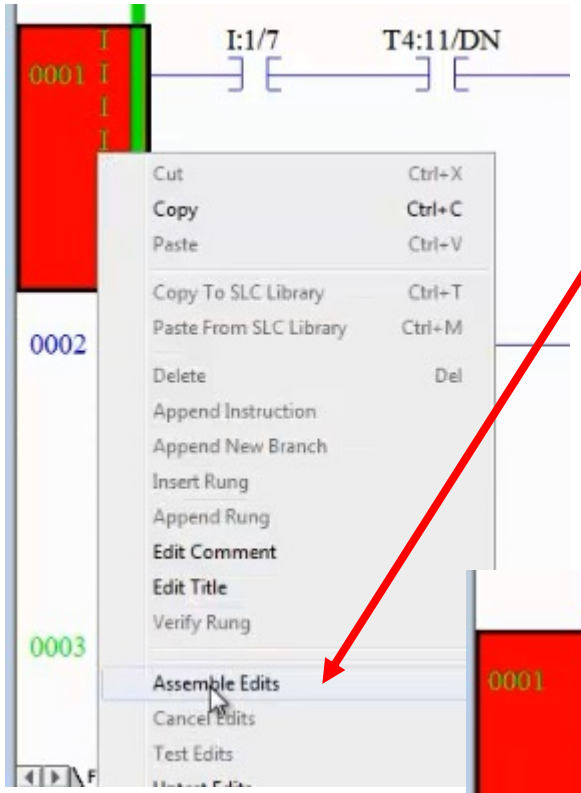
Online Programming Steps cont.



5. Right click on the rung with the Is, and choose Test Edits.

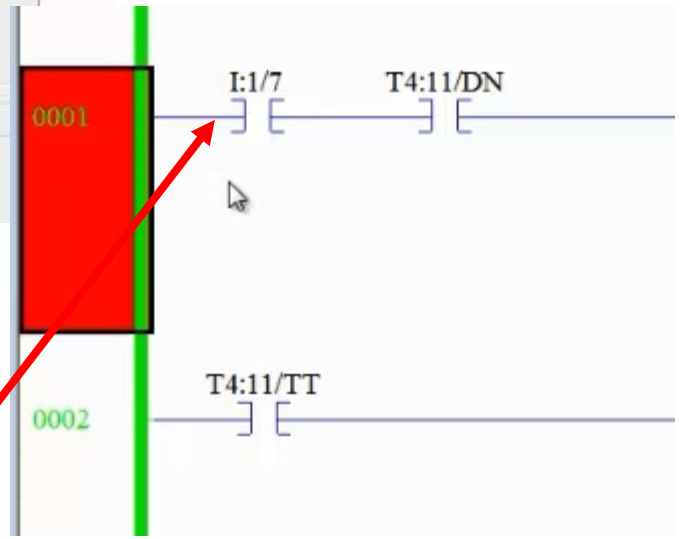


6. This will move the scan to the edited rung so the user can test it, to see if it will work.



7. Once the program modification has been tested and it works, the user will right click on the edited rung and choose Assemble Edits.

8. The edited rung will replace the duplicate rung in the program.



Miscellaneous Topic for Module 5, #1

- PING, is a DOS command that is run from the Command Prompt, that used to test connectivity from one Ethernet connection to another.
- If the PLC that the technician wishes to communicate with from a program panel is marked as 192.168.105.150 for an IP address, the technician will connect the program panel (via Ethernet), then at the command prompt type: C:>Ping 192.168.105.150 and Enter.
- If the response shows communication, RSLinx will be started and a driver will be configured to communicate with the processor.

Miscellaneous Topic for Module 5, #2

- If an SLC-500 processor or I/O module is found to faulty and need to be replaced, the user can replace the processor or module and download the program for the machine into the new processor.
- Before they do that, since the processor module could be a newer or older version, the user must Read the I/O configuration with the new processor or module. Then the project will need to be saved.
- Then the user will be able to download the program into the processor with the new I/O configuration, which is also downloaded.

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