

Allen Bradley CompactLogix Training Basic OTE, OTL, OTU Lab

Objectives:

Upon completion of this lab exercise the trainee should be able to:

1. Explain the operation of an OTE instruction as compared to the OTL & OTU instructions.
2. Determine how to turn the address description on and off of the ladder program display within RSLogix5000 .
3. Monitor the image tables with the PLC programming software.
4. Explain how retentive and non-retentive coils respond after recovery from a power loss.

Procedure:

1. Key in the Alias Tags for the Base I/O Tag addresses.
Key in the following program with RSLogix5000 and save to the hard drive.
Start up RSLinx and create a driver (path) to the ControlLogix processor.
2. Download the program from the hard disk to the ControlLogix processor.
3. Go Online to the ControlLogix and you should see the following program.
Put the processor into the RUN (or Remote Run Mode).

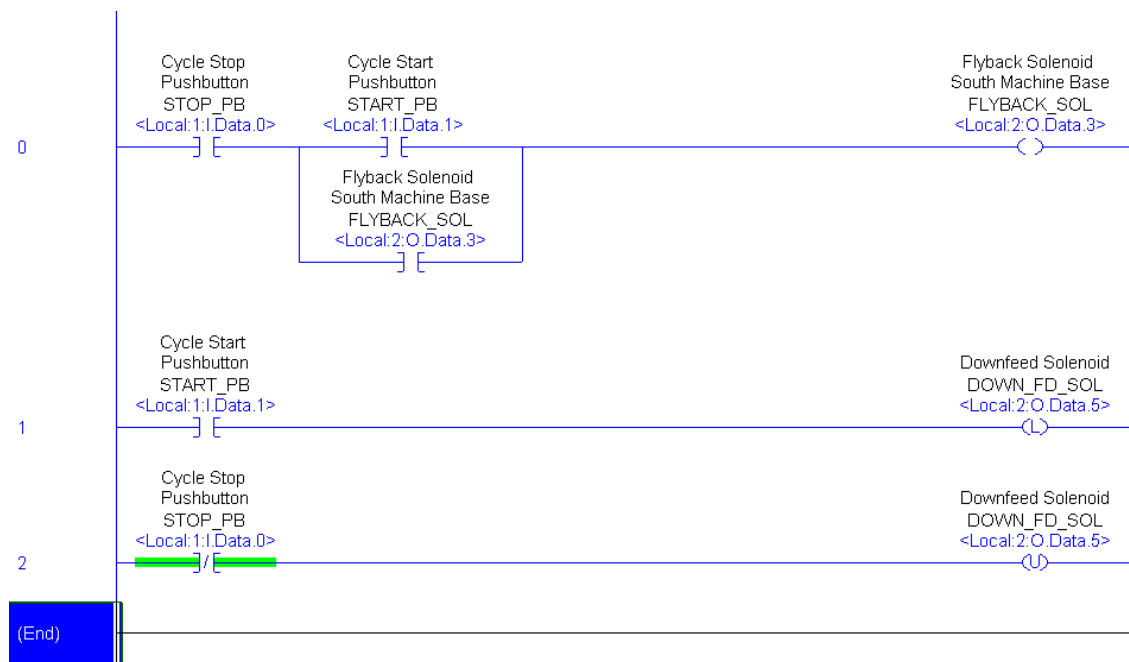


Figure 1. Basic CompactLogix ladder logic program with relay instructions.

This lab assumes that a N.C. wired stop button is wired to input “Local:1:I.Data.0”. If this is a simulator switch on a ControlLogix system, close the first switch “Local:1:I.Data.0” to simulate a N.C. pushbutton.

4. Do any instructions (contacts or coils) have highlight? Which ones?
5. Momentarily push or toggle on (then off) the Start Pushbutton Local:1:I.Data.1”. Do both outputs come on?

The **Flyback Solenoid** (Local:2:O.Data.3) is held on with a hold in contact, and the **Down Solenoid** output is held on with a retentive coil instruction.

When the **Downfeed Solenoid** is on Local:2:O.Data.5”. is both the latch and unlatch coils highlighted?

Explain.

6. Now monitor the input tag table with RSLogix5000 by right mouse clicking while pointing the mouse on an input addressed instruction. Choose “Monitor/Edit Force Value of “START_PB” from the right click menu.

The image table will be shown on graphic below.

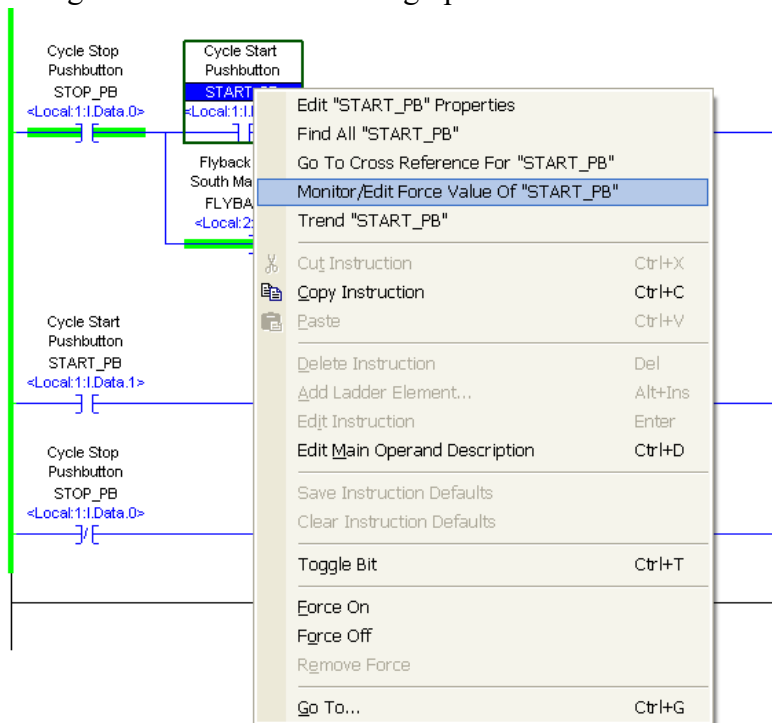


Figure 2. How to monitor the data in RSLogix5000.

The data should be show in the following graphic.

Name	Value	Force Mask	Style	Data Type	Description
DOWN_FD_SOL	1		Decimal	BOOL	Downfeed Solenoid
FLYBACK_SOL	1		Decimal	BOOL	Flyback Solenoid ...
+ Local:1:1	{...}	{...}		AB:1769_DI16:I:0	
+ Local:2:C	{...}	{...}		AB:1769_DO16:C:0	
+ Local:2:1	{...}	{...}		AB:1769_DO16:I:0	
+ Local:2:0	{...}	{...}		AB:1769_DO16:O:0	
+ Local:3:C	{...}	{...}		AB:1769_IF4XOF...	
+ Local:3:1	{...}	{...}		AB:1769_IF4XOF...	
+ Local:3:0	{...}	{...}		AB:1769_IF4XOF...	
+ Local:4:1	{...}	{...}		AB:1769_SDN_4...	
+ Local:4:0	{...}	{...}		AB:1769_SDN_3...	
START_PB	0		Decimal	BOOL	Cycle Start Pushb...
STOP_PB	1		Decimal	BOOL	Cycle Stop Pushb...

Figure 3. Interpreting the data in RSLogix5000.

Now toggle the START_PB input. Does the value change to a “1”?

- Toggle the Stop Pushbutton “Local:1:I.Data.0”.

Does the **Flyback Solenoid** go off? _____ Explain!

Does the **Downfeed Solenoid** go off? _____ Explain!

- Push (or toggle) the START_PB tag (Local:1:I.Data.1) to turn the outputs back on.

Turn the power supply off that feed the rack of the PLC-5 to simulate a power outage.

Now turn the power back on. What is the state of the outputs?

Explain!

- Turn off the address descriptions on the ladder display.
Click on the “**Tools**” pull down menu and choose “**Options**” for program display options.

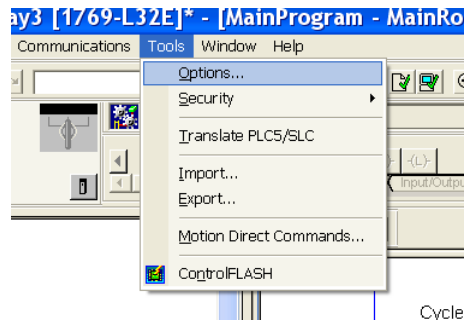


Figure 3. Bringing up the Options window in RSLogix5000.

Uncheck the “Show Main Operand Descriptions”, then click apply or OK.

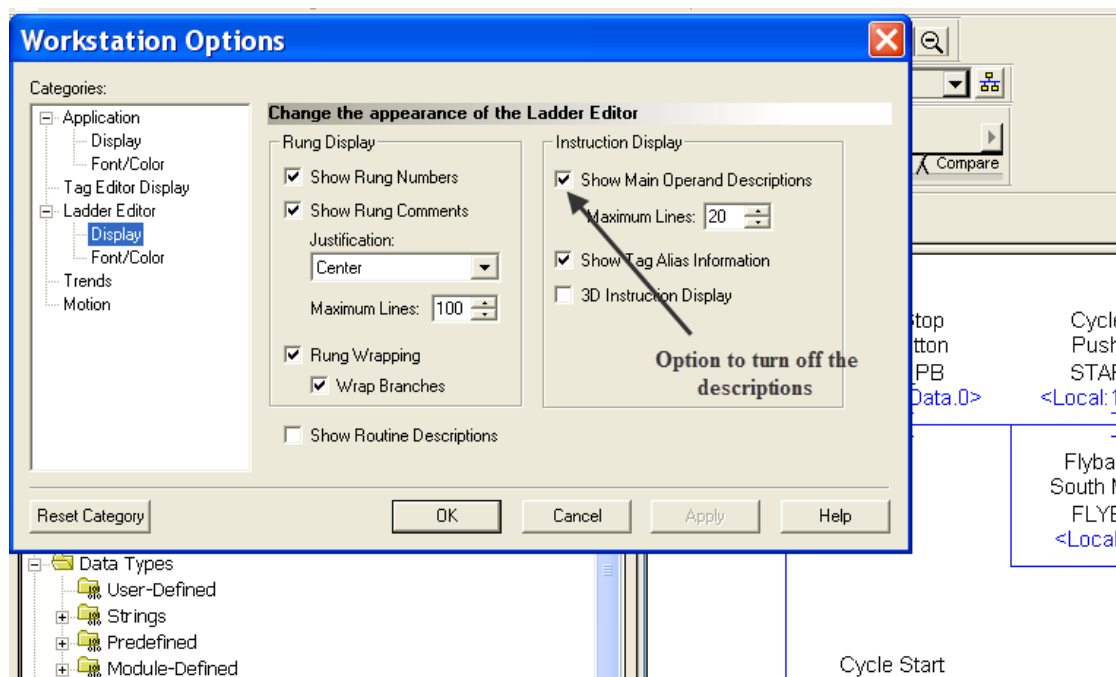


Figure 4. Turning on/off the address descriptions.

The ladder program should be displayed as below (without address descriptions):

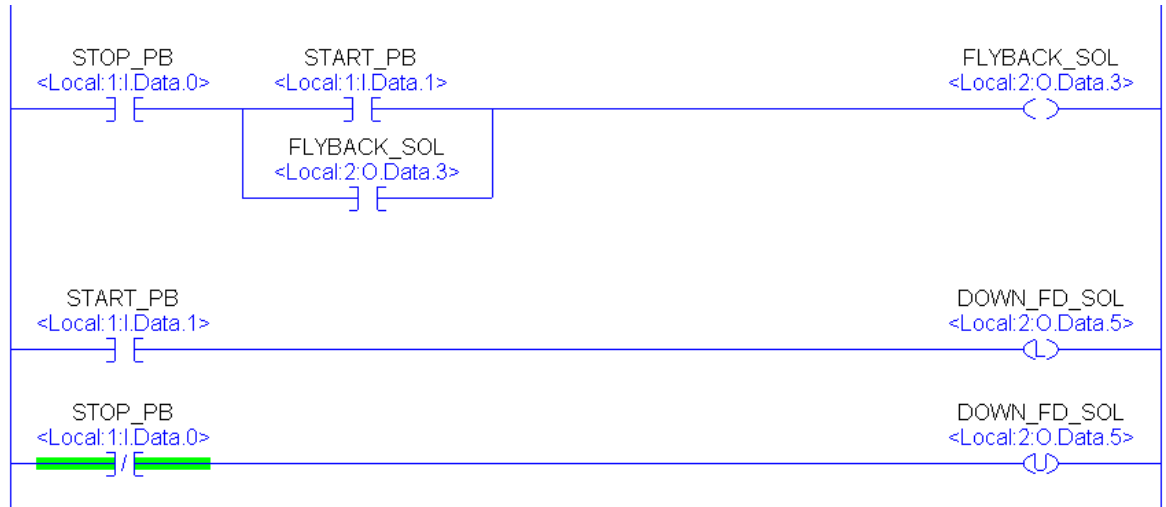


Figure 5. The change in the ladder view of RSLogix5000.

Now turn the descriptions back on.

10. Problem: Design a program that will energize output O:000/04 when any of three start buttons (I:000/02, I:000/03 and I:000/04 – all wired N.O.) are energized. If the Stop Pushbutton (I:000/00 – wired N.C.) is pushed or input I:000/07 (wired N.O.) is pushed, the output will shut off.
Key in the program and try it in the PLC trainer.

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