Learning Thread in a Competency-Based/Hybrid Course:

This document will show just a portion the learning materials in module 5 of the PLC1 course.

Module Topics:

Module 5 Topics:
1. Hardware basics on ControlLogix
2. How to reset the memory of a 1756-L71 controller
3. Learn the basic operation of Studio 5000 Logix Designer
4. Create and download a project to the ControlLogix controller
5. Tag basics & basic Atomic data types
6. Hardware basics on the CompactLogix 5370 L2
7. Opening a .ACH and .L5K files
8. I/O Tags on the Compact and ControlLogix
9. Changing an I/P address with RSLinx
10. Reset the memory of a CompactLogix
11. Create a Logix Designer project for the CompactLogix
12. Controller Tags (Global) versus Program Tags (Local); Alias vs. Base Tags
13. Task, Programs and Routines
14. Basic operation of a continuous, periodic and event type of Task

Module Outcomes:

Module Outcomes: Upon completion of this module students will be able to:
1. Explain the hardware components of a CompactLogix 5370 L2 processor
2. Explain the hardware components on a ControlLogix 1756 modular I/O system
3. Interpret the diagnostic indicators for the Logix 5000 controllers
4. Interpret the tags (addressing) for local and remote I/O
5. Identify and explain all communication ports on the CompactLogix processor
6. Create a new project in Studio5000, by configuring the I/O, and creating the alias tags in the Controller Tags settings.
7. Create a 4 rung program in a new project with the relay and timer instructions, using Studio5000
8. Use Studio5000 to do basic program functions (Download, go online, go offline, upload)
9. Explain the difference between base tags and alias tags, as well as controller and program scoped tags
10. Explain the BOOL and DINT data types

Performance Assessment

Assessment #3: (Students should take this after completing **Module 6 KAA)**
1. Identify and explain all hardware components on a ControlLogix system
2. Identify and explain all Hardware on a CompactLogix 5370 L2 system
3. Create and download a project to the CompactLogix 5370 L2 controller
4. Backup PLC program to SD and restore manually or from power on
5. Change IP address on CompactLogix with RSLinx
6. Create multiple types of tags in CompactLogix
7. Use ControlFLASH to upgrade/downgrade the firmware of a CompactLogix controller
8. Transfer a program from RAM to/from SD module on CompactLogix,
9. Replace an IO module on a ControlLogix system

Lab Exercises:

Lab 5.3: CompactLogix 5370 L2 Hardware Lab

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

1. Identify the hardware components on the CompactLogix 5370 L2 controller
2. Determine the wiring terminal on a CompactLogix 5370 L2 based on the I/O Tag
3. View the CompactLogix 5370 L2 processor and I/O within RSLinx
4. Find the version of firmware for the processor in RSLinx
5. View the I/P address for the CompactLogix Ethernet port using RSLinx
6. Download Logix Designer files from Canvas, then download files to the controller
7. Open a ladder logic routine using Logix Designer
8. Reset the memory of the CompactLogix 5370 L2 controller

***This lab could be performed in the Terra PLC Lab**.

Getting Started with Lab 5.3 041923: https://youtu.be/EawrkJmtOJI

Part 1: Identify the hardware components of the CompactLogix 5370

1. Figure 1 shows the CompactLogix 5370 L2 package controller that is used in the Terra PLC lab.

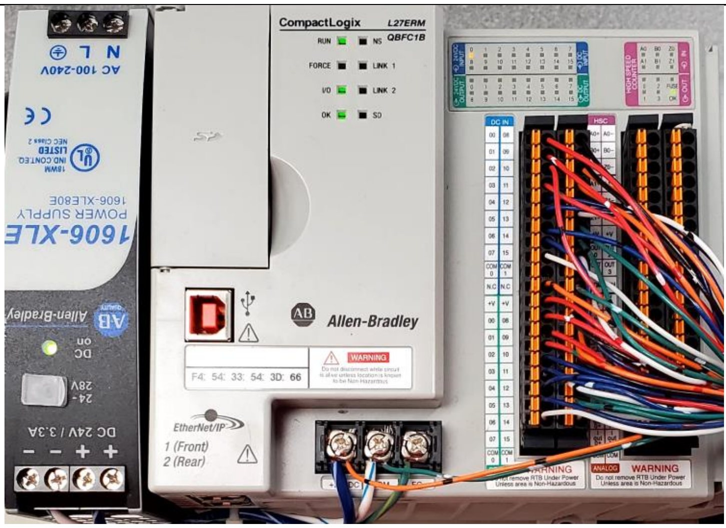


Figure 1. CompactLogix 5370 L2 Controller.

2. Find the following on the CompactLogix 5370 L2 Controller:
   a. Processor Indicator lights
   b. USB port
   c. Ethernet port (both connectors)
   d. I/O status indicators
   e. Processor mode switch
   f. SD module
   g. Power source for the controller

3. Identify the wire terminal on the terminal strips for:
   a. Local:1:I.Data.15
   b. Local:1:O.Data.13

4. Figure 2 shows the discrete I/O located in Slot 1 of the controller. Identify the following:
   a. Wire terminal and output light for address: Local:1:O.Data.10.
   b. Wire terminal and output light for address: Local:1:O.Data.1.
   c. Wire terminal and input switch for address: Local:1:I.Data.7.
   d. Wire terminal and input switch for address: Local:1:I.Data.12.

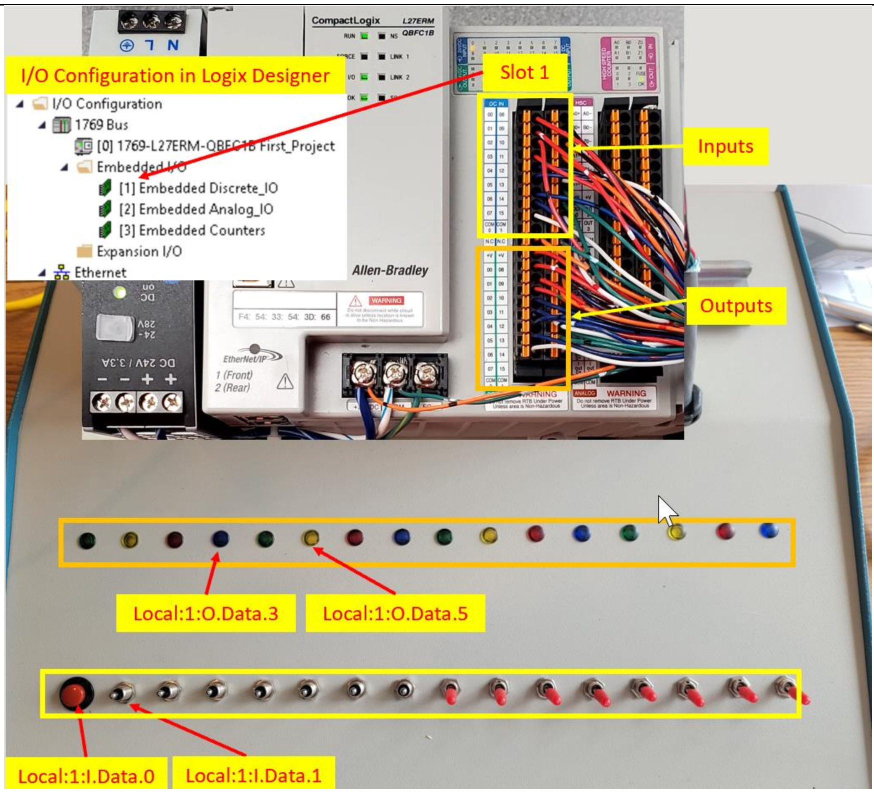


Figure 2. Discrete I/O located in Slot 1 of the 5370.

Part 2: Using RSLinx to Monitor and Configure the CompactLogix

1. Start RSLinx on the Terra Virtual Machine

2. Plug in the USB cable from the CompactLogix controller to the USB on the desktop computer. The USB Driver should appear automatically, as shown in Figure 3.

3. Close and delete any Ethernet IP drivers.

4. Create a new Ethernet IP driver in RSLinx and open the driver to show the controller and the embedded IO, as shown in Figure 3.

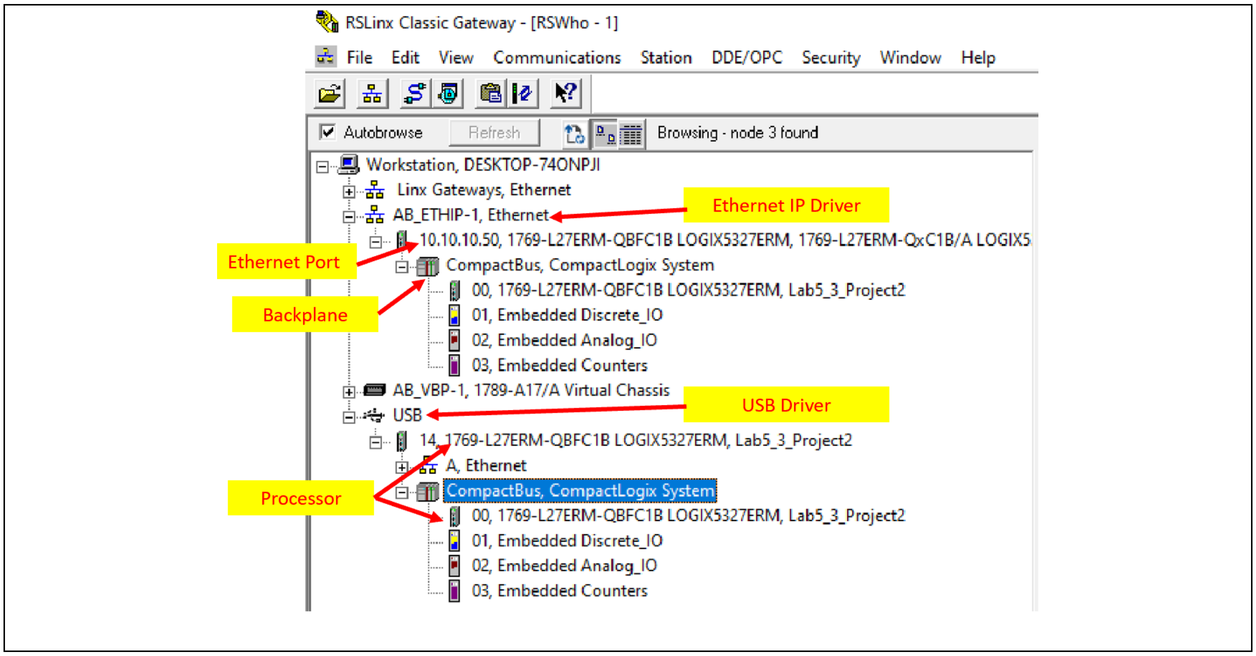


Figure 3. RSWho view in RSLinx.

5. Use RSLinx Classic to view the firmware revision of the CompactLogix controller, as shown in Figure 4.
    1. Right mouse click on the IP address of the controller.
    2. Choose Device Properties from the pull down menu.
    3. The Firmware Revision is displayed as version 32.011.
    4. Click on the “Close” button.

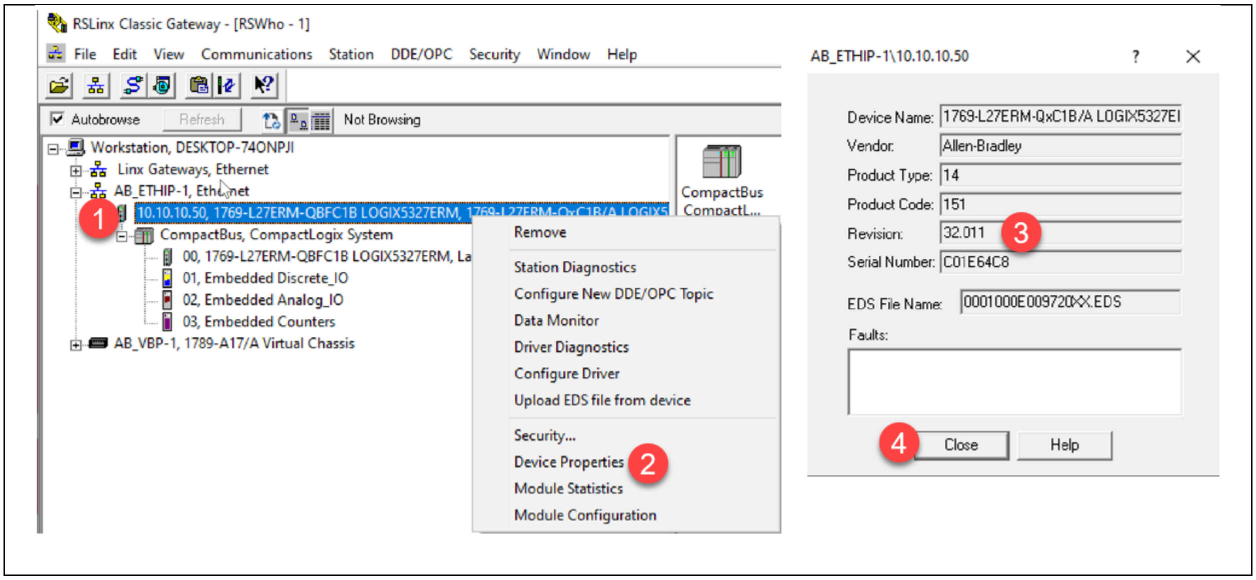


Figure 4. Viewing the Controller Firmware Revision Level with RSLinx.

6. Use RSLinx Classic to view the IP address on the Ethernet port of the CompactLogix controller, as shown in Figure 5.
   1. Right mouse click on the IP address of the controller.
   2. Choose Module Configuration from the pull down menu.
   3. The IP address on this controller is 10.10.10.50. This addressed can also be changed with RSLinx Classic
   4. Click on the "OK" button.

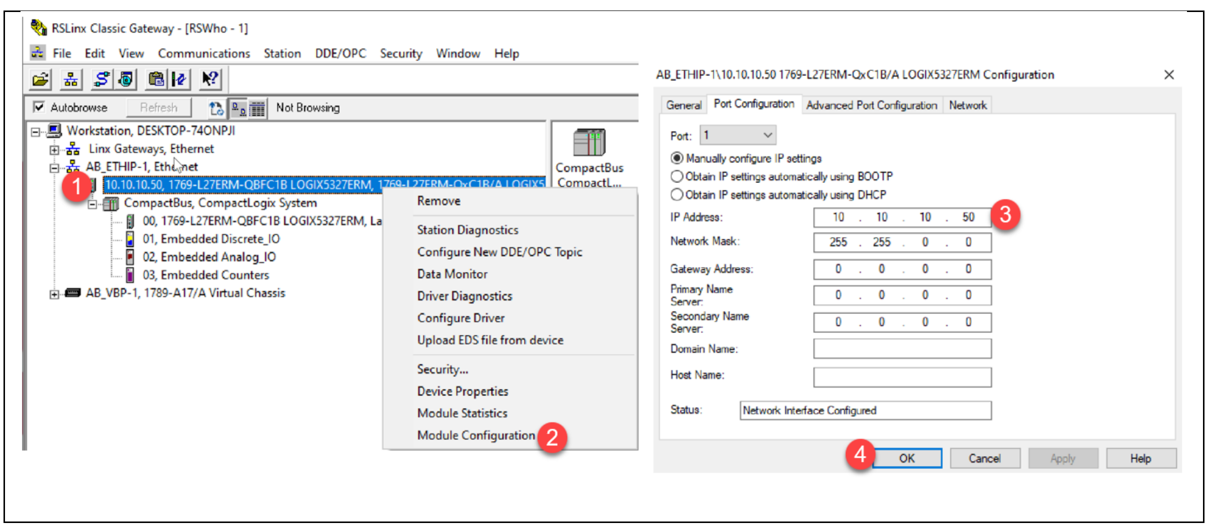


Figure 5. Viewing the IP address for the Ethernet port.

Part 3: Move a Logix Designer File from Canvas to a VM in the Terra Lab:
View the following video to see the steps on copying the Logix Designer files (created by the Instructor) from Canvas to a Terra VM in the PLC Lab, then downloading to the CompactLogix.

Copying Logix Designer Files from Canvas to VM 060523: https://youtu.be/3Il7IDbAfcc

1. Open the Canvas LMS, and go to the PLCI course. Navigate to Module 5, then download the following 2 files:
   Lab5_3_Project1.ACD
   Lab5_3_Project2.L5K
   to the Downloads folder on the computer, then copy them to a memory stick (thumb drive).

2. Insert the USB memory stick into a computer in the PLC lab (the user will be prompted to connect the USB device to the VM, or the Host computer), connect to the Virtual Machine, then copy the two to the Documents folder on the Virtual Machine.

3. Double click on the Lab5_3_Project1.ACD file, which should open the project in Logix Designer. The main routine should have 2 rungs as shown in Figure 6.

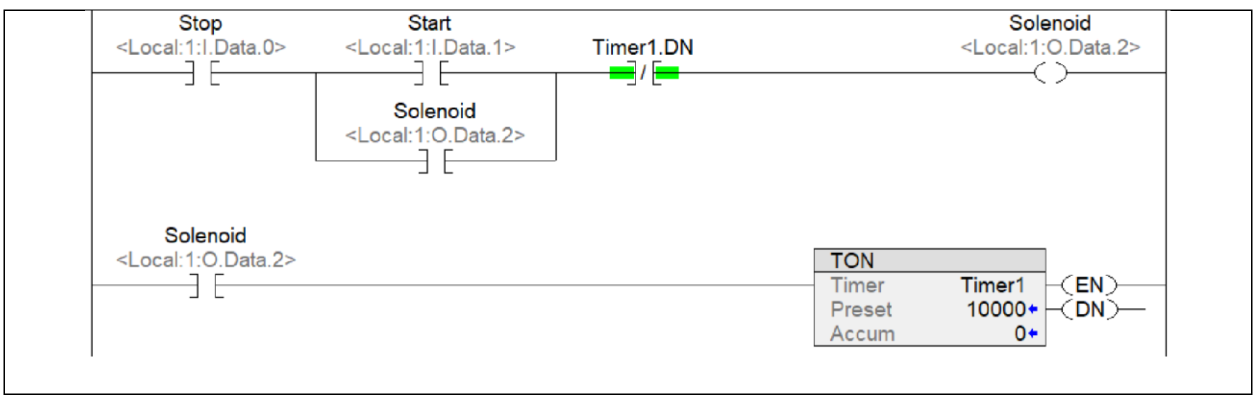


Figure 6. Ladder Routine for Lab5_3_Project1.ACD.

4. Download the project to the CompactLogix 5370 L2 controller. Go online and put the controller into Run or Remote Run Mode and verify the operation of the ladder routine.

5. Explain how the Solenoid output respond, once the Start pushbutton is actuated in the program shown in Figure 6. ____

   Press the Start button to verify.

6. Close the project in Logix Designer.

7. Open the Lab5_3_Project2.L5K from the Documents folder, by doing a File, Open in Logix Designer. The user will be prompted to do an import of the Lab5_3_Project2.L5K to Lab5_3_Project2.ACD. The main routine should have 3 rungs as shown in Figure 7.

8. Download the project to the CompactLogix 5370 L2 controller. Go online and put the controller into Run or Remote Run Mode and verify the operation of the ladder routine.

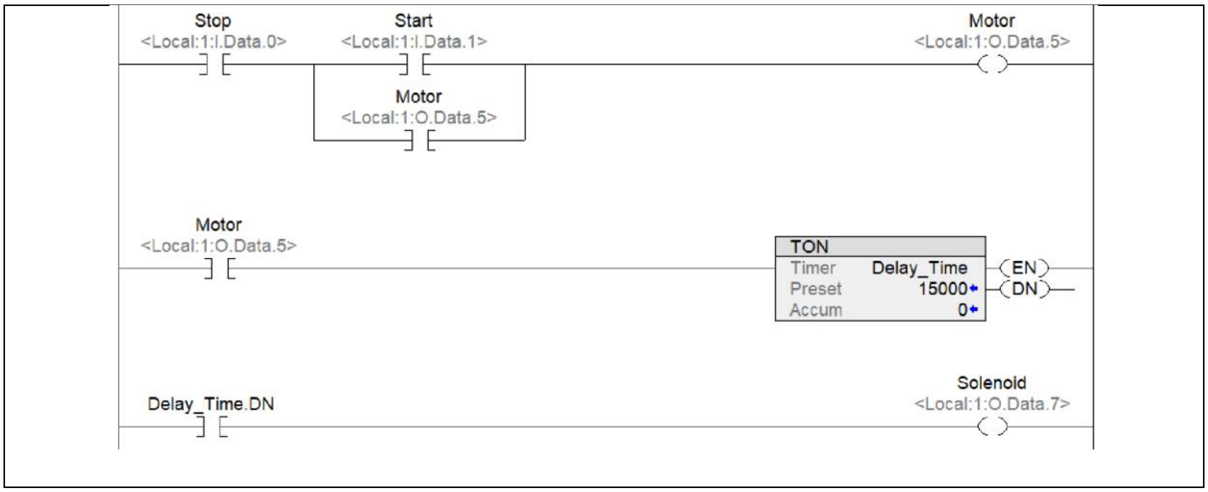


Figure 7. Ladder Routine for Lab5_3_Project2.ACD.

9. Explain how the Motor and Solenoid outputs respond, once the Start pushbutton is actuated in the program shown in Figure 7. ______________________________

   Press the Start button to verify.

10. Locate the terminals on the removeable terminal strip for the Motor and the Solenoid.

Part 4: Reset the CompactLogix Controller Memory

Important: The CompactLogix 5370 L2 controller memory can be reset (cleared) by using a paper clip to initiate the reset button on the controller, as shown in Figure 8. It is important to understand that the Ethernet port is separate from the controller memory. The settings on the Ethernet port will not be affected by a memory reset.

1. Power down the Controller and wait until all the processor diagnostic indicators go out.

2. Use a paper clip to press in the reset button on the controller

3. Power the unit (the OK light should be Red) and keep the reset button pressed until the OK light goes to a solid Green.

4. The user can verify that there is no project in the controller by viewing the processor through the RSWho menu in RSLinx, as shown in Figure 9. If there is a project name after the processor, there is a project. If there is no project name, then the memory has been reset.

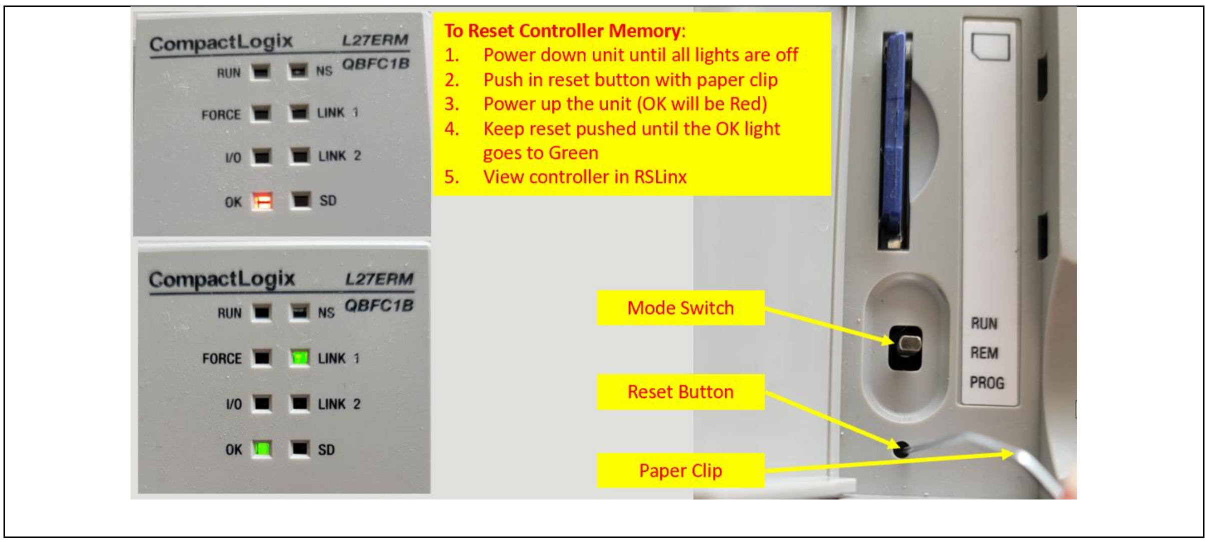


Figure 8. Devices/Indicators on the CompactLogix controller.

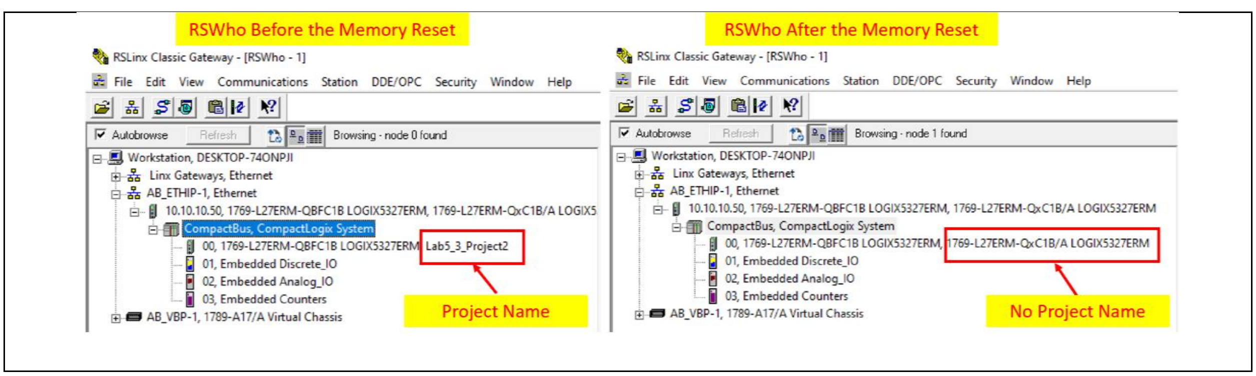


Figure 9. Verifying the Controller has no Project in it.

Some important things to know about this lab:

1. Nonvolatile Memory (NVM) is the SD module that plugs into the front of the controller. Nonvolatile Storage is (NVS) is the area in the controller memory where the RAM is backed up to on a power down, and loaded from into the RAM memory on a power up, thus the CompactLogix 5370 L2 does not require a battery. The ESM (Energy Storage Module) circuitry is built into the Compactlogix 5370 controller. On a power down and power up, the OK light on the processor will be solid Red for about 2 minutes. The memory transfer between the RAM and NVS will be done at that time.
2. The .ACD file is a Logix Designer file that stores the ControlLogix and CompactLogix projects. Logix Designer downloads the information from this file into the controller when a download is performed. The .L5K file is a backup file for the .ACD file. It is much smaller in size than a .ACD file but holds the same content. If a user double clicks on a .ACD file, the Logix Designer application will open. The .L5k type of file must be opened within Logix Designer (File-Open), then the user will be prompted to create a .ACD file (from the L5K file), since a .L5K file cannot be downloaded to the controller.
3. The I/P address of the Ethernet port on the CompactLogix 5370 L2 can be set with RSLinx Classic. If the controller memory is reset, the I/P address on the Ethernet port will not be affected. RSLinx Classic can also show the firmware level of the controller.
4. With the CompactLogix 5370 L2 package controller, the processor is in slot 0, and the discrete I/O are in slot 1. The inputs are: Local:1:I.Data.0-15 (16 input points), and the outputs are: Local:1:O.Data.0-15 (16 output points). The analog I/O are in slot 2 and the high speed counters (incremental encoders) will be in slot 3.
5. There is a memory reset button behind the door on the CompactLogix 5370 L2 controller. This is a recessed button and requires a paper clip to reset. The button should be held in when the controller is powered up, and remain held in until the OK light goes to a solid Green.
6. When a USB cable is connected between the processor and the computer, a USB driver will be created automatically.

<u>Questions:</u>

1. T F The CompactLogix 5370 L2 uses a lithium battery to backup the RAM memory in case there is a power loss to the controller.

2. Which type of Logix Designer file can be downloaded to the CompactLogix 5370 L2 controller?
   a. .ACD file
   b. .L5K
   c. Both the .ACD and .L5K files can be downloaded

3. What slot number will the discrete outputs be in, when using a CompactLogix 5370 L2?
    a. Slot 0
    b. Slot 1
    c. Slot 2
    d. Slot 3

4. What could be wrong if the project name does not appear on the processor, when viewing the CompactLogix 5370 in RSWho through an Ethernet/IP driver?
    a. IP address has been changed on the controller ethernet port
    b. The controller memory has been reset
    c. The project is being downloaded with Logix Designer
    d. The USB driver has been deleted

5. T F The Energy Storage Module circuit built into the CompactLogix 5370 controller, automatically saves the RAM memory to the SD module on a power down.

6. What software is required to view the firmware revision level for the CompactLogix 5370 L2 controller?
    a. RSLinx Classic only
    b. Logix Designer only
    c. RSLinx Classic and Logix Designer
    d. Factory Talk Machine Edition

7. T F The user can use RSLinx Classic to change the IP address on the Ethernet port of the CompactLogix 5370 L2 package controller.

8. T F If a CompactLogix 5370 processor memory is reset, the Ethernet IP address is not affected.

9. Choose any of the following statements that are true:
    a. The .L5K file can be downloaded to the controller
    b. The .L5K file is smaller in size, compared to a .ACD file for the same project
    c. Logix Designer is used to import a .L5K file to a .ACD file
    d. The .ACD file is smaller in size, compared to a .L5K file for the same project
    e. The .ACD file can be downloaded to the controller

10. T F In order to download a project to a CompactLogix controller, the controller firmware version must be the same as the software version of Logix Designer.

Answers to the Questions Asked in this Lab:

This section will be important for the student to verify that the answers they had written down in the lab, are correct. If you have any questions, please contact your instructor. It is important to perform this lab exercise in its entirety, since questions will be asked about it in both the KAA and the performance assessments.

Part 3:

5.The Solenoid output comes on as soon as the Start button is pushed., and will shut off after 10 seconds, or if the Stop button is pushed.

7.The Motor output comes on as soon as the Start button is pushed. The Solenoid output comes on 15 seconds later. Both outputs shut off when the Stop button is pushed.

Answers to the Review Questions:

1. F
2. a
3. b
4. b
5. F
6. a
7. T
8. T
9. b, c, e
10. T

This material is based upon work supported by the National Science Foundation under an NSF ATE project awarded to Terra State Community College (ATE-DUE #2201982: Creating Relevant, Effective and Accessible Technical Education for Electrical Skilled Trades – CREATE). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Lab 5.4: L5000 Relay Instructions Lab

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

11. Create a new project using Studio 5000 Logix Designer
12. Create alias and base tags within the CompactLogix project
13. Change the mode of the processor with Logix Designer or the mode switch
14. Create a ladder logic routine in Logix Designer
15. Explain how to monitor the Tags while online
16. Download a project to the CompactLogix controller and go Online
17. Explain how the basic relay instructions work in a CompactLogix controller
18. Monitor the value in a Tag in the CompactLogix

***This lab could be performed in the Terra PLC Lab**.

***View the following video** that will show how to create the Tags and the following program using Studio 5000 Logix Designer: Creating the project for Lab 5.4 040423: https://youtu.be/wQzXLVHkpsw

Part 1: Creating a Studio 5000 Logix Designer project:

7. Figure 1 shows the program that will be used in this lab. View the video above to learn how to create a new project in Studio 5000 Logix Designer.

8. Verify the driver in RSLinx to the CompactLogix processor, create the new project, enter the program as shown in Figure 1 in the MainRoutine. The user will have to create the Alias tags either when entering the ladder logic, or in the Controller Tags tab. The Alias and Base tags are shown in Figure 2.

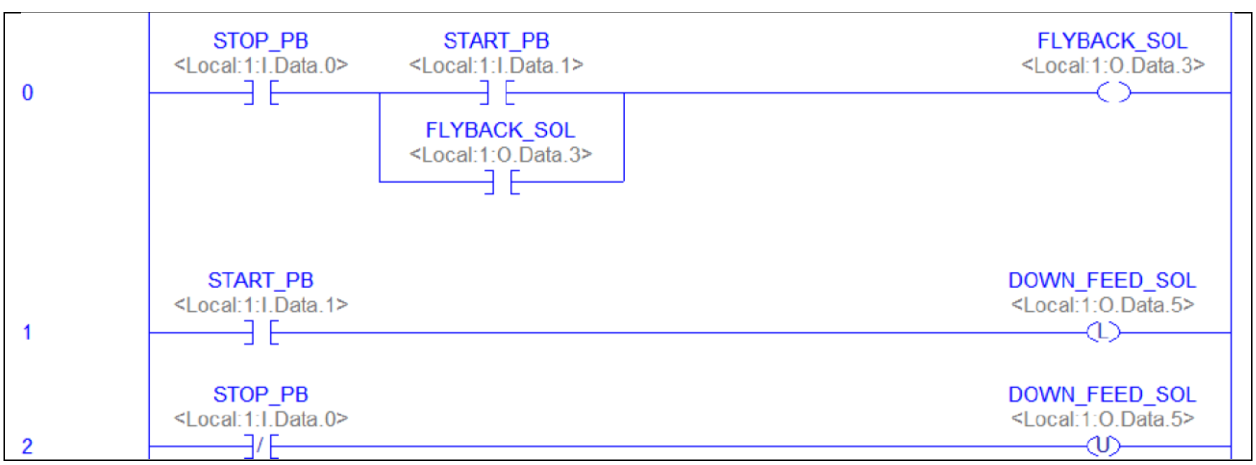
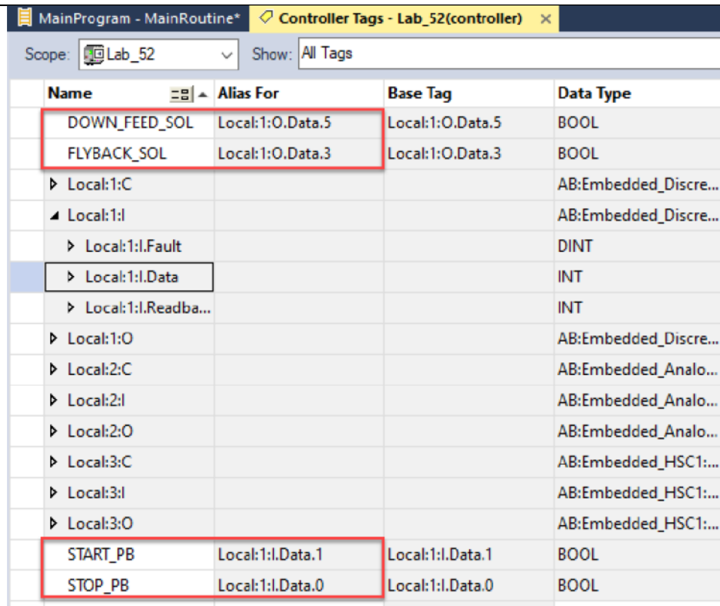


Figure 1. L5000 program using relay instructions.

9. Save the project to the Documents folder on the virtual machine, and download the project to the controller, then go Online and put the processor into the Run or Remote Run mode.



Name	Alias For	Base Tag	Data Type
DOWN_FEED_SOL	Local:1:O.Data.5	Local:1:O.Data.5	BOOL
FLYBACK_SOL	Local:1:O.Data.3	Local:1:O.Data.3	BOOL
Local:1:C			AB:Embedded_Discre...
Local:1:I			AB:Embedded_Discre...
Local:1:I.Fault			DINT
Local:1:I.Data			INT
Local:1:I.Readba...			INT
Local:1:O			AB:Embedded_Discre...
Local:2:C			AB:Embedded_Analo...
Local:2:I			AB:Embedded_Analo...
Local:2:O			AB:Embedded_Analo...
Local:3:C			AB:Embedded_HSC1:...
Local:3:I			AB:Embedded_HSC1:...
Local:3:O			AB:Embedded_HSC1:...
START_PB	Local:1:I.Data.1	Local:1:I.Data.1	BOOL
STOP_PB	Local:1:I.Data.0	Local:1:I.Data.0	BOOL

Figure 2. Alias and Base Tags in CompactLogix.

This lab assumes that a N.C. wired stop pushbutton is wired to input "Local:1:I.Data.0", and a toggle switch is wired to input "Local:1:I.Data.1", as shown in Figure 3.

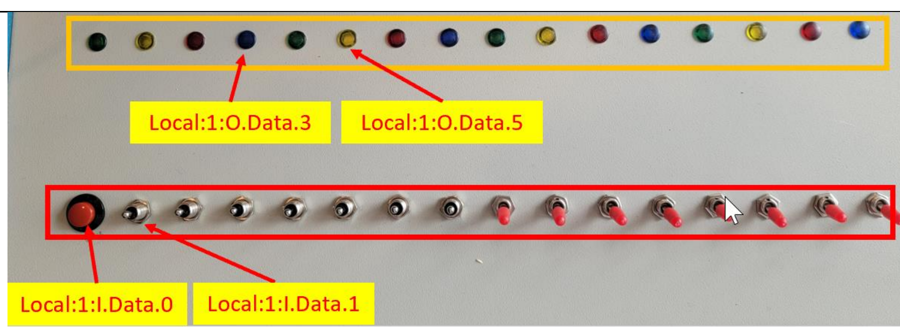


Figure 3. Input/Output simulator on the CompactLogix trainer.

10. Without actuating any inputs, are any instructions (XICs, XIO, OTE, OTL and OUT) highlighted in the program? ______________________________

    Which ones? ______________________________

11. Toggle the first toggle switch “Local:1:I.Data.1”, do both output come on? __________

12. Toggle the stop pushbutton. Do both outputs shut off? ___________

13. Toggle the first toggle switch again turning on both outputs.

14. Unplug the CompactLogix trainer and leave off until the “OK” light on the processor is no longer red.

15. Power the unit up again. Does either output come back on? __________ Explain!

Part 2: Adding a rung with Outputs in Series:

1. Go Offline to the processor, and add a rung 3 to the program as shown in Figure 4. Notice that this rung is using all Base Tags (no Alias tags). Also, the OTEs are in series instead of parallel, which is quite different from a legacy controller.

2. Turn on toggle switch 4 (Local:1:I.Data.4). Do all 3 outputs come on? ___________

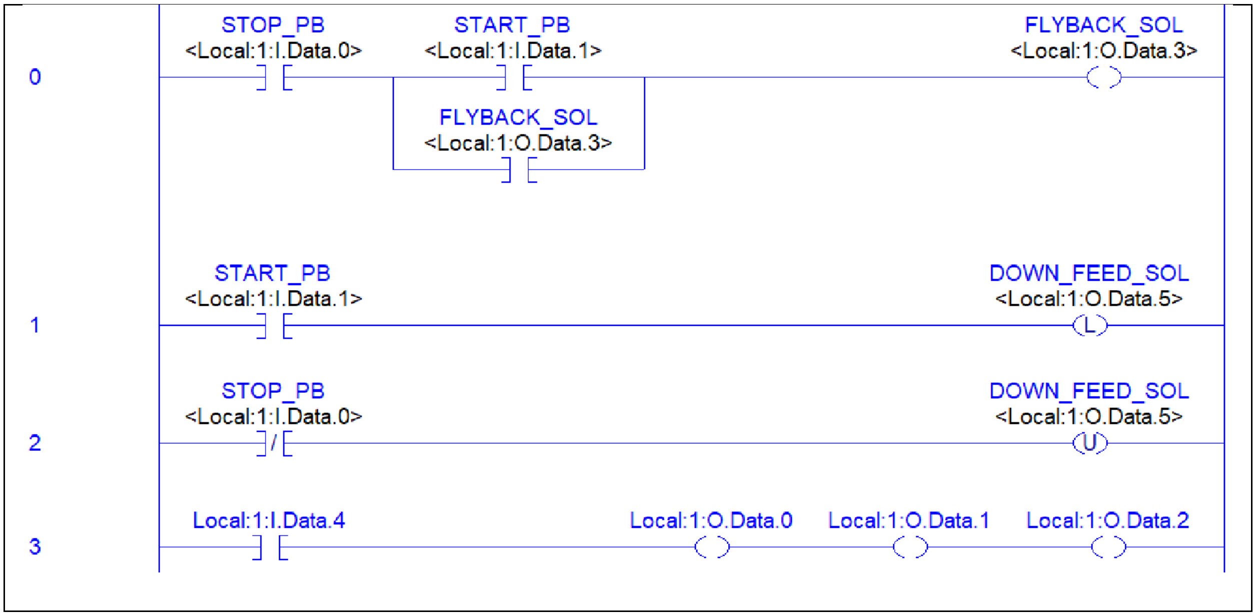


Figure 4. Main Routine Program with Additional Rung.

3. Monitor the status of the input tags by doing a right mouse click on the STOP_PB tag, then choosing “Monitor/Edit Force Value” as shown in Figure 5. Toggle different inputs on and off and monitor the state change of the tags.

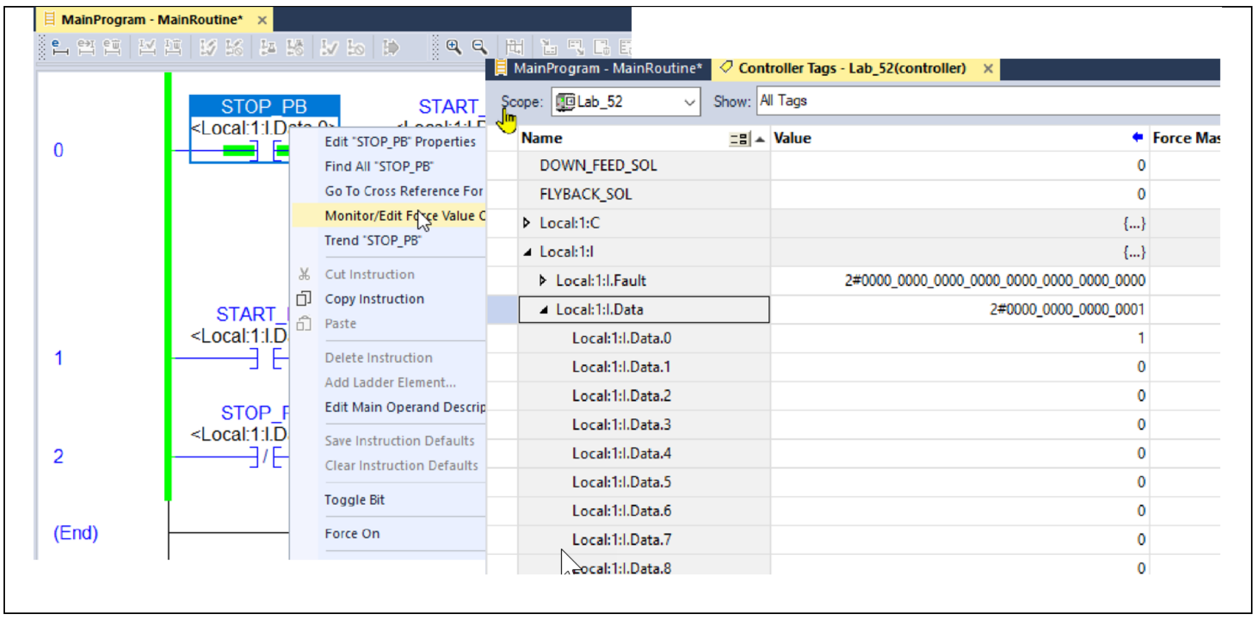


Figure 5. Monitoring the Tags in the Controller Tags folder.

Some important things to know about this lab:

7. The CompactLogix 5370 processor has three types of embedded I/O: discrete, analog and high speed counters. The discrete are allocated to slot 1, analog to slot 2 and high speed counters to slot 3. This is important since it will determine the I/O tag name (address)
8. Embedded discrete I/O are Controller (Global) Scope, which means that all programs in the controller can access and use these tags. By comparison, a Program Scope tag can only be used by that program.
9. A Base tag in a Logix5000 processor stores data. An Alias tag does not store data, but is given an explanatory name, then is assigned to a base tag. A good way to understand this is that the Alias tag points to the Base tag. When you use the Alias tag in a program, it will display the value of the data that is stored in the Base tag it is assigned to. Both Alias and Base tags are downloaded into the processor. Alias tags are similar to Symbols that were used in RSLogix500.
10. Tags names can have a maximum of 40 characters.

11. The address for an embedded discrete tag on the CompactLogix will start with Local, which means it is local to the processor (located in the same chassis/DIN or packaged controller. An example of a discrete output tag will be: Local:1:O.Data.3 (Local I/O, Slot 1, Output Data, Bit 3).
12. If an output tag is turned on with an OTL (latch coil), and power is lost to the CompactLogix controller, the output will come back in an "on" state when power is restored and the processor self test.

Review Questions:

1. What are the two ways to communicate to a CompactLogix 5370 processor from a computer with RSLinx?
    a. RS-232
    b. USB
    c. Data Highway Plus
    d. Ethernet

2. What type of tag stores data?
    a. Alias
    b. Base
    c. Both types of tags store data

3. What slot number are the embedded discrete I/O assigned to?
    a. 0
    b. 1
    c. 2
    d. 3

4. Which types of tags are downloaded to the CompactLogix processor?
    a. Alias
    b. Base
    c. Both types of tags are sent to the processor in a download

5. Which one of the following tags would be for an embedded discrete output on the CompactLogix 5370?
    a. Local:1:O.Data.3
    b. Local:2:O.Data.3
    c. Local:1:I.Data.3
    d. Local:2:I.Data.3

6. If an embedded discrete output tag is turned on with an OTL, and then the processor loses power, what state should the output be in when power is returned (and after the Power On Self Test)?
   a. The output will be in an off state
   b. The output will be in an on state
   c. The output will remain on even if the controller loses power

Answers to the Questions Asked in this Lab:

This section will be important for the student to verify that the answers they had written down in the lab, are correct. If you have any questions, please contact your instructor. It is important to perform this lab exercise in its entirety, since questions will be asked about it in both the KAA and the performance assessments.

Part 1:

4. Yes
   Which ones? XIC STOP_PB in rung 0 should be highlighted since the stop pushbutton is wired normally closed.
5. Yes, and they both remain on after releasing the START_PB.
6. Yes, when stop is pressed, rung 0 looses the hold in instruction, and the OTU in rung 2 is energized, which turns off the DOWN_FEED_SOL bit.
7. Yes, the tag turned on with the OTL comes back in the on state. Explain! When a tag is turned on with a latch coil (OTL), and power is lost, the processor remembers it was turned on with a retentive instruction, thus it turns it back on after power is restored and the processor power on self test.

Part 2:

2. Yes

Answers to the Review Questions:

1. b and d
2. b
3. b
4. c
5. a
6. b

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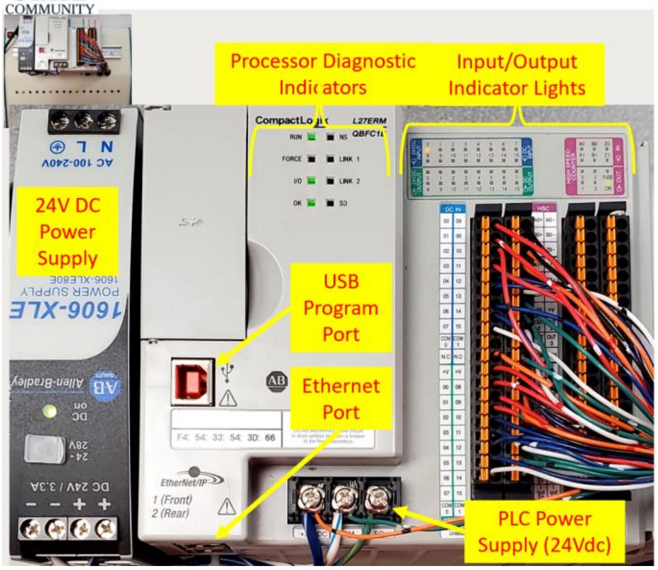
PPT/PDF on the CompactLogix

CompactLogix 5370 L2 Processor

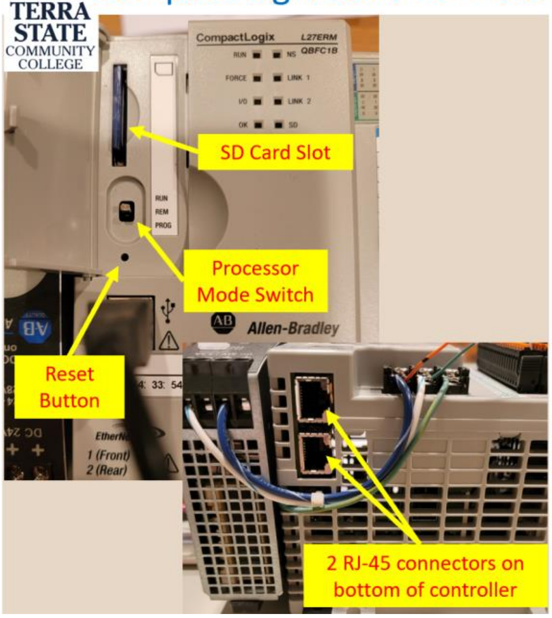


This processor is identified with a number on the front of the controller as: L27ERM-QBFC1B, which is actually a 1769-L27ERM-QBFC1B part number. This is important when a project is created in the Studio 5000 software.
Notice the 24VDC power supply on the left, is a separate power supply, mounted upside down so it was simple to connect the output of the supply to the PLC power supply terminals (processor is powered with 24 Vdc).
Notice the USB communication port on the front used for communications, as well as the Ethernet port, with the connections on the bottom of the controller.

This controller has multiple embedded inputs and outputs that are part of the unit. Rockwell will used the term: ***Packaged Controllers***, to describe controllers with embedded I/O. Notice the indicator lights that will be used for troubleshooting a system.

Also notice the processor indicator lights are considerably different from the processor lights on an SLC-500 and PLC-5.

CompactLogix 5370 L2 Processor, cont.



Behind the small door on the front of the 5370 controller, the user will find 3 important components:
1. SD card, which is a standard SD storage unit that can be removed and can be used to backup the processor memory to the card. This can also be configured to load the program from the SD card to the RAM memory on a power up.

2. Processor mode switch (not a key switch) that functions the same as on the legacy controllers. There is a Run and Prog position, as well as a REM position that will allow a computer with the Logix Designer software to change the mode of the controller while online.

3. Reset button which will be used to reset the RAM memory to reset or clear the RAM memory. A small screwdriver or a paper clip will be used to perform the reset. The controller must be powered off, then hold the button down and power up the unit. After the Power On Self Test (POST) which takes a little time, the controller memory is reset. This does not reset the IP address on the Ethernet port.

CompactLogix: L27ERM-QBFC1B

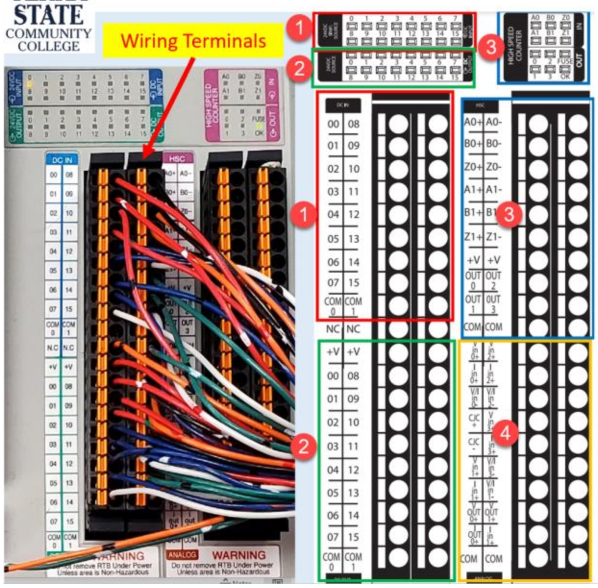
Cat. No.	Sinking/ Sourcing 24V DC Digital Input Points	Sinking 24V DC Digital Output Points	High-speed Counters	High-speed Counter Output Points	Universal Analog Input Points	Analog Output Points
1769-L24ER-QB1B	16	16	-	-	-	-
1769-L24ER-QBFC1B			4	4	4	2
1769-L27ERM-QBFC1B						

It is important to know the part number for the CompactLogix processor, especially when a new project is created in the Studio 5000 software, since this will also configure the I/O.
The processor number should be on the front of the CompactLogix unit, or on the side of the processor module when working with a modular CompactLogix system. The technical manuals will also specify that the L27ERM-QBFC1B unit is part of the **5370 L2** family of processors.

It is also important to understand the capability of the CompactLogix unit used in the Terra labs. As the table in the lower graphic shows, the **1769-L27ERM-QBFC1B** unit has the following I/O capability:
16, 24 Vdc sinking or sourcing discrete inputs
16, 24 Vdc sinking discrete outputs
4, high speed counters (used with incremental encoders)
4, high speed counter outputs
4, universal analog inputs (thermocouple, RTD, analog current and analog voltage
2, analog outputs (voltage or current)

The terms sinking and sourcing for DC discrete I/O is the way the DC power supply is wired to the DC I/O modules and discrete devices. More on this in later slides.

Embedded Inputs and Outputs:



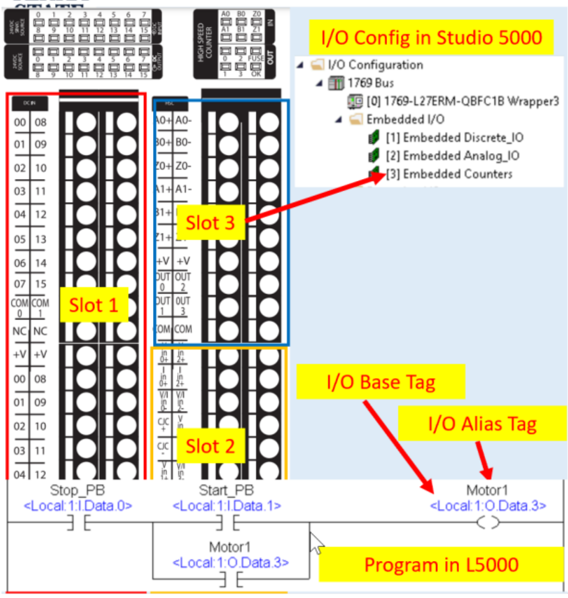
This slide shows that actual wiring terminals and I/O indicators for the 5370 L2 controller (left), and a diagram of the terminals (right)
The unit has 4 removeable wiring terminals for quick exchange if a controller needs to be replaced.
The following are the designated sections:
1. Discrete Inputs – Notice that on the actual graphic on the left, input 0 indicator light is on, which means that +24Vdc would be measured at input terminal 0.
2. Discrete Outputs – 24 Vdc outputs
3. High-speed Counters
4. **Analog I/O** (notice no indicator lights)

Important: On this 5370 L2 controller:
1. Discrete Inputs & Outputs are considered **Slot 1**
2. Analog I/O are considered **Slot 2**
3. High speed counters are considered **Slot 3**

This is important to understand because when a project is created in Studio 5000, the slot identifier is part of the I/O address, which in L5000 is a Tag.

Also, the terminal marked as NC, means No Connection, not Normally Closed.

Discrete I/O Addressing:



L5000 Controllers use Tags versus Addresses (which is what legacy controllers use). It is important to understand the I/O Base Tags and Alias Tags.

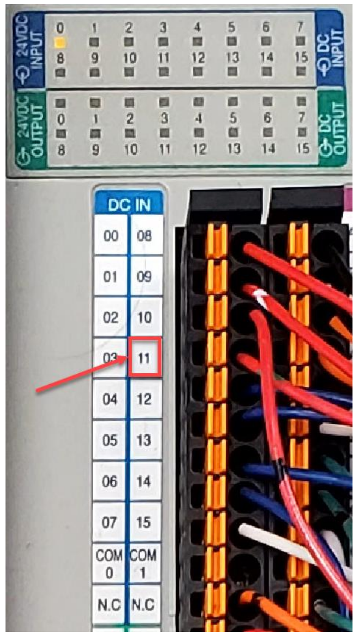
Base Tag – is a tag that stores data in the processor

Alias Tag – Is a tag name that points to another tag in the controller. As shown below in the ladder program, **Motor1** is the Alias Tag for the Output Tag of **Local:1:O.Data.3** is the base tag.

Alias Tags are descriptive and are very much like the Address Symbols in RSLogix500. The big difference is that the Base and Alias Tags in the L5000 system are both downloaded into the processor, where the Symbols of RSLogix500 was stored in the .RSS file on the computer, while the addresses were downloaded into the 500 processor.

The parts of the I/O base tag of "**Local:1:O.Data.3**" is:
Location:Slot:Type.Member.Bit
Location: – Local is the I/O is typically in the same chassis or on DIN rail as the processor (Remote will be discussed later)
Slot #: This I/O address is in slot 1
Type. – "I" for input and "O" is output
Member. – for inputs and outputs, this will be termed Data
Bit – is the bit number (bits are in decimal)

Questions in Canvas (KAA):

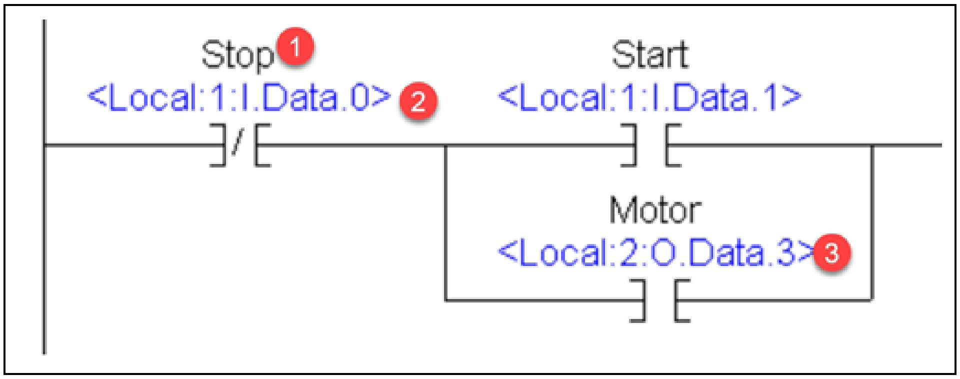


17. What is the I/O Tag that is created for the specified input?

a. **Local:1:I.Data.11**
b. Local:2:I.Data.11
c. Local:11:I.Data.2
d. Local:0:I.Data.11

19. Which indicator light on the processor will be solid red during the power up and power down cycle of the CompactLogix processor?

a. Run
b. Force
c. SD
d. **OK**



5. The object that is marked with a "1" in this graphic would be called a(n):
   a. Base Tag
   b. **Alias Tag**
   c. Symbol
   d. Floating Tag

6. The object that is marked with a "2" in this graphic would be called a(n):
   a. **Base Tag**
   b. Alias Tag
   c. Program Tag
   d. Local Scope Tag