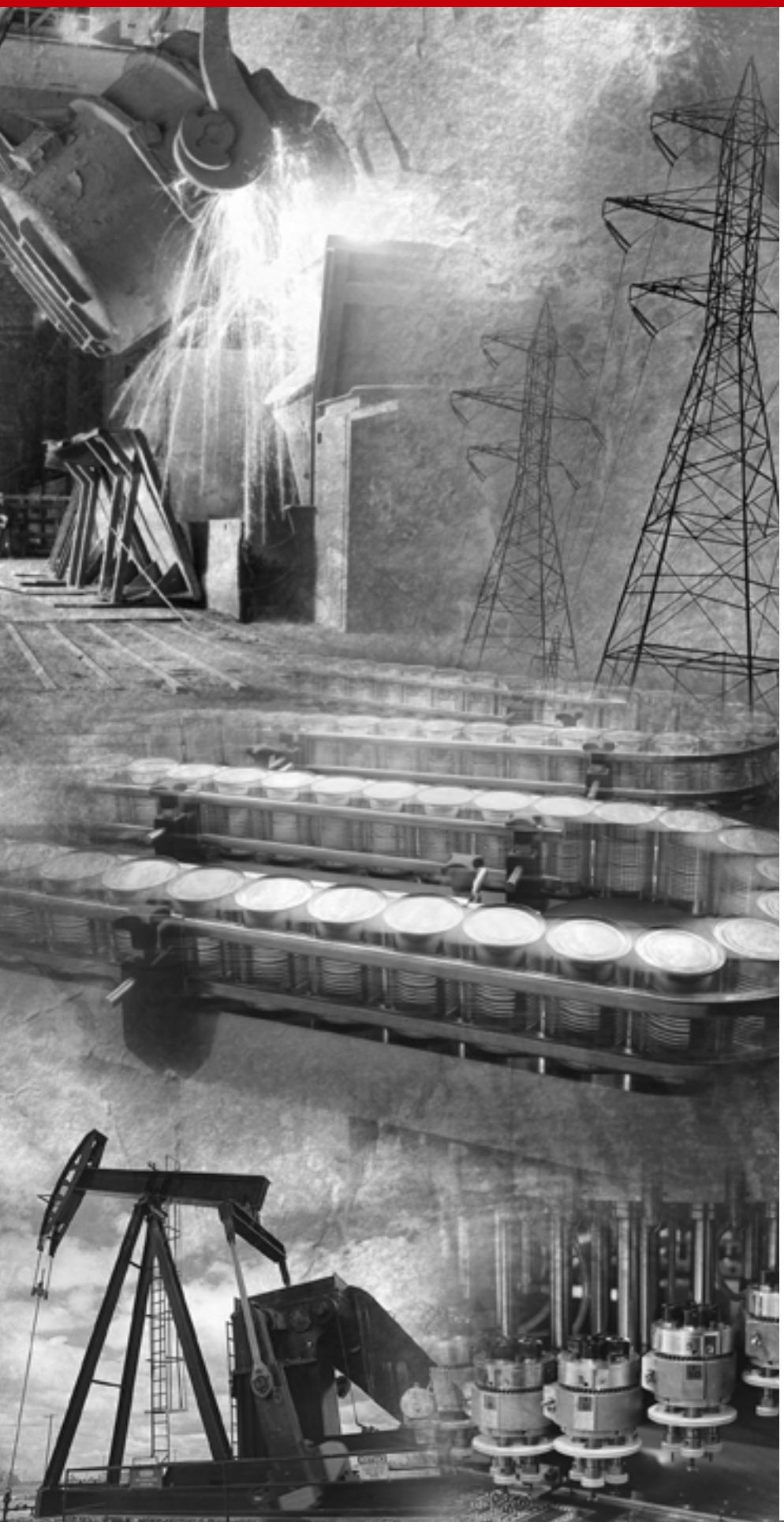


Allen-Bradley

CompactLogix Controller Starter Kit

1769-STRT2

Quick Start Manual

Rockwell Automation

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Throughout this manual we use notes to make you aware of safety considerations:

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss

Attention statements help you to:

- identify a hazard
- avoid a hazard
- recognize the consequences

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

Table of Contents

Welcome to CompactLogix Controller Quick Start: About the Exercises

The objective of these exercises is to introduce you to the CompactLogix controller and the RSLogix 5000 programming software. The CompactLogix controller is part of the Logix family of controllers, including ControlLogix, FlexLogix, and SoftLogix5800 platforms.

The ACD files needed to perform the following exercises are:

- CompactLogix_ImportExport.ACD
- CompactLogix_ ReuseableCode.ACD

See http://www.ab.com/logix/compactlogix/programfiles for the ACD files that go along with these exercises. They are in a zip file named compact_verB.zip.

About the CompactLogix Platform

The features, scalability, and small size of the CompactLogix platform provide a powerful alternative for machine-level control, material handling, data acquisition, and other applications requiring reduced I/O (the 1769-L30 supports as many as 16 CompactBus modules and the 1769-L20 supports as many as 8 CompactBus modules.

CompactLogix will fit your applications if:

- you are an existing Logix customer with lower-end, lower-cost control applications
- you are a new customer who wishes to apply Logix technology, but at a lower initial investment
- you are an existing PLC and/or SLC customer who wishes to convert to Logix technology
- you run SCADA/RTU applications within a range of industries (e.g., petrochemical, wastewater, etc.)

Other Logix Platforms

About the ControlLogix Platform

The ControlLogix platform provides a high performance, modular control platform suited for sequential, process, drive, or motion control - in any combination. With this platform, you can mix multiple processors, networks, and I/O without restrictions. And as your system grows, you can use the ControlNet network to distribute control to additional chassis and/or other Logix platforms.

A ControlLogix system can consist of anything from a stand-alone controller and I/O modules in a single chassis, to a highly distributed system consisting of multiple chassis and networks working together. ControlLogix will fit your applications if they:

- require a high performance control solution
- demand the integration of multiple control disciplines (e.g., high speed packaging machines integrating sequential and motion control, or web handling applications integrating sequential and drive control)
- combine batch and process control, but seek a flexible choice of visualization software
- require an integrated, plant-wide control solution, from incoming materials to outbound distribution
- expand an existing investment in a PLC-5 or SLC 500 controller-based system

About the FlexLogix Platform

The FlexLogix platform combines the high performance Logix control engine with the popular distributed FLEX I/O to provide a cost-effective distributed controller.

A simple FlexLogix system can consist of a single, stand-alone system with one controller and as many as eight I/O modules, or you can use multiple controllers across networks and distribute multiple I/O platforms over multiple I/O links. FlexLogix will fit your applications if:

- you are already using FLEX I/O and are looking for a simple way to add control to your distributed architecture
- you are currently using a centralized control architecture to control multiple stations in a process

About the SoftLogix5800 Platform

The SoftLogix5800 platform is a high performance, PC-based control system that integrates sequential and motion control.

SoftLogix will fit your applications if:

- you are already using PC-based control
- you have a need for integrated motion capabilities
- you have a need for high-level information integration
- you want to completely customize your application

Before You Begin

Before you begin these exercises, please be sure to close any applications that are currently running.

We have provided you with the following materials so that you can complete the exercised in this quick start manual:

- **1769-L20/A CompactLogix controller**
- **1769-PA2 power supply**
- **1769-IQ6XOW4 digital input/output combination module**
- **1769-IF4XOF2 analog input/output combination module**
- **1769-ECR right I/O end cap**
- **1756-CP3 serial cable**
- **9324-RLD200ENE RSLogix5000 programming software, mini package**
- **1769-DPALEN CompactLogix controller documentation set**
- **1769-QS001B-EN-P quick start manual**

.

Document Conventions

Throughout this manual, we have used the following conventions to help guide you through the materials:

This style or symbol:	Indicates:
Words shown in bold italics (e.g., ***RSLogix 5000***)	An item that you must click on or a menu name from which you must choose an option or command.
Words shown in single quotes (e.g., 'Controller1')	An item that you must type in the specified field.
FYI	The text that follows this symbol is additional information regarding the materials, but not information that is required reading in order for you to complete the exercises
Tip	The text that follows this symbol provides you with helpful hints that may make it easier for you to use the software.
	The text that follows this symbol is a step in the exercise in which you are working. Place a checkmark in this box as you complete each step.

Note, also, that if the mouse button is not specified in the text, you should click on the left mouse button.

Installing the CompactLogix Controller

For information on installing the CompactLogix controller, see the CompactLogix Controller Installation Instructions, publication *1769-IN047B-EN-P*. This publication is part of the documentation set, *1769-DPALEN*, that is included with the CompactLogix Starter Kit.

Installing the RSLogix 5000 Programming Software

The following table identifies the hardware and software requirements for the RSLogix 5000 programming software.

Category	Requirements
Personal computer	Pentium II 150 MHz processor
Operating system	Microsoft Windows NT version 4.0 with Service Pack 5 (or greater) **or** Microsoft Windows 2000 with Service Pack 1 (or greater)
RAM	minimum of 64 Mb RAM (we recommend 128 Mb)
Hard disk space	40 Mb hard disk space free
Other requirements	any Windows-compatible pointing device

When you insert the installation CD into your CDROM drive, the CD automatically begins the Setup program for the programming software. If your computer meets the hardware and software requirements for the controller, you can install the programming software.

Note: These installation instructions are only a summary of the installation procedure. For the complete procedure, see the *RSLogix 5000 Programming Software Getting Results Guide*, publication 9399-RLD300GR. This document is available in PDF format on the RSLogix 5000 CD.

1. Select Install RSLogix 5000.

   During installation, if you already have a version of RSLogix 5000 installed on your computer, you will be prompted to give the installation program permission to uninstall the older version (if you have not already done so). Follow the directions that appear on your screen.

2. When prompted for a serial number, enter any sequence of characters, not longer than 10 characters in length. Press F1 if you need help.

3. When prompted, click Yes to complete the activation of the software.

   Follow the directions that appear on your screen.

4. Click on Finish to complete the installation.

   When the setup utility finishes, an entry for the **RS** Logix 5000 application program appears in the program list in the Rockwell Software group.

Exercise 1:
Creating a New Controller File and Configuring Your I/O

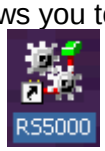
In this exercise, we will introduce you to the family of Logix controllers. You will:

- create a new controller file
- write ladder logic using symbolic tag names
- configure your I/O modules
- alias the module tags to the tags you created in your ladder logic

Follow the steps below to complete Exercise 1. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

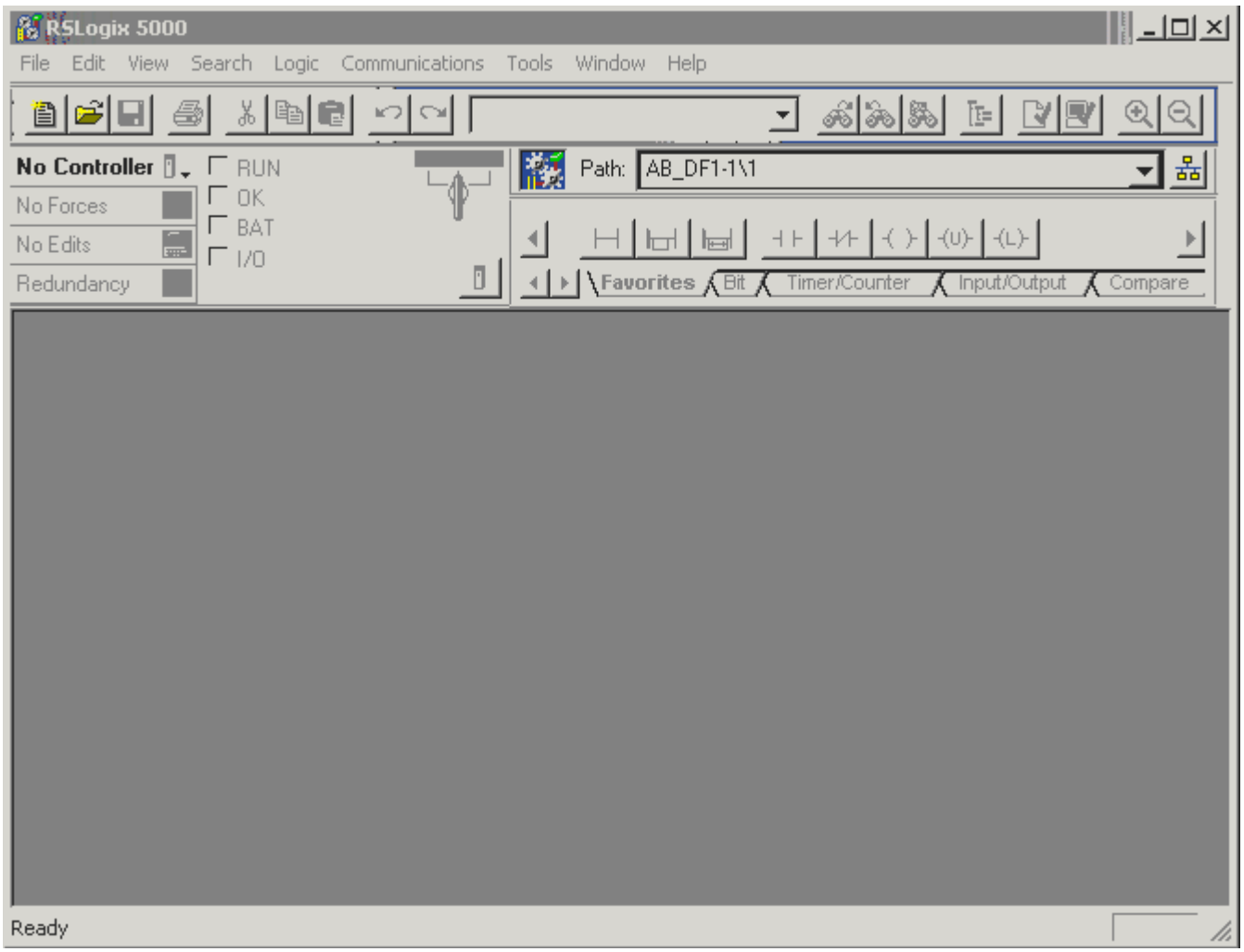
Launching RSLogix 5000 Programming Software

Launch the RSLogix 5000 software, which allows you to program the controller.

☐ 1. Double click on the ***RSLogix 5000*** icon 

on the Desktop to launch RSLogix 5000 software.

The RSLogix 5000 screen appears.

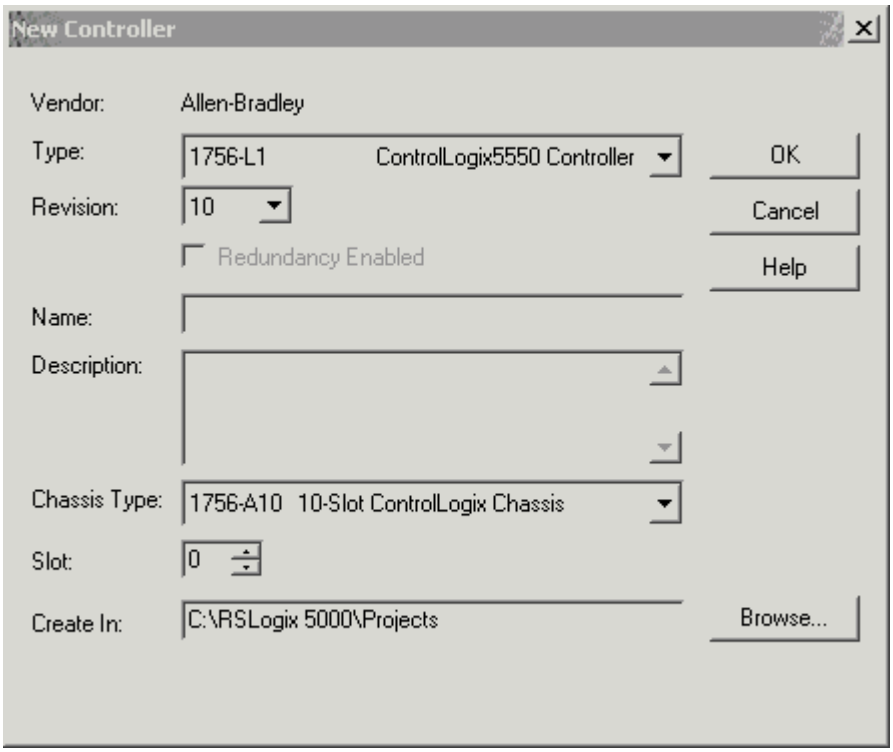


Creating a New Controller File

Create a first controller file.

1. From the ***File*** menu, choose ***New***.

   The New Controller dialog appears.



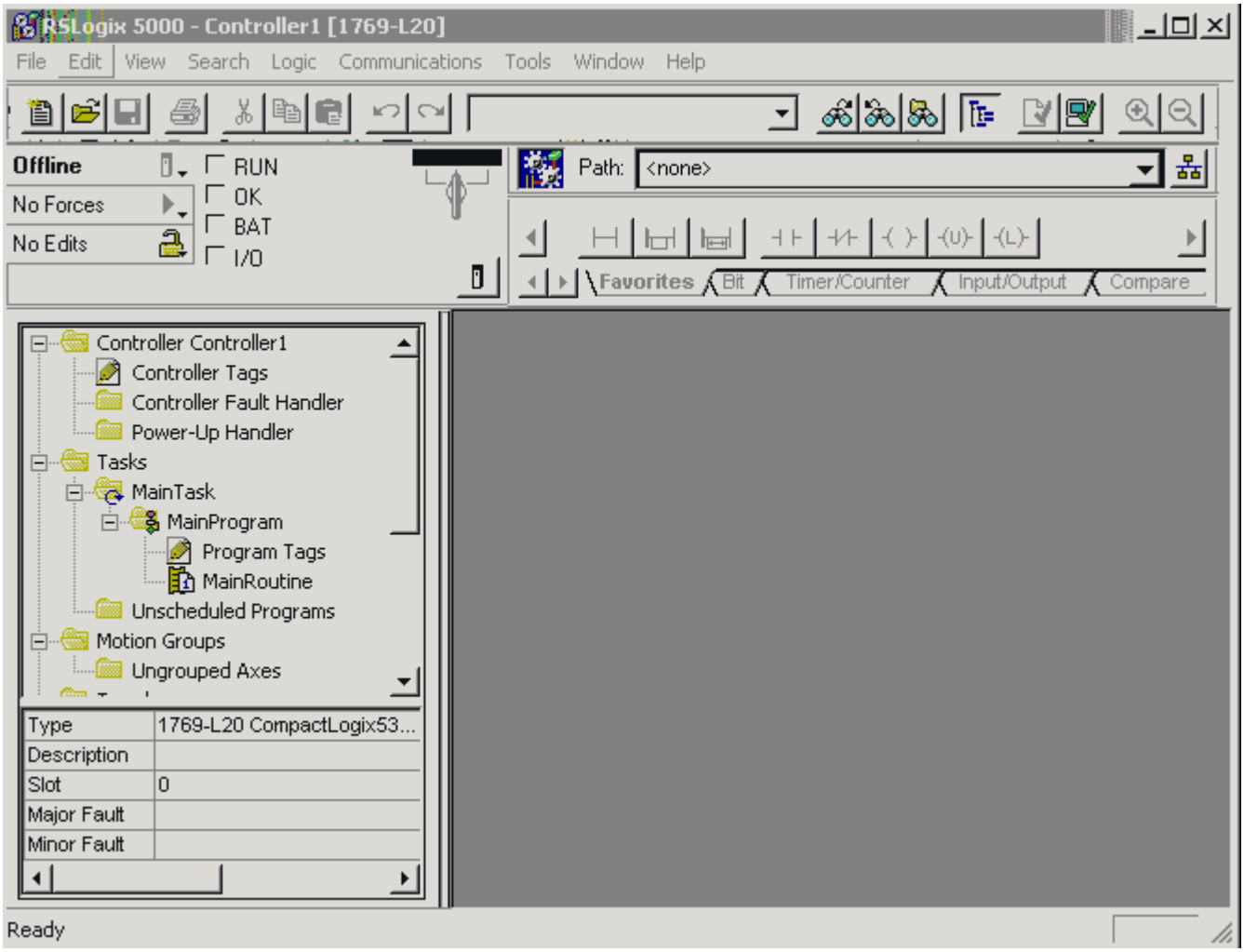
2. From the ***Type*** pull-down menu, choose the ***1769-L20 CompactLogix 5320 Controller*** you will use for the rest of the Hands-On session.

3. In the ***Name*** field, type 'Controller1' for the controller name.

4. In the ***Create In*** field, type 'C:\RSLogix 5000\Projects' or click on the Browse button to navigate to that directory.

5. Click on ***OK***.

The Controller Organizer appears on the left side of the RSLogix 5000 window, with a folder called Controller Controller1. You have now created your first controller file. At this time, there is no I/O, no tag database, and no logic associated with the controller file.



FYI

The Controller Organizer is a graphical representation of the contents of your controller file. This display consists of a tree of folders and files that contain all of the information about the programs and data in the current controller file. The default main folders in this tree are:

- **Controller File Name** - contains controller-scoped tags, controller fault handler and the power up handler.
- **Tasks** - tasks are shown in this folder. Each task shows its own programs with ladder routines and program-scoped tags.
- **Trends** - trends are shown in this folder.
- **Data Types** - shows predefined and user-defined data types. User-defined data is created in this folder.
- **I/O Configuration** - contains the information about the hardware configuration of this controller file. It holds a hierarchy of modules with which the controller is configured to communicate.

FYI (continued)

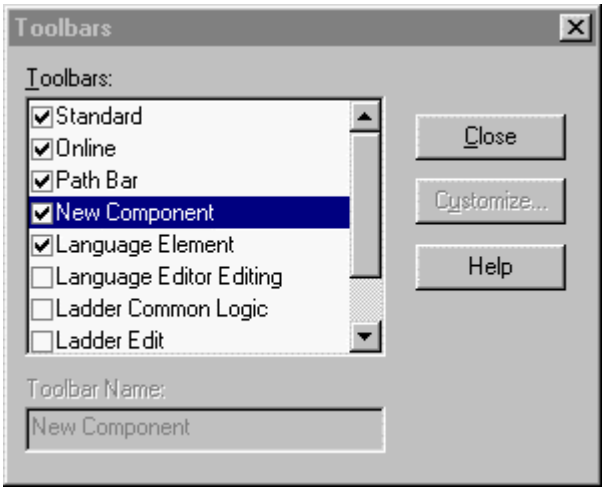
In front of each folder, there is a square containing a + sign or a - sign. The + sign indicates that the folder is closed. Click on it to expand the tree display and display the files in the folder. The - sign indicates that the folder is already open and its contents are visible.

Clicking on the right mouse button brings up many different context-sensitive popup menus. Often, you will find that this is a shortcut to access the property window or to menu options from the menu bar. Double clicking on files in the Controller Organizer display often brings up functional dialogs, from which you can enter parameters to accomplish relevant tasks.

Editing the Main Routine

Edit the ladder logic for the main routine in your MainProgram folder, and then add an input and an output instruction.

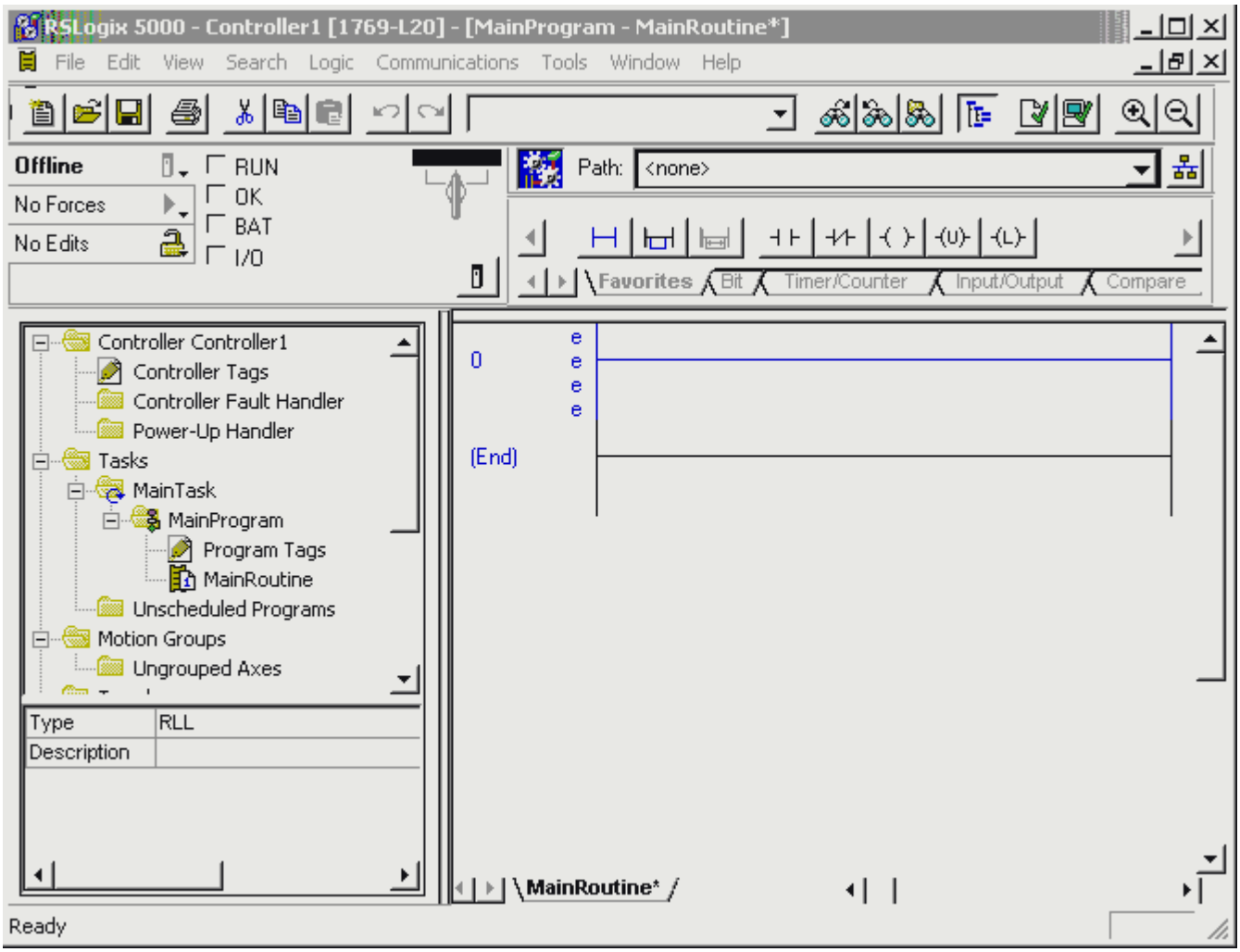
1. From the ***View*** menu, choose ***Toolbars***.
   The Toolbars dialog appears.



2. Verify that the first 5 toolbars are checked, and click on ***Close***.

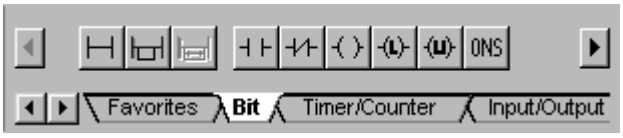
3. From the ***Controller Organizer***, double click on the ***Main Routine*** icon MainRoutine.

   An empty rung appears in the Ladder Editor.



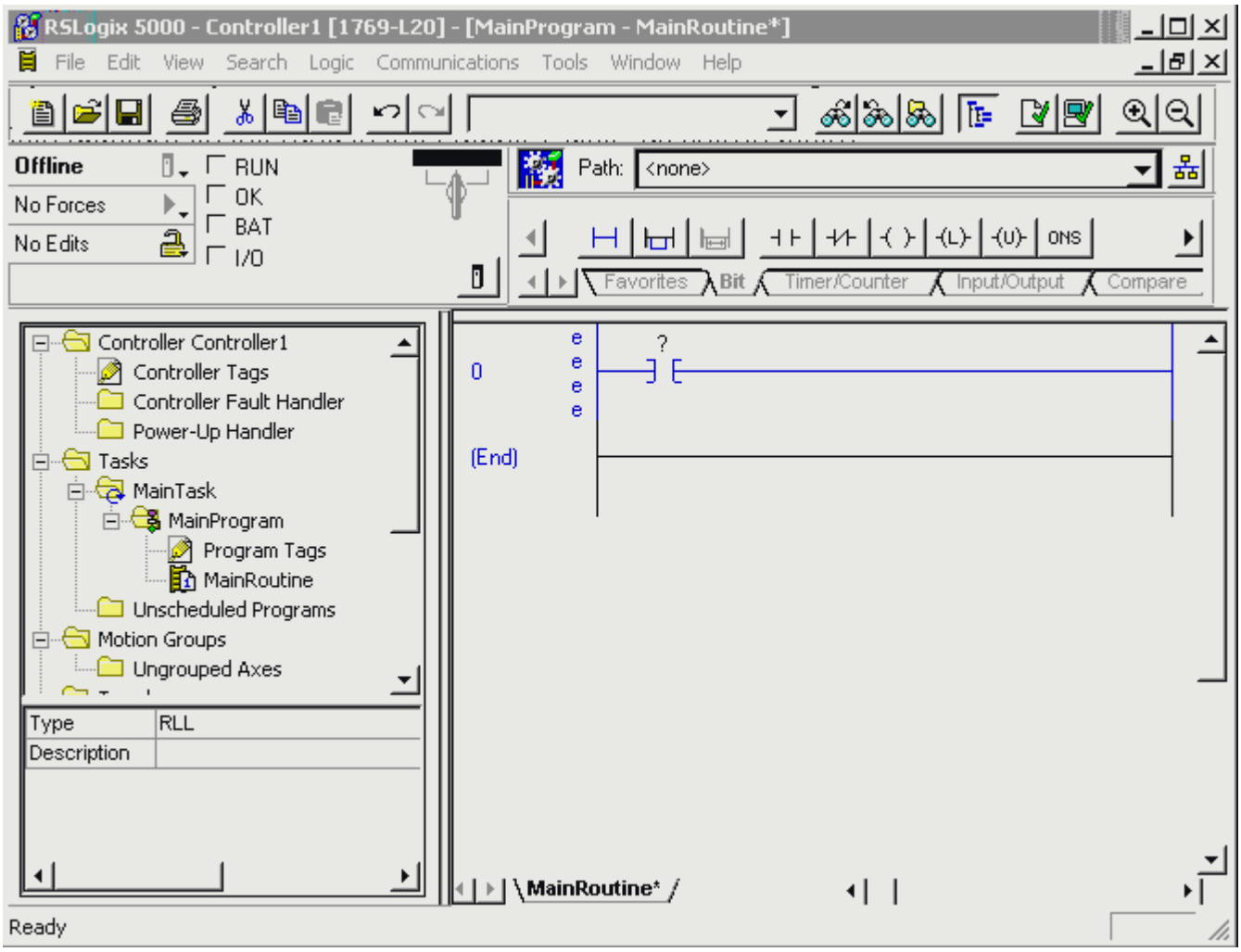
4. From the Ladder Instructions toolbar (as shown below), click on the ***Bit*** tab.

   The Ladder Instruction toolbar refreshes to show you all of the available Bit instructions.



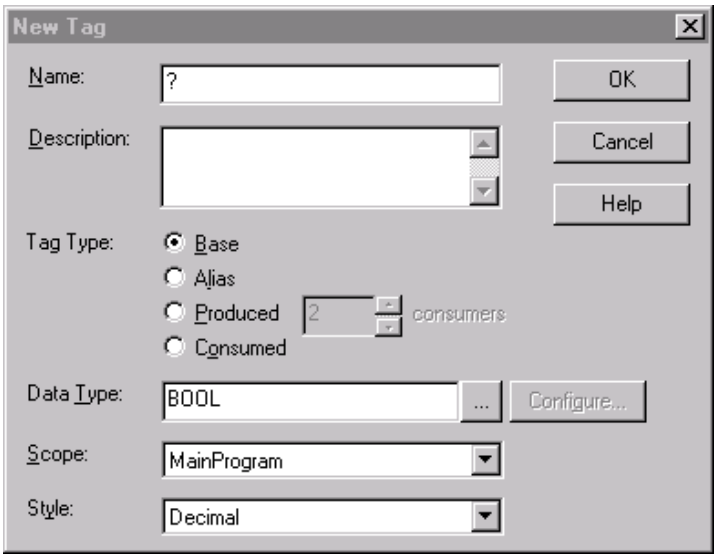
5. Click on the ***XIC (Examine On)*** icon to enter the instruction on the rung.

   The XIC instruction appears on the rung in the Ladder Editor, as shown below.



6. Right click on the ***Question Mark (?)*** in the blue highlighted area above the XIC instruction, and choose ***New Tag***.

   The New Tag dialog appears.



7. In the ***Name*** field, type 'Switch'.

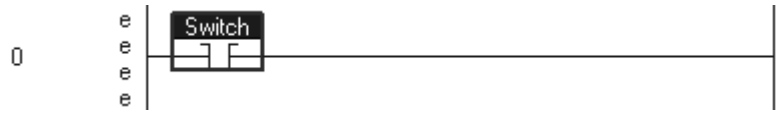
   Verify that MainProgram appears in the Scope field. Switch is then created as a program-scoped tag.

FYI

> There are two types of tag scopes: program-scoped and controller-scoped. Program-scoped tags are accessible only to the routines of a specific program. Controller-scoped tags are accessible to the routines of all programs in a controller.

8. From the ***Tag Type*** selections, choose ***Base***.
9. From the ***Data Type*** menu, choose ***BOOL***.
10. Click on ***OK***.

    Your rung should now look like this:



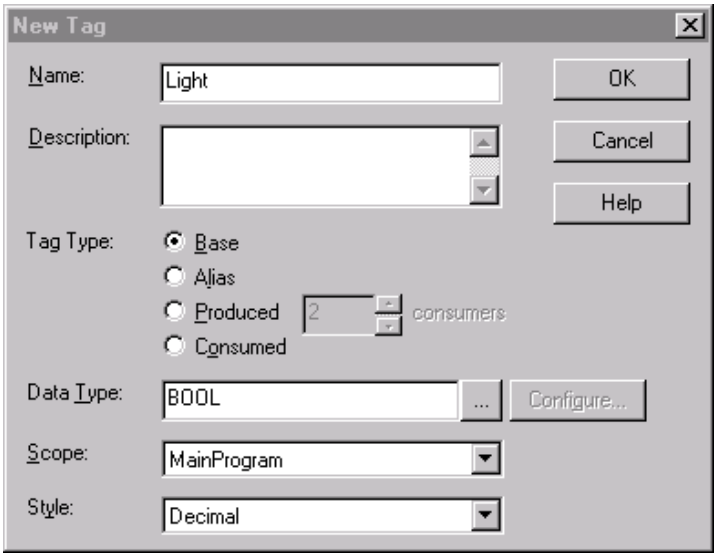
11. Click and hold the mouse button on the ***OTE (Output Energize)*** icon  in the toolbar, and drag it over the blue line of rung 0 until a green dot appears to the right of the XIC instruction that you just entered.

    When you release the mouse button, the OTE instruction will be placed at the end of rung 0. This is an alternate way of entering an instruction on a rung.

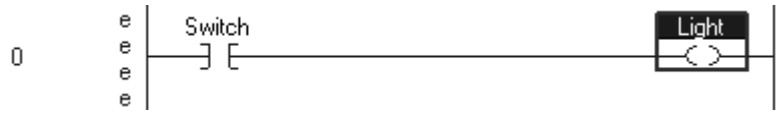
12. Right click on the ***Question Mark (?)*** in the blue area above the ***OTE instruction***, and choose ***New Tag***.

    The New Tag dialog appears.

13. Enter the parameters as shown below and click on ***OK***.



    Your rung should now look like this:

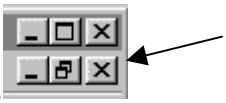


14. Right click on the rung number ***(0)***, and choose ***Verify Rung***.

    A message appears at the bottom of the RSLogix 5000 window indicating the results of the Verify Rung command.

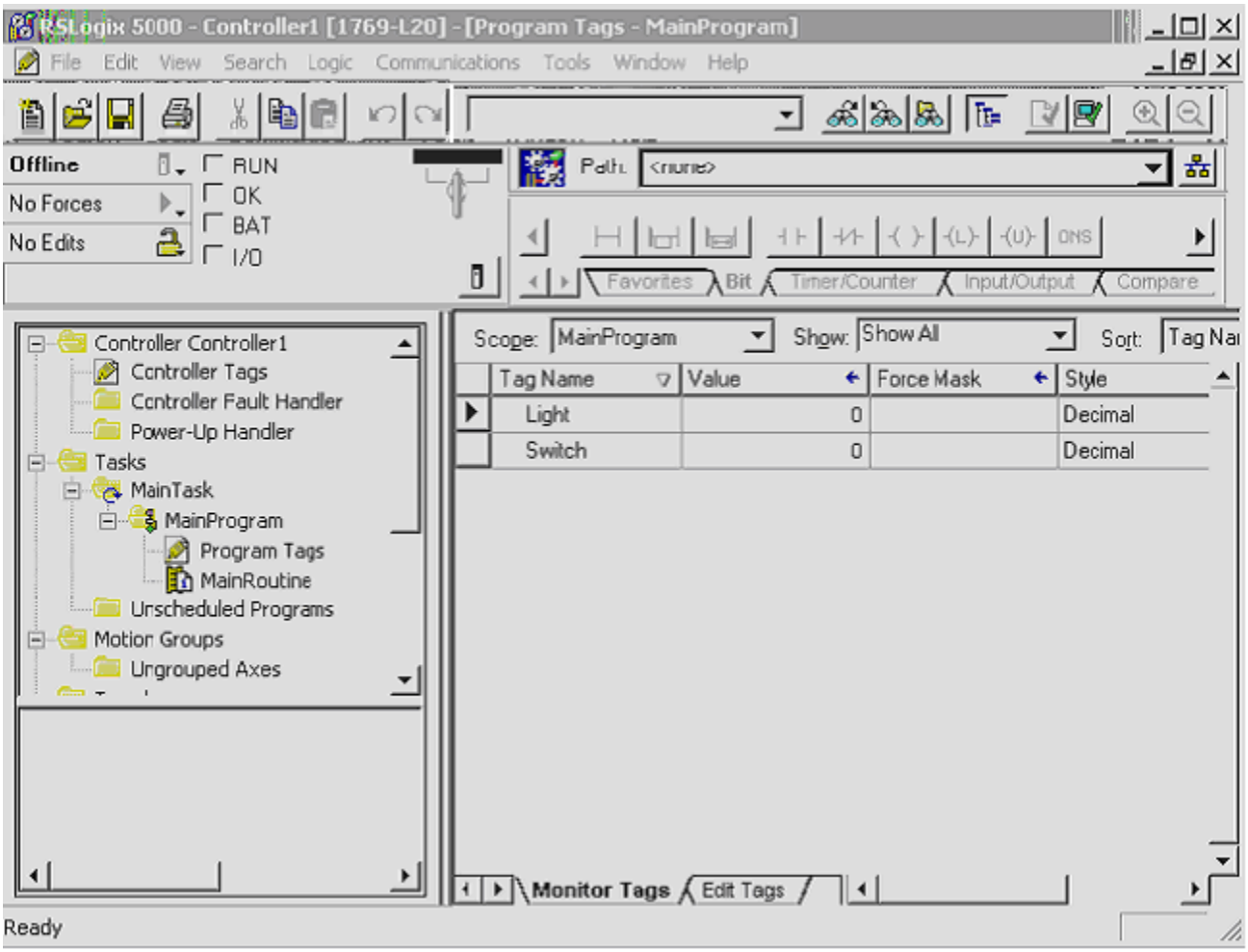
    Note: The message will appear either in the status bar at the bottom of the screen, or in the Results window if it is selected under the View menu. If there are errors, you must correct them before the rung will verify. You can also verify the entire routine by choosing ***Verify > Routine*** from the ***Logic*** menu.

15. Click on the ***X*** at the upper right corner of the Ladder Editor to close the editor.

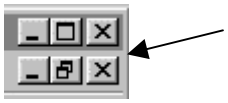


16. From the ***Controller Organizer***, under ***MainProgram***, double click on the ***Program Tags*** folder to view the two program scoped tags.

    The Data Monitor appears, with two entries in the Tag Name column.



17. Click on the ***X*** at the upper right corner of the Data Monitor to close the window.

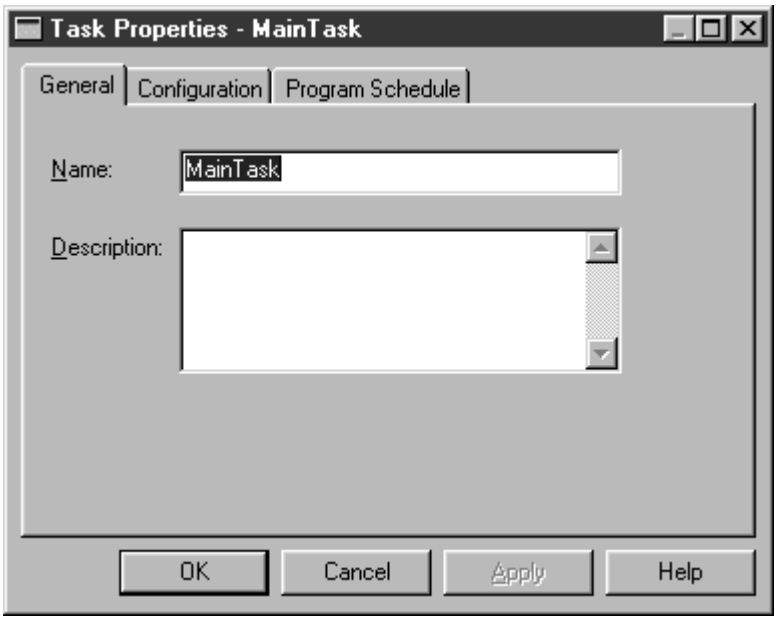


Verifying the Properties for the Main Task and the Main Program

Verify that the controller's main task and main program are correctly configured.

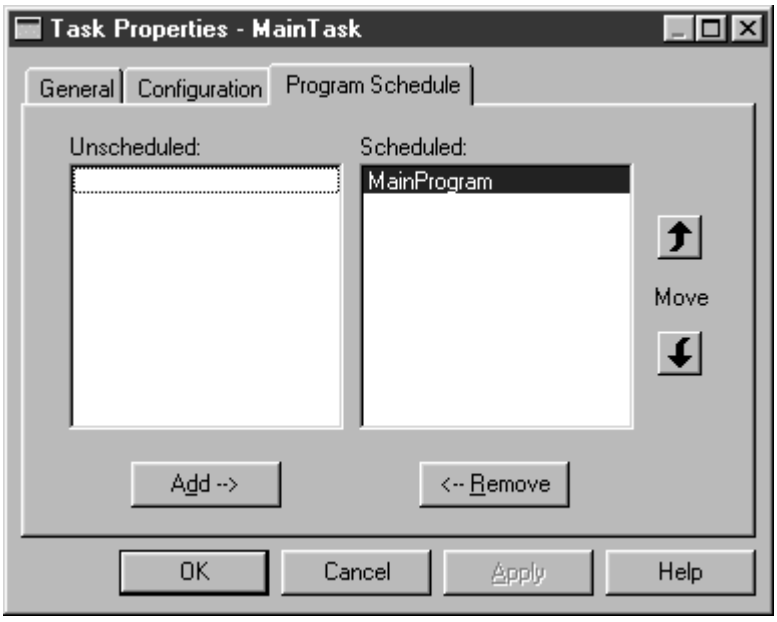
1. From the ***Controller Organizer***, right click on the ***MainTask*** icon  and choose ***Properties***.

   The Task Properties dialog appears.

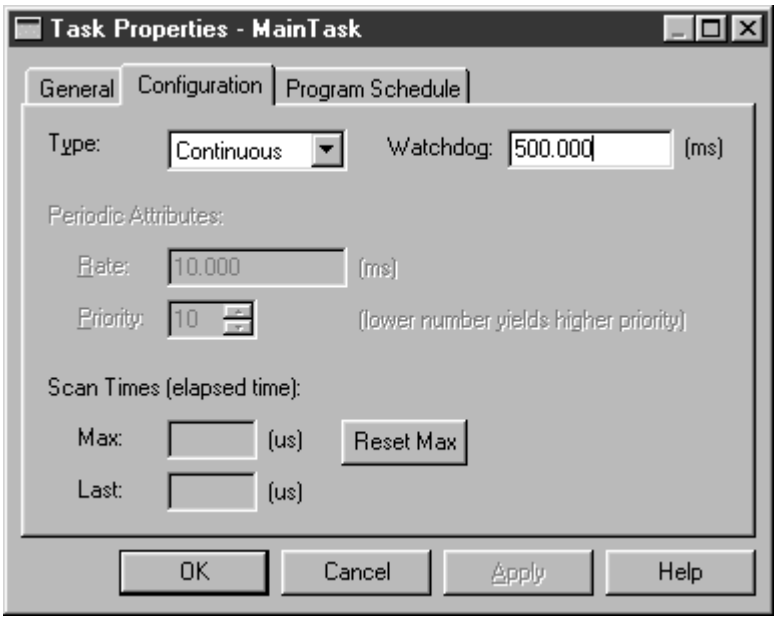


2. Click on the ***Program Schedule*** tab and verify that the MainProgram appears in the Scheduled programs field.

   If it does not, click on the ***Add*** button to schedule the MainProgram. If a program folder is not scheduled under a task, it will not be executed and it will appear in the Unscheduled Programs folder in the Controller Organizer.



3. Click on the ***Configuration*** tab and verify that the Watchdog is set for 500 ms.



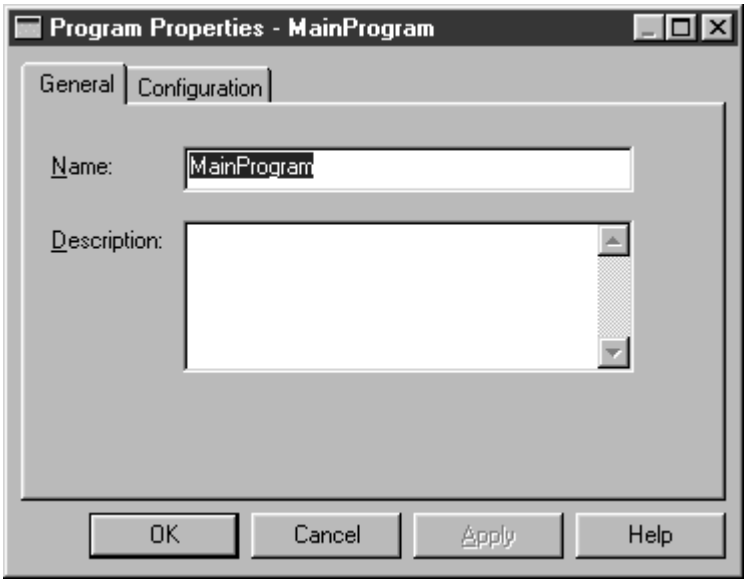
   The Watchdog is a task scan time watchdog which, if exceeded, faults the processor.

4. Click on ***OK*** to close the Task Properties dialog.

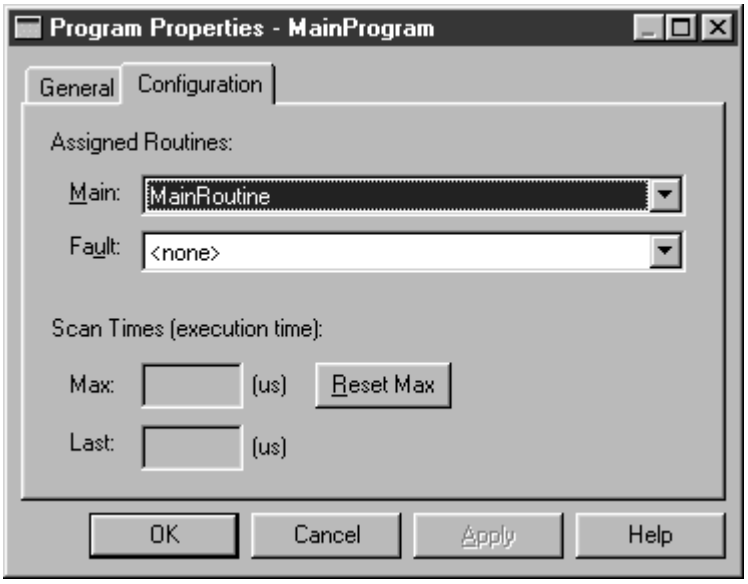
5. From the ***Controller Organizer***, right click on the ***MainProgram*** icon 

and choose ***Properties***.

   The Program Properties dialog appears.



6. Click on the ***Configuration*** tab and verify that MainRoutine appears in the Main field. If it does not, choose MainRoutine from the Main field pull-down menu.



FYI

> Every program folder must have a main routine assigned. All other routines in a program folder are only executed if they are selected as a fault routine, or if they are called using a JSR instruction from another routine in the same folder.

7. Click on ***OK*** to close the Program Properties dialog.
8. From the ***File*** menu, choose ***Save*** to save your program.

Configuring Your I/O

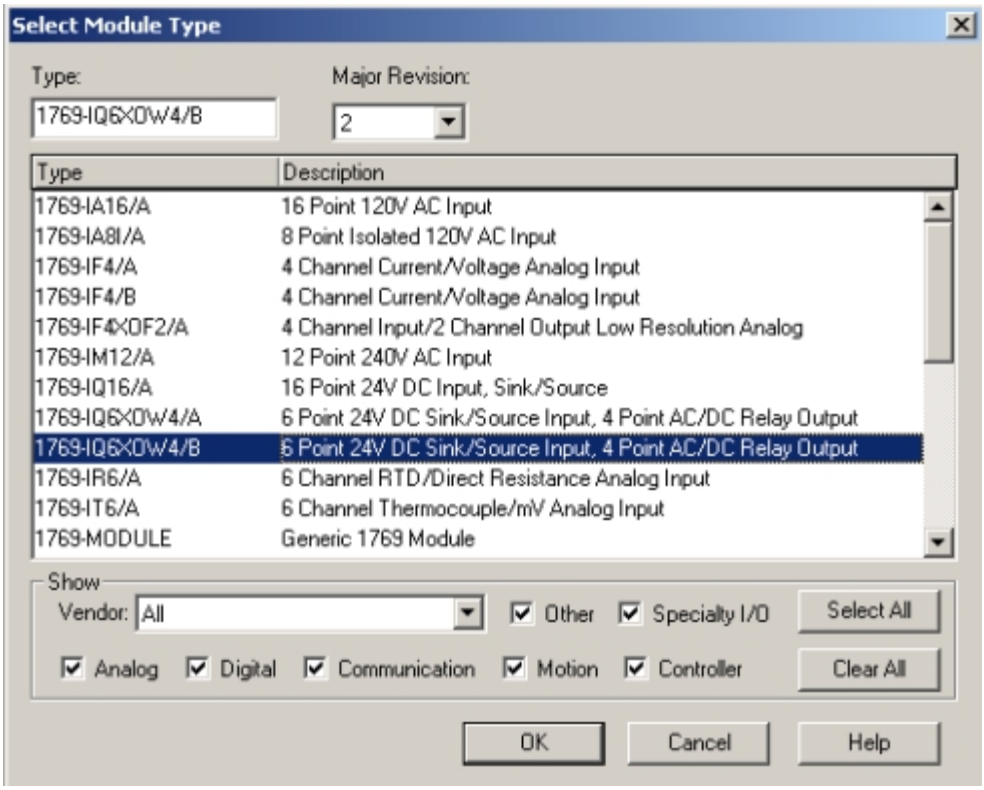
Configure your I/O modules and use the aliasing capabilities of the RSLogix 5000 software to alias the tags you have already created in your ladder logic to module tags.

Configuring the Discrete Input/Output Combo Module

Add the discrete input/output combo module to the CompactBus Local bus - Slot 1 in the I/O Configuration list.

1. From the ***Controller Organizer***, under the ***I/O Configuration*** folder, right click on the ***CompactBus Local*** folder and choose ***New Module***.

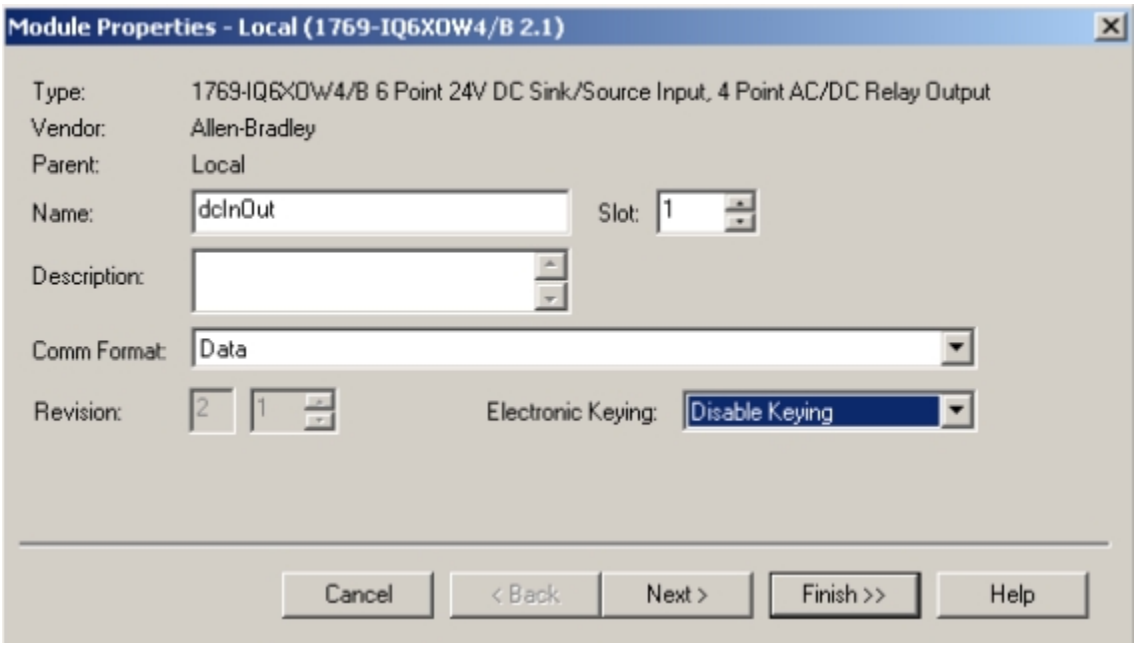
   The Select Module Type dialog appears. This dialog is used to narrow your search for I/O modules to configure into your system.



2. Double click on the ***1769-IQ6XOW4/B.***

   The Module Properties dialog appears.

3. Enter the parameters as shown below, and then click on ***FINISH.***



The 1769 discrete output modules are not yet configurable in a CompactLogix system. In other words, Program and Fault mode values for User Defined Safe Sate and also Hold Last State options are not supported for 1769 discrete output modules in a CompactLogix system at this time.

Viewing Tags

View the tags that were created for the 1769-IQ6XOW4/B module in Slot 1 when you added the module to the I/O configuration.

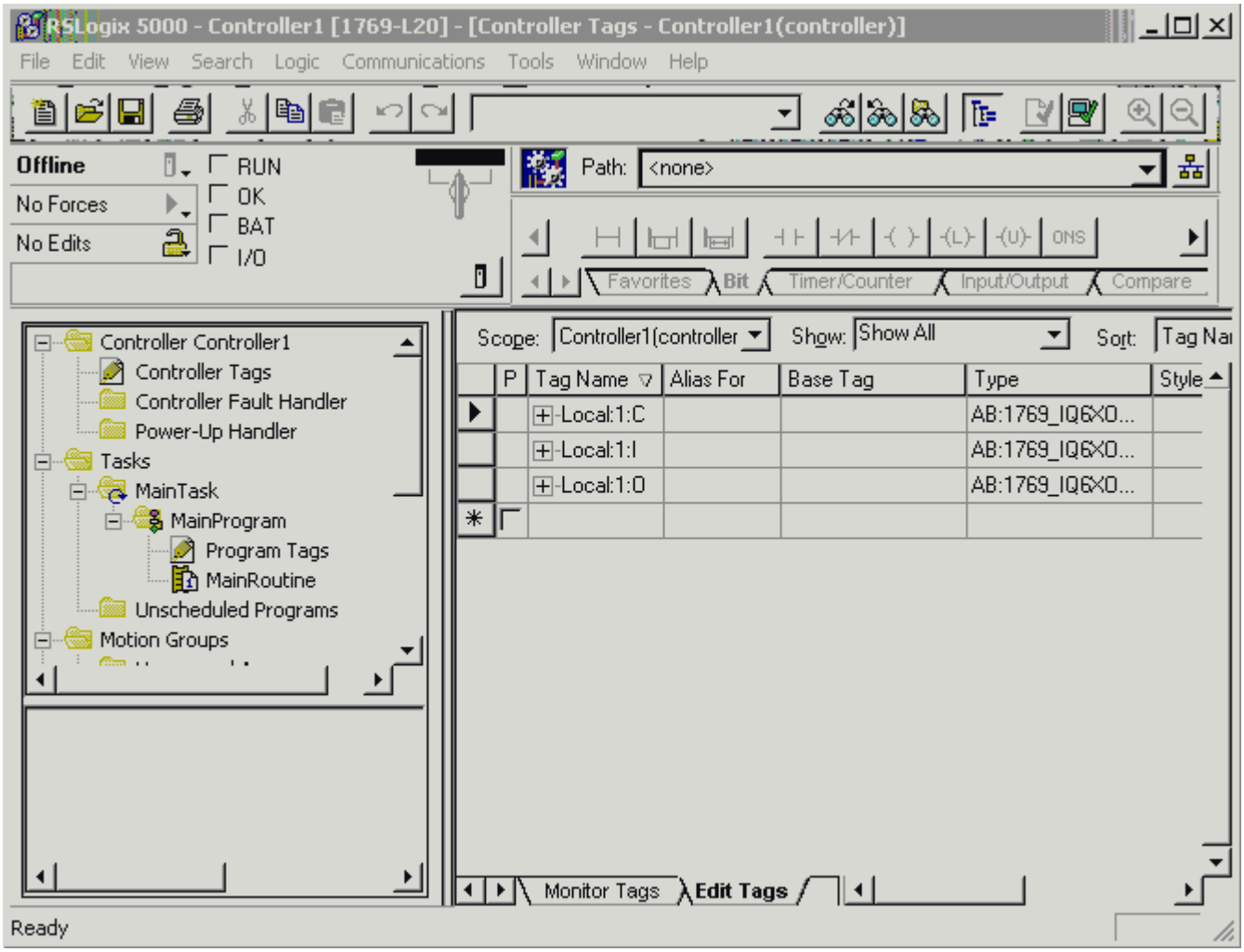
1. From the ***Controller Organizer***, double click on the ***Controller Tags*** icon 

.

   The Data Monitor appears, with 3 entries in the Tag Name column:

   - Local:1:C
   - Local:1:I
   - Local:1:O

These entries are tag structures. The Local:1:C, I, & O are the tags that were created for the module we created in slot 1. Notice in the type field, the type is AB:1769_IQ6XOW4, which is the type of module we created.



The tag structures contain more tags than are actually displayed in the Data Monitor screen. Note the + sign next to the tag name; this indicates that you can expand the tag structure to see more tag information.

FYI

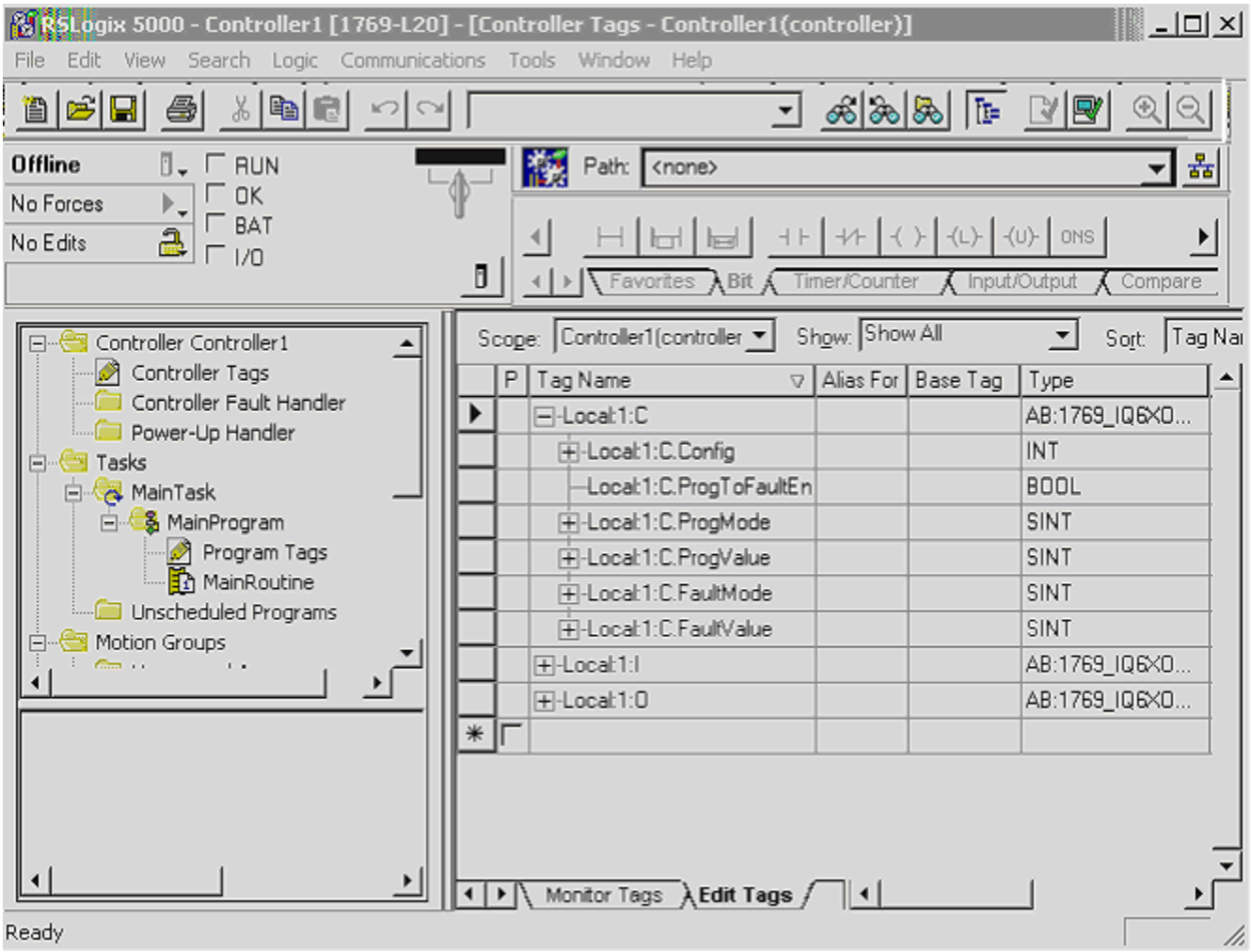
The name Local indicates that these tags are associated with a module that is in the same chassis as the controller. The number between the colons is the slot number of the module; in this case, the module is in slot 1. The characters appearing after the last colon (i.e., the C, the I, and the O) indicate whether the data is **C**onfiguration, **I**nput, or **O**utput data. This particular module has all three types of data.

The Scope field above the Tag Name column displays the scope for the tags that are displayed. The scope defines the range in which tags are recognized within the routines. Tags created at the controller scope are accessible to all routines in all program folders; those created at the program scope are accessible only to routines within that single program folder.

In this case, the tag scope is Controller1 (controller), which indicates that the tags are valid for all routines in all program folders in this controller file. If the scope field contained a program name, then the tags would be valid only for the routines in the program folder specified.

2. Click on the **+** sign in front of the ***Local:1:C*** tag to display the configuration tags for this module.

   The Data Monitor refreshes to show you all of the tags underneath the Local:1:C tag. If you cannot see the entire tag name and value, drag the edges of the respective columns to increase their width.



   Click on the arrow pointing to the right at the bottom of the screen to view the other columns of the tag database.

3. Click on the **+** sign in front of the ***Local:1:I*** tag to display all of the input tags for this module.

   You should see 3 entries under this tag structure.

4. Click on the **+** sign in front of the ***Local:1:O*** tag to display all of the output tags for this module.

   The Local:1:O.Data tag appears under the Local:1:O tag structure. Tags labeled Local:1:O.Data are the actual output bits (like the output image data in a PLC-5 processor).

Mapping I/O Points to Tags

Assign the tags Light and Switch to physical points on the 1769-IQ6XOW4.

1. Click on the ***Edit Tags*** tab at the lower left of the Data Monitor window.

2. From the ***Scope*** pull-down menu, choose ***MainProgram.***

3. In the ***Alias For*** column, click in the box after Light, and click on the down arrow that appears on the right hand side of the box.

4. From the tag browser that appears, click on ***Controller Scoped Tags***.

5. Click on the **+** sign in front of ***Local:1:O***, and click on ***Local:1:O.Data***.

   Again, a down arrow appears on the right hand side of the box

6. Click on the arrow.

   A grid of numbers appears, representing the bits in the tag.

7. Click on ***0*** to select the 0 bit.

8. Repeat steps 3 through 7 for the tag called Switch.

   Choose the Local:1.I to access the inputs of the module, and use Local:1:I.Data.0 as the alias tag.

9. From the ***File*** menu, choose ***Save*** to save your program.

Note: Adding and configuring the 1769-IF4XOF2/A will be performed in Exercise 6: Configuring and Testing 1769 I/O Modules

Congratulations! You have now completed the steps for Exercise 1.

Notes:_____

Exercise 2:
Configuring Your Communications Driver, Verifying Communications, Downloading Your Program, Creating a New Task, Program, and Routine, and Creating an Array of Counters

In this exercise, we introduce you to the online operations that you will complete with the RSLogix 5000 software. In this exercise, you will:

- launch RSLinx communications software and configure your communications driver
- verify communications to the controller
- download your program to the controller, using the driver you configured
- create a new periodic task
- create a new program
- create a new routine
- create an array of counters

Follow the steps below to complete Exercise 2. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

Launching RSLinx Software

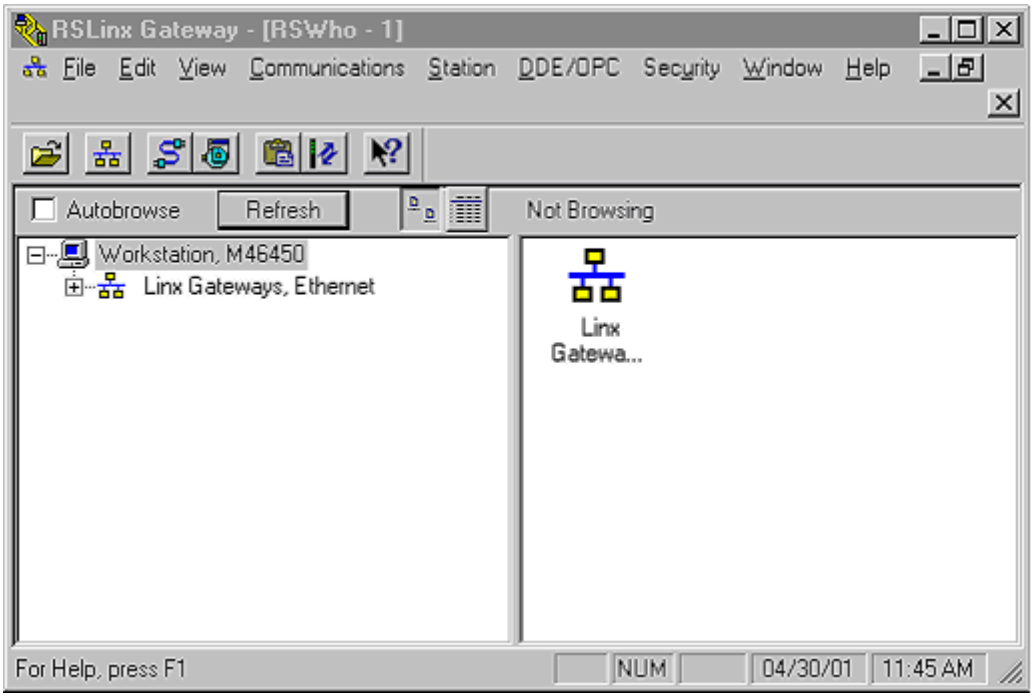
Launch the RSLinx software, which will enable you to configure the driver you use to communicate with the Logix5320 processor.

☐ 1. Double click on the ***RSLinx*** icon 

on the Desktop to launch RSLinx software.

☐ 2. Click the RSWho icon  .

The Rockwell Software RSLinx Gateway - [RSWho - 1] screen appears.



FYI

The RSWho screen is actually RSLinx's network browser interface, which allows you to view all of your active network connections.

The left pane of this display is the Tree Control, which shows networks and devices in a hierarchical view. When a network or device is collapsed, as indicated by the + sign, you can click on the + sign or double click on the network or device icon to expand the view and begin browsing. When a network or device is expanded, as indicated by the - sign, you can click on the - sign or double click on the network or device icon to collapse the view.

The right pane of the RSWho display is the List Control, which is a graphical representation of all of the devices present on the network.

Tip

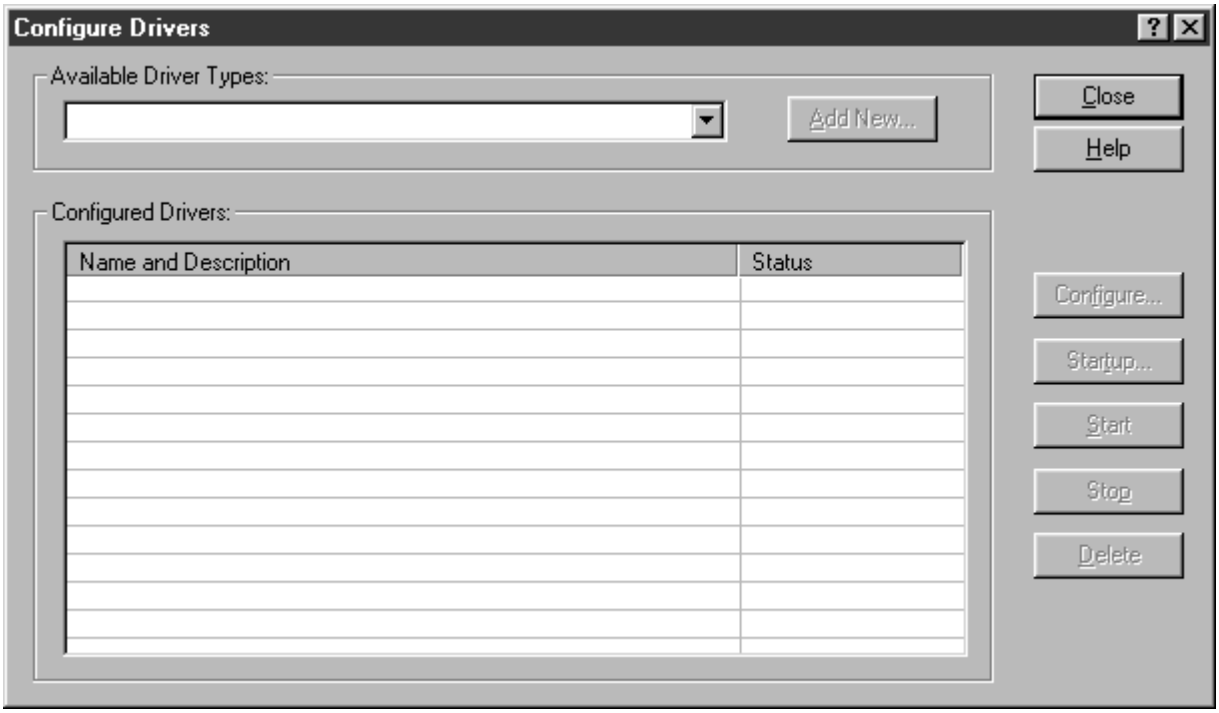
If there is a communication status error with a device (e.g., when a recognized device is inadvertently unplugged), that device appears with a red **X**, indicating that RSWho previously recognized it, but now it can not. You can choose to remove the device from the RSWho display, or to correct the communication error.

Adding the RS-232 DF1 Driver

Add the RS-232 driver that you can use to communicate with the Logix5320 processor.

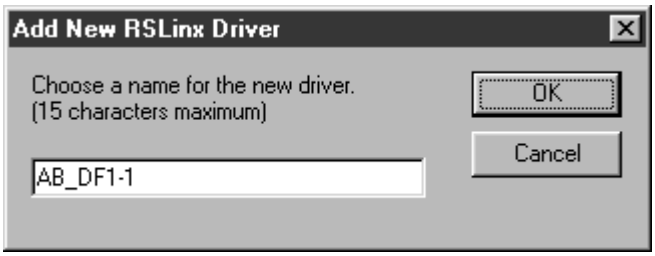
1. From the Communications menu, choose Configure Drivers.

   The Configure Drivers dialog appears.



2. From the ***Available Driver Types*** pull-down menu, choose ***RS-232 DF1 Devices*** and click on the ***Add New*** button.

   The Add New RSLinx Driver dialog appears. You are prompted to enter a name for the driver.



3. Click on ***OK*** to accept the default name (AB_DF1-1).

   The Configure Allen-Bradley DF1 Communications Device dialog appears.

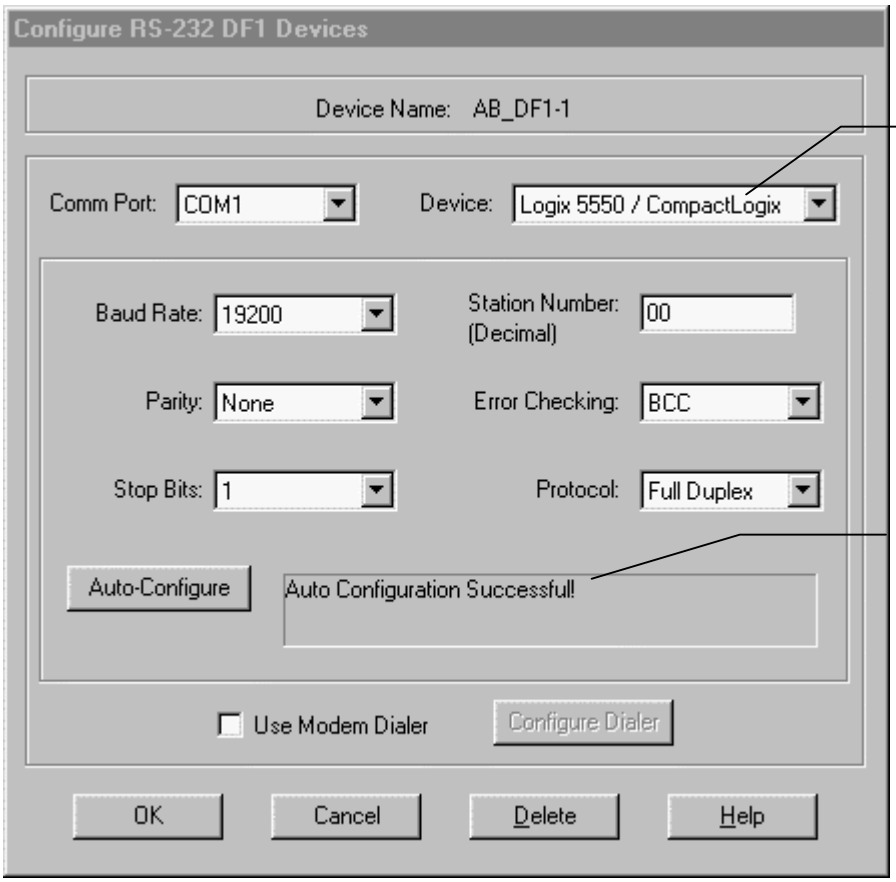
Important: Before you proceed, make sure that the serial cable (1747-CP3 or 1756-CP3) is connected from the serial port on the front of the Logix processor to the serial port on the back of your PC.

Note: The slots in all of the chassis are numbered from left to right, starting with Slot 0. At a CompactLogix station, the chassis can contain up to 8 local I/O modules.

4. Click on the ***Auto-Configure*** button.

   If the serial cable is attached correctly, as you confirmed in the previous step, then RSLinx automatically sets the proper DF1 parameters for you when you click on this button.

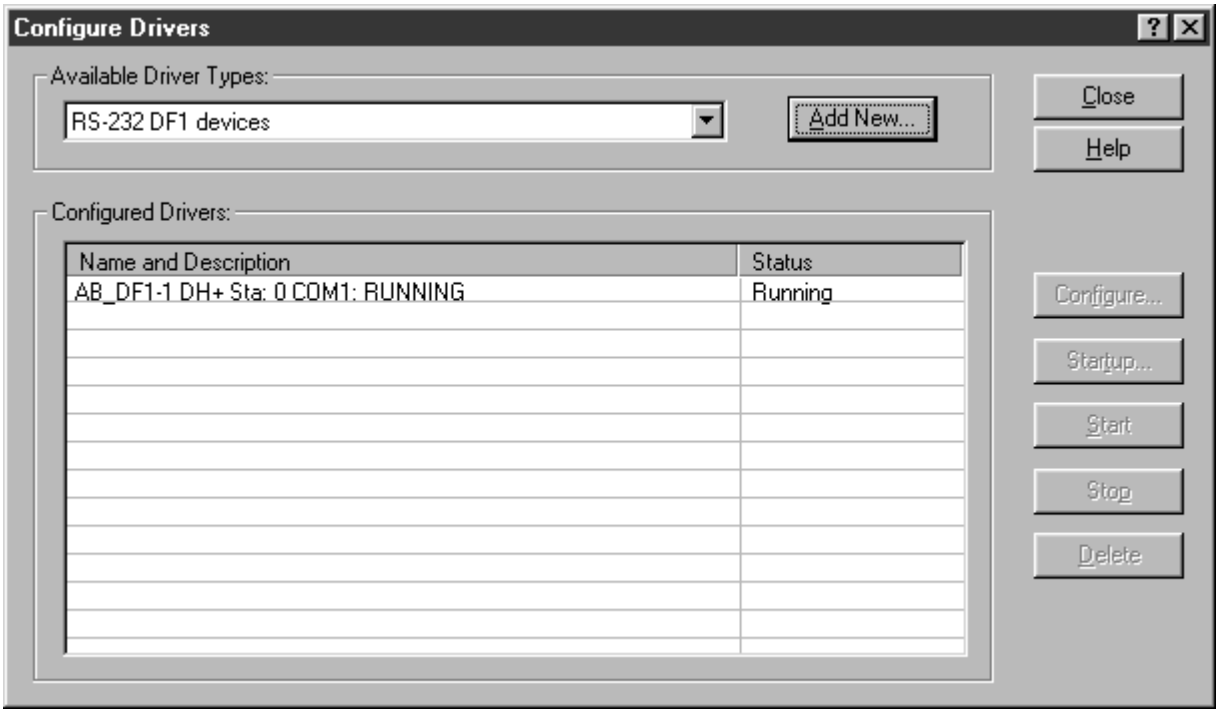
   The Configure Allen-Bradley DF1 Communications Device dialog refreshes, and the parameters appear as follows:



Note: The device field contains "Logix 5550/CompactLogix" regardless of the platform you are using.

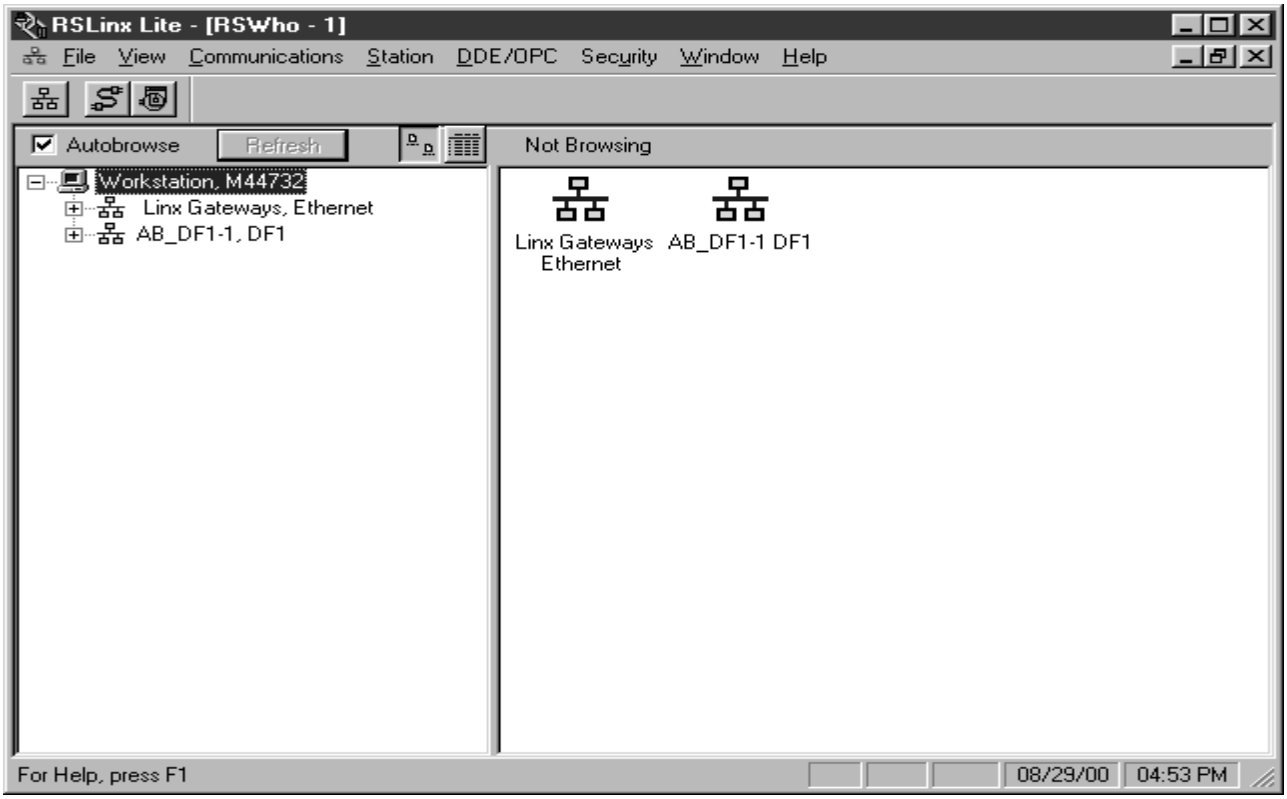
☐ 5. If the parameters on your screen match the dialog as shown on the previous page, click on ***OK***.

The AB_DF1 driver should now appear in the list of Configured Drivers on the Configure Drivers screen, and it should be listed as "Running" in the Status column.



☐ 6. Once you have verified that the driver is configured and running, click on the ***Close*** button to close the Configure Drivers dialog.

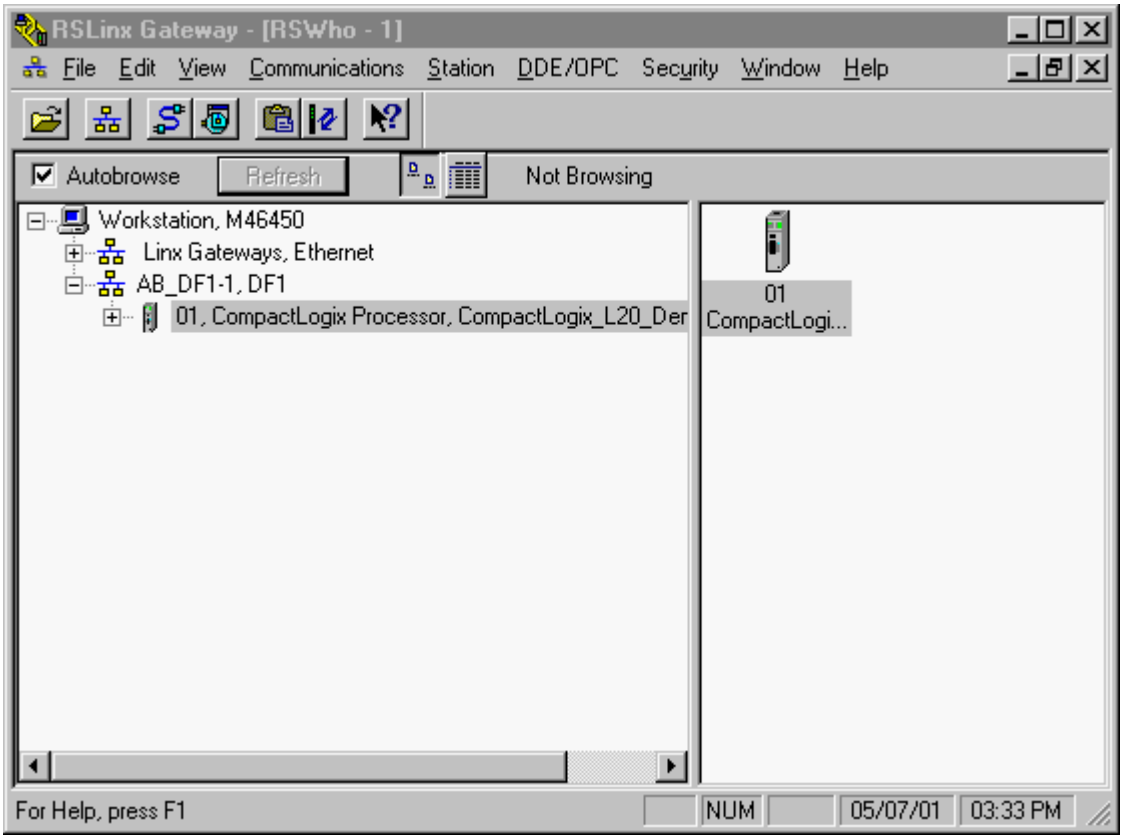
Note: The AB_DF1 driver appears in the RSWho display, in both the left and right panes.



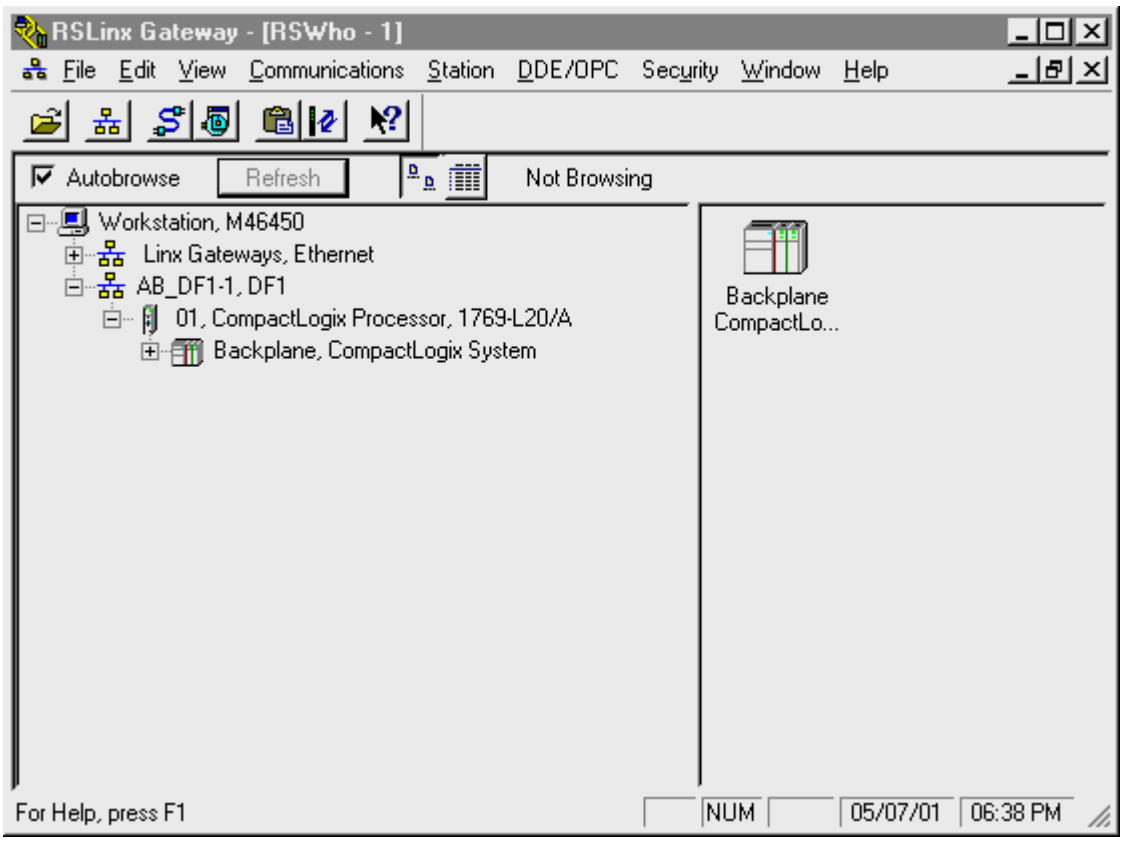
Verifying Communications to the Processor

Use RSWho to verify that you can communicate with the Logix5320 processor via the DF1 driver you just added.

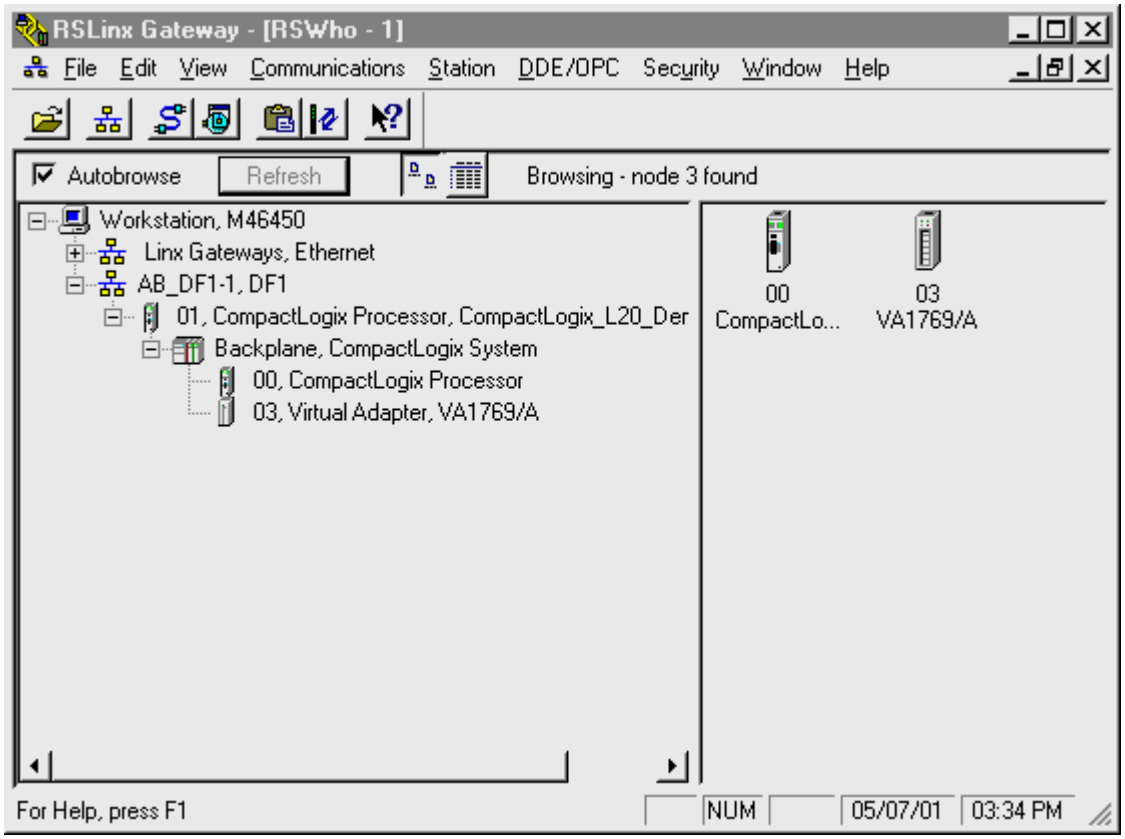
1. From the RSWho window, double click on the ***AB_DF1-1, DF1*** driver icon.



2. Double click on the controller icon. The controller expands to display the virtual backplane and the serial port of the controller.

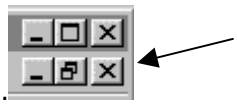


3. Double click on the Backplane icon. You can see the CompactLogix Controller and the Virtual Adapter. You cannot access the 1769 I/O module from here.

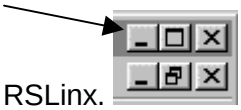


4. Verify that the small square LED to the right of the serial cable on the controller in slot 0 is flashing green.

5. Click on the ***X*** in the upper right corner of the RSWho window to stop RSWho.



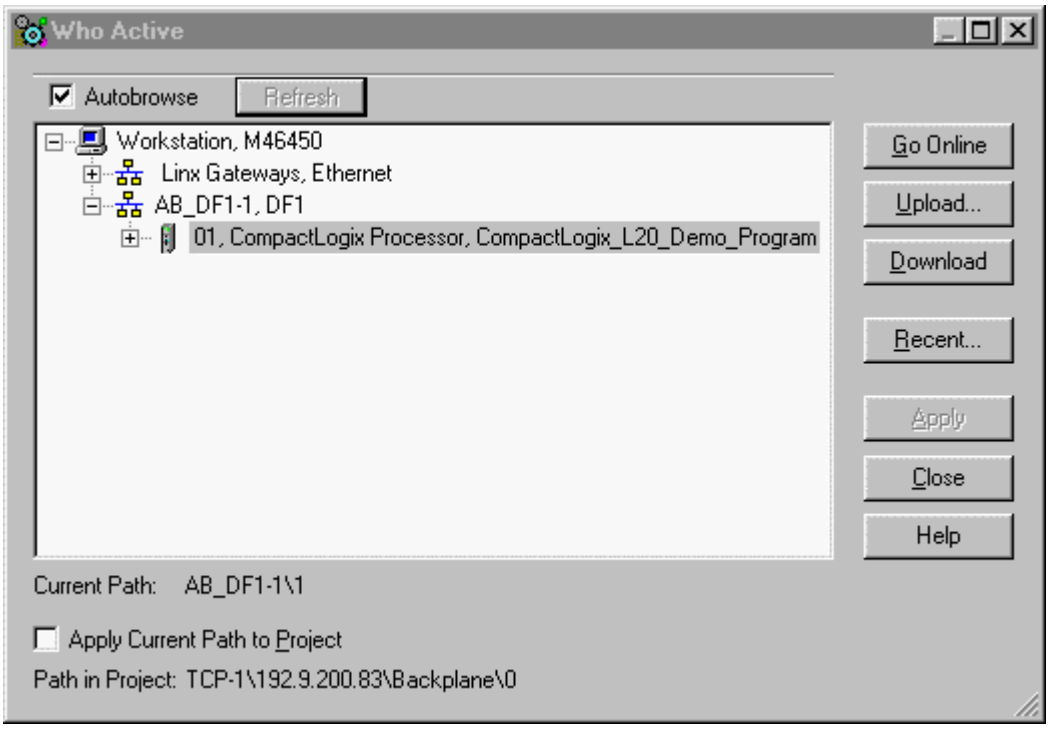
6. Click on the **-** in the upper right corner of the RSLinx window to minimize RSLinx.



Downloading the Program Using the RS-232 DF1 Driver

Download the program you have created to the controller in the demo box, using the DF-1 driver you configured earlier.

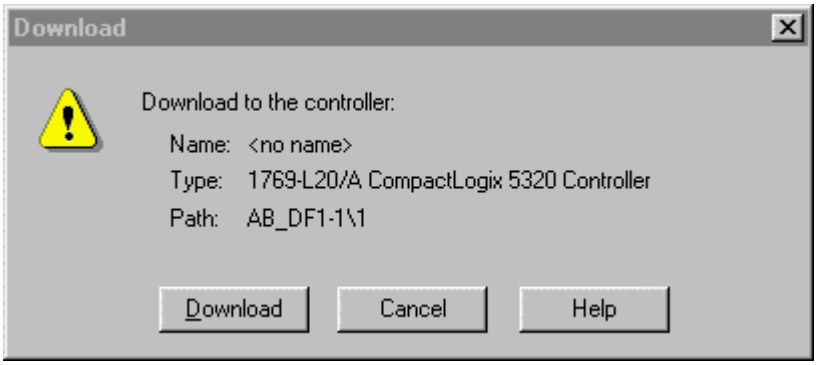
1. Open your ***Controller1.ACD*** program in ***RSLogix 5000***. From the ***Communications*** menu, choose ***Who Active***.



2. Double click on the ***AB_DF1-1, DF1*** icon and click on the controller entry to select the controller as your target controller.

3. Click on the ***Download*** button.

   You will see the following Download. Note that the controller must be in Program or Remote Program mode in order to download. If it is not, you are prompted to confirm that it is okay for the software to change modes before downloading. Depending on what mode you are in, the prompt you see will vary; follow the instructions on the prompt and continue with the download.



4. Click on the ***Download*** button.

   You will see a series of progress dialogs as your program is downloaded to the controller.

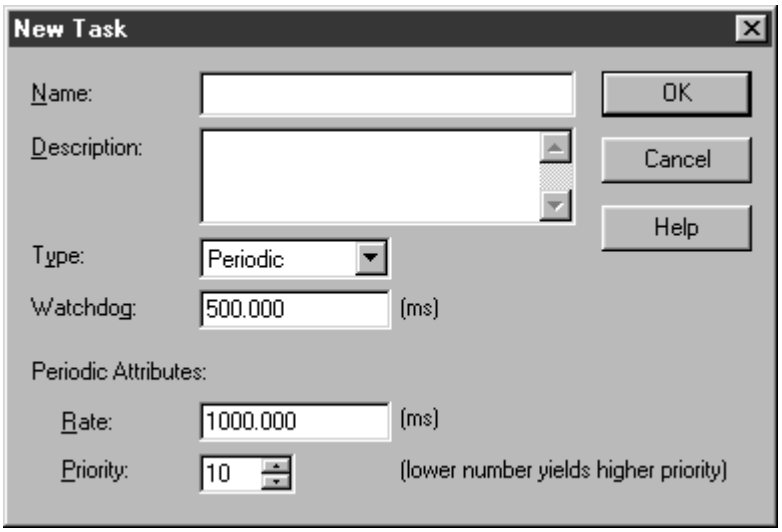
Creating a New Periodic Task

Create a new periodic task that we will then use to schedule the execution of a new program. At this point, you should be online with your controller. Make sure the controller is in Program mode.

1. From the ***Controller Organizer***, right click on the ***Tasks*** icon 

and choose ***New Task***.

   The New Task dialog appears.



2. In the ***Name*** field, type 'Task2'.
3. In the ***Description*** field, type 'This task is similar to an STI in a PLC-5.'
4. In the ***Type*** field, be sure that ***Periodic*** is selected.
5. In the ***Watchdog*** field, leave the default of ***500*** ms.
6. In the ***Rate*** field, enter ***1000*** ms (1 second); leave the other parameters set to their default values.
7. Click on ***OK*** to create the task.

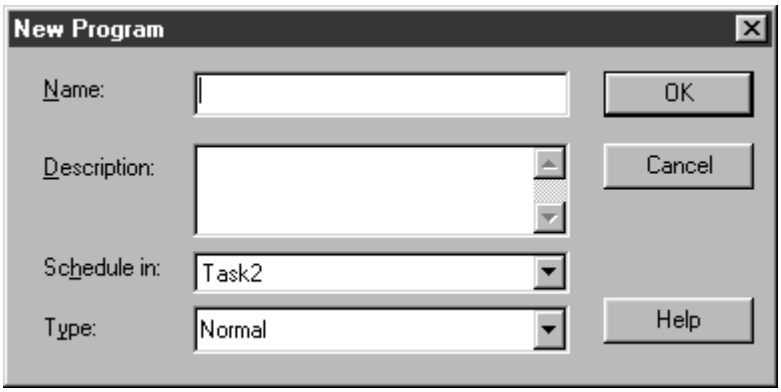
   Task2 now appears in the Controller Organizer. The folder icon for Task2 includes a small clock, indicating that this is a periodic, or time-based, task.

Creating a New Program

Create a new program under Task2, which is the periodic task.

1. From the ***Controller Organizer***, right click on the ***Task2*** icon  and choose ***New Program***.

   The New Program dialog appears.



2. In the ***Name*** field, type 'Program2'.

3. In the ***Schedule In*** field, be sure that ***Task2*** is selected and click on **OK**.

   You have now created a new program under Task2. All of the routines created and called under this program folder will execute once every 1000 milliseconds (or once every second).

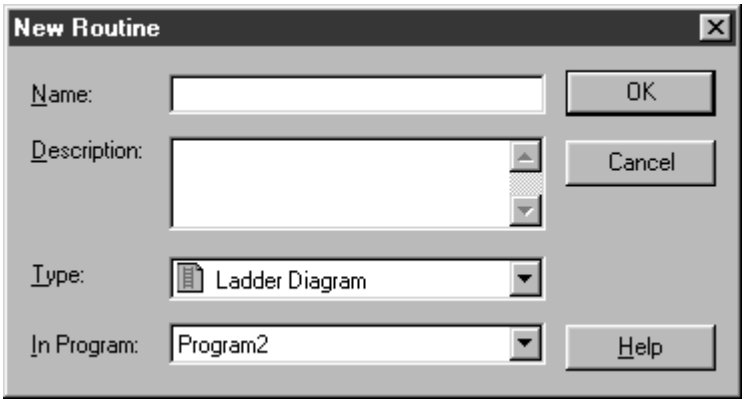
   Also notice that under Program2 in the Controller Organizer, there is now an item called Program Tags. All program-scoped tags are kept under this entry; any tags stored here are accessible by Program2 and all of its routines, but not by other programs in the controller.

Creating a New Routine

Create a new routine under the Program2 folder.

1. From the ***Controller Organizer***, click on the **+** sign in front of Task2 to expand it, right click on ***Program2*** and choose ***New Routine***.

   The New Routine dialog appears.

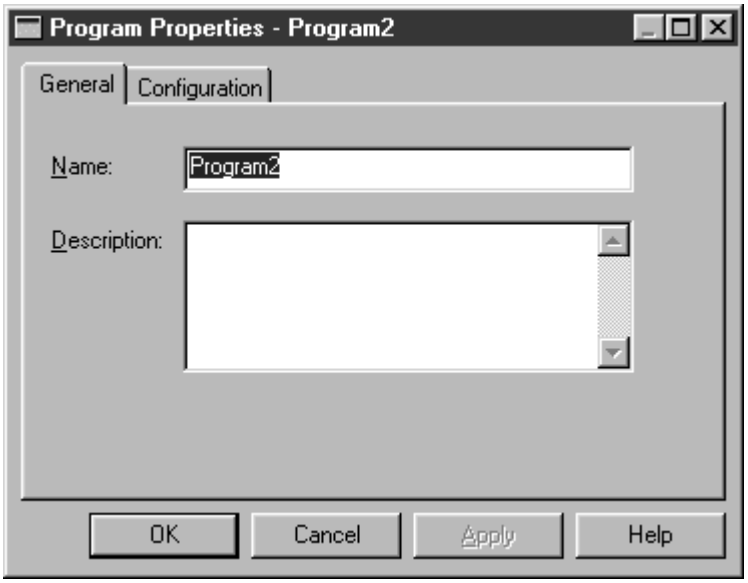


2. In the ***Name*** field, type 'Routine2'.
3. In the **Description** field, type 'This routine will increment a counter each time the routine is executed.'

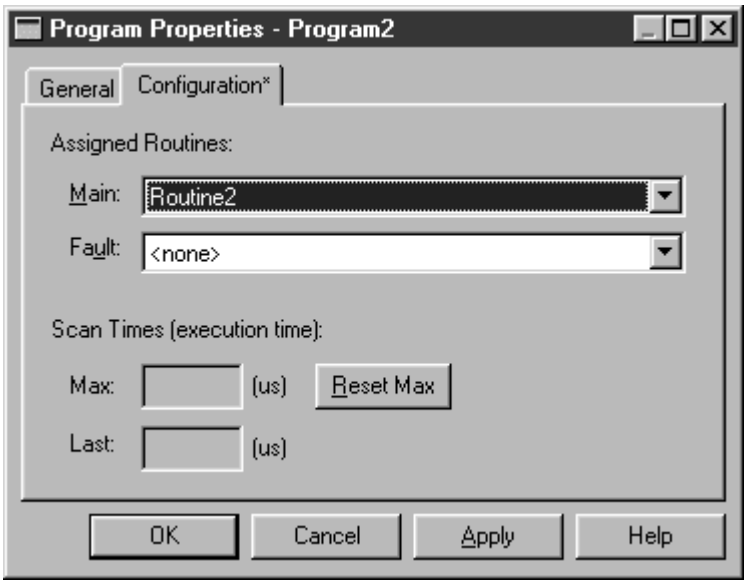
4. In the ***Type*** field, be sure that ***Ladder Diagram*** is selected.
5. In the ***In Program*** field, be sure that ***Program2*** is selected and click on **OK**.

   The next thing you want to do is assign a routine to be the MainRoutine for Program2.
6. From the ***Controller Organizer***, right click on the ***Program2*** icon and choose ***Properties***.

   The Program Properties dialog appears, with the General tab selected.



7. Click on the Configuration tab to display the assigned routines for Program2.



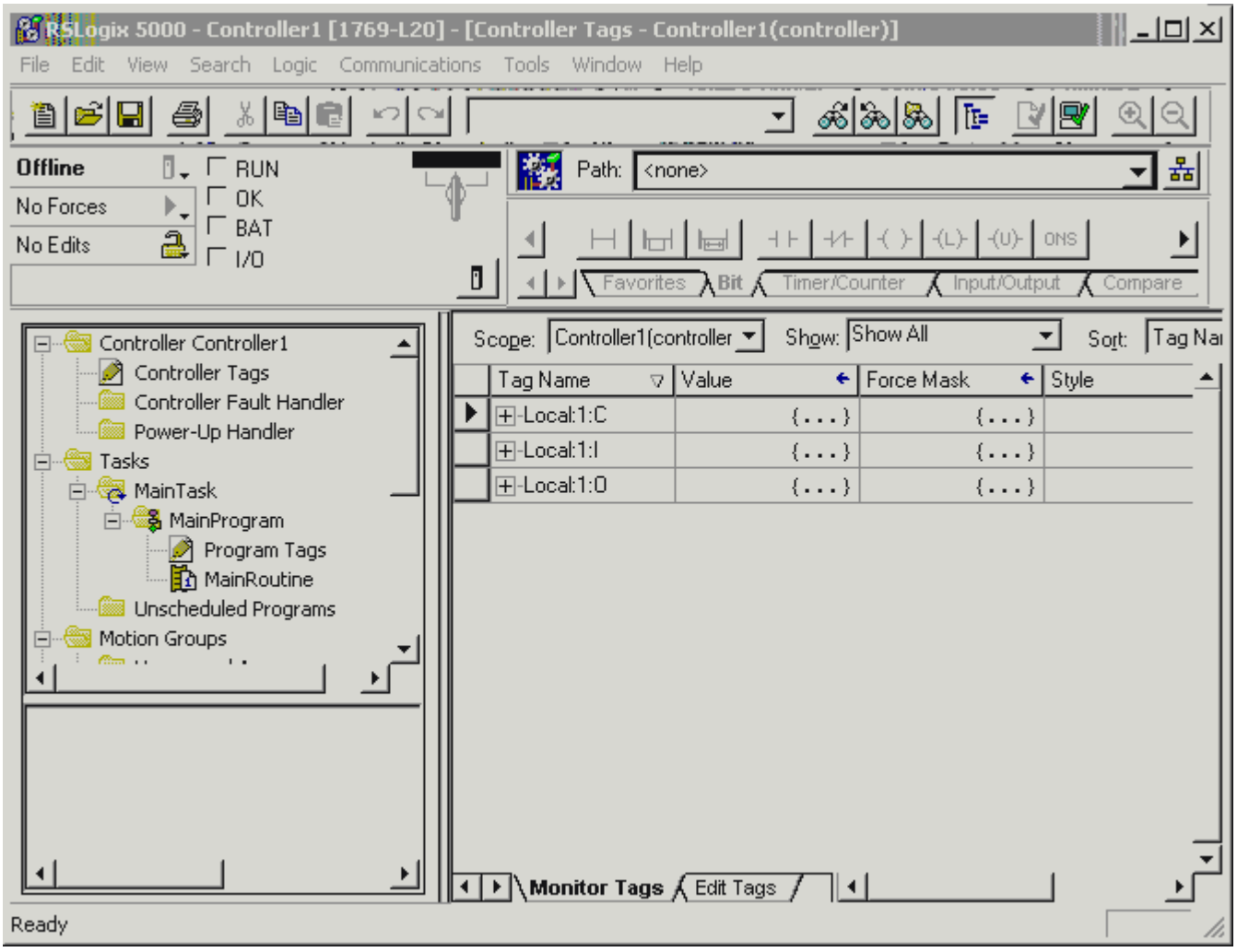
8. From the ***Main*** pull-down menu, choose ***Routine2*** and click on ***OK***.

   This makes Routine2 the main routine for Program2.

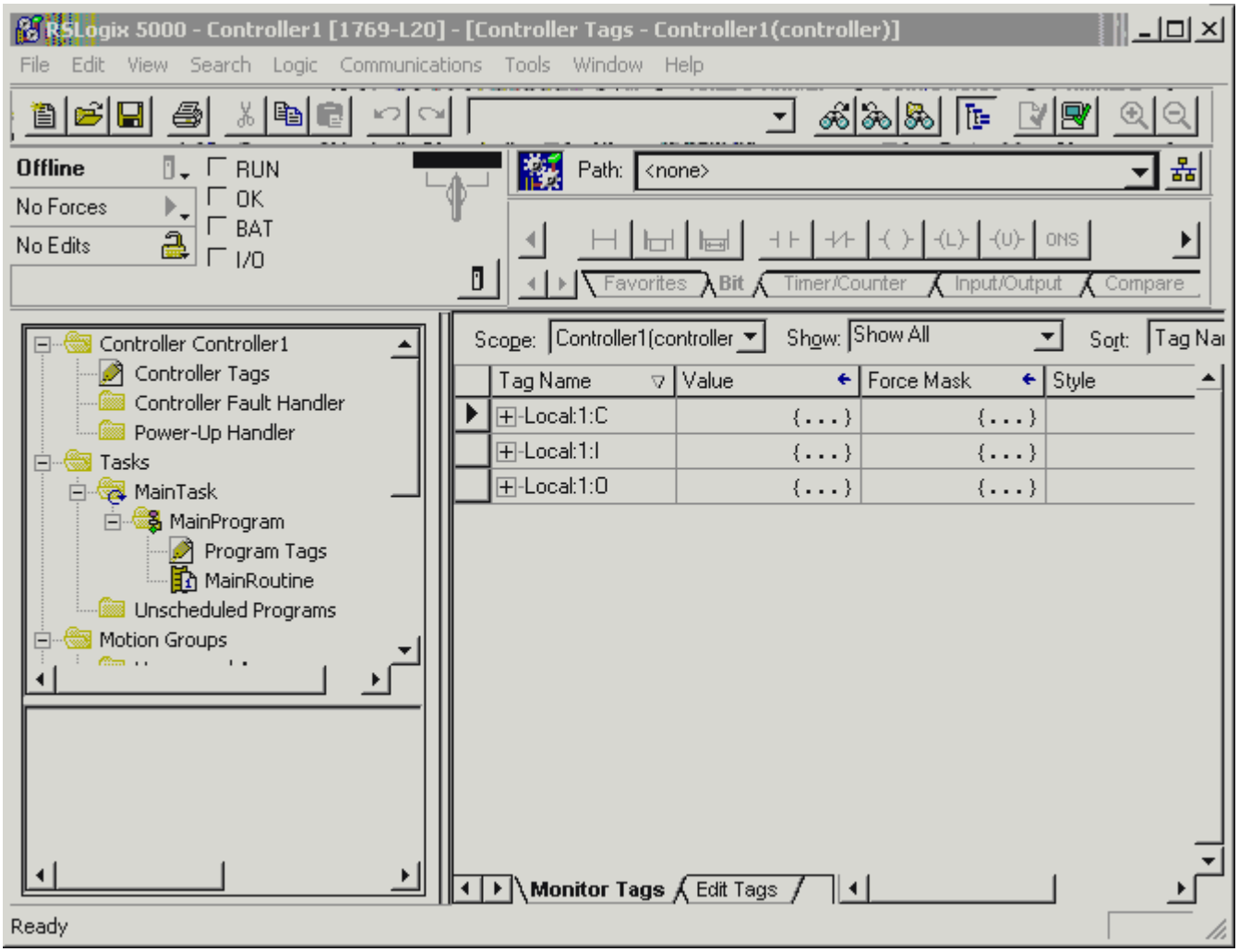
Creating an Array of Counters

Create an array of counters that you can then use in the rest of your routines.

1. From the ***Controller Organizer***, double click on ***Controller Tags*** icon Controller Tags to open the Data Monitor.



2. Click on the Edit Tags tab at the bottom of the window to open the Tag Editor.



3. Under the ***Tag Name*** column, click in the row next to the * button and type 'C5' for the tag name.

4. Press the ***Tab*** key until your cursor appears in the ***Type*** column.

5. Click on the ... button, choose a data type of ***COUNTER***.

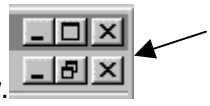
6. In the ***Dim 0*** field, click on the up arrow until a value of ***10*** is displayed, and click on ***OK***.

7. Press the ***Enter*** key to accept the tag.

8. Click on the **+** sign in front of the ***C5*** tag name to display the array of 10 counters that you created.

9. Click on the **+** sign in front of the ***C5[0]*** tag name to display all of the members in the counter structure (tag) associated with the C5[0] counter.

10. Click on the ***X*** in the upper right corner of the Tag Editor to close the Controller Tags window.



Congratulations! You have now completed the steps for Exercise 2.

Exercise 3:
Editing and Testing Your Routines, Programs, and Tasks

This exercise continues with online operations to edit and test what you have done. In this exercise, you will:

- edit and test your routine
- create a trend to monitor the Counter Accum value
- test your program's continuous task
- test your program's periodic task

Follow the steps below to complete Exercise 3. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

Editing and Testing Your Routine

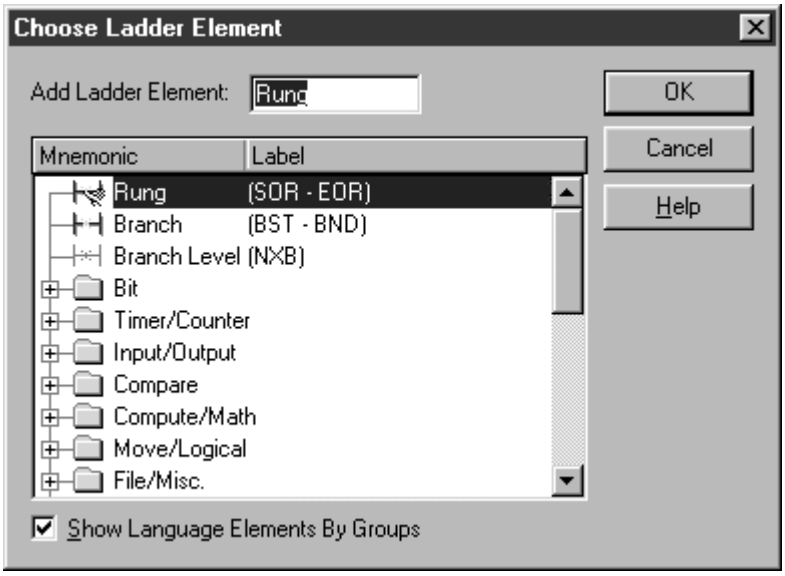
Add ladder instructions to your routine, using a different method than you used in the previous exercise.

☐ 1. From the ***Controller Organizer***, double click on ***Routine2*** icon.

The Ladder Editor appears, with a blank rung 0 displayed.

☐ 2. Press the ***Insert*** key on your keyboard.

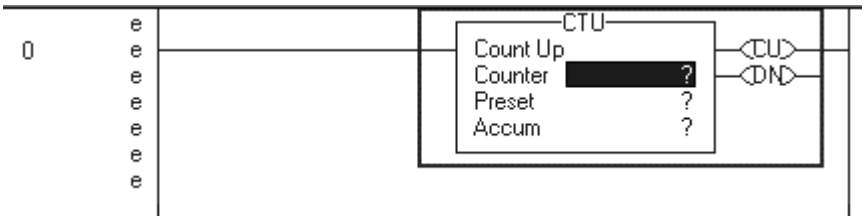
The Choose Ladder Element dialog appears.



If the folders do not appear in this dialog, click on the Show Language Elements by Groups checkbox.

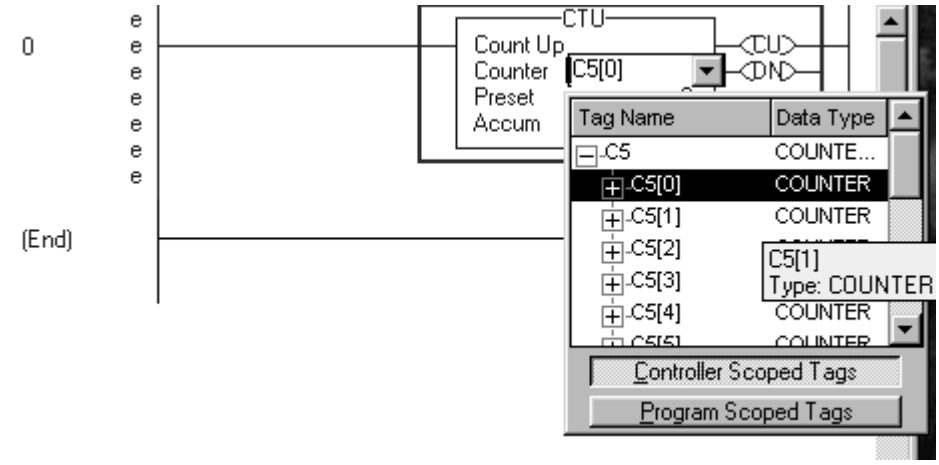
3. Type 'CTU' and press ***Enter***.

   The instruction is inserted on rung 0 as shown:



4. Double click on the ***blue field*** next to the word ***Counter*** in the CTU instruction block.

5. Click on the ***down arrow*** to display the drop-down list.



6. Click on the **+** sign in front of the ***C5*** tag, double click on ***C5[0]***, and press ***Enter*** to select the tag.

   If you do not see the tags, make sure you have clicked on the "Controller Scoped Tags" button.

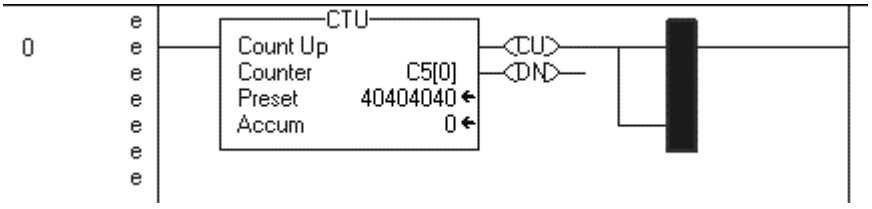
7. In the ***Preset*** field, type '40404040' and press ***Enter***.

8. Press ***Enter*** again to accept 0 as the Accum value.

   The Preset and Accumulator values in Logix are double integer (DINT) words. This allows you to enter 32-bit values.

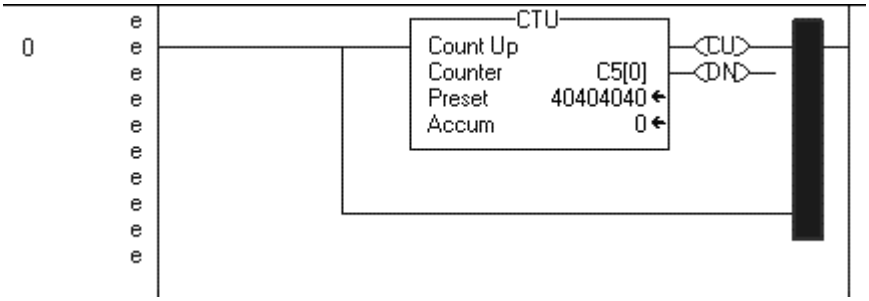
9. Press the ***Insert*** key, type 'BST', and press ***Enter***.

   Rung 0 should now look like this:



10. Click and hold the mouse button on the vertical blue bar of the branch on Rung 0, and drag it to the left until it is past the CTU instruction and a green dot appears. Release the mouse button to place the branch around the CTU instruction.

    Rung 0 now looks like this:

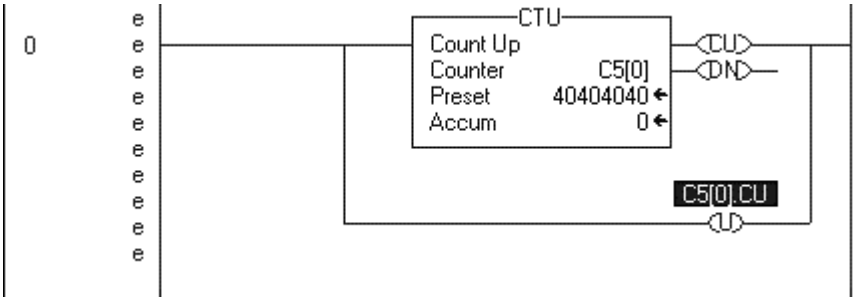


11. Click on the lower left corner of the branch to move the cursor.

12. Press the ***Insert*** key, type 'OTU' for the Output Unlatch instruction, and press ***Enter***.

13. Press ***Enter*** with your cursor on the ***Question Mark (?)***, and press the down arrow to view the available tags; select the ***C5[0].CU*** tag for the OTU instruction, and press ***Enter*** to accept the operand.

    Rung 0 now looks like this:



14. Right click on the rung number ***(0)*** and choose ***Verify Rung***.

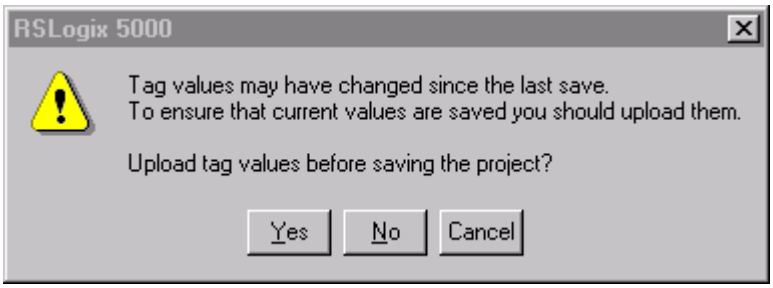
    A message appears at the bottom of the RSLogix 5000 window indicating the results of the Verify Rung command. (Note: The message will appear either in the status bar at the bottom of the screen, or in the Results window if it is selected under the View menu. If there are errors, you must correct them before the rung will verify. If there are no errors, the "e's" next to the rung will change to "i's"; this indicates the logic still needs to be inserted into your controller image. You can also verify the entire routine by choosing ***Verify > Routine*** from the ***Logic*** menu.

15. Right click on the rung number ***(0)*** and choose ***Accept Pending Rung***.

    This merges the rung edits into your existing code. You can also verify the entire routine by choosing ***Accept Pending Rung Edit*** from the ***Logic*** menu.

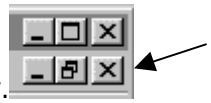
16. From the ***File*** menu, choose ***Save*** to save your program.

    A dialog appears, prompting you to confirm whether you would like to upload the tag values.



17. Click on ***No***.

18. Click on the ***X*** in the upper right corner of the Ladder Editor to close the editor.

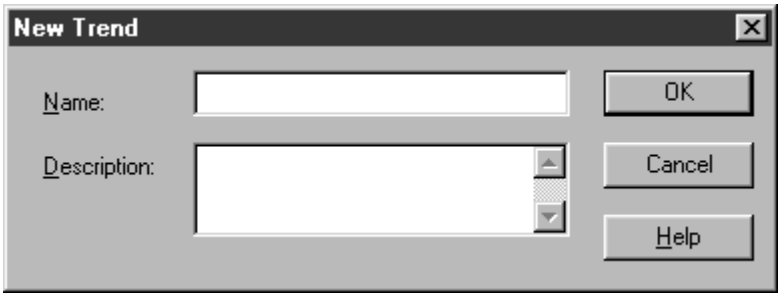


Creating a Trend to Monitor the CTU Accum Value

Use the trending feature of RSLogix 5000.

1. From the ***Controller Organizer***, right click on the ***Trends*** folder and choose ***New Trend***.

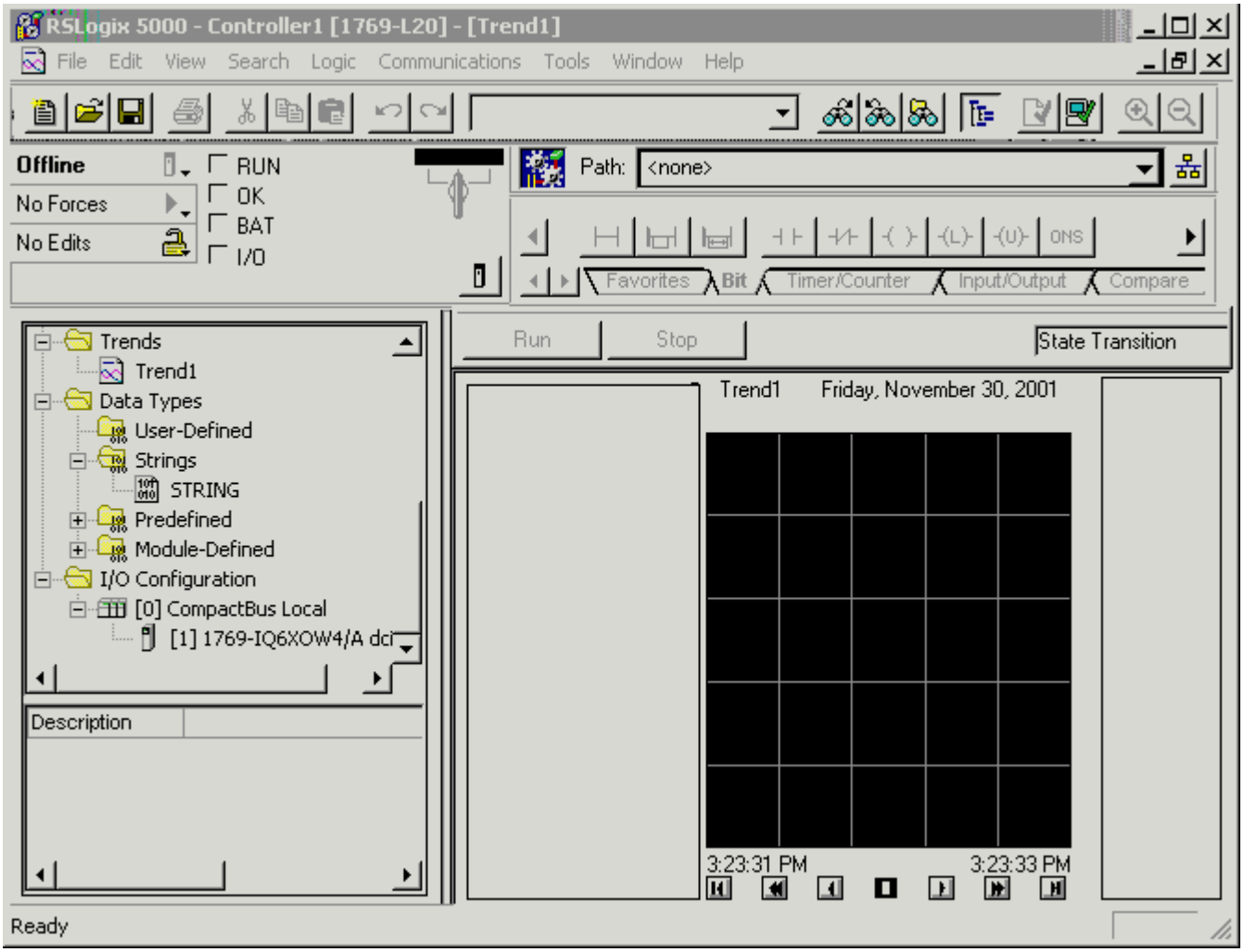
   The New Trend dialog appears.



2. In the ***Name*** field, type 'Trend1' and click on ***OK***.

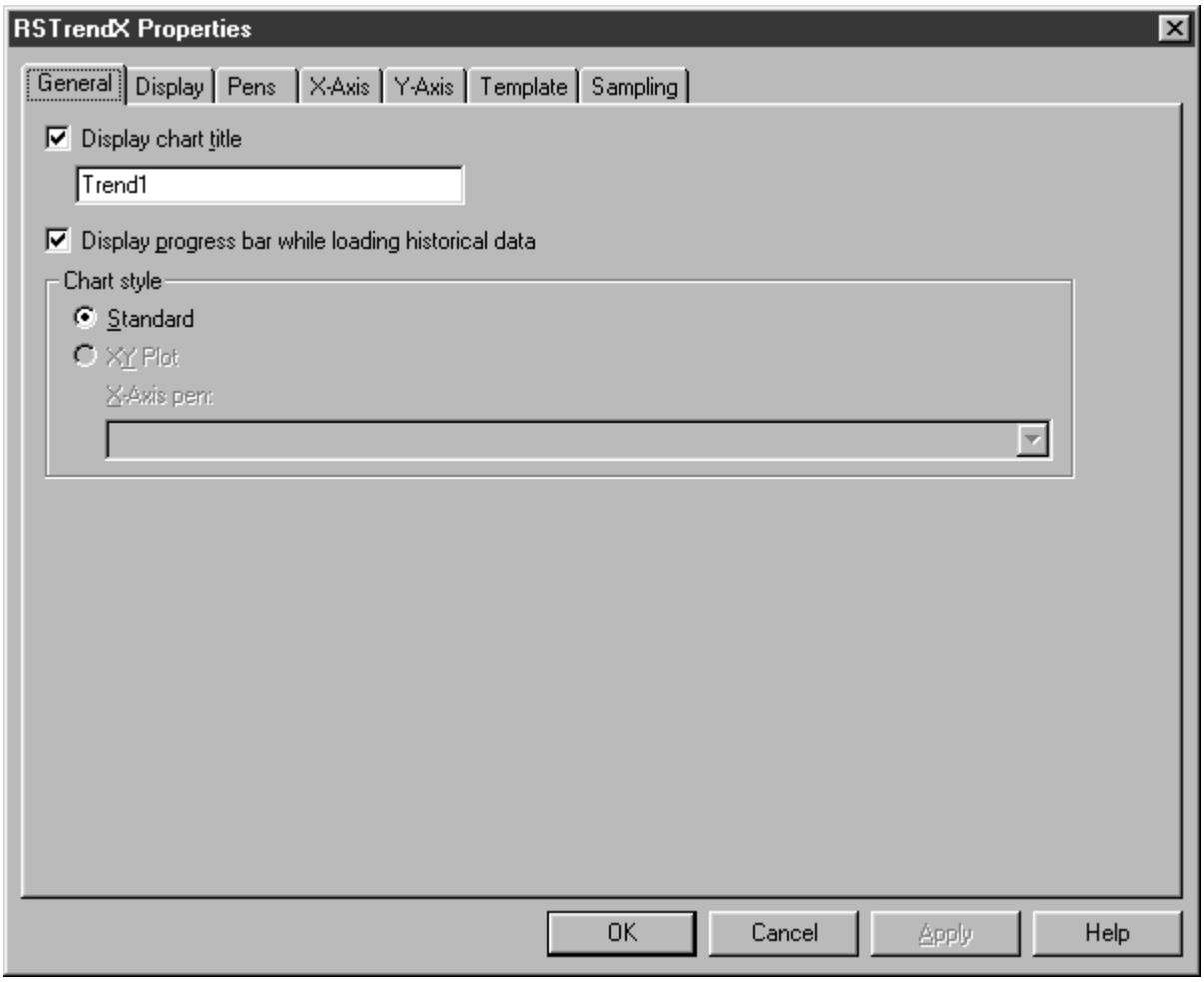
   The Trend1 icon appears in the Controller Organizer under the Trends folder.

3. Double click on the ***Trend1*** icon to open the Trend Chart window.

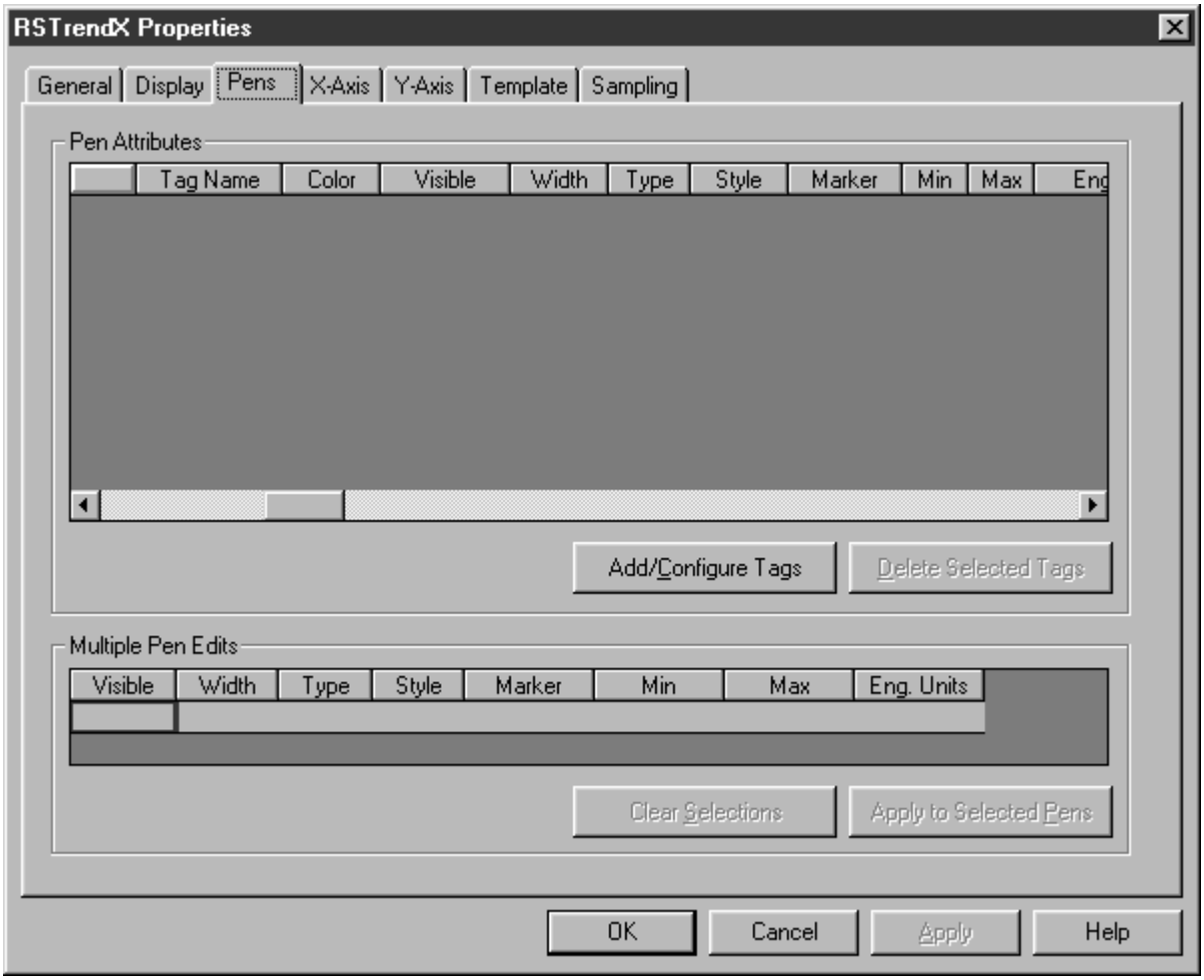


4. Right click on the Trend Chart window and choose ***Chart Properties***.

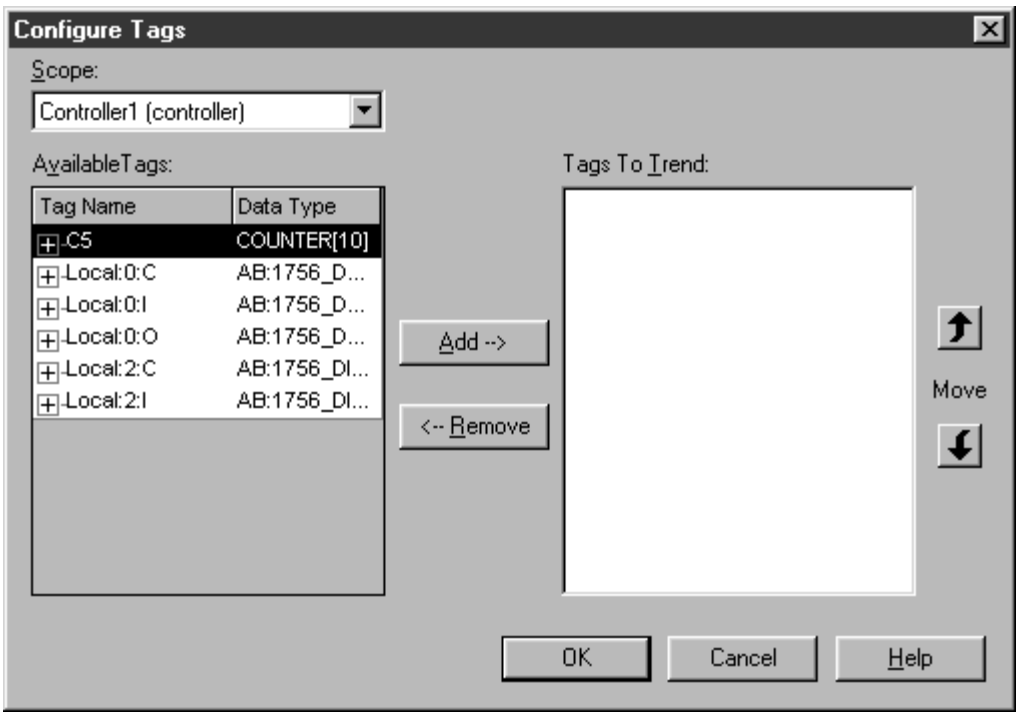
   The RSTrendX Properties dialog appears.



5. Click on the ***Pens*** tab and click on ***Add/Configure Tags***.



The Configure Tags dialog appears.



6. Choose the ***Controller1 (controller)*** scope from the pull-down menu.

7. Click on the **+** sign to the left of the C5 tag to expand the counter array.

8. Click on the **+** sign to the left of C5[0] to expand the counter.

9. Click on ***C5[0].ACC***, click on the ***down arrow***, and select ***bit 0*** of the C5[0].ACC tag.

   The tag is now copied to the list of Tags to Trend.

10. Click on ***OK***.

    You are returned to the RSTrendX Properties screen.

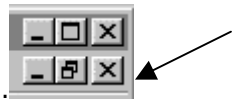
11. Click on the ***Type*** field in the C5[0].ACC.0 row and choose ***Digital***.

12. Click on the ***X-Axis*** tab and change the ***Time Span*** to ***5 seconds***.

13. Click on the ***Sampling*** tab and change the ***Period*** to ***1 second***.

14. Click on ***Apply***.

15. Click on ***OK*** to close the RSTrendX Properties dialog.

16. Click on the ***X*** in the upper right corner of the Trend Chart to close Trend1. 

Testing Your Program – Periodic Task

Continue testing of the Periodic Task to see that your program does what you intended it to do.

Periodic Task – Recall we created Task2 as a periodic task running every 1 second. The Routine2 contained a counter that counts up every scan. We then added a Trend to capture the 0 bit of the counter accumulator.

1. Double click on the ***Trend1*** icon to open the Trend Chart window.

2 To run the trend, click on the ***Run*** button in the upper left corner of the Trend Chart window.

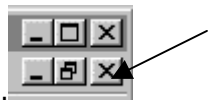
You should be able to observe a trend of the C5[0].ACC.0 changing state once per second. This is the rate of the periodic task.

Note: The workstation must be online to the controller, with the chart open, and have at least one tag configured to be able to Run the current trend. When a trend is started, all existing trend data is permanently deleted. Notice the pen legend in the upper right corner. You can see the value of bit 0 of the accumulator changing once every second.

FYI

Basic Trending in RSLogix 5000 allows you to view data sampled over a time period in a graphical display for a set of up to eight data elements. Data is sampled at a periodic rate that is configurable from 10 milliseconds to 30 minutes. RSLogix 5000 will allow you to create a trend, configure the data elements and display attributes, and save it as part of your project file. Basic Trending has these constraints: you can trend data elements of type BOOL, SINT, INT, DINT, and REAL, you are limited to sampling eight unique data elements, and you will be limited to activating data collection for one trend at a time.

3. Click on the ***Stop*** button to stop the trend.

4. Click on the ***X*** in the upper right corner of the Trend Chart to close the trend. 

5. From the ***Communications*** menu, choose ***Go Offline***.

6. From the ***File*** menu, choose ***Save*** to save the controller file.

7. From the ***File*** menu, choose ***Close*** to close the controller file.

Congratulations! You have now completed the steps for Exercise 3.

Notes:_____

Exercise 4:
Demonstrating Reusable Code

In this exercise, you will explore reusable code in the CompactlLogix system. You will copy existing code and tags from one project to another, and map the copied tags to existing I/O.

Note: This exercise is a continuation of the previous exercises. Follow the steps below to complete Exercise 4. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

Opening Two Sessions of RSLogix 5000

Open two sessions of the RSLogix 5000 software.

- [ ] 1. From the ***File*** menu, choose ***Open*** to open the controller file ***Controller1.ACD*** that you created in Exercise 2 and Exercise 3.

- [ ] 2. Double click on the ***RSLogix 5000*** icon on the desktop to open another session of RSLogix 5000.

- [ ] 3. Open the ***Compact_ReusableCode.ACD*** controller file in the second session of RSLogix 5000.

  You should now have both Controller1.ACD and Compact_ReusableCode.ACD opened in the two sessions of RSLogix 5000.

Copying the Main Program and Pasting Reusable Code

Copy the main program from Controller1.ACD and paste it into the Compact_ReusableCode.ACD file.

- [ ] 1. In the ***Controller1.ACD*** controller file right click on the ***MainProgram*** icon and choose ***Copy***.

- [ ] 2. In the ***Compact_ReusableCode.ACD*** controller file right click on the ***Main Task*** icon and choose ***Paste***.

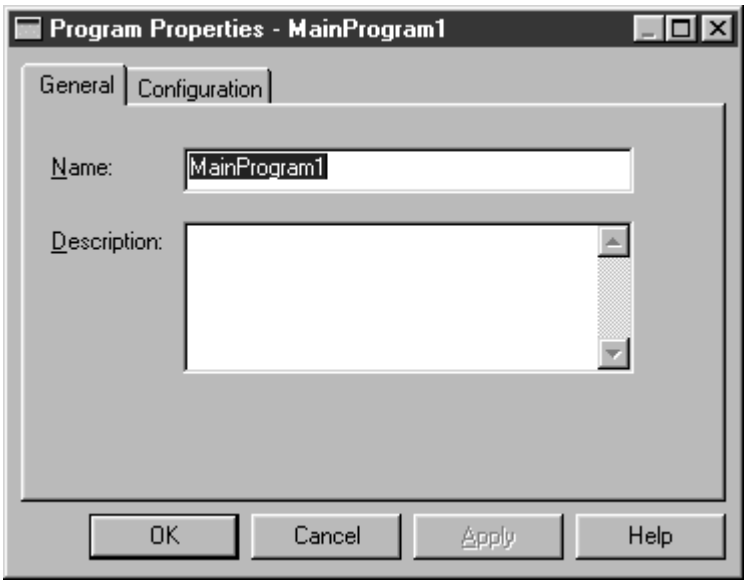
- [ ] 3. Verify in the Compact_ReusableCode.ACD controller file that MainProgram was pasted under the task, MainTask, as MainProgram1.

Changing the Name of the Program You Pasted

Change the name of MainProgram1 in the Compact_ReusableCode.ACD controller file.

1. In the ***Compact_ReusableCode.ACD*** controller file, right click on ***MainProgram1*** and choose ***Properties***.

   The Program Properties - Reused Program dialog appears.



2. In the ***Name*** field, type 'ReusedProgram'.

3. In the ***Description*** field, type 'This program was copied from Controller1.ACD. The code and tags will be reused in this project to perform the same function.'

4. Click on ***OK*** to save your changes and close the Program Properties dialog.

Changing the Name of the Main Routine

Change the name of MainRoutine and review the ladder diagram.

1. In the ***Compact_ReusableCode.ACD*** controller file, under ***ReusedProgram***, right click on ***MainRoutine*** and choose ***Properties***.

2. Change the name of MainRoutine to ***ReusedRoutine***.

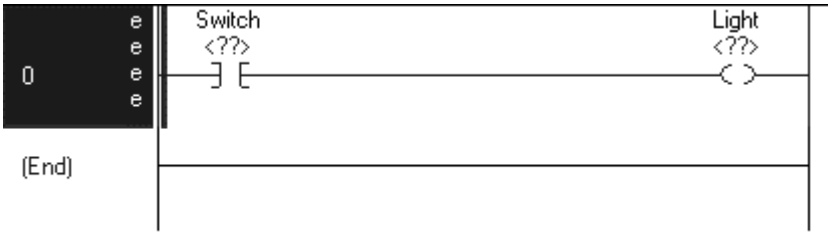
3. Click on ***OK*** to save your changes and close the routine properties dialog.

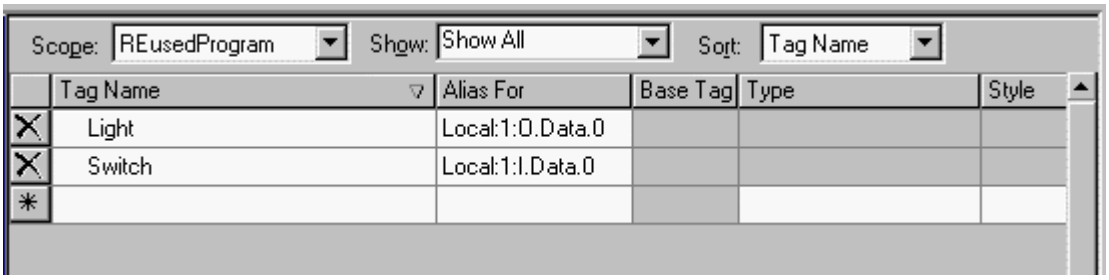
FYI

> You probably noticed that there were two routines named MainRoutine. ControlLogix provides program scoping, which allows routines under different programs to have the same name. Program scoping also allows program tags to have the same name as tags under other programs. The program scoping concept makes it easy to cut and paste code for reuse.

4. Double click on ***ReusedRoutine.***

   The Ladder Editor and ReusedProgram Tags should appear as shown below.



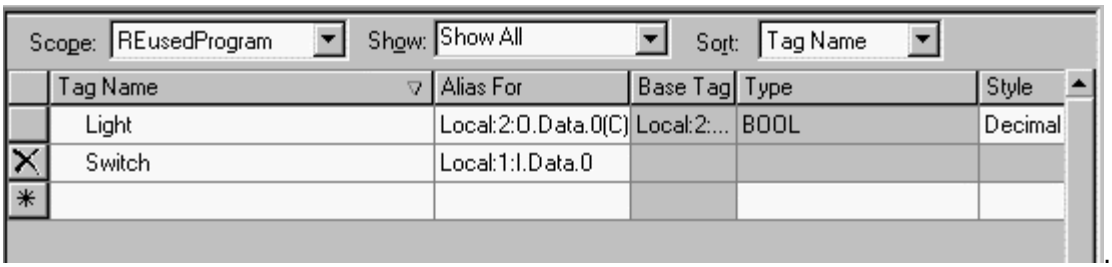


Notice the ***X***s to the left of the tag names. This is because the tag points to an alias that does not exist in this project. You must "re-map" the tag to the I/O configuration in this project.

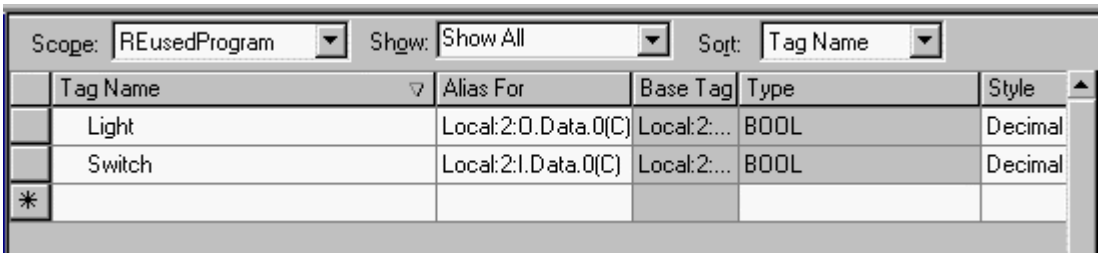
Mapping the Tags

Map the tags to I/O in the ReusableCode controller file.

1. In the ***Compact_ReusableCode.ACD*** controller file, under ***ReusedProgram***, right click on ***Program Tags*** and choose ***Edit Tags***. Re-map Light to bit 0 of the Local:2:O.Data controller-scoped tag as shown below.



2. Next, re-map Switch to bit 0 of the Local:2:I.Data controller-scoped tag. Your Reused Program tag database should now appear as shown below:



Note: The C after the **Alias For** tags above denotes that these tags are controller-scoped tags. This means that these tags can be found under **Controller Tags** in the Controller Organizer. I/O tags are automatically created under **Controller Tags** when I/O modules are configured.

3. Press the ***Enter*** key to accept the Alias For tag once you have changed it.

You have now completed mapping the tags to different I/O points in the new project file. We will now review the steps for reusing existing code.

Reviewing the Steps for Reusing Existing Code

With a few simple steps, the MainProgram from Controller1.ACD has been copied into the Compact_ReusableCode.ACD file and is ready for execution. Let's review the steps for reusing code.

1. The first step required us to cut and paste the Program from one Project to another Project.

   This can also be accomplished by dragging and dropping the program across projects.

   FYI

   > You can copy Tasks, Programs, Routines, Tags, User Defined Types, Modules, Rungs and Instructions to other projects the same way we copied the Program.

2. The second step we renamed the Program and the Routine.

   This is not a required step, we renamed them to emphasize their reuse.

3. The third step we mapped the tags to I/O that already existed in our new project.

   FYI

   > All “Program Tags” get copied with the program. Therefore, since the “switch” and “light” tags were program scoped, the tags were copied over with the program.

4. Close both .ACD files and shut down one session of RSLogix 5000.

   Do not save any changes you have made.

Congratulations! You have now completed the steps for Exercise 4.

Notes:_____

Exercise 5:
Demonstrating Import/Export Capabilities

In this exercise, you will examine, import, and export a controller file to demonstrate the Import/Export capabilities of the CompactLogix system.

Note: This exercise is not a continuation of the previous CompactLogix exercises. It is optional, and is not required to complete the remaining exercises. Follow the steps below to complete Exercise 5. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

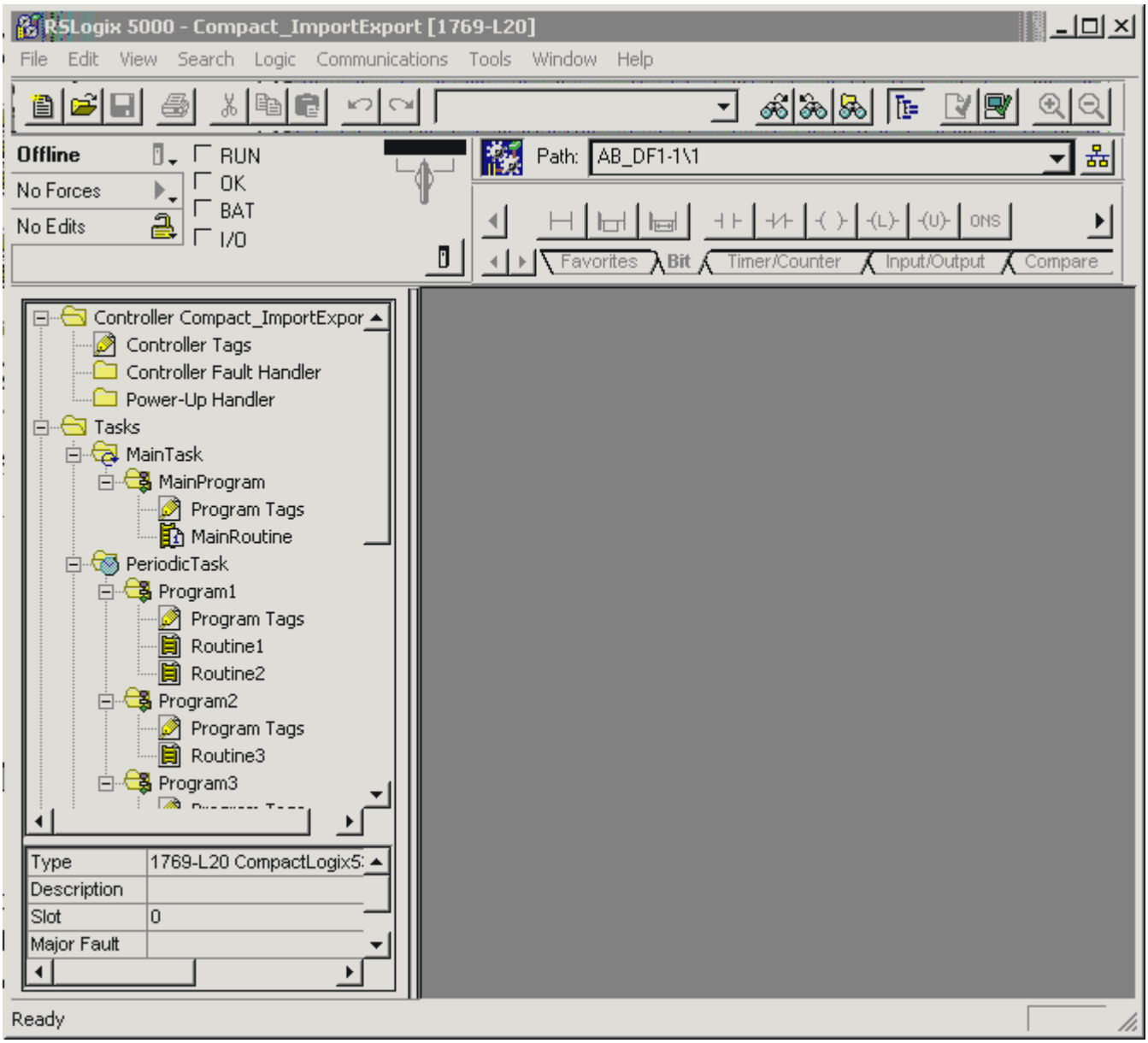
Examining the Controller file

Open the Compact_ImportExport.ACD file.

☐ 1. From the ***File*** menu, choose ***Open*** to open the ***Compact_ImportExport.ACD*** controller file.

You can find this file in the C:\RSLogix 5000\Projects directory.

The Controller Organizer should look like this:



Notice that the controller file contains:

- (1) Continuous Task (MainTask)
- (1) Periodic Task (PeriodicTask)
- (4) Scheduled Programs (MainProgram, Program1, Program2, and Program3)
- (2) Unscheduled Programs (Program4, Program5)
- (1) I/O module
- (1) Logix5320 controller

Exporting the controller file

1. From the ***File*** menu, choose ***Save As***.
2. Click on the ***down arrow*** next to the ***Save As Type*** field and click on ***RSLogix 5000 Import/Export File (*.L5K)*** to change the file format to an Export format.
3. Note the directory you are saving the controller file to and click on ***Save*** to export the controller file.

Reviewing the Export File Format

1. Open Windows Explorer and navigate to the directory to which you exported the controller file.
2. Double click on the ***Compact_ImportExport.L5K*** file to open the export file.

   If the file is not associated with any application, select Notepad to open the file.

   Notice the first few lines tell you what version of RSLogix 5000 exported this file, who the owner is, and when it was exported.

   The second section lists the Controller Name (Compact_ImportExport in this case), the Time Slice, and the Communications path.

   The next section deals with Modules. Notice that each module configured in our controller file is listed. The name identifies the module; other attributes such as the catalog number and the major and minor revision are listed and easy to read.
3. Scroll down in the Export file until you see the section labeled ***Tag*** as shown below. Under this section, notice that all of the tags you created in the controller file and their values are listed.

```
TAG
        IntArray : INT[10] (RADIX := Decimal) := [0,0,0,0,0,0,0,0,0,0];
        Light : BOOL (RADIX := Decimal) := 0;
        LightTimer : TIMER  := [0,10000,0];
        myCounter : COUNTER  := [0,50,0];
        myTime : Time  := [0,0,0];
        Switch : BOOL (RADIX := Decimal) := 0;
END_TAG
```

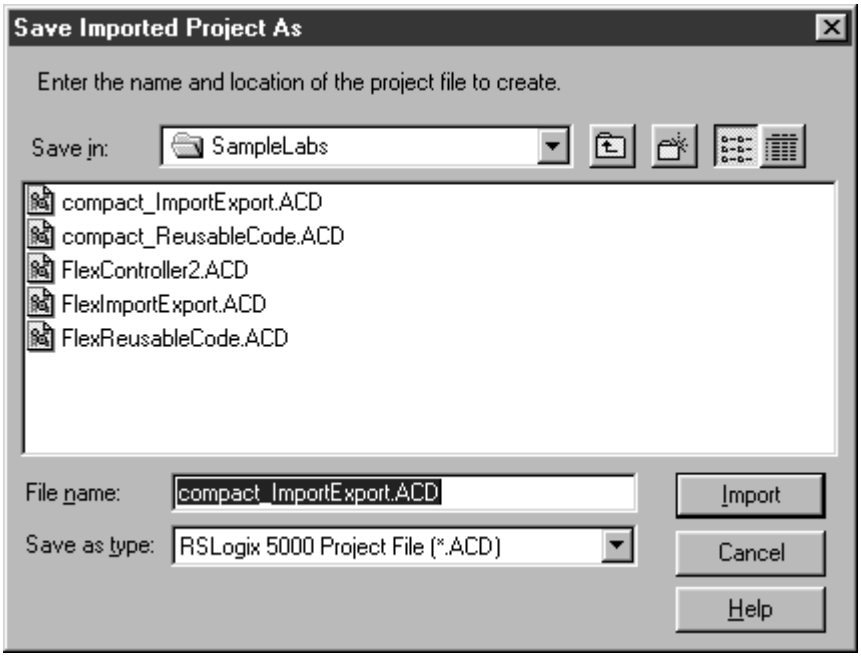
4. Change the values in the ***IntArray*** to ***[0,1,2,3,4,5,6,7,8,9]***.
5. Change the Preset of ***myCounter*** to ***100*** by changing the value field to ***[0,100,0]***.
6. From the ***File*** menu in Notepad, choose ***Save*** to save your changes.
7. Scroll through the remainder of the file.

   Notice the program and routine configuration.
8. From the ***File*** menu, choose ***Exit*** to close the file and Notepad.

Importing the Changed Export File

1. From the ***File*** menu in RSLogix 5000, choose ***Open.***
2. Click on ***Compact_ImportExport.L5K*** and then click on ***Open***.

   The Save Imported Controller File As dialog appears.



3. In the ***File name*** field, type 'myInitials_Compact_ImportExport.ACD' (e.g., PYL_Compact_ImportExport.ACD).
4. Click on ***Import*** to import the file.

Verifying Your Changes in the Imported File

1. From the ***Controller Organizer***, right click on ***Controller Tags*** and choose ***Monitor Tags***.

   The Tag Monitor appears.
2. Click on the **+** sign in front of the ***IntArray*** tag to display the entire array. Verify the values have changed from all zeros to 0-9.
3. Click on the **+** sign in front of the ***myCounter*** tag to display the counter values. Verify the preset has changed from 50 to 100.
4. ***Close*** your ACD file without saving changes.

Congratulations! You have now completed the steps for Exercise 5.

Notes:_____

Exercise 6:
Configuring and Testing 1769 I/O Modules

Follow the steps below to complete Exercise 6. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

Verifying I/O Layout by Adding Total Words of Backplane Memory Used

Each module in a CompactLogix system uses a set amount of backplane memory, in addition to the data that the module stores or transfers. Some modules require a considerable amount of backplane memory. Take this into account when designing your system because it affects how many modules a controller can support.

Each CompactLogix controller supports 256, 16-bit words of backplane data. This table shows how many backplane words each module uses.

Catalog Number:	Number of Modules:	Number of words used:	Calculated number of words:
1769-IA8I		8	
1769-IA16		8	
1769-IM12		8	
1769-IQ16		8	
1769-IQ6XOW4		12	
1769-OA8		12	
1769-OA16		12	
1769-OB16		12	
1769-OB16P		12	
1769-OV16		12	
1769-OW8		12	
1769-OW8I		12	
1769-OW16		12	
1769-IF4		14	
1769-OF2		14	
1769-IF4XOF2		20	
1769-IR6		14	
1769-IT6		16	
1769-HSC		187 (35 words input, 34 words output, 118 words configuration)	
1769-SDN		66 plus total words in scanlist	
system overhead (per controller)		34	34
		Total Words Required:[1]	

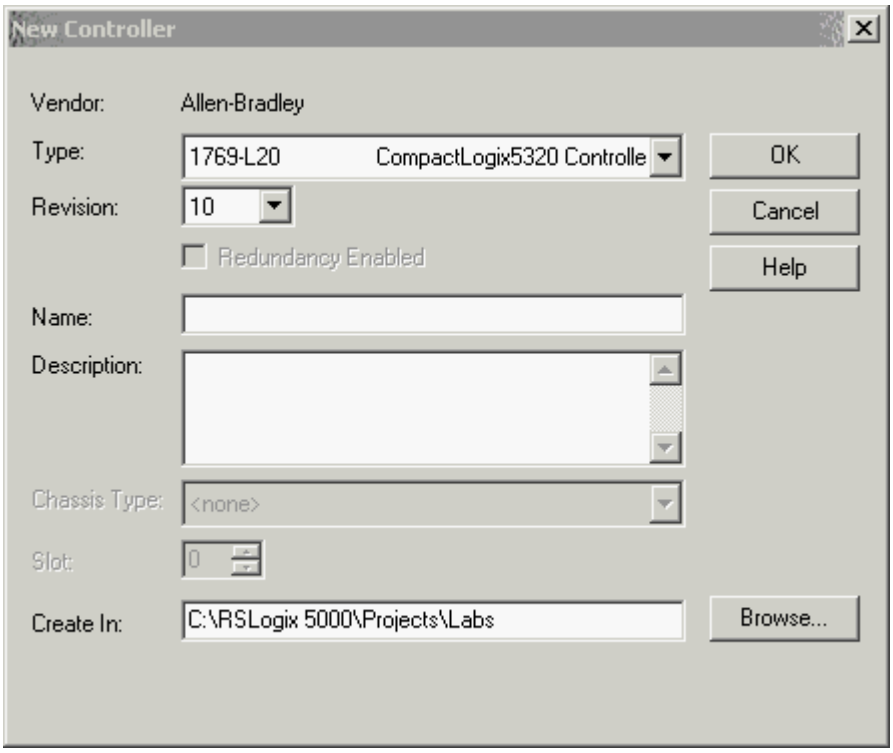
Creating a New Controller File and Saving It

In order to configure a 1769 I/O module for a CompactLogix, you must create a new controller file to be used in this exercise. Save it under any name you like.

1. In RSLogix 5000, from the ***File*** menu choose ***New***.

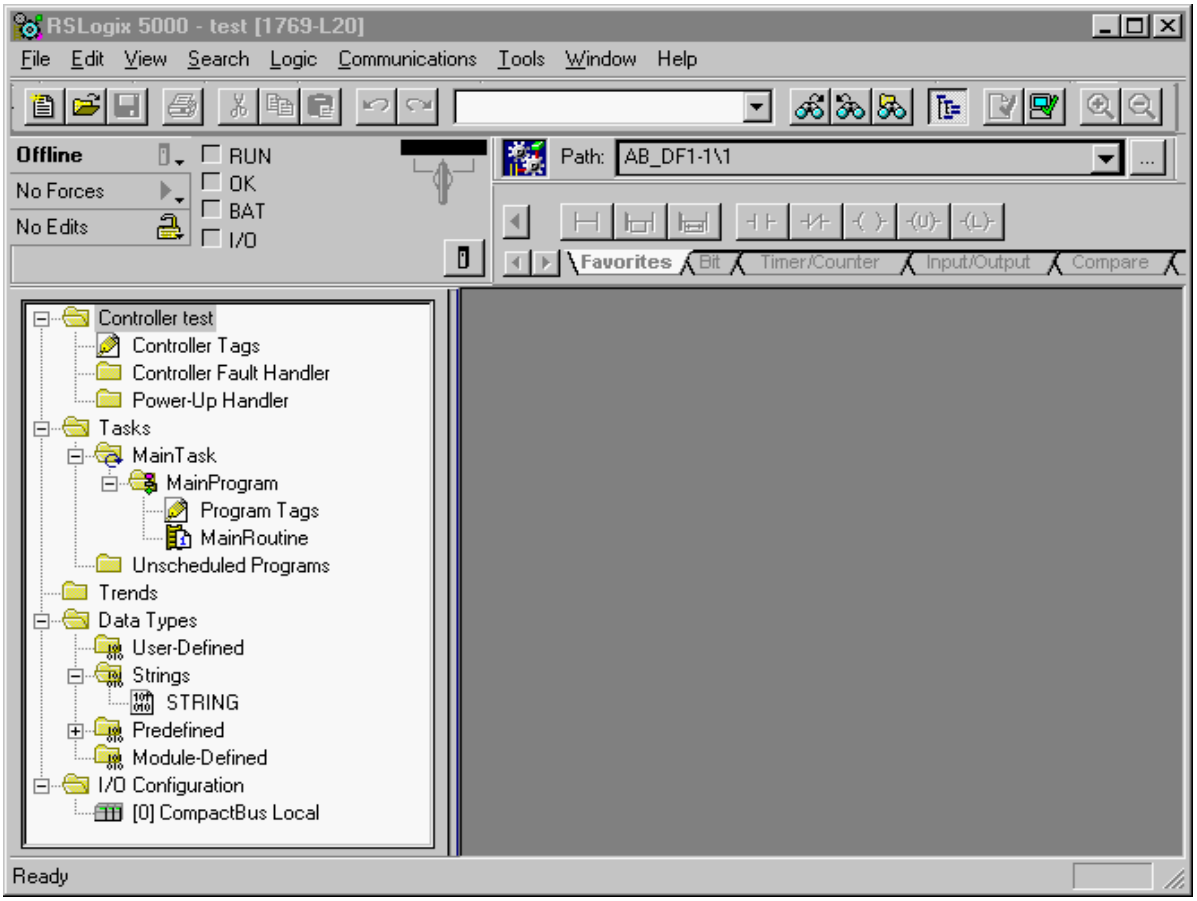
   The New Controller dialog appears.

[1] The total words required cannot exceed 256 words.



2. Choose the ***1769-L20 CompactLogix 5320 Controller*** from the ***Type*** pull-down menu and give this project a name called,“test”.
3. Make sure to create this project in the directory shown above.
4. Click on ***OK***.

The following screen appears:

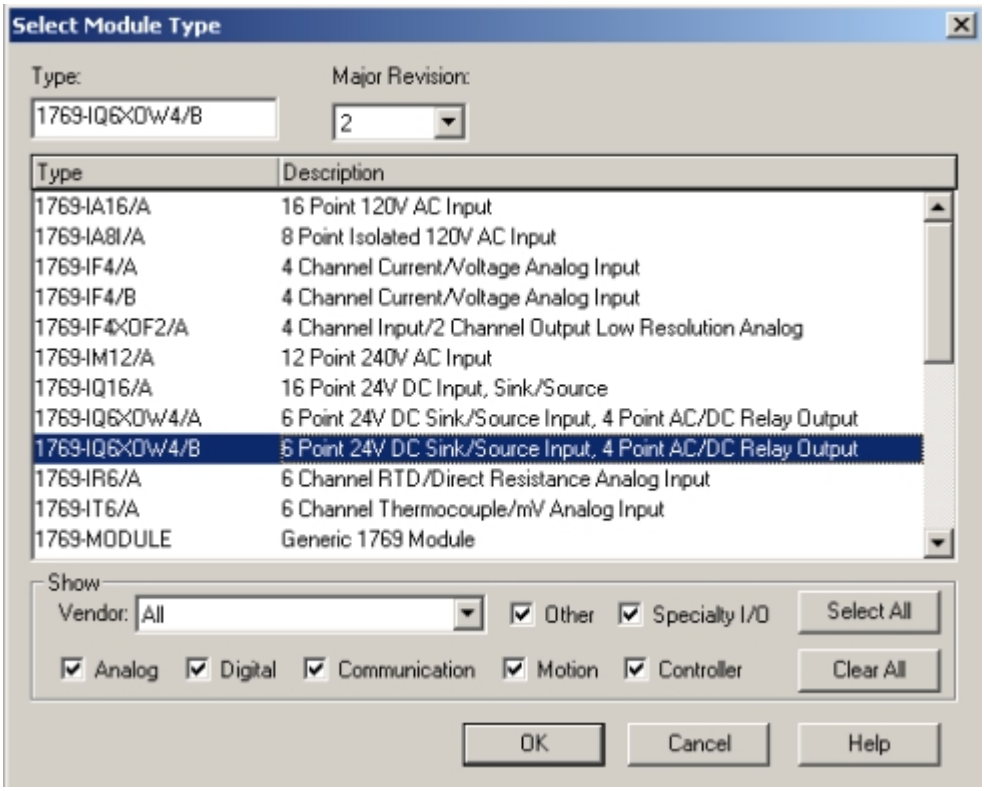


Reviewing the CompactBus Local Properties

Review the properties of the CompactBus Local. The last entry in the Controller Organizer on the left of the screen shown above is a line labeled “[0] CompactBus Local”.

1. From the ***Controller Organizer***, under the ***I/O Configuration*** folder right click on ***CompactBus Local*** and choose ***New Module***.

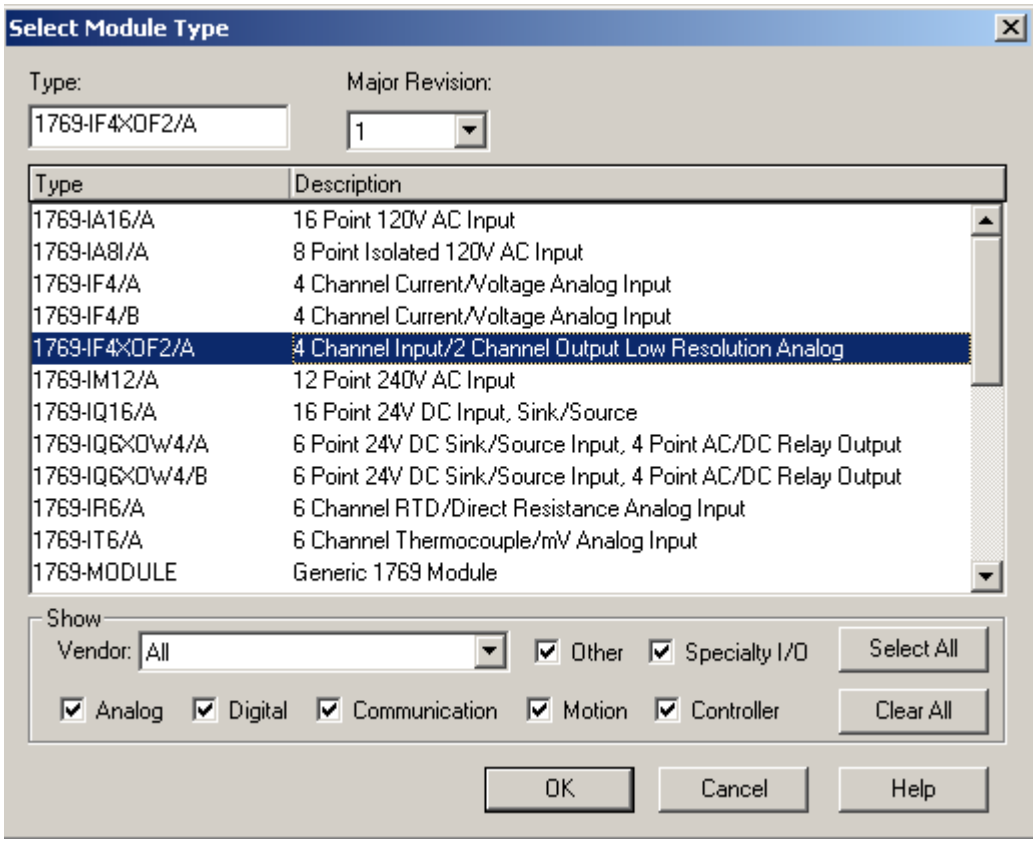
The Select Module Type dialog appears.



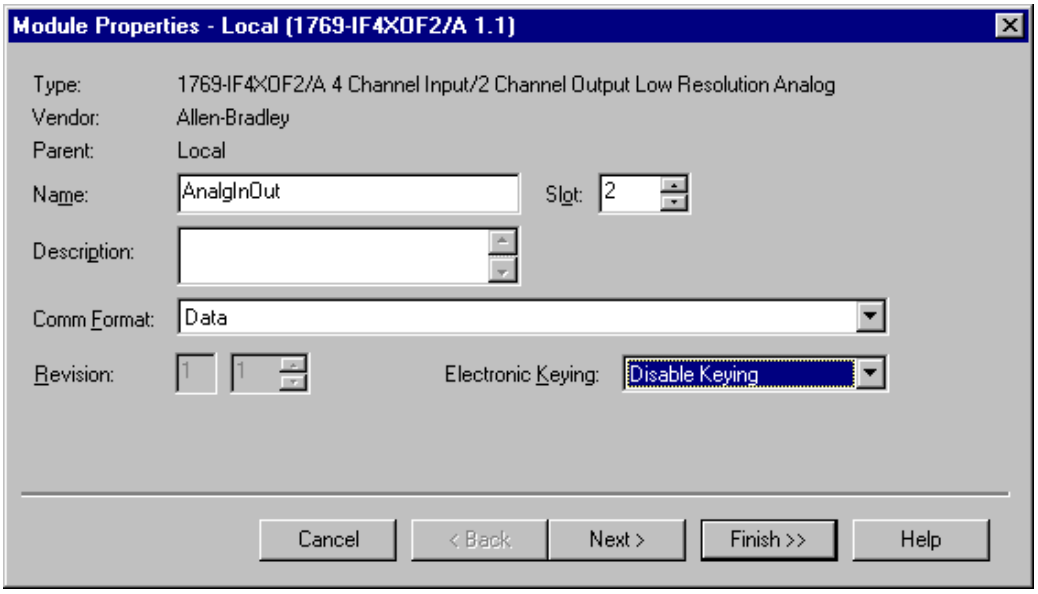
This screen is used to narrow your search for I/O modules to configure into your system.

☐ 2. Now configure the ***1769-IQ6XOW4/B*** in slot 1 just as you did in Exercise 1.

☐ 3. Now configure the ***1769-IF4XOF2.*** Choose ***1769-IF4XOF2*** and click on ***OK***.



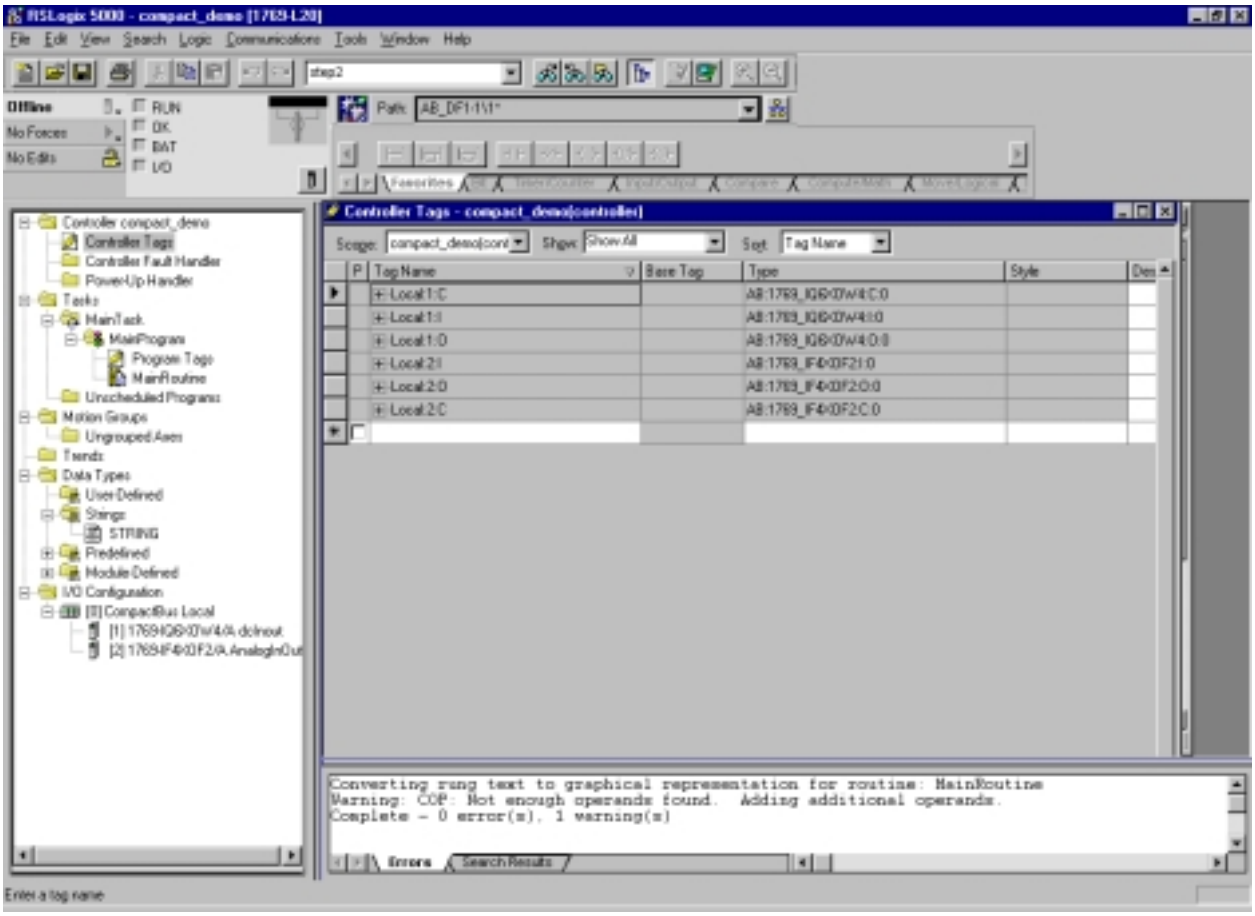
The module properties dialog box appears. Configure the module as shown below and then click ***Finish***.



Note: the 1769-IF2XOF2 is a combo Analog providing 4 channels of analog input and 2 channels of analog output.

Configuring I/O Module

Once you have configured the I/O modules in your CompactLogix demo box, your Controller Tags screen will look like the following:



Tag addresses are automatically created for configured I/O modules. All local I/O addresses are preceded by the word Local. These addresses have the following format:

- Input Data: Local:*s*:I
- Output Data: Local:*s*:O
- Configuration Data: Local:*s*:C

Where *s* is the slot number you assigned to the I/O module.

In order to configure an I/O module, you must open the configuration tag for that module by clicking on the plus sign to the left of its configuration tag in the tag database.

Configuring a 1769 Discrete Combo Module

Discrete output modules are not configurable at this time. It is intended that discrete output modules will support Hold Last State and User Defined Safe State features in a future release of controller firmware. At that time, these modules will be configurable. This configuration will be optional for discrete output modules and will be utilized only if the user requires certain outputs to be left or turned on if the controller faults or is placed into the program mode. At this time, the 1769-IQ6XOW4 module as well as all other 1769 discrete output modules in a CompactLogix system are not configurable and therefore all outputs are turned off if the controller faults or is placed into the program mode.

Configuring a 1769-IF4XOF2 Analog Input Module

Configure the 1769-IF4XOF2 analog input module.

1. To configure the 1769-IF4XOF2 module in slot 2, click on the plus sign left of Local:2:C in the Controller Tags database, then refer to the sections below for specific configuration data.

Configuration data is entered for input channel 0 under the Local:2:C.Config0 tag. The (2) configuration words apply to the input and output channels respectively. The (2) configuration words are all identical, except that the input word contains (2) more entries the two extra input analog channels.

Channel Enable Bit:

Tags Local:2:C.Ch0inputEn through Local:2:C.Ch3InputEn are the enable bits for each of the four analog input channels. By default, all channels are disabled. To enable Channel 0 for example, enter a 1 in tag Local:2:C.Ch0inputEn. Unused channels should be left disabled.

- Enable Analog Input Channel 0 by entering a 1 in tag **Local:2:C.Ch0inputEn**.
- Enable Analog Input Channel 1 by entering a 1 in tag **Local:2:C.Ch1inputEn**.
- Enable Analog Input Channel 2 by entering a 1 in tag **Local:2:C.Ch2inputEn**.
- Enable Analog Input Channel 3 by entering a 1 in tag **Local:2:C.Ch3inputEn**.
- Enable Analog Output Channel 0 by entering a 1 in tag **Local:2:C.Ch0OutputEn**.
- Enable Analog Output Channel 0 by entering a 1 in tag **Local:2:C.Ch1OutputEn**.

Channel Configuration Bits Specific to Outputs:

The following describes the configuration options for the analog output channels and shows the bit values for each possible selection. Make your choices and enter them into the proper tag fields as described above.

Word 1 (Local:2:C.Config0) and word 2 (Local:2:C.Config1) have configurations that are specific to each analog output channel. A brief outline of each field is listed below:

Local:2:C.Config0

Local:2:C.Ch0ProgToFaultEn	Program to fault enable bit for output channel 0
Local:2:C.Ch0ProgMode	Program mode selection bit for output channel 0
Local:2:C.Ch0FaultMode	Fault mode selection bit for output channel 0

Local:2:C.Config1

Local:2:C.Ch1ProgToFaultEn	Program to fault enable bit for output channel 1
Local:2:C.Ch1ProgMode	Program mode selection bit for output channel 1
Local:2:C.Ch1FaultMode	Fault mode selection bit for output channel 1

Description for each of the parameters follows:

- **Local:2:C.Ch0ProgToFaultEn and Local:2:C.Ch1ProgToFaultEn:** These are the Program To Fault Enable Bits for output channels 1 and 2. If the CompactLogix controller is in Program Mode and a fault occurs, this bit determines whether the Program or Fault Mode value is applied to the output. If the bit is set to a 1, the module applies the Fault Mode data value to the output. If the bit is a 0, the module applies the Program Mode data value to the output.
- **Local:2:c.Ch0ProgMode and Local:2:c.Ch1ProgMode:** These are the Program Mode selection bits for output channels 1 and 2. If the CompactLogix controller is placed into the Program Mode, this selection determines the state of the analog outputs. If this bit is a 0, the module holds the output in its Last State. For analog output modules, this is the default. If this bit is a 1, the module applies the channel's Program Values (specified in Tags **Local:2:C.CH0ProgValue** and **Local:2:C.CH1ProgValue**) to the appropriate outputs.
- **Local:2:c.Ch0FaultMode and Local:2:c.Ch1FaultMode:** These are the Fault Mode selection bits for output channels 1 and 2. If the CompactLogix controller faults, this selection determines the state of the analog outputs. If this bit is a 0, the module holds the output in its Last State. If this bit is a 1, the module applies the channel's Fault Values (specified in Tags **Local:2:C.CH0FaultValue** and **Local:2:C.CH1FaultValue**) to the appropriate outputs.

Program/Fault Value:

The Program/Fault Value words are tags **Local:2:C.CH0FaultValue** and **Local:2:C.CH1FaultValue**. In these two words, you specify the value each output will assume, when the controller is faulted. The allowable values are dependent upon the range selected in the range selection field. If the value entered by the user is outside the normal operating range for the output range selected, the module generates a configuration error. The default value is 0.

☐ To use this option enter a value of 1 into the tags for Local:2:C.Ch0FaultMode for channel 0 and Local:2:C.Ch1FaultMode for channel 1.

Program/Idle Value:

The Program/Idle Value words are tags **Local:2:C.CH0ProgValue** and **Local:2:C.CH1ProgValue**. In these two words, you specify the value each output will assume, when the controller is placed into the Program mode. The allowable values are dependent upon the range selected in the range selection field. If the value entered by the user is outside the normal operating range for the output range selected, the module generates a configuration error. The default value is 0.

☐ To use this option enter a value of 1 into the tags for Local:2:C.Ch0ProgMode for channel 0 and Local:2:C.Ch1ProgMode for channel 1.

Testing Your Analog I/O Configuration

☐ 1. Double click on the ***MainRoutine*** in your project.

☐ 2. Enter a ***Copy*** instruction on rung 0 with the following configuration:

☐ 3. ***Save*** your project and ***download*** to the CompactLogix controller.

☐ 4. When prompted, go into ***Remote Run*** mode.

To test, you need to hook up some type of analog input device to input channel 0 of the analog module and some type of analog output device output channel 0 of the analog module. You may want to setup a 0–5volt potentiometer circuit to the analog input channel 0 and a 0 – 5 volt needle meter to the analog output channel 0.

☐ 5. Test your configuration by turning the potentiometer and watching the meter sweep from 0-5V.

Congratulations! You have now completed the steps for Exercise 6.

Exercise 7:
Using the Online Manuals and Help Features

In this exercise, you will learn about Online Manuals and Online Help features of the RSLogix 5000 software.

Note: This exercise is not a continuation of the previous exercises. It is optional, and is not required to complete the remaining exercises. Follow the steps below to complete Exercise 8. **Place a checkmark in the square next to each step as you complete it.** This will help you keep your place as you work through the steps.

Accessing the Online Manuals

Follow these steps to access the product documentation that is included with your RSLogix 5000 software.

☐ 1. From the ***Help*** menu, choose ***Online Books > Getting Results Guide***.

The Adobe Acrobat Reader is launched, and the .pdf file for the RSLogix 5000 Getting Results Guide opens.

☐ 2. See if you can find the section of the manual entitled Quick Start Steps.

☐ 3. List the 8 Quick Start Steps, as outlined in the Getting Results Guide.

1._____

2._____

3._____

4._____

5._____

6._____

7._____

8._____

☐ 4. Close the Getting Results Guide and choose another manual from the Online Books menu.

Explore this manual and the other online manuals to familiarize yourself with the online documentation that is available to you.

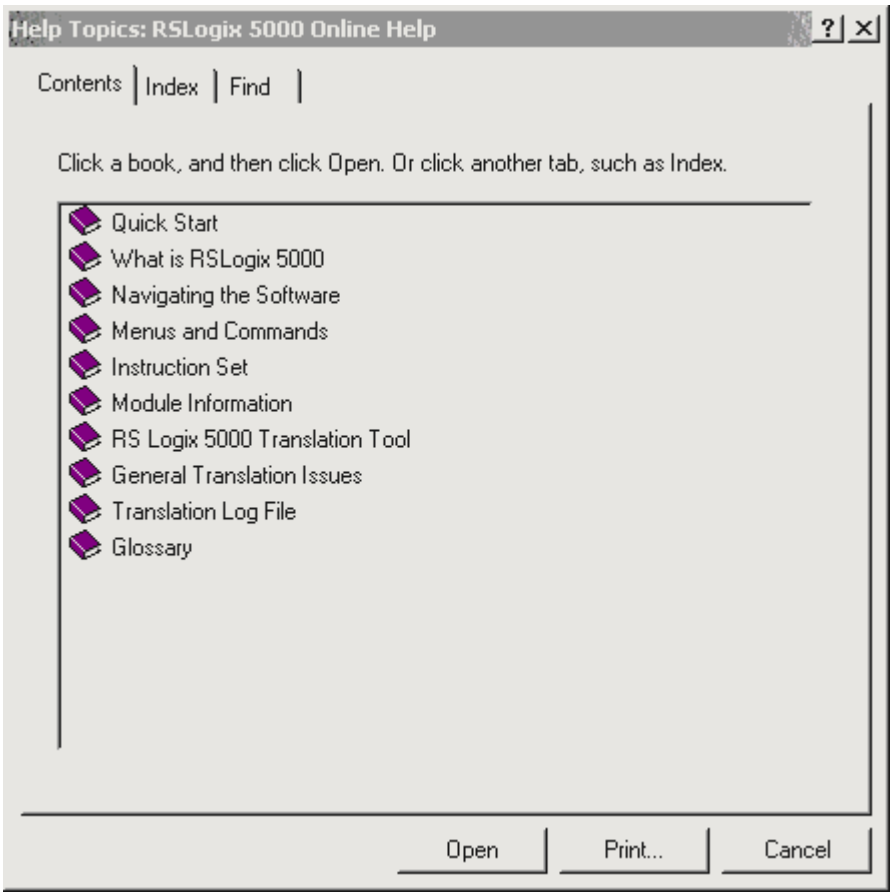
☐ 5. Once you have taken some time to look through the online manuals, you can close the Adobe Acrobat Reader.

Using Online Help

Follow these steps to use the Online Help system that is included with your RSLogix 5000 software.

1. From the ***Help*** menu, choose ***Contents***.

   The RSLogix 5000 Help window appears.



   From this window, you can quickly find information contained within a number of "books," including:

   - Release Notes to provide you with the latest information about this release
   - Quick Start steps to help you quickly get up and running with the software
   - Basic information on what RSLogix 5000 is and helpful tips to help you find your way around the software
   - Menu and command information that will help you to learn the different menu options
   - Instruction set reference material
   - Module creation and configuration information
   - Help on the RSLogix 5000 Translation Tool utility
   - A Glossary of terms that are used in ControlLogix and with RSLogix 5000 software

2. Click on the ***Index*** tab.

   From this tab, you can look up specific items you want help on, just as you would use the index of a book.

   For instance, see if you can find information on configuring a routine.

3. Click on the ***Find*** tab.

   From this tab, you can search to see if a specific word or phrase exists anywhere within the help system. This tab is particularly useful when you're not sure of the exact terminology under which something might be indexed, but you know some of the related words or phrases.

4. For example, type in the word 'Alarms.'

   A list of topics containing the word Alarms appears at the bottom of the Find tab. Look through the list to see the types of information available.

5. Click on ***Cancel*** to close the RSLogix 5000 Help window.

Congratulations! You have now completed the steps for Exercise 8.

Notes:_____

How Are We Doing?

Your comments on our technical publications will help us serve you better in the future. Thank you for taking the time to provide us feedback.

You can complete this form and mail it back to us, visit us online at www.ab.com/manuals, or email us at RADocumentComments@ra.rockwell.com

Pub. Title/Type CompactLogix Controller Quick Start

Cat. No. 1769-STRT2 Pub. No. 1769-QS001B-EN-P Pub. Date September 2002 Part No. 957707-79

Please complete the sections below. Where applicable, rank the feature (1=needs improvement, 2=satisfactory, and 3=outstanding).

Overall Usefulness	1 2 3	How can we make this publication more useful for you?
Completeness (all necessary information is provided)	1 2 3	Can we add more information to help you? ☐ procedure/step ☐ illustration ☐ feature ☐ example ☐ guideline ☐ other ☐ explanation ☐ definition
Technical Accuracy (all provided information is correct)	1 2 3	Can we be more accurate? ☐ text ☐ illustration
Clarity (all provided information is easy to understand)	1 2 3	How can we make things clearer?
Other Comments		You can add additional comments on the back of this form.

Your Name _____ Location/Phone _____

Your Title/Function _____ Would you like us to contact you regarding your comments?

___No, there is no need to contact me

___Yes, please call me

___Yes, please email me at _____

___Yes, please contact me via _____

Return this form to: Allen-Bradley Marketing Communications, 1 Allen-Bradley Dr., Mayfield Hts., OH 44124-9705

Phone: 440-646-3176 Fax: 440-646-3525 Email: RADocumentComments@ra.rockwell.com

PLEASE FASTEN HERE (DO NOT STAPLE)

Other Comments

PLEASE FOLD HERE

PLEASE REMOVE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 18235 CLEVELAND OH

POSTAGE WILL BE PAID BY THE ADDRESSEE

Allen-Bradley
RELIANCE ELECTRIC
DODGE
ROCKWELL SOFTWARE
Rockwell Automation

1 ALLEN-BRADLEY DR
MAYFIELD HEIGHTS OH 44124-9705

Reach us now at www.rockwellautomation.com

Wherever you need us, Rockwell Automation brings together leading brands in industrial automation including Allen-Bradley controls, Reliance Electric power transmission products, Dodge mechanical power transmission components, and Rockwell Software. Rockwell Automation's unique, flexible approach to helping customers achieve a competitive advantage is supported by thousands of authorized partners, distributors and system integrators around the world.

Americas Headquarters, 1201 South Second Street, Milwaukee, WI 53204, USA, Tel: (1) 414 382-2000, Fax: (1) 414 382-4444
European Headquarters SA/NV, avenue Herrmann Debroux, 46, 1160 Brussels, Belgium, Tel: (32) 2 663 06 00, Fax: (32) 2 663 06 40
Asia Pacific Headquarters, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication 1769-QS001B-EN-P - September 2002
PN 957707-79
Supersedes 1769-QS001A-EN-P - February 2002