Using the DeviceMaster UP with Ethernet/IP to Load and Test the Loopback Plug Sample Code

This document will walk you through the complete process of setting up and testing the DeviceMaster UP running Ethernet/IP firwmare version 4.10. This guide is written using a ComtrolLogix 5550 PLC running version 15 with a DeviceMaster UP 1 port running Ethernet/IP version 4.10 firmware.

This guide is designed to set up a very basic configuration and test data written from the PLC to the DeviceMaster, from the DeviceMaster to the Loopback Plug, from the Loopback Plug back into the DeviceMaster, from the DeviceMaster back to the tag file in the PLC.

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Section 3 Trouble Shooting and Support Assistance

The IP addresses used in this document will start by showing a default IP address which will then be modified to show the IP address of my devices. My PLC is 192.168.2.40. My DeviceMaster UP is 192.168.2.11

Use the loopbackExampleTagWrite.L5K file imported into the PLC.

See pages 16 and 17 of the Quick Start Guide to configure the write aspects at
ftp://ftp.comtrol.com/dev_mstr/up/software/ethernetip/docs/ethernet_ip_quickstart.pdf
If you are not doing writes, these pages can be ignored.
In this document we will not be changing the data that is written, but will allow the program to continuously write the same data to the DeviceMaster which will resend the same data back to the PLC.

Version 1.0

Import Sample File

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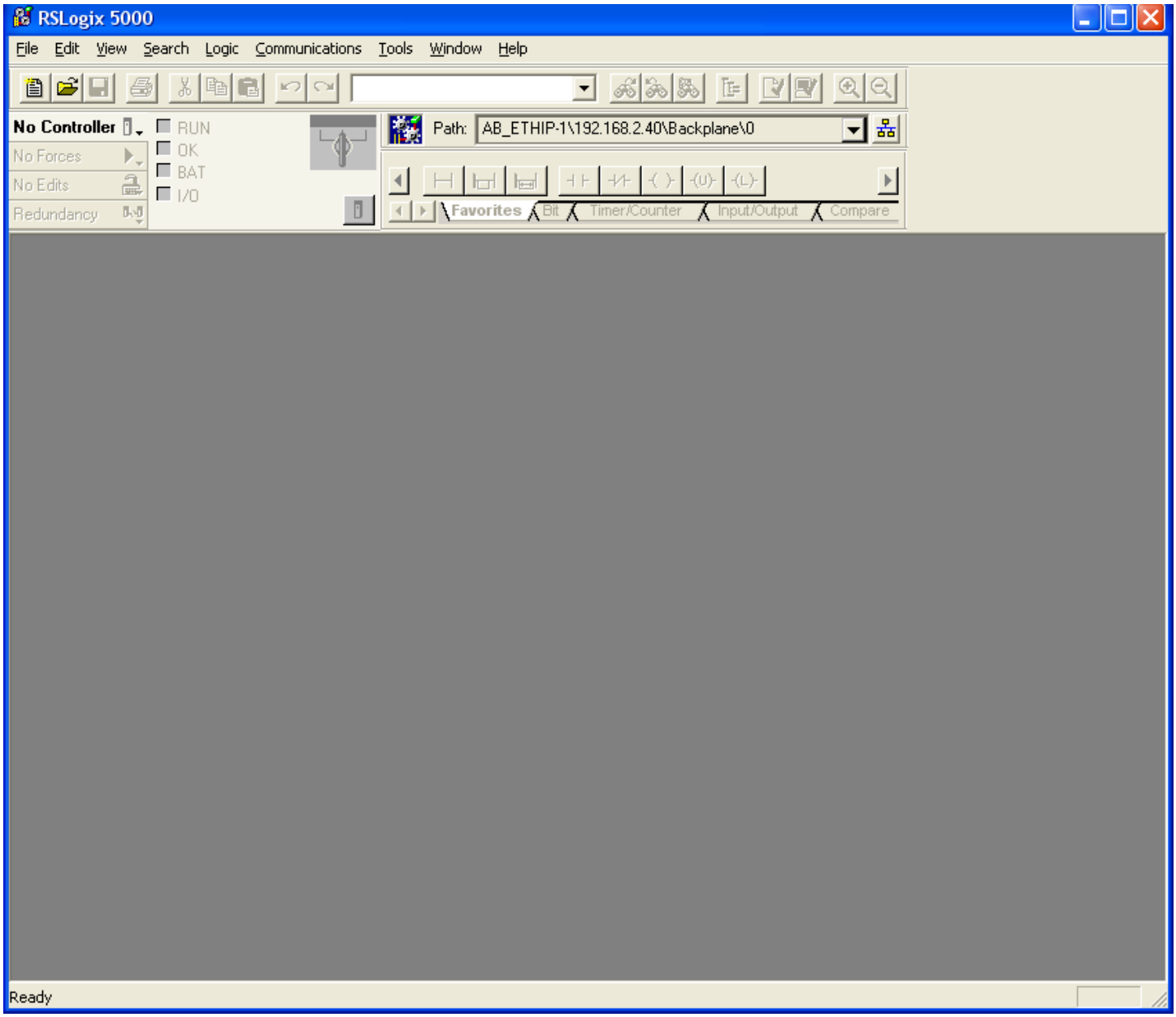
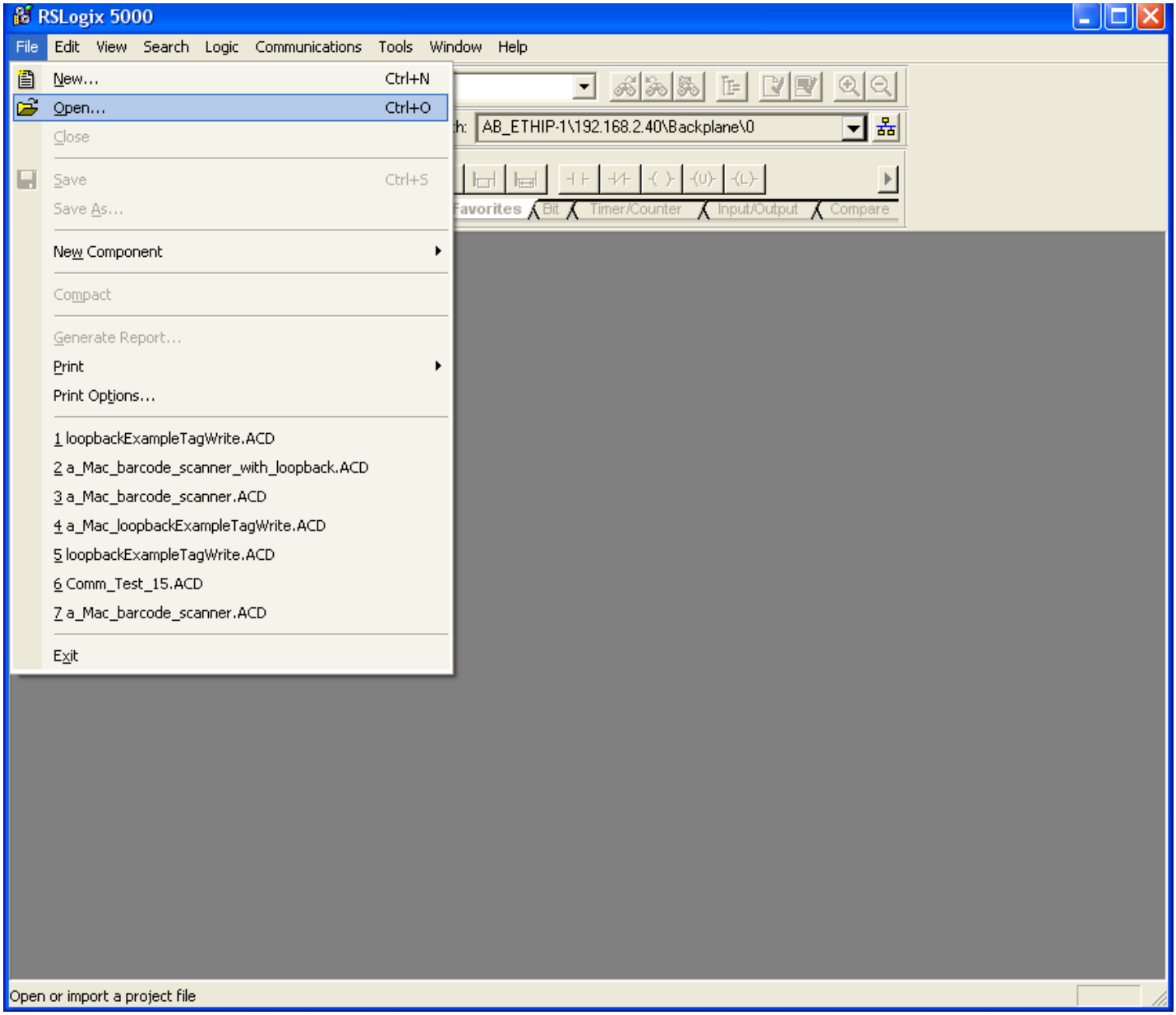
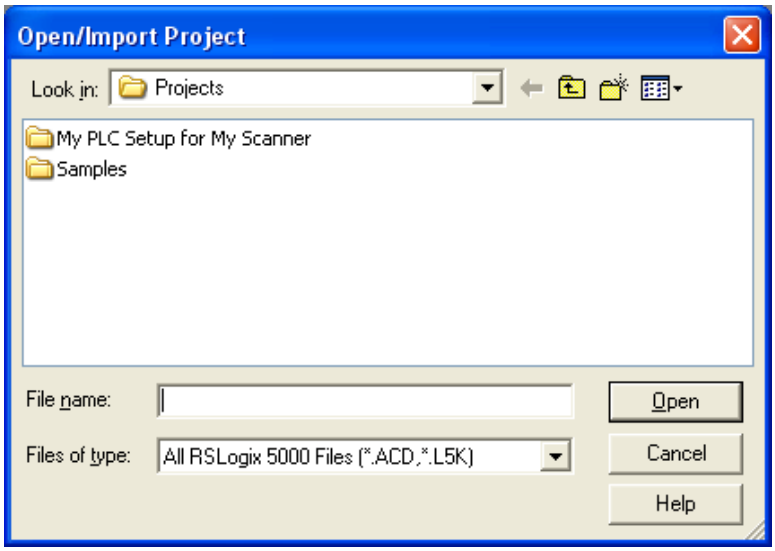
Start by importing the loopbackExampleTagWrite.L5K at:
C:\comtrol\EtherNetIP\Examples\loopbackExampleTagWrite.L5K



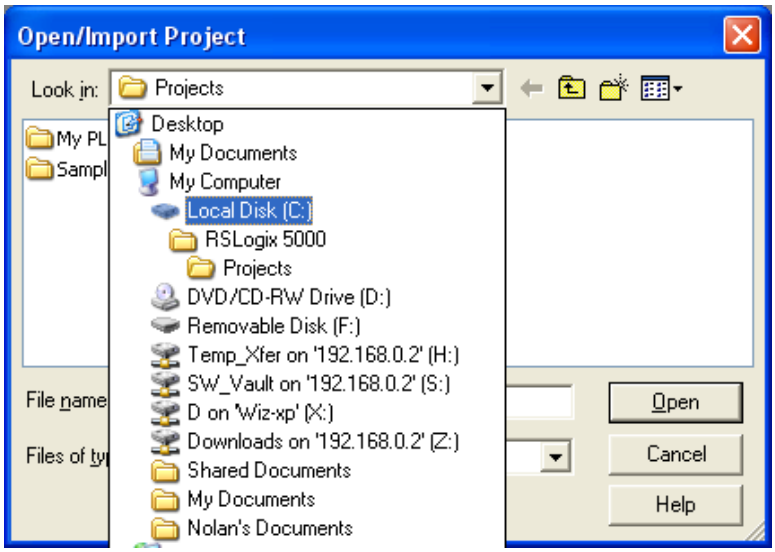
Open RSLogix5000

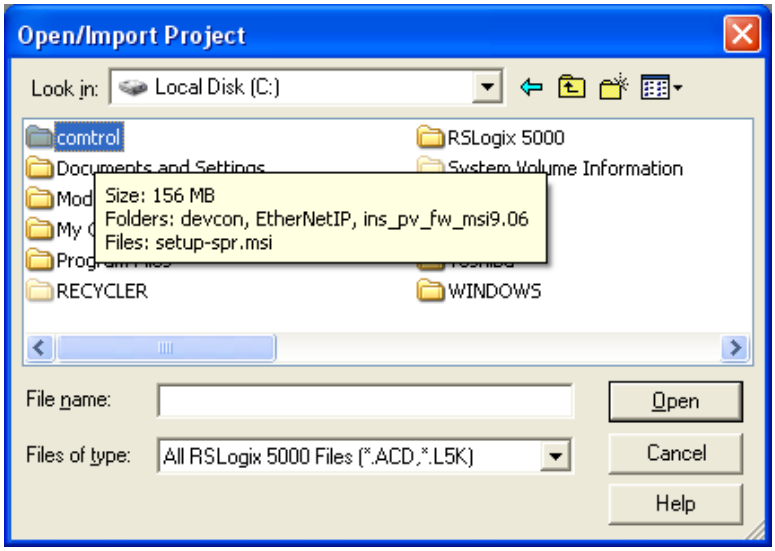


Click the “File” drop down menu and select Open



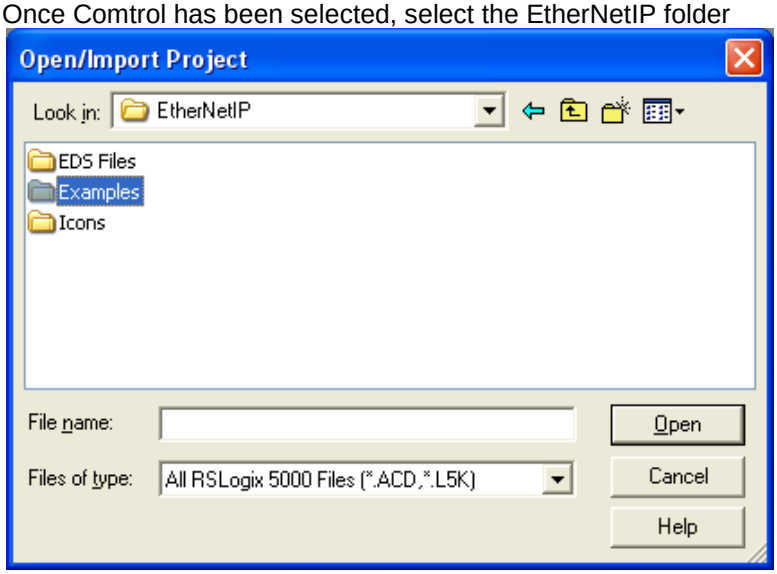
Click the drop down arrow to browse.
Path to C:\comtrol\EtherNetIP\Examples\loopbackExampleTagWrite.L5K





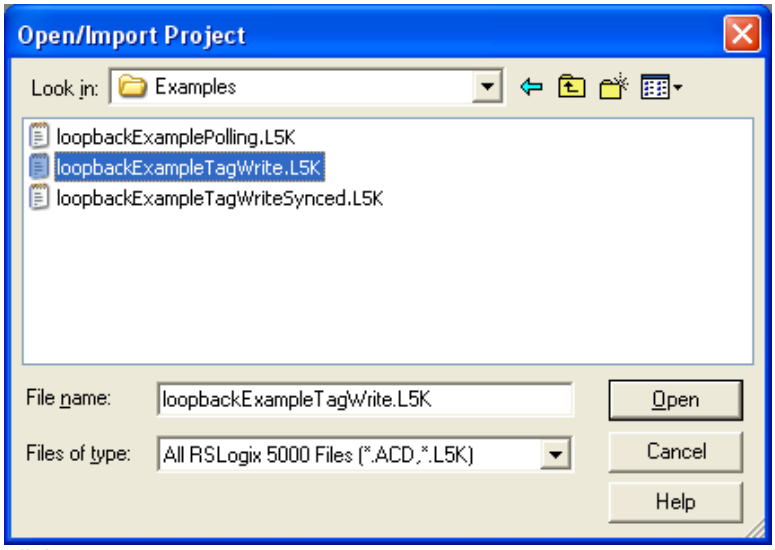
Highlight Comtrol and press Open.

Once Comtrol has been selected, select the EtherNetIP folder

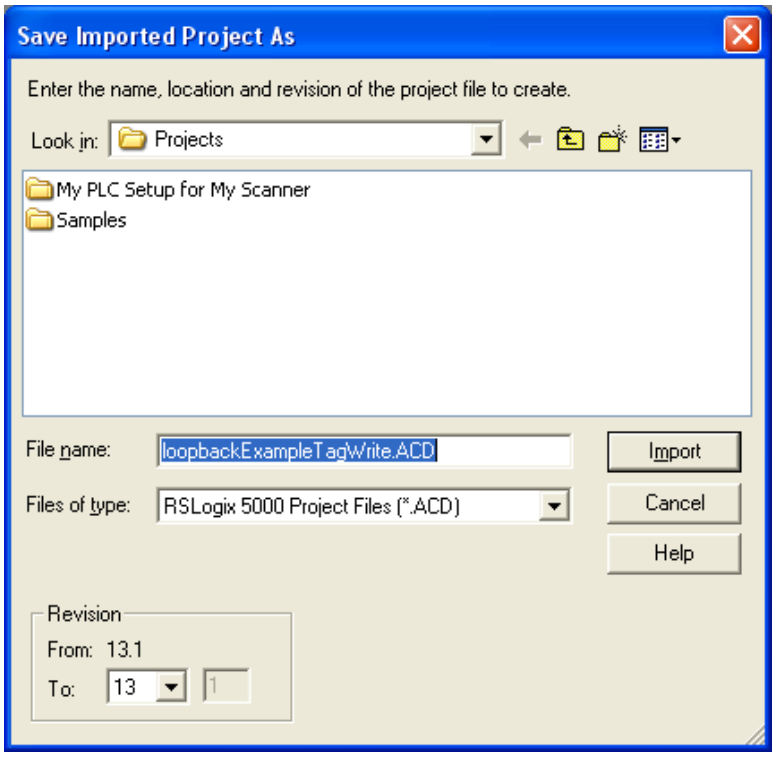


In the EtherNetIP folder select Examples and click Open

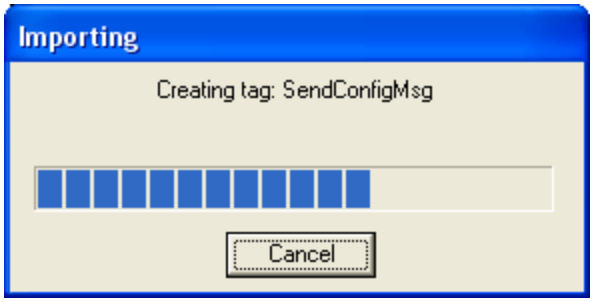
Select the loopbackExampleTagWrite.L5K file



Click on Open



Click on Import



Wait for the process to complete.

Configure I/O Controller

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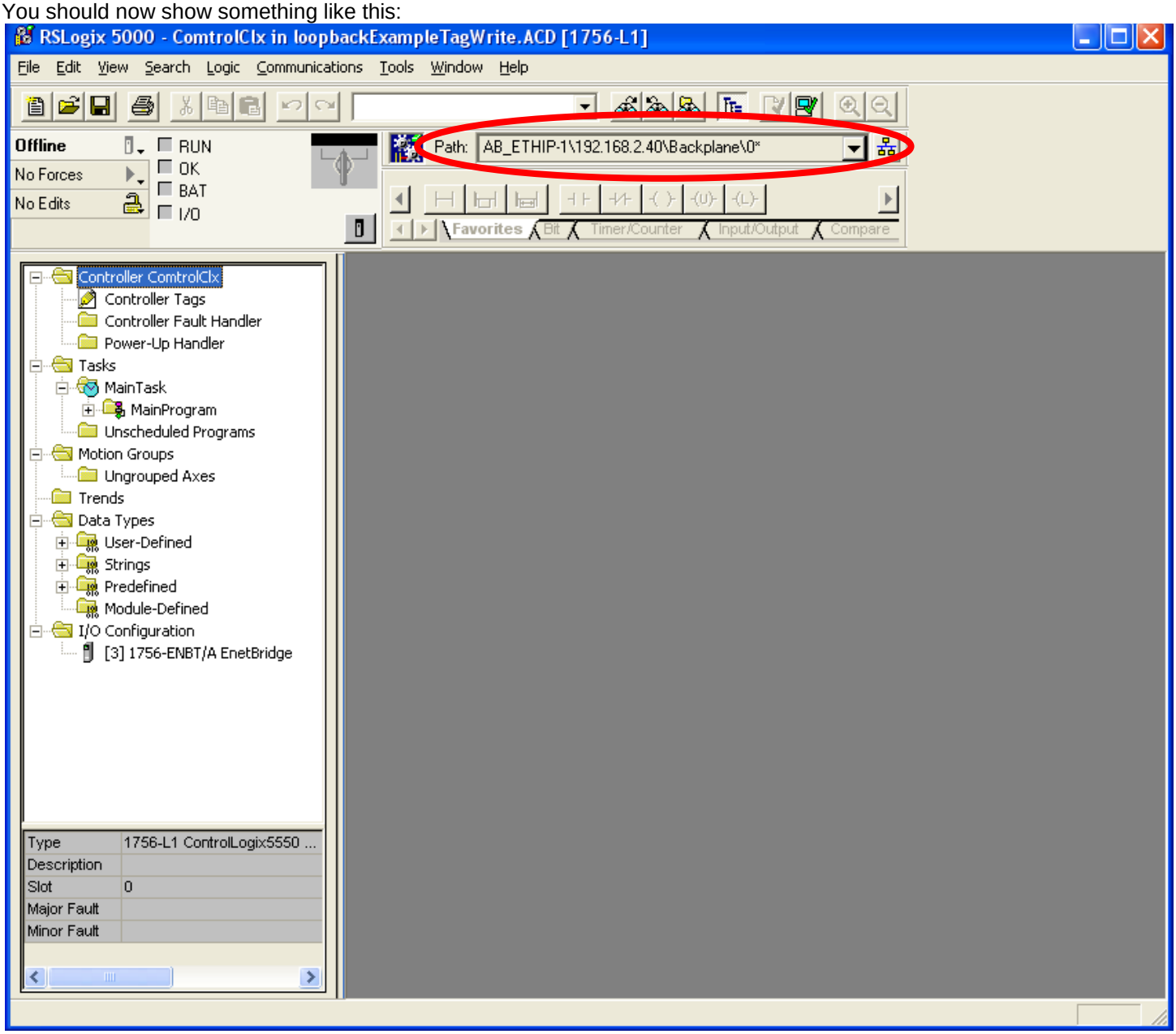
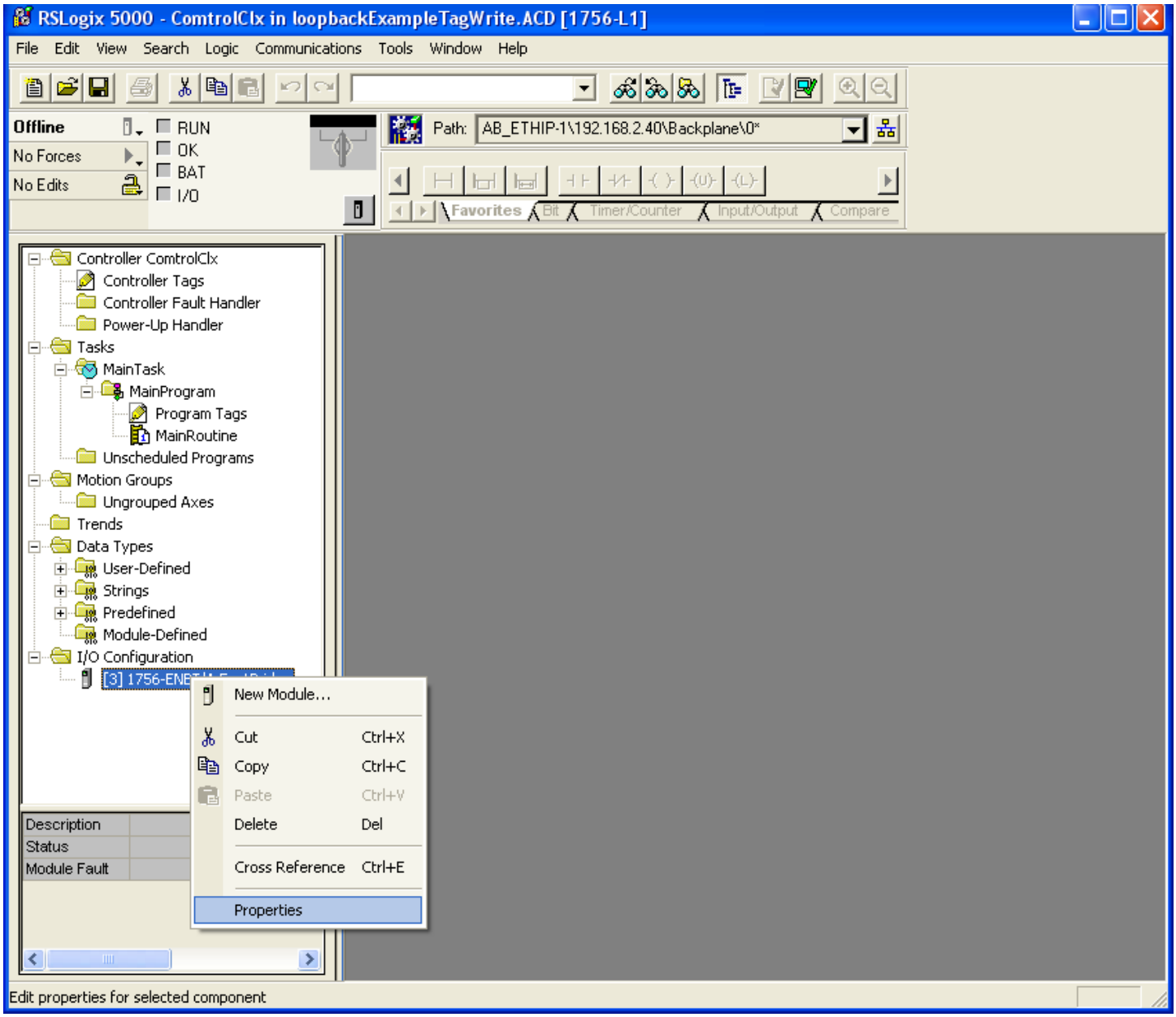
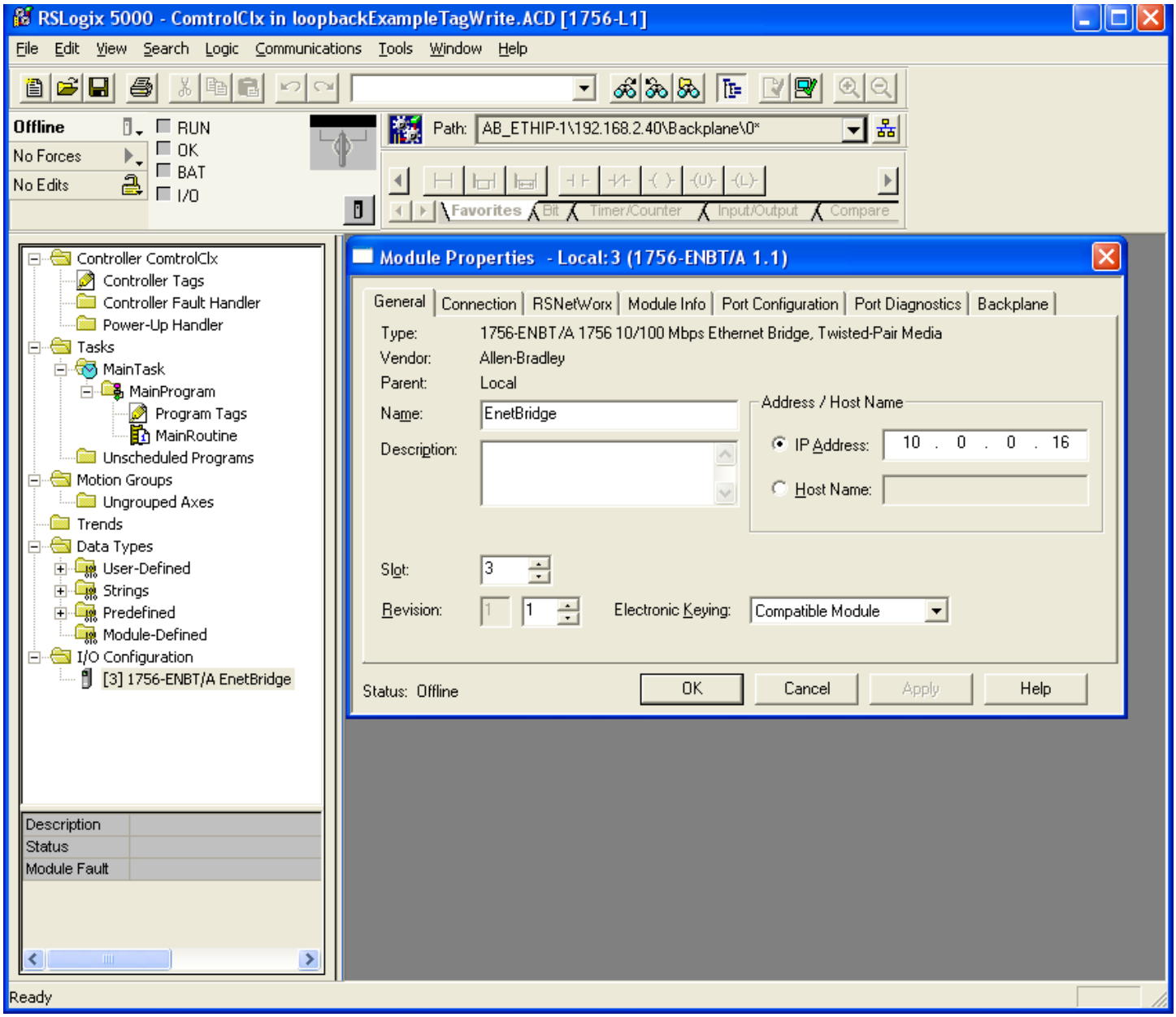
You should now show something like this:



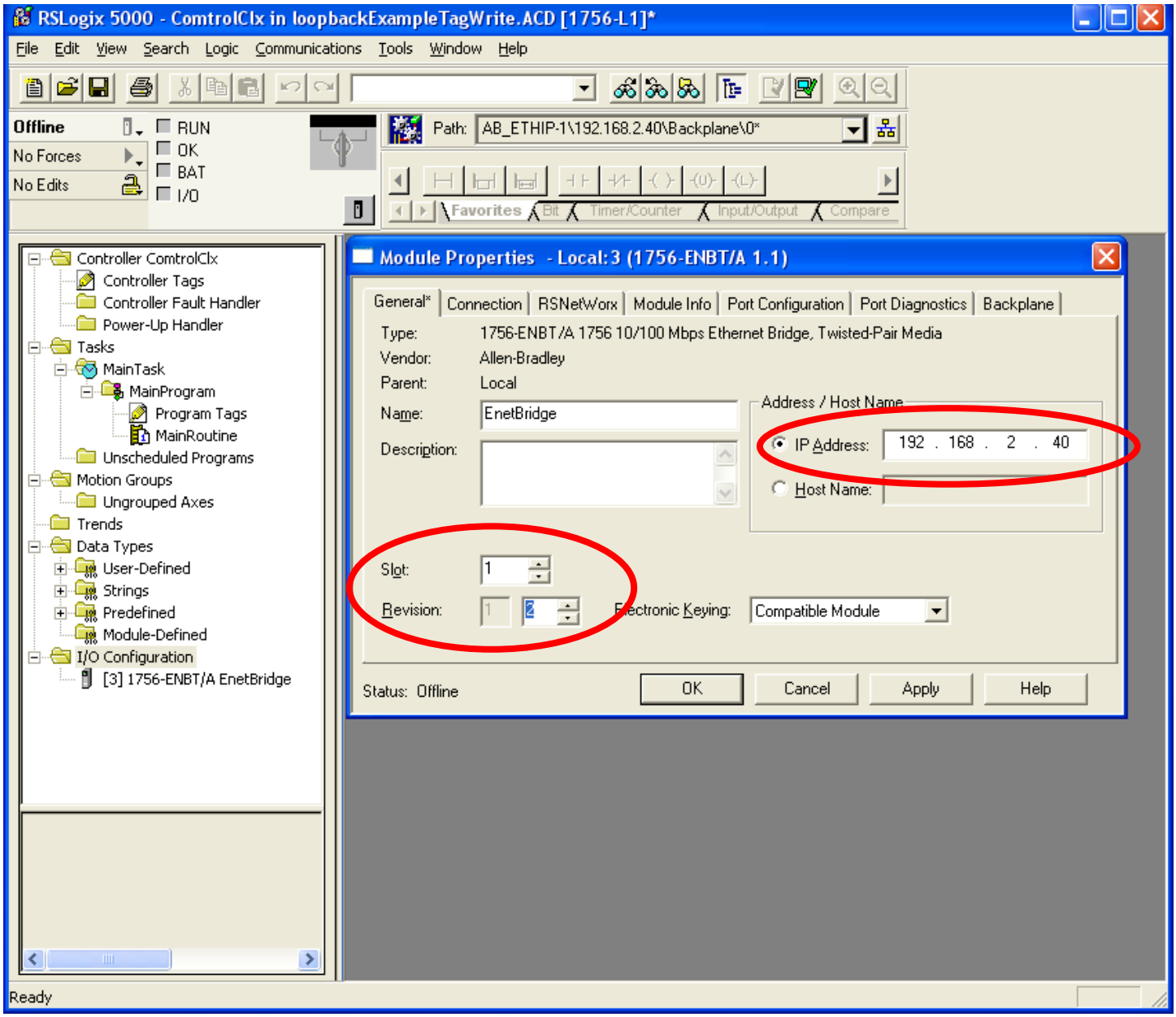
It should show the IP address of your PLC in place of 192.168.2.40 in the example above as that is my PLC IP address.



Go to the I/O Configuration and select your Ethernet controller. Right click on it and select Properties.



This object will need modifications from the defaults which are shown here.



Change the IP address to be the IP Address of your PLC.
Change the Slot and Revision number to match your equipment
Click on Apply
Click on OK

Configure the Ladder of the loopbackExampleTagWrite

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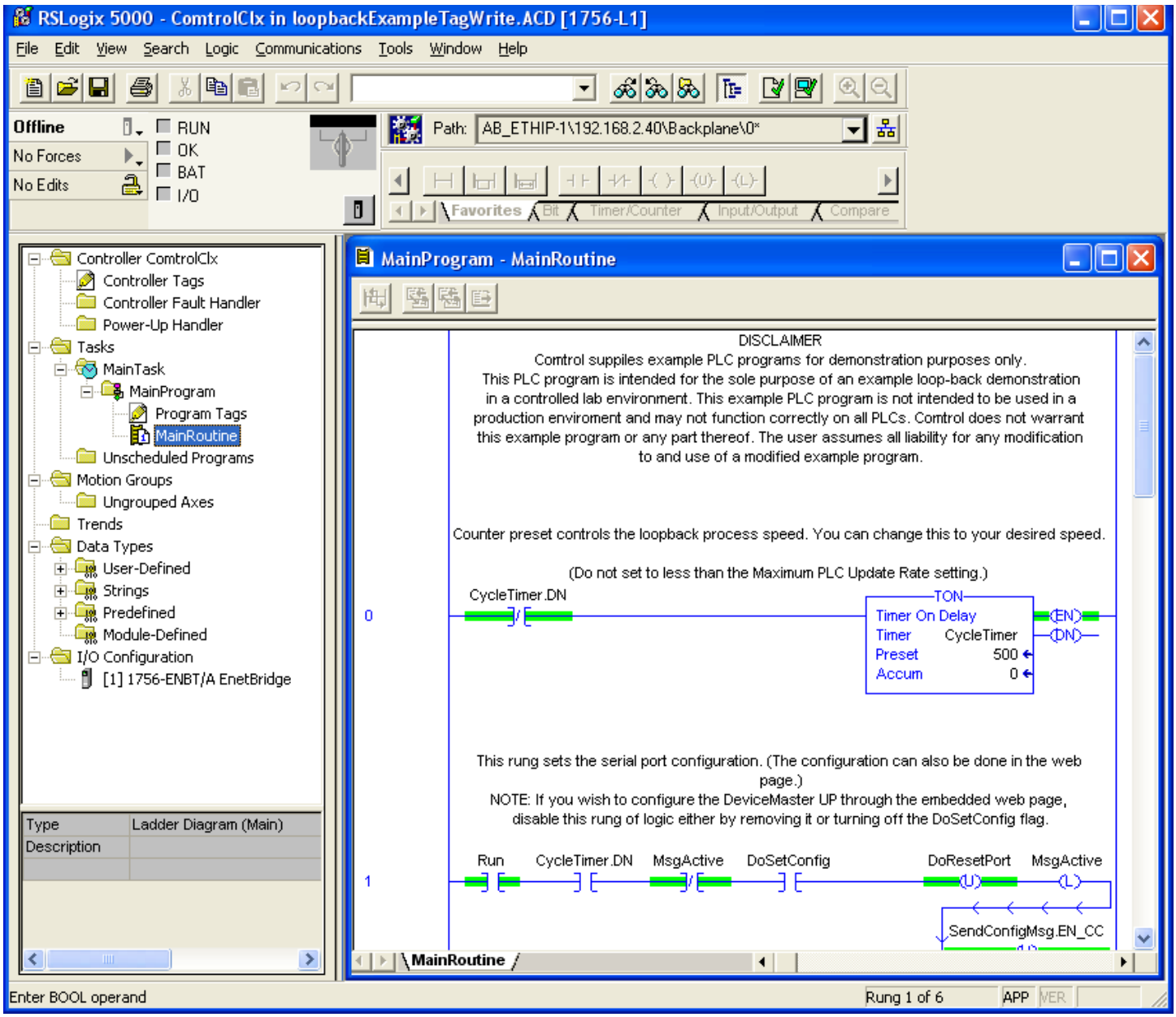
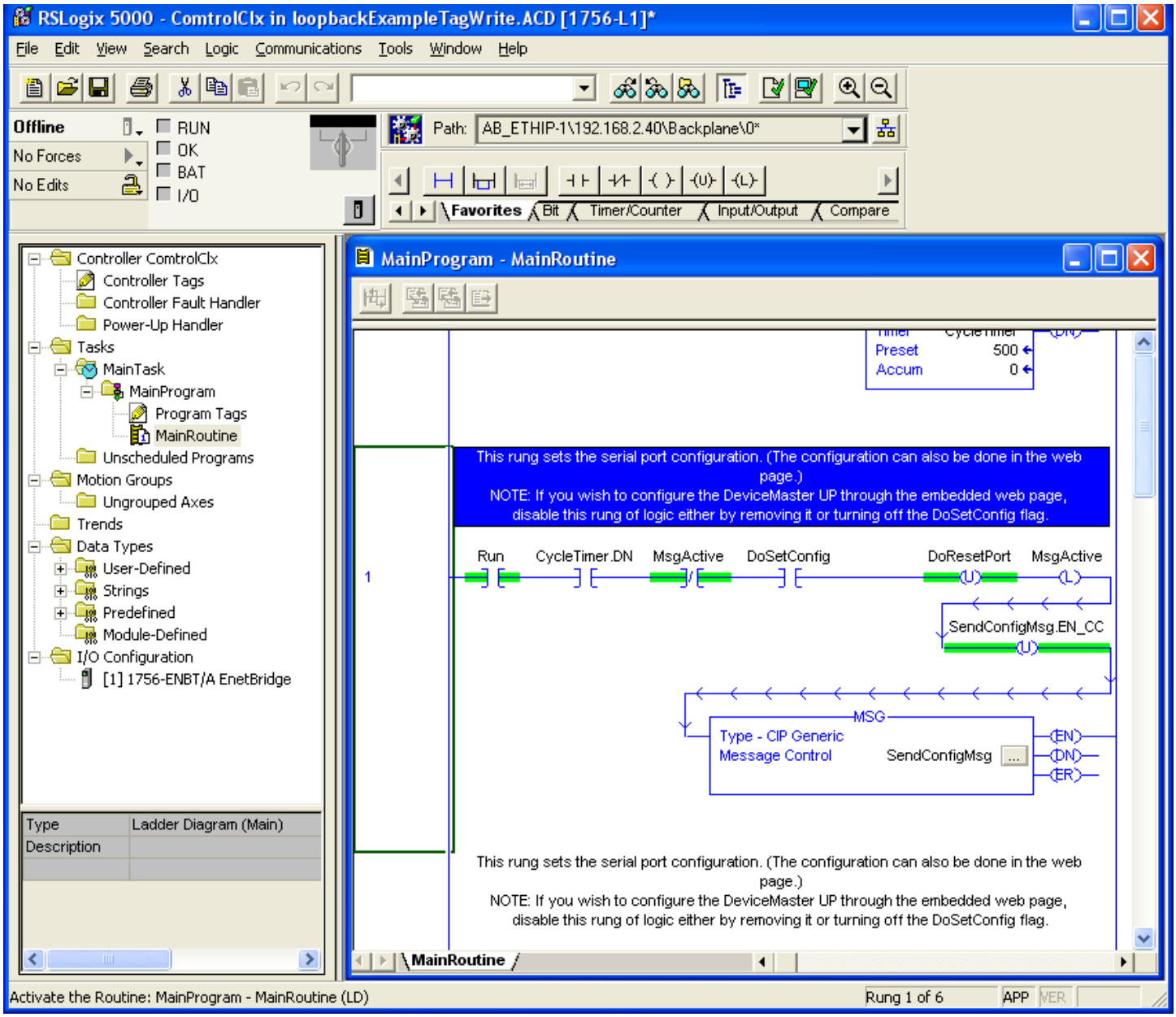
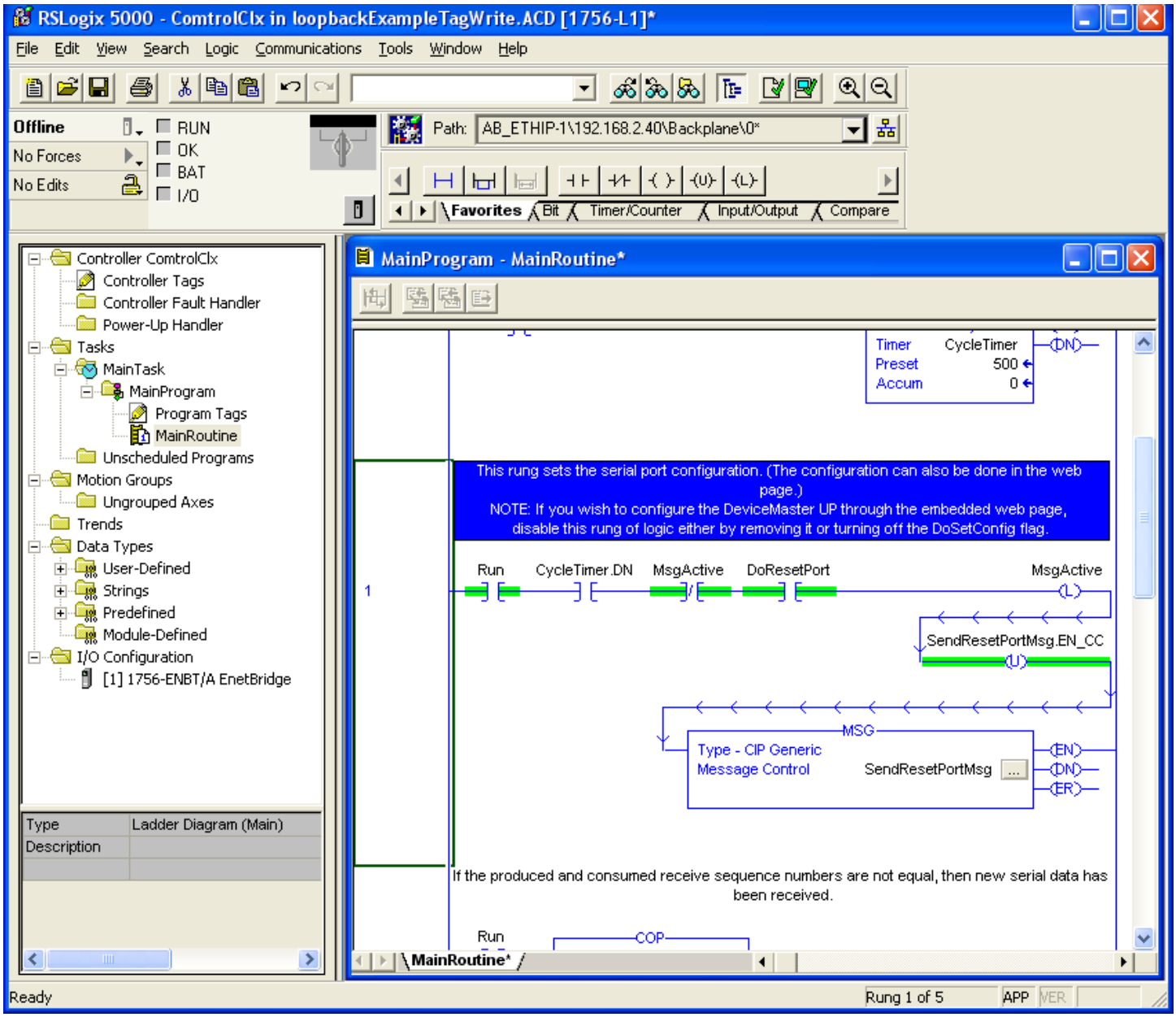


Open the Main Routine in Tasks/MainTask/MainProgram/MainRoutine

Please Note: We will not be using the MainRoutine to configure the DeviceMaster, so we will be deleting some of the rungs of the MainRoutine. We will use the web pages of the DeviceMaster in order to configure the DeviceMaster itself in a later section.



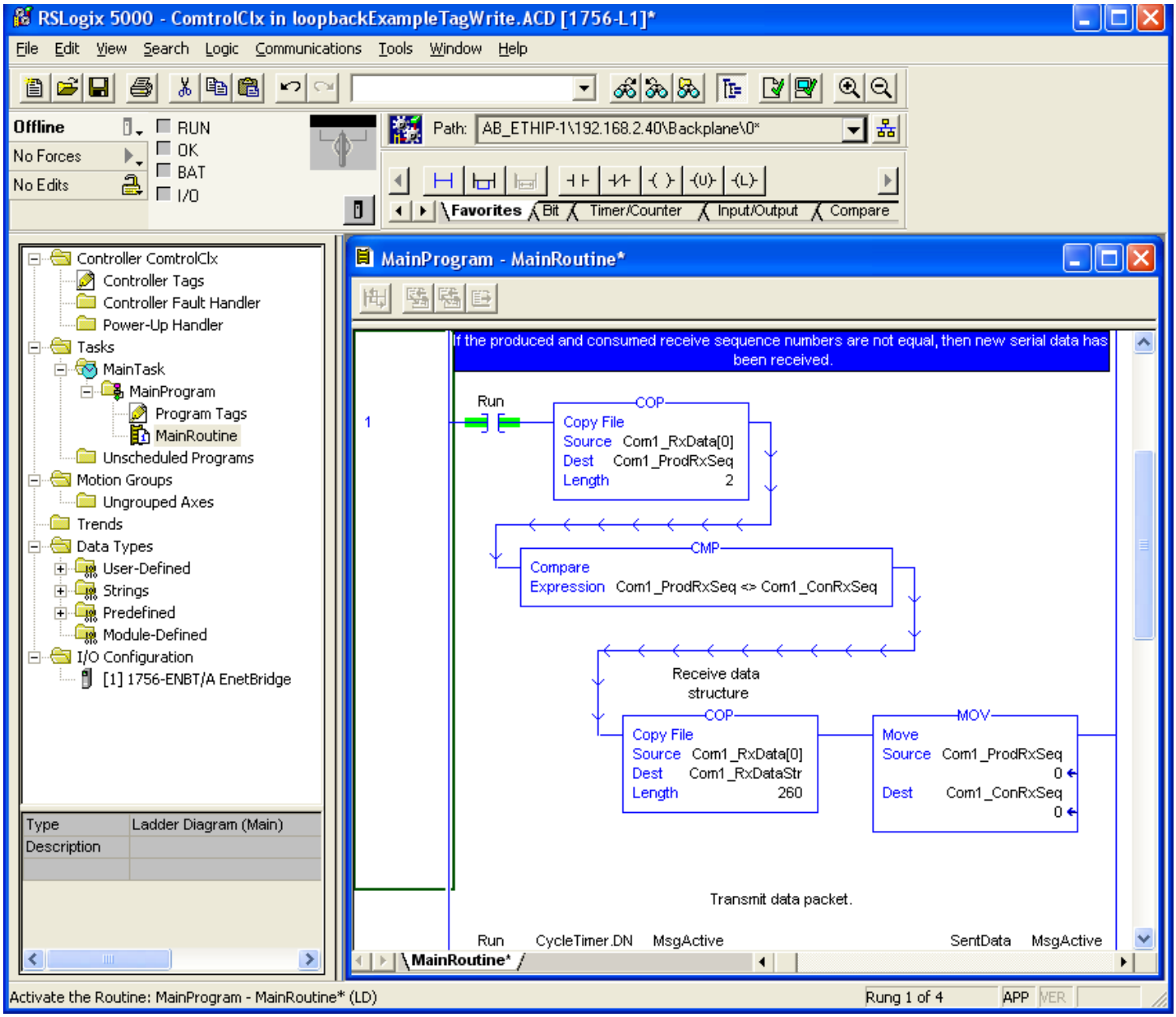
This rung would be used to configure the DeviceMaster instead of using the web page. Configuration of the DeviceMaster via the web page is much simpler and straightforward to complete. We will delete this rung of the ladder.
Right click and select “Cut Rung” from the pop-up menu.
The rungs will then auto-renumber themselves.



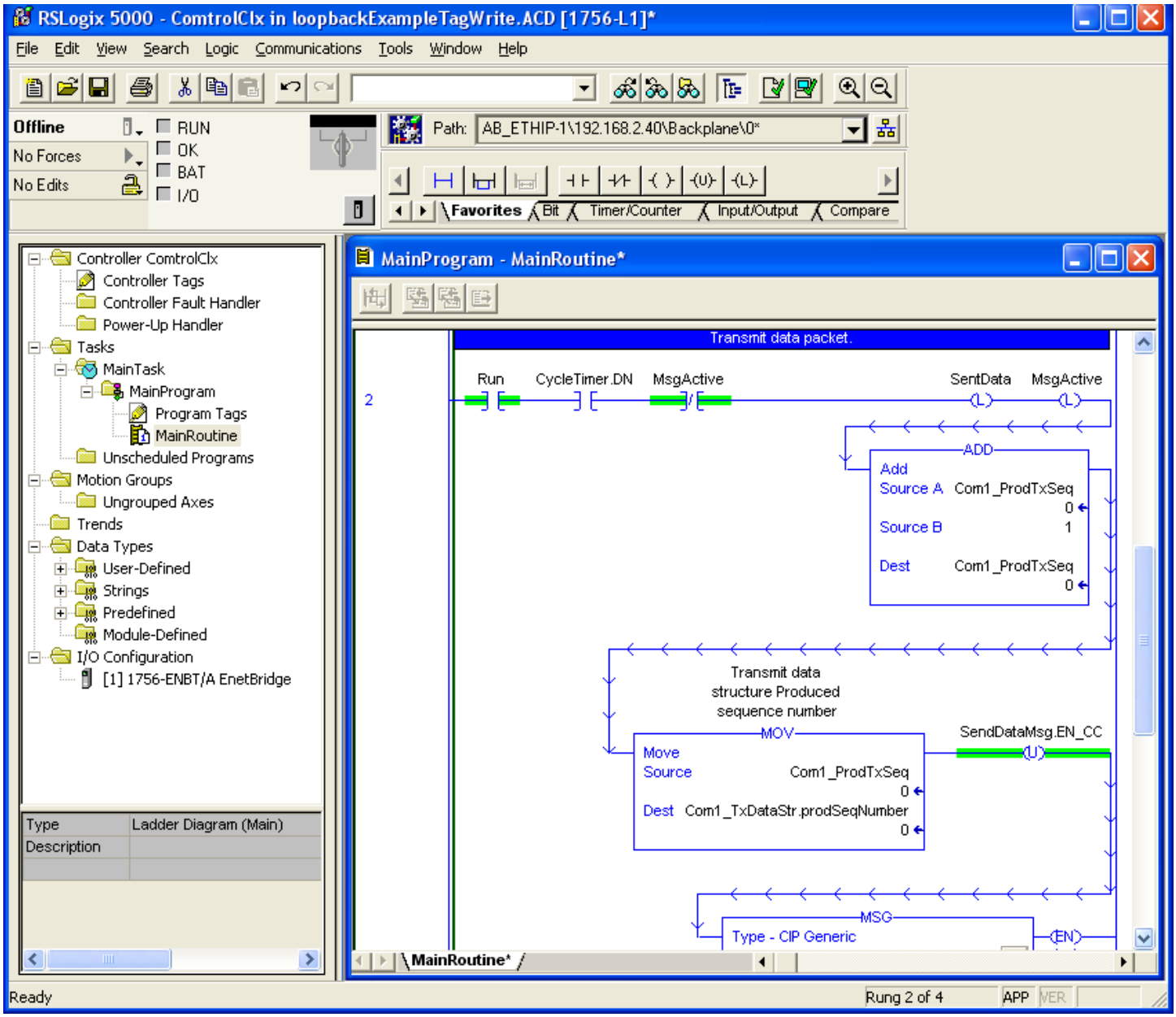
This newly renumbered rung 1 is used to reset the serial port after the changes have been implemented from the rung we just cut. This rung is only used in conjunction with the previous rung which was cut. The auto-renumbering has numbered this rung as rung1. We will cut this rung also

Right click and select “Cut Rung” from the pop-up menu.

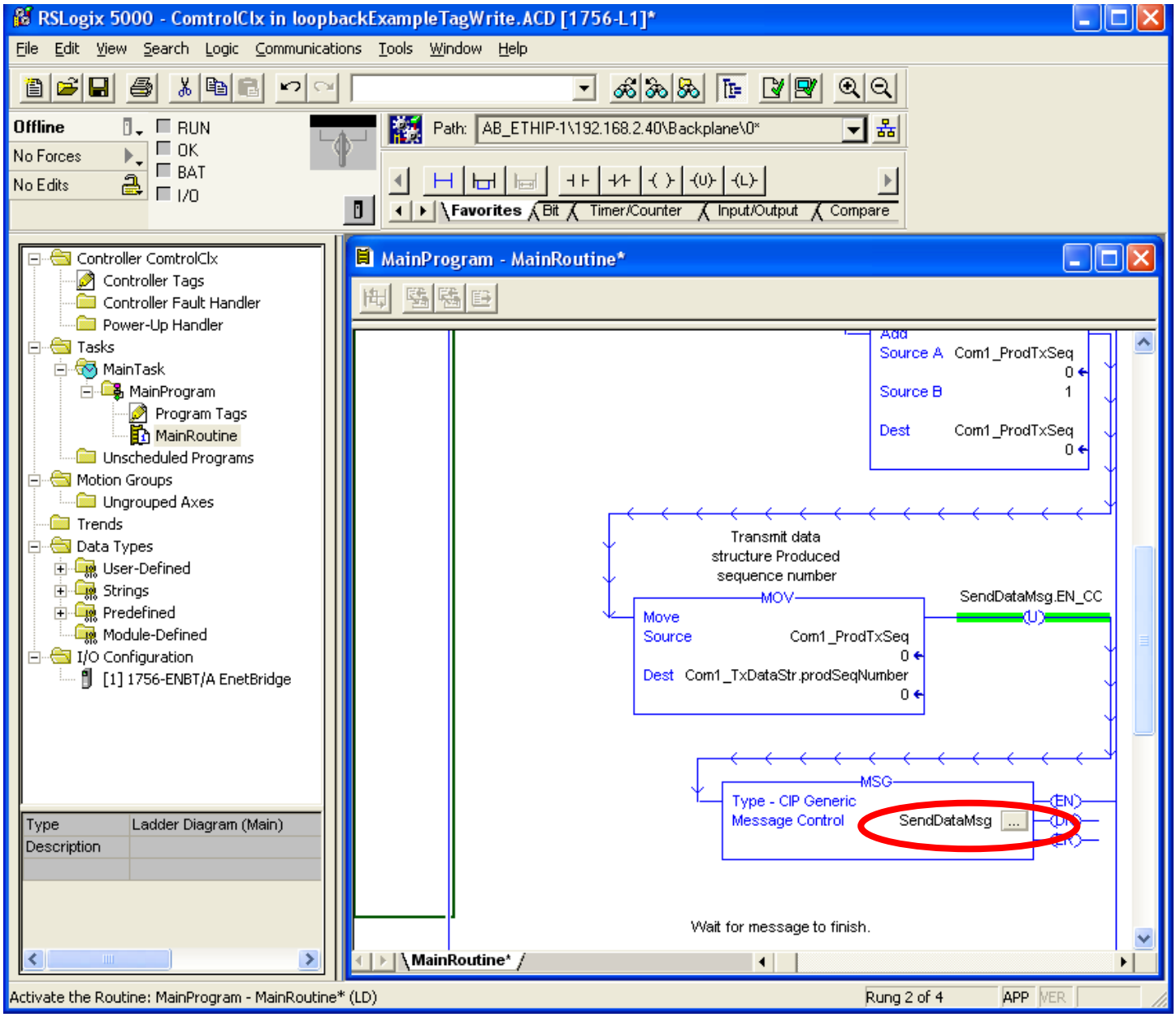
The rungs will again auto-renumber themselves.



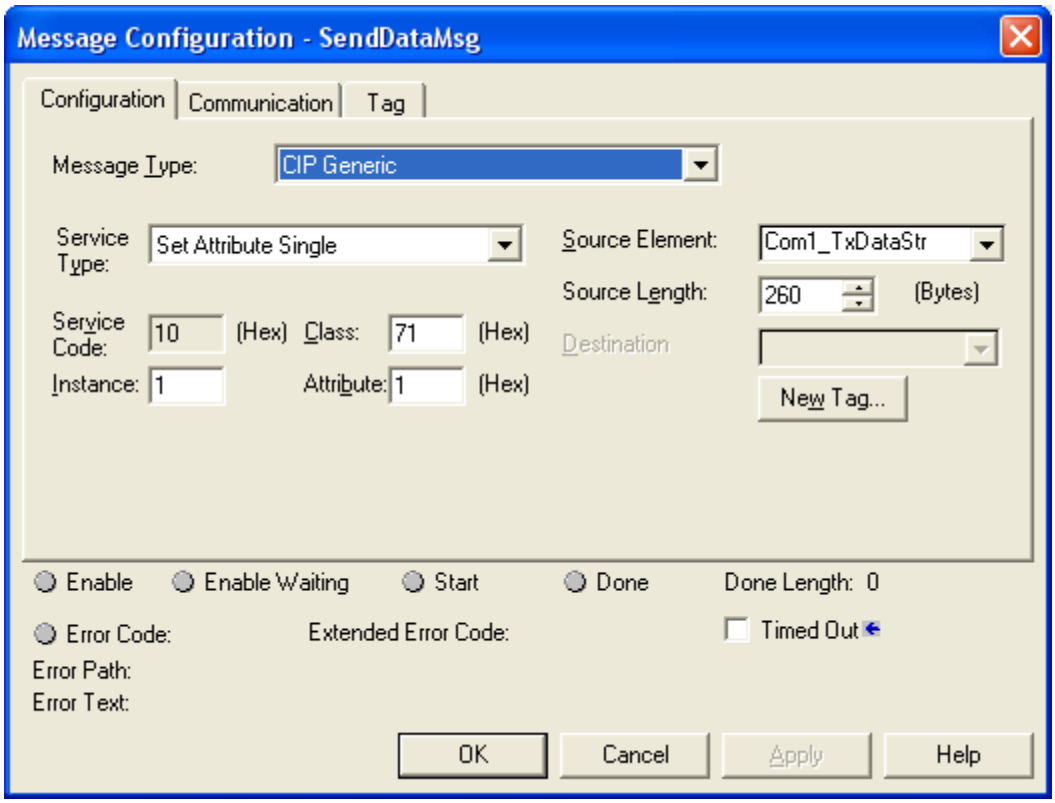
The new Rung 1 will compare sequence counters to determine if new data is received and copy the data from the Com1_RxData (where the DeviceMaster will write the data to) to the Com1_RxDataStr where the data may be copied from to manipulate in whatever manner is required.
This rung requires no modification.



Rung 2 will transmit data to the serial port of the DeviceMaster.
Scroll down to the bottom of rung 2 until you see a SendDataMSG.

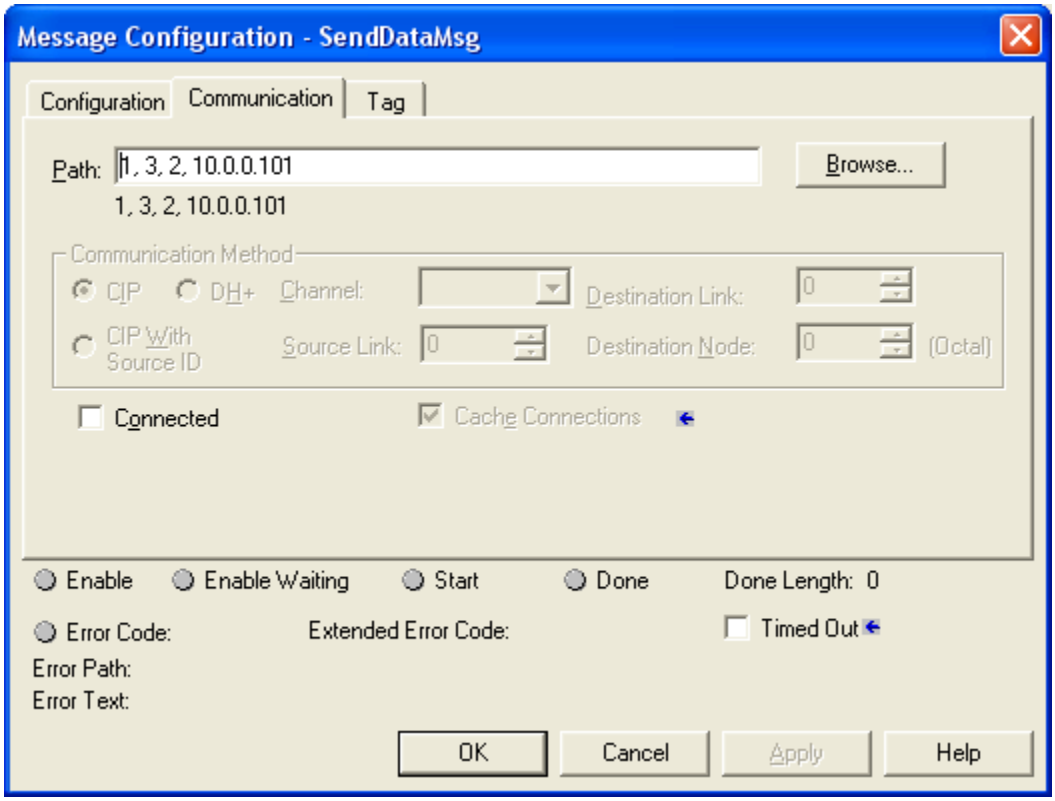


Click the SendDataMsg box to open the View Tag Configuration Dialog

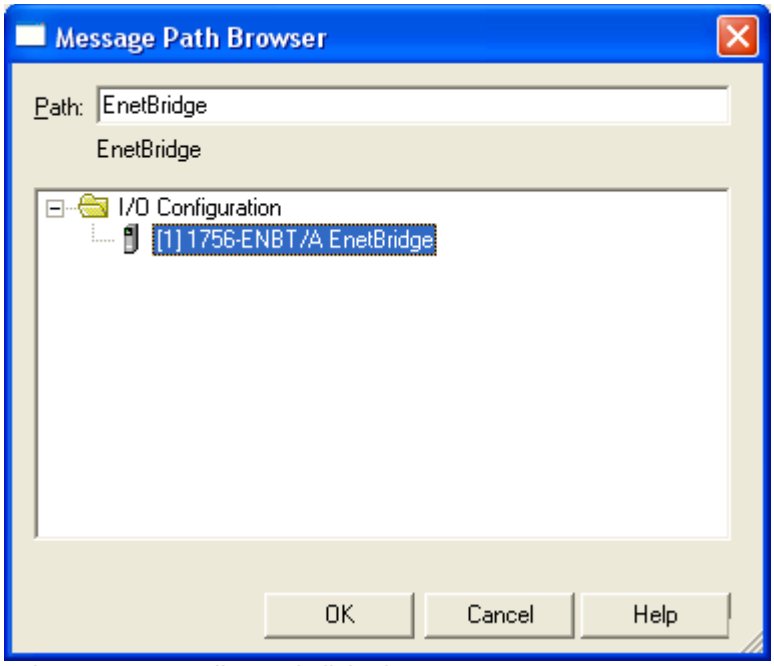


There will be no modification to the “Configuration” tab in this example. If the data was being sent to an Ethernet device instead of a serial device the class would be changed from 71 to 74. The ‘Instance’ value points to the serial port on multiport DeviceMaster units such as the 4 port model. Data going to the 4th port would require changing the instance to a 4. We are using a 1 port DeviceMaster so the instance value will not be changed.

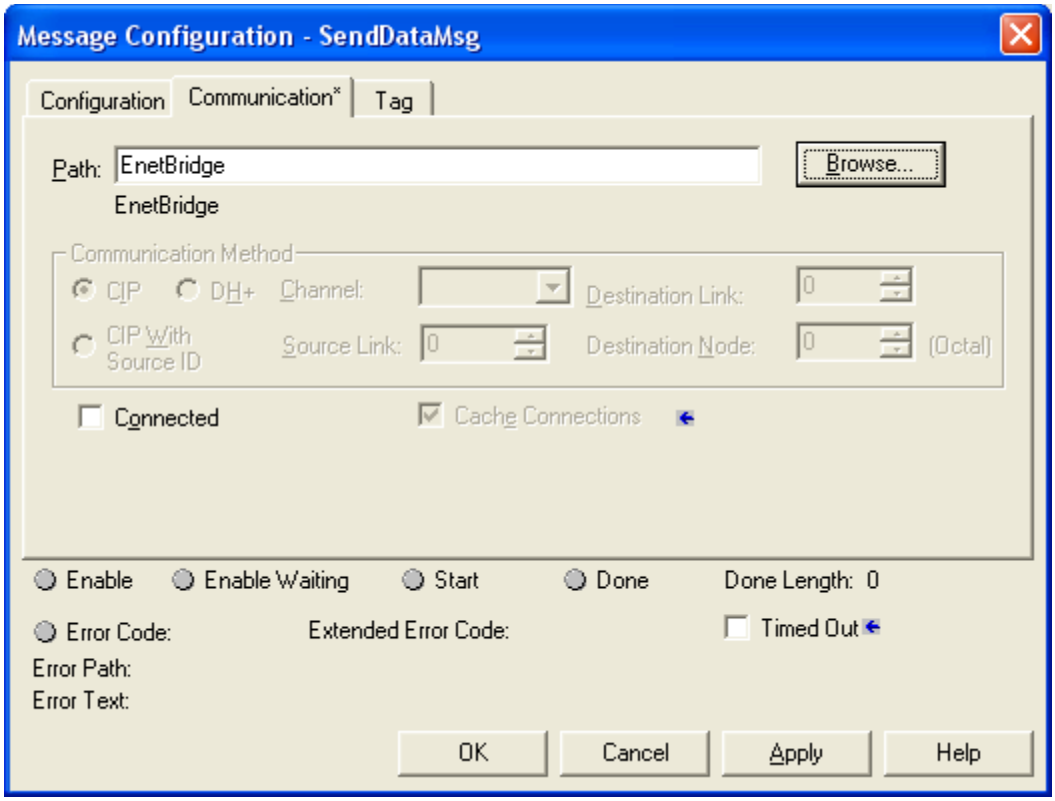
Click on the “Communication” tab.



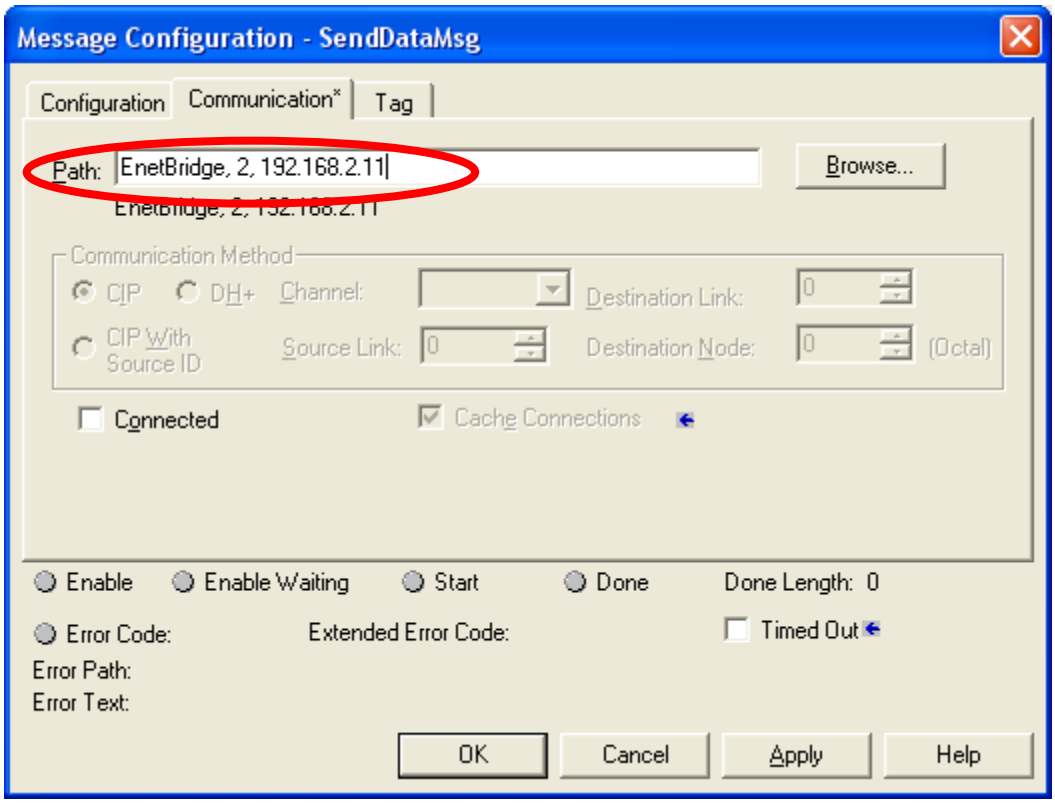
The Path will be modified. This path will be dependent on you PLC.
Click the Browse button



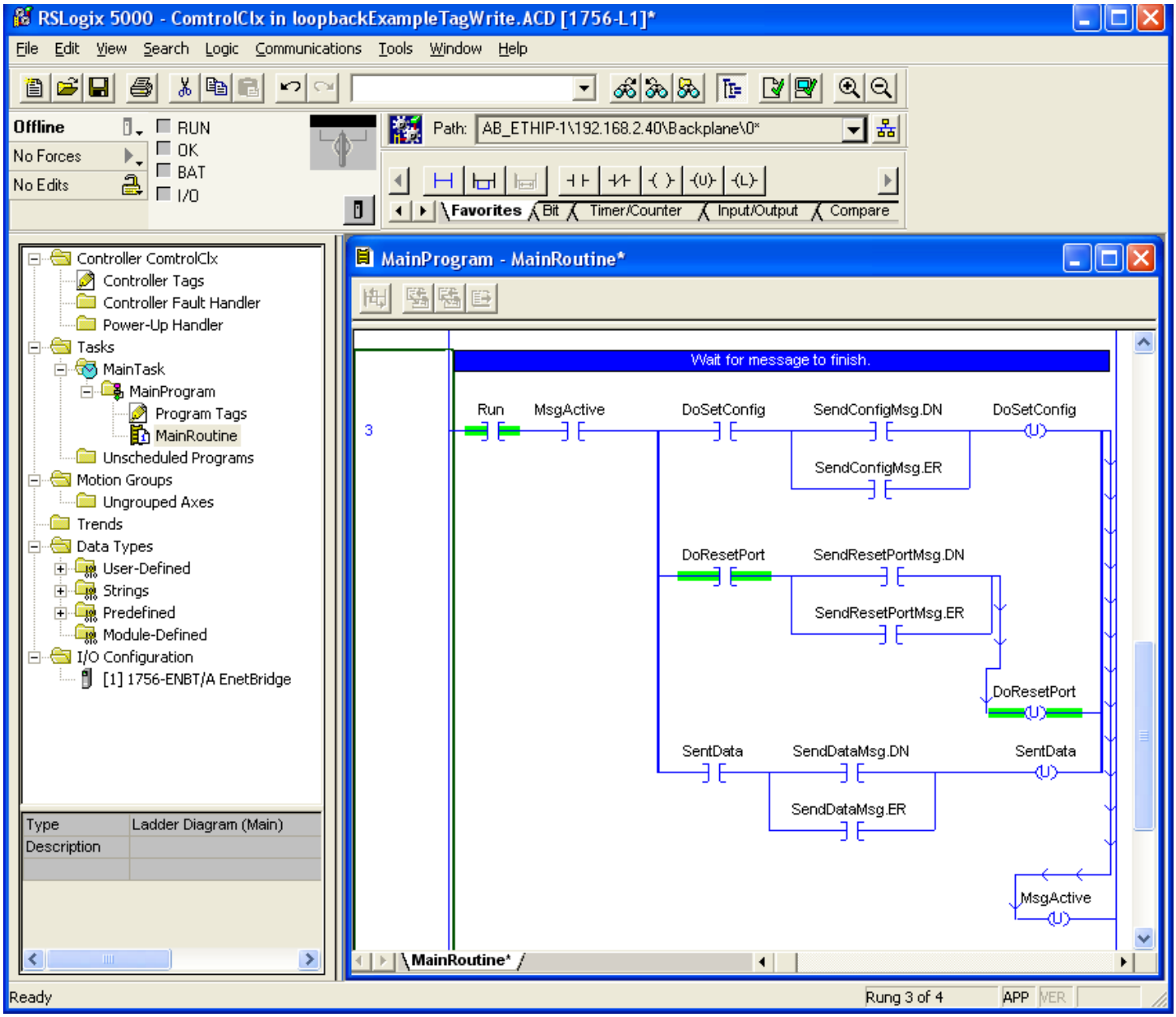
Select your controller and click ok



The Path: will still need additional information. For my system it is to add the information as seen in the next screen.



I have added a comma and the 2 and a comma and the IP address of my DeviceMaster. It now reads EnetBridge, 2, 192.168.2.11 and yes, I did put spaces after the commas. Click Apply and OK



That finishes the modifications to the MainRoutine

Click on “File” drop down menu and select “Save…” or “Save as…” to save your changes to the file.

Load the Project to the PLC

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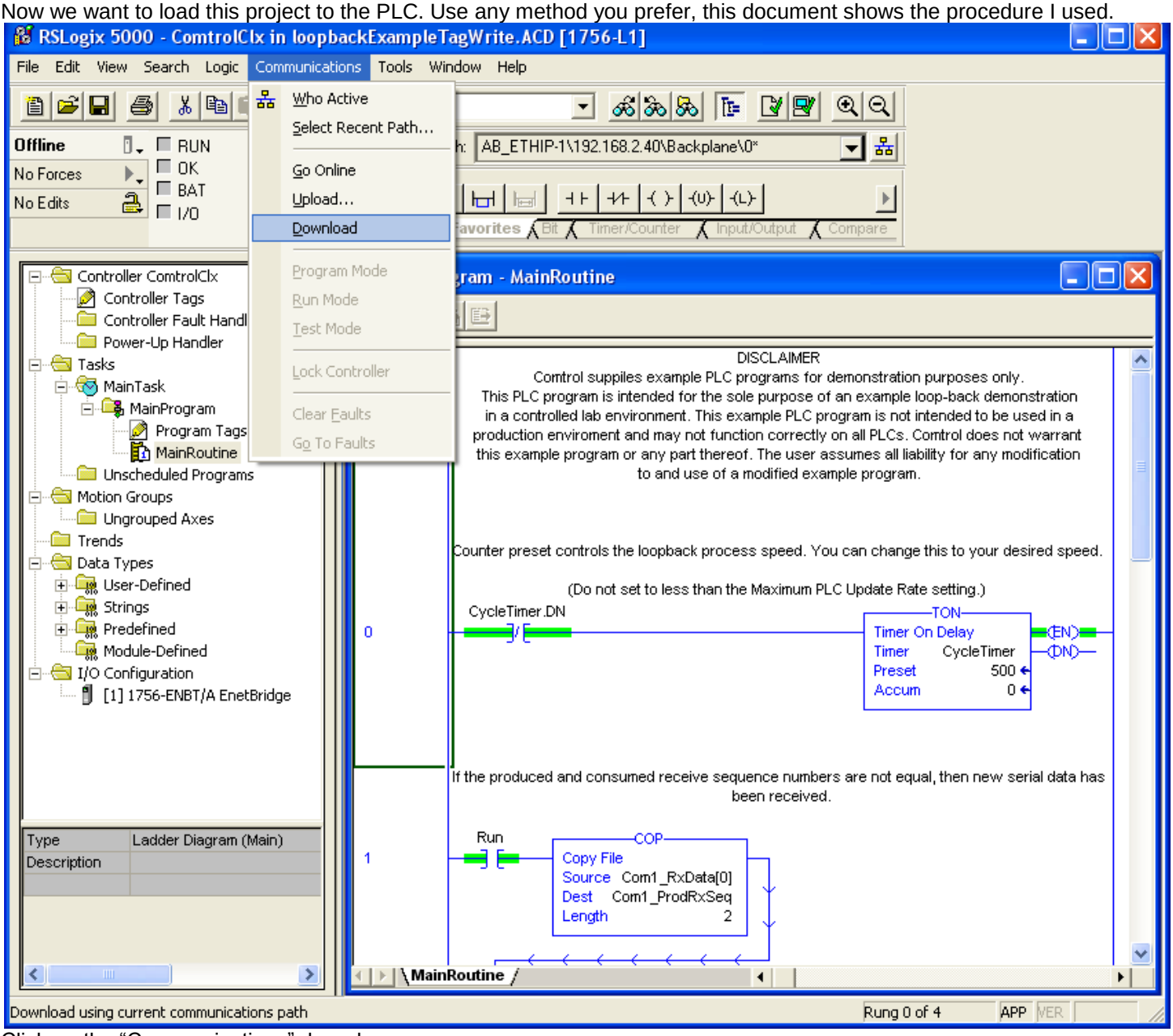
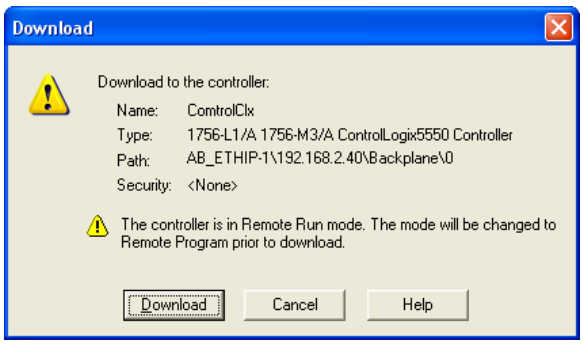
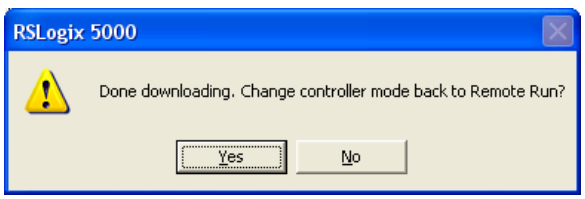
Now we want to load this project to the PLC. Use any method you prefer, this document shows the procedure I used.



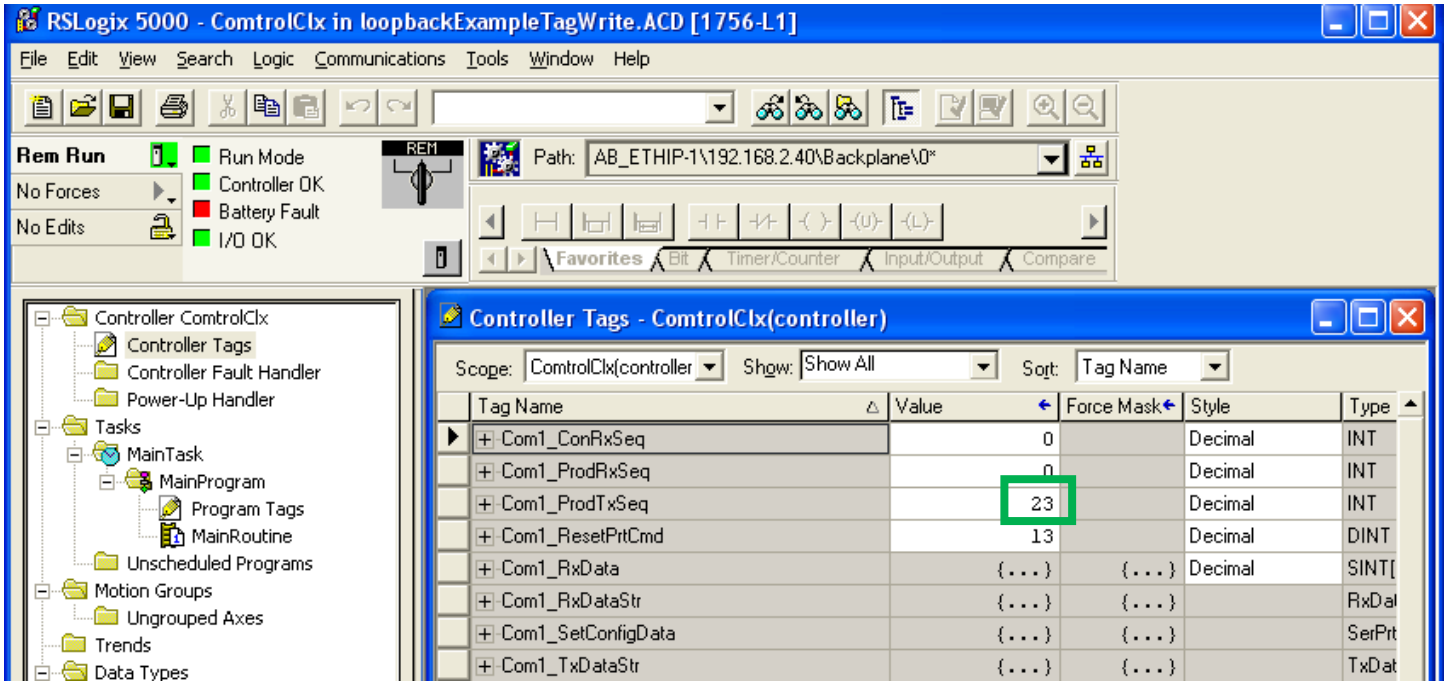
Click on the “Communications” drop down menu.
Select “Download”



Click the Download button.

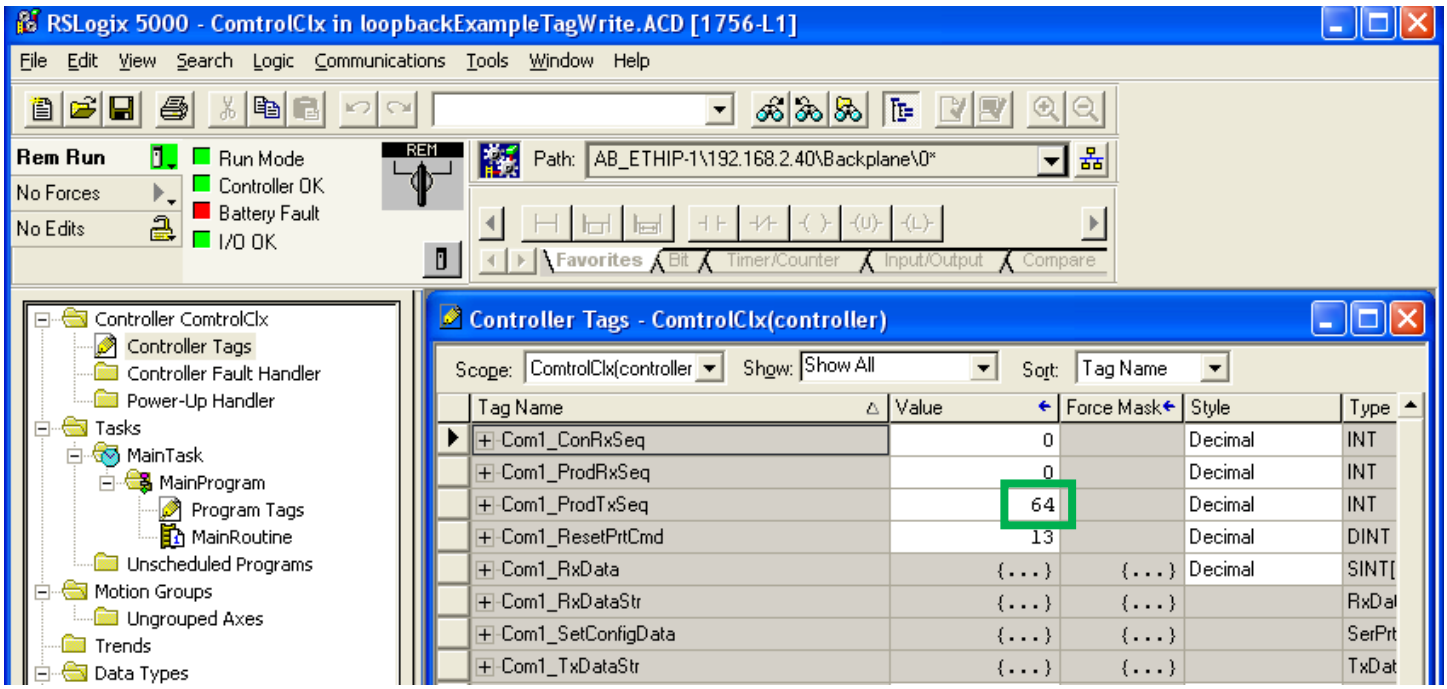


Confirm Yes



Once the Controller is in “Run Mode” open the “Controller Tags” in the “Controller ComtrolCLX” menu.

Note the Com1_ProdTxSeq value incrementing from the above screen at 23 to the next screen showing 64



This value increasing indicates the PLC is sending data.

Now we will configure the DeviceMaster UP itself.

Configure the DeviceMaster

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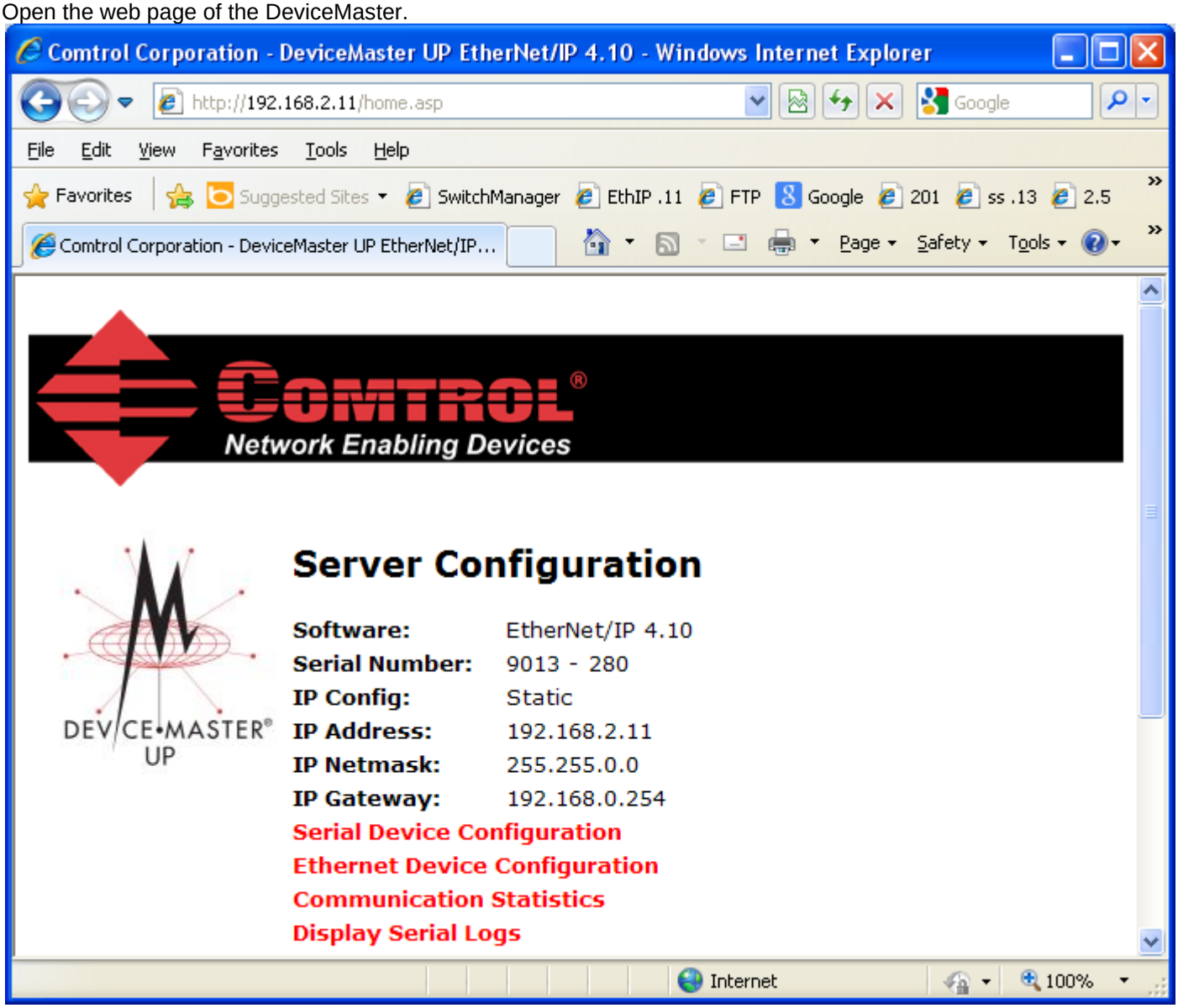
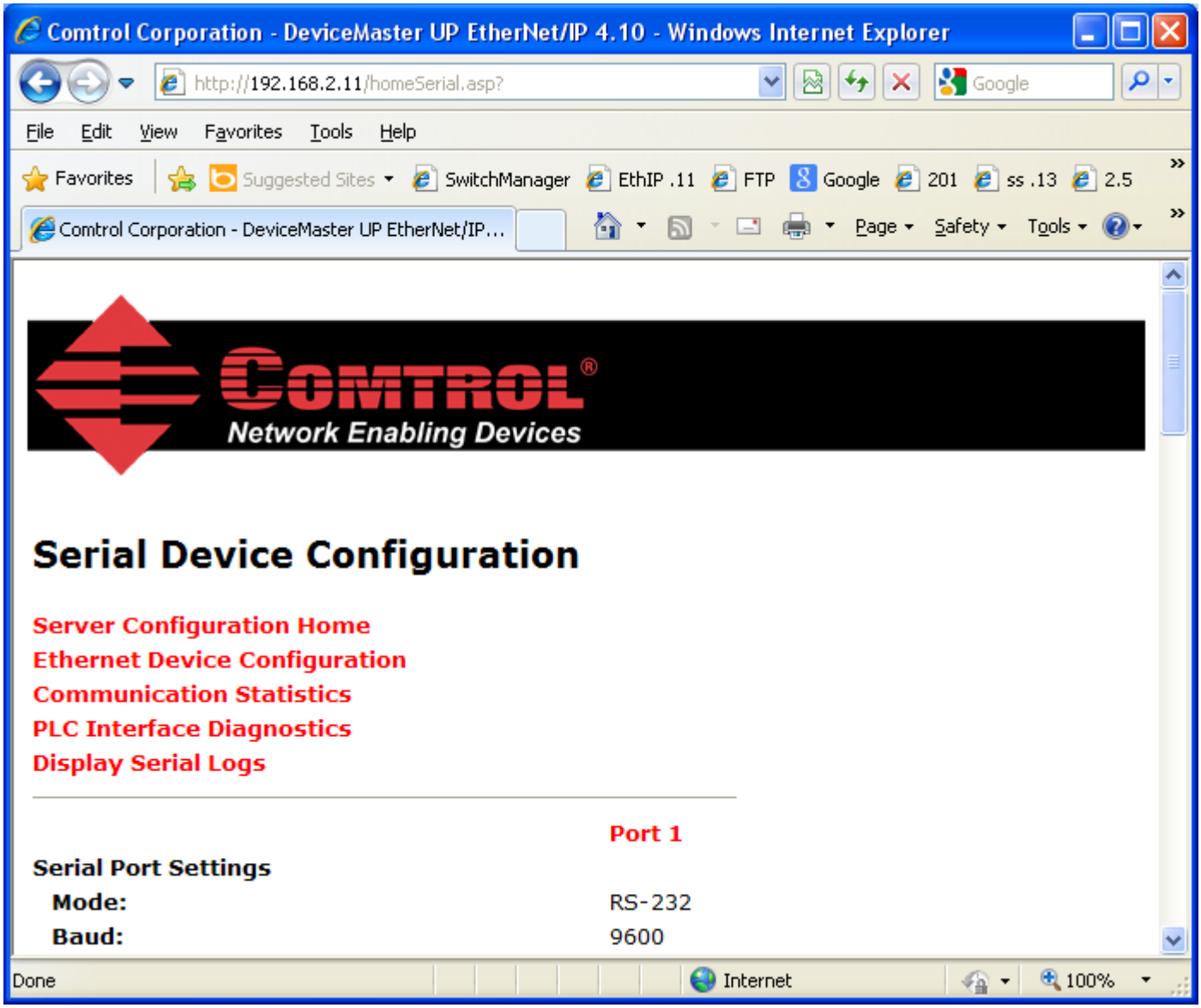
Open the web page of the DeviceMaster.

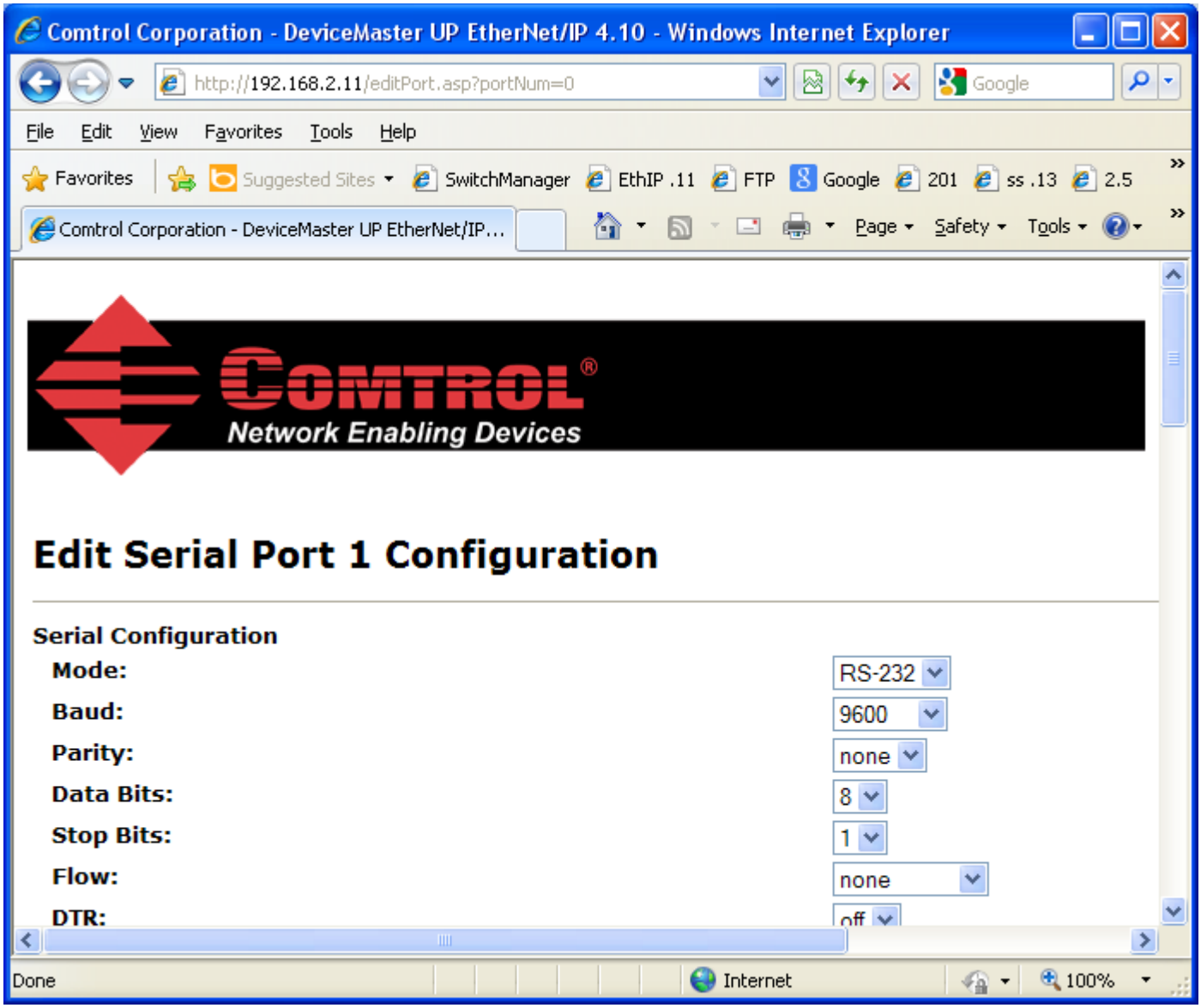


If your DeviceMaster UP does not have Ethernet/IP 4.10 shown as the “Software:” type, you will need to load in the correct firmware. Firmware is included in the same file that provided the loopbackExampleTagWrite.L5K from the proceeding steps. Use PortVision Plus to install the ethernetip-4.10.bin file to the DeviceMaster.

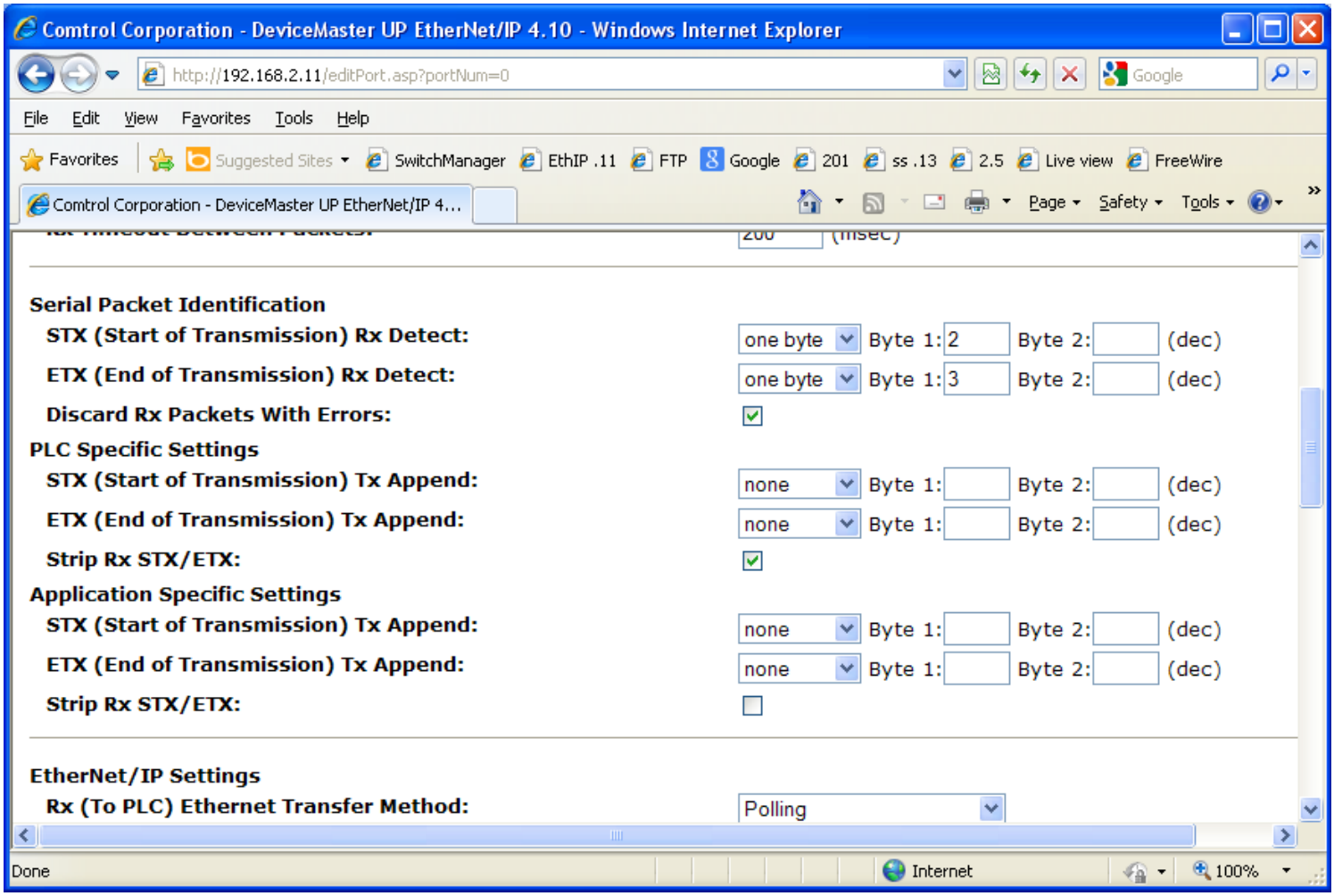
Click on Serial Device Configuration



Click on Port 1

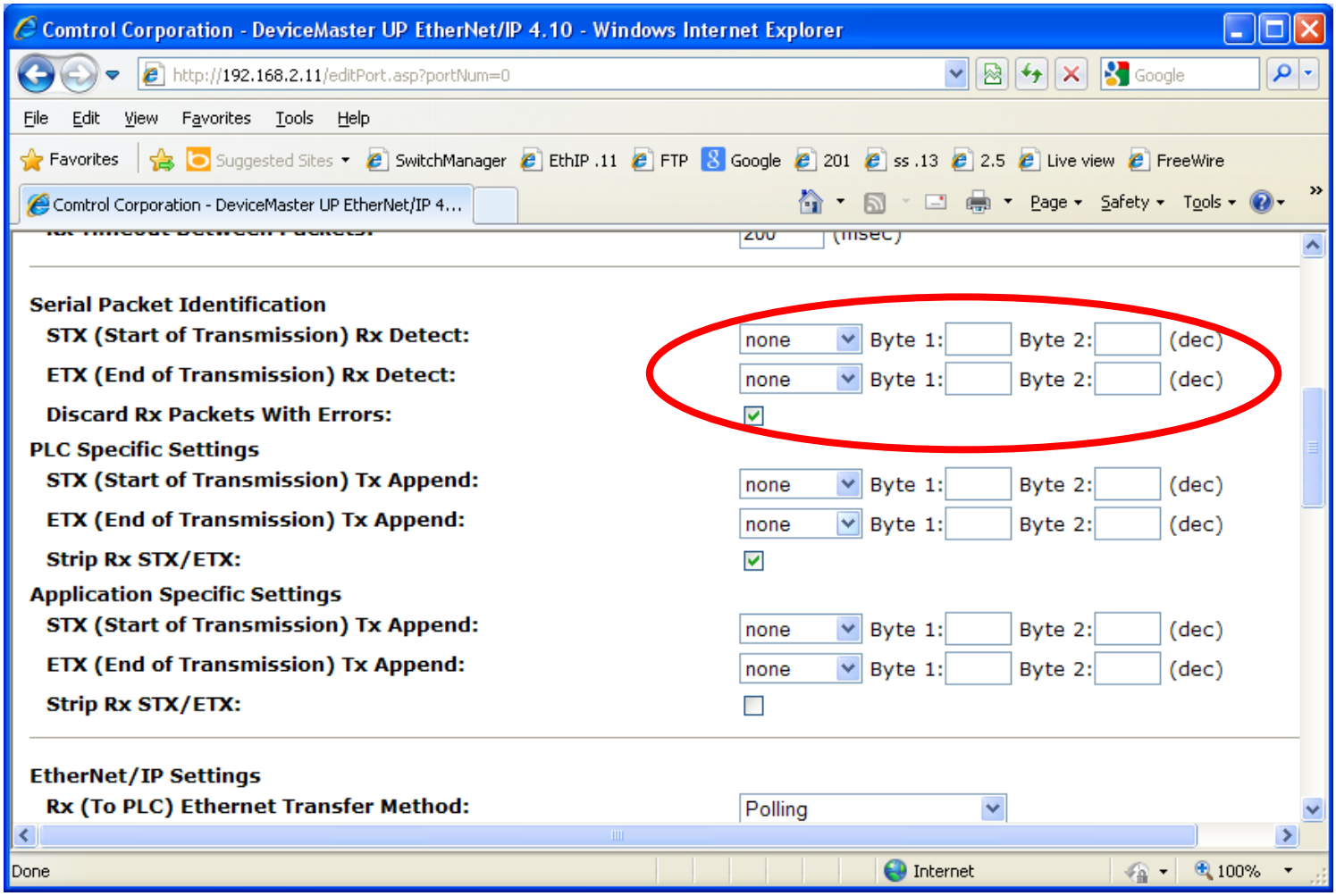


We will make no changes to the Serial Port settings as we are simply suing the Comtrol supplied Loopback Plug for testing. You may need to modify these settings once you attach your serial device.
Scroll down to the Serial Packet Identification section



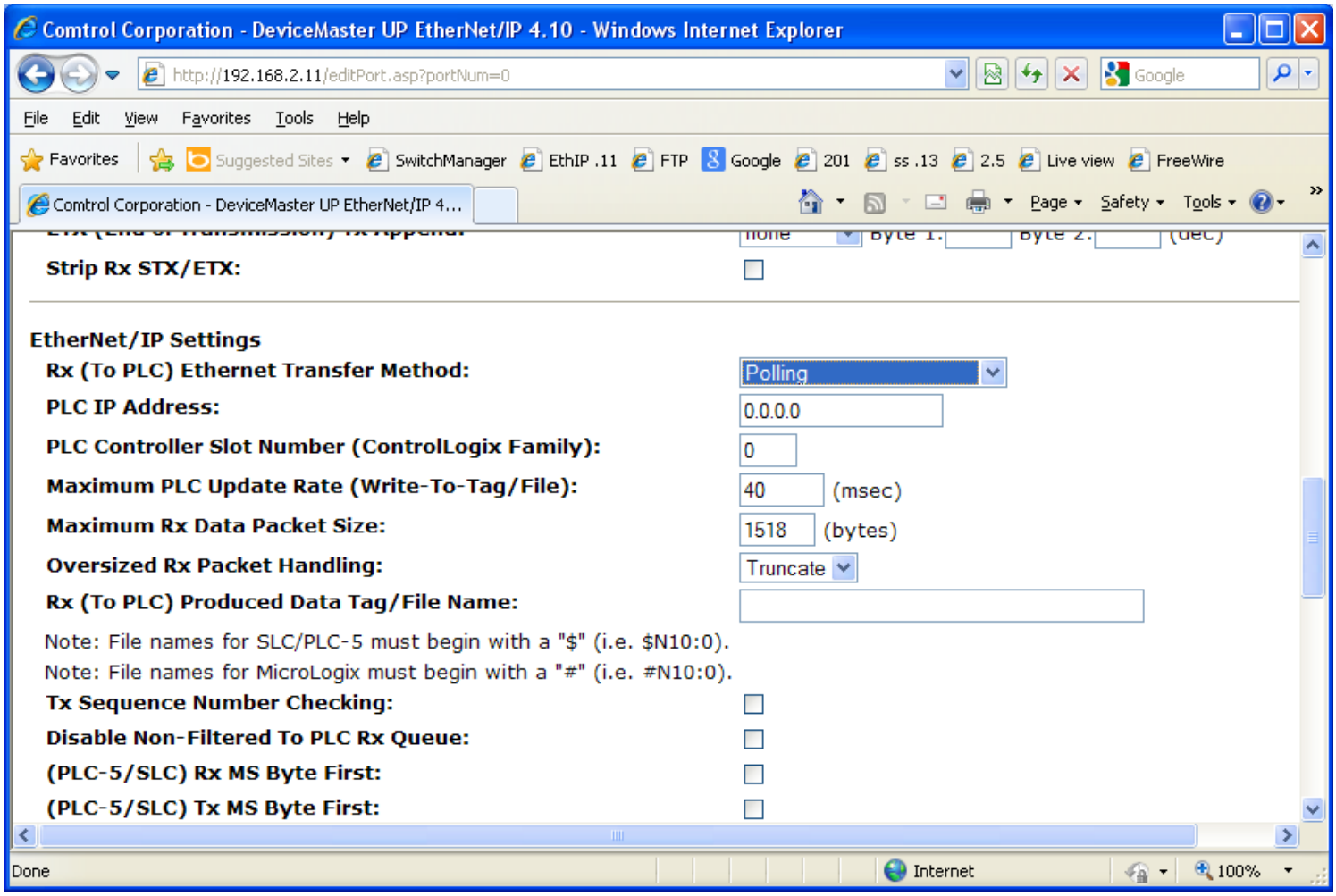
Default values are shown here which we will not want to use.

(You may click here to be returned to the STX ETX Determination procedure which is the last chapter of this document.)

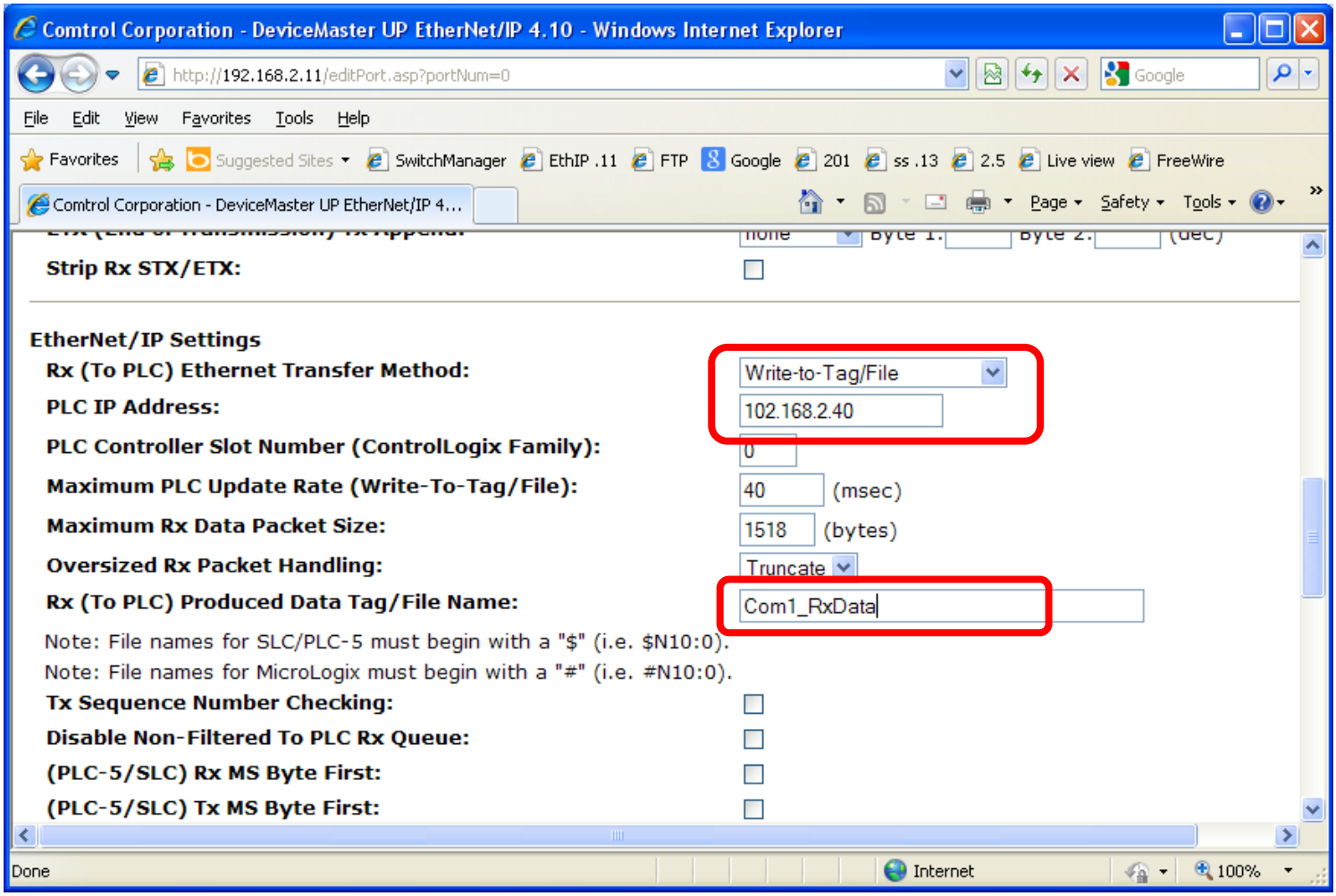


Set the values as shown.
Set the STX (Start of Transmission) Rx Detect: to None with Byte 1: and 2: as blank.
Set the ETX (End of Transmission) Rx Detect: to None with Byte 1: and 2: as blank.

Scroll down to the EtherNet/IP Settings

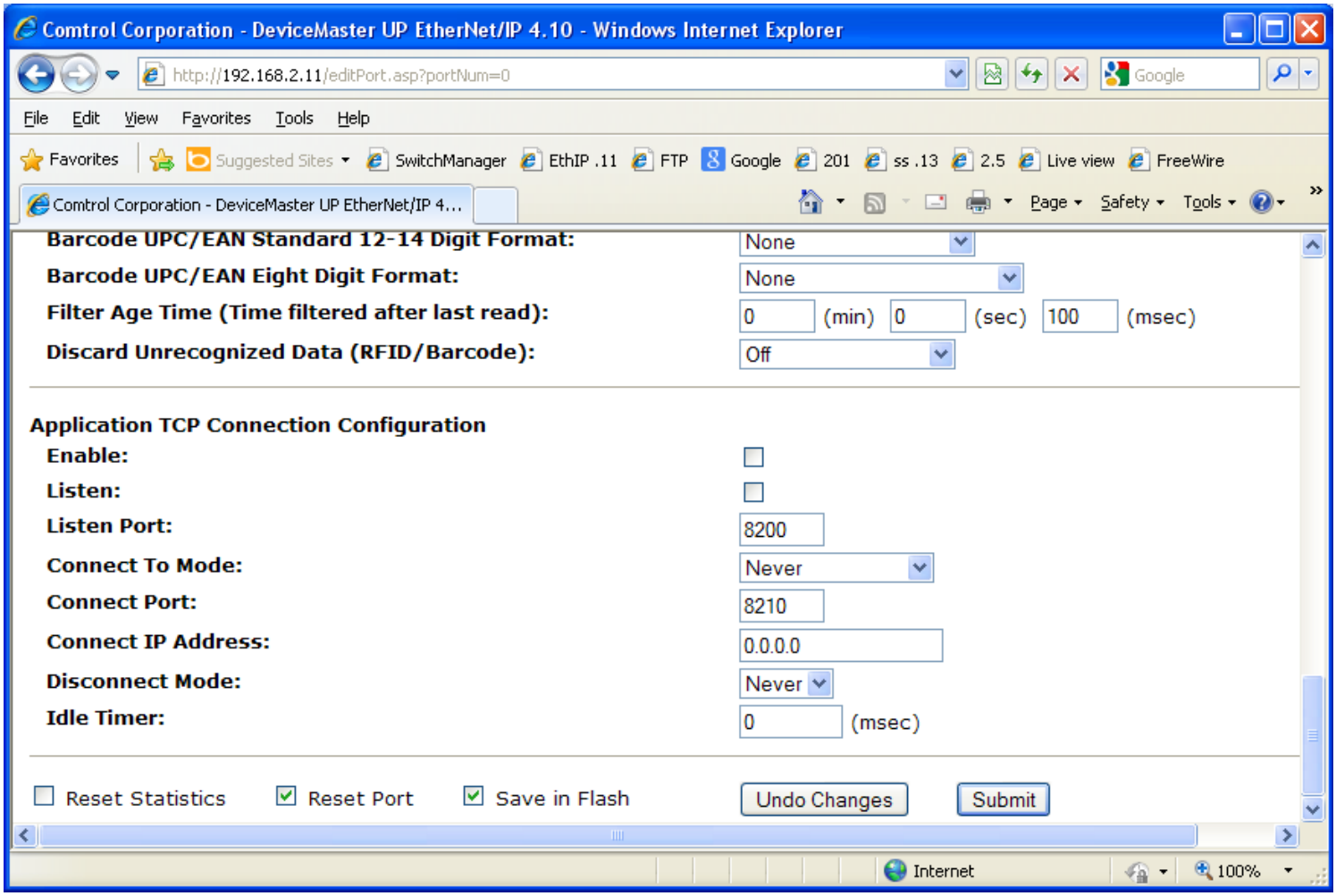


These are the defaults. Change these as shown in the next graphic.

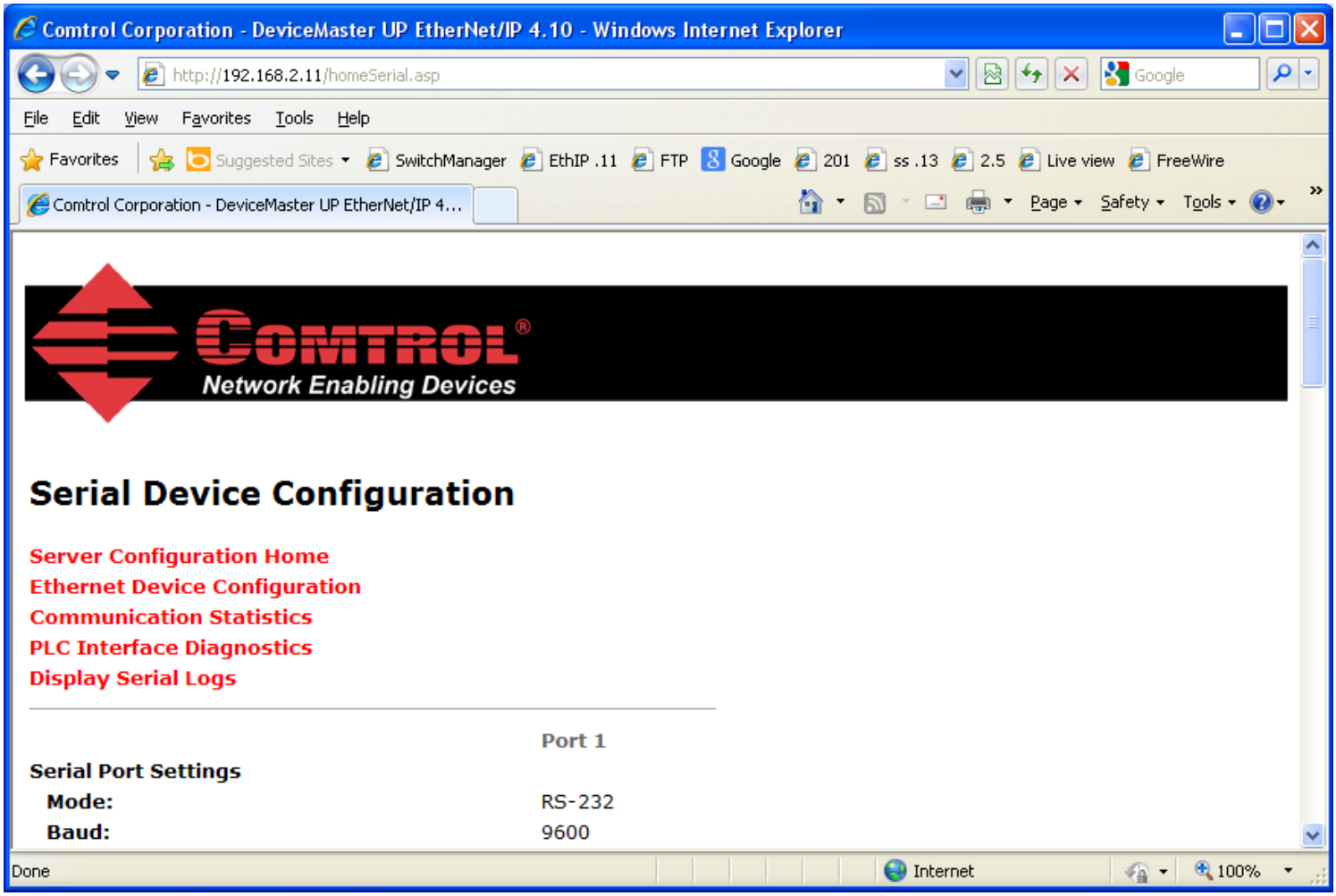


Change the Rx (To PLC) Ethernet Transfer Method to “Write-to-Tag/File”
Enter the IP address of your PLC. (Mine is 192.168.2.40)
Change the Rx (To PLC) Produced Data Tag/File Name : to Com1_RxData
NOTE. The tag file must match EXACTLY. Case DOES matter. Spaces are NOT allowed.
Any error on this field and data will NOT transmit properly!

Scroll to the bottom of the page.

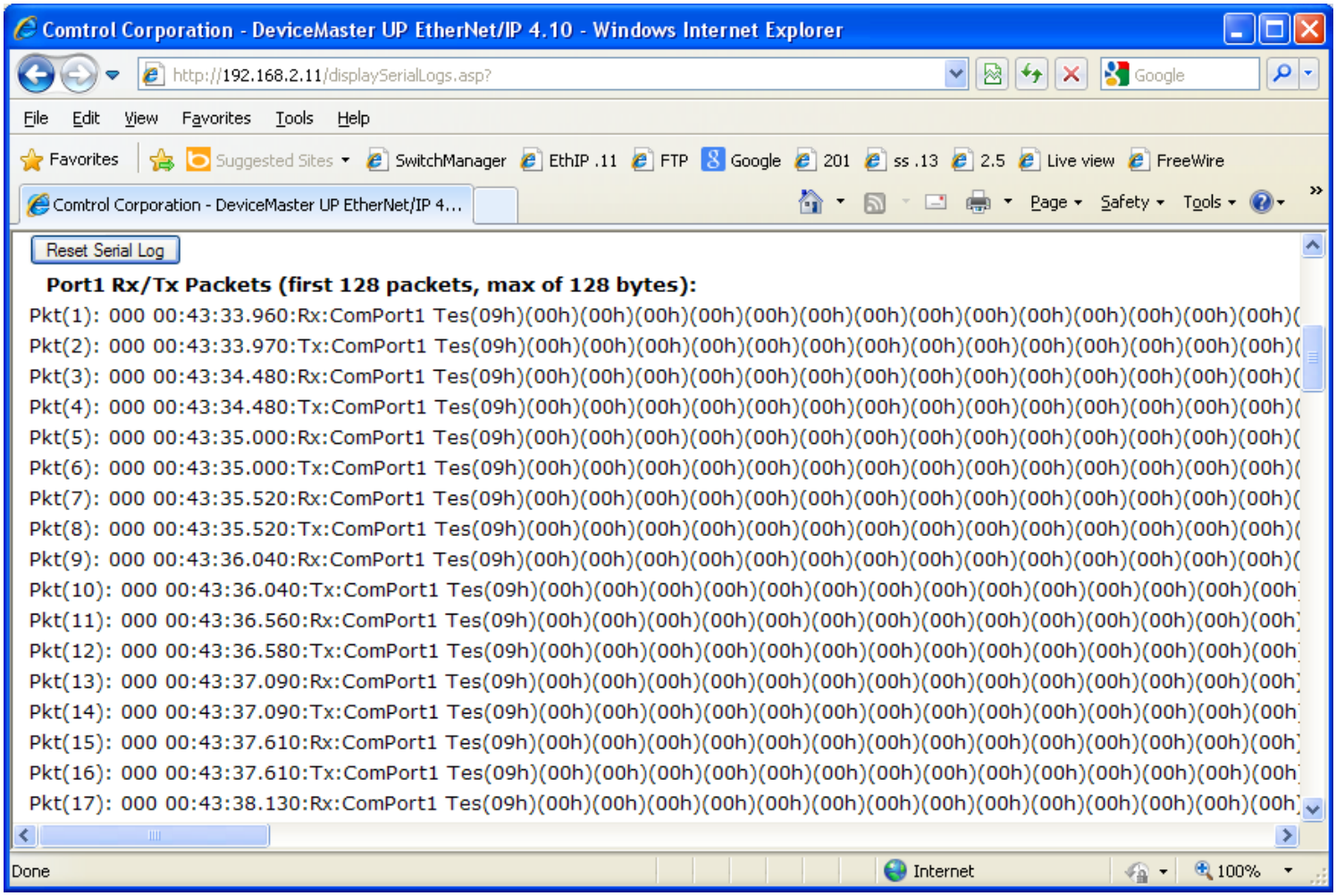


Click the Submit Button.



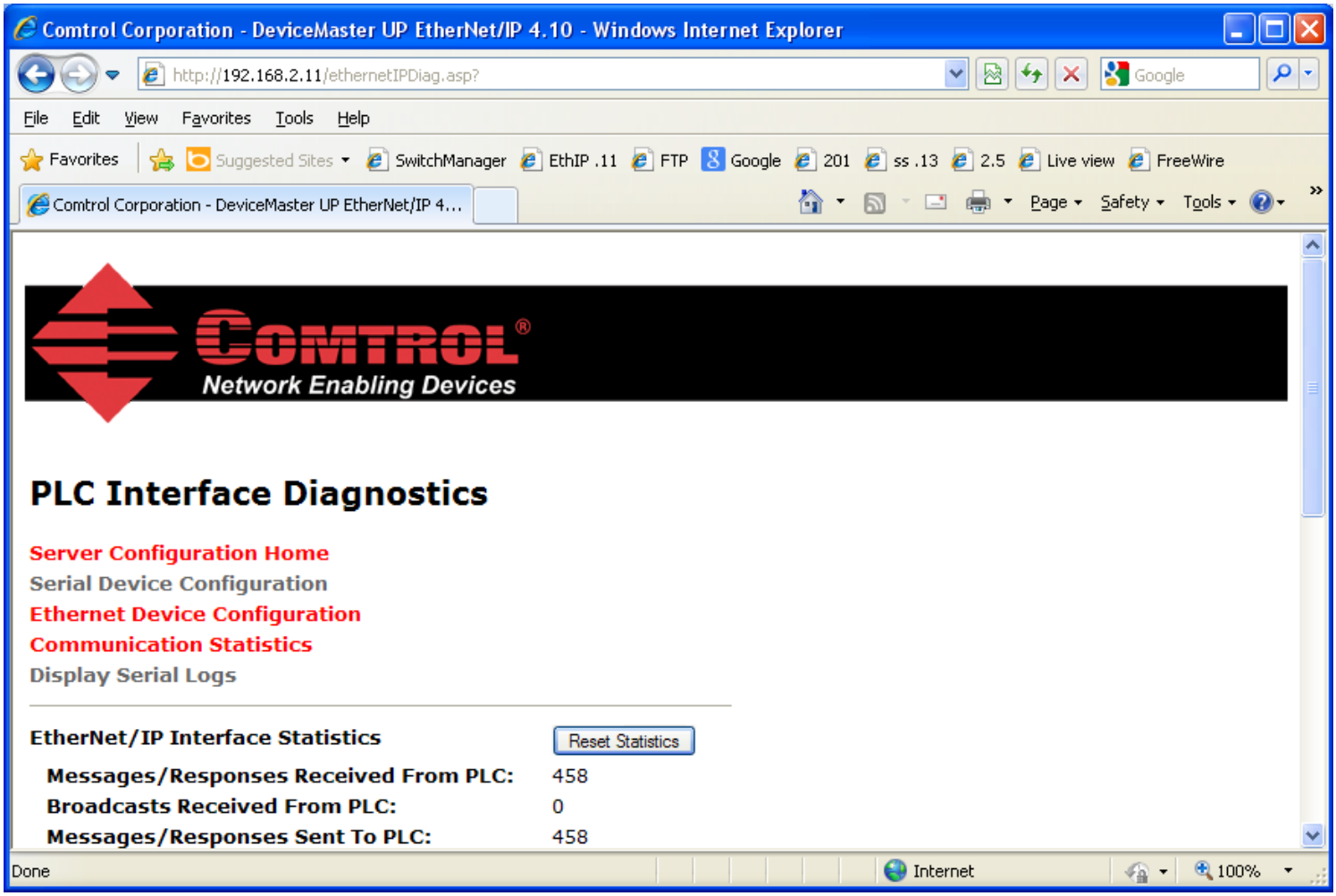
You will be returned to the Serial Device Configuration page.
Click on Display Serial Logs

Scroll down on the Serial log page until you see the data coming from the PLC.

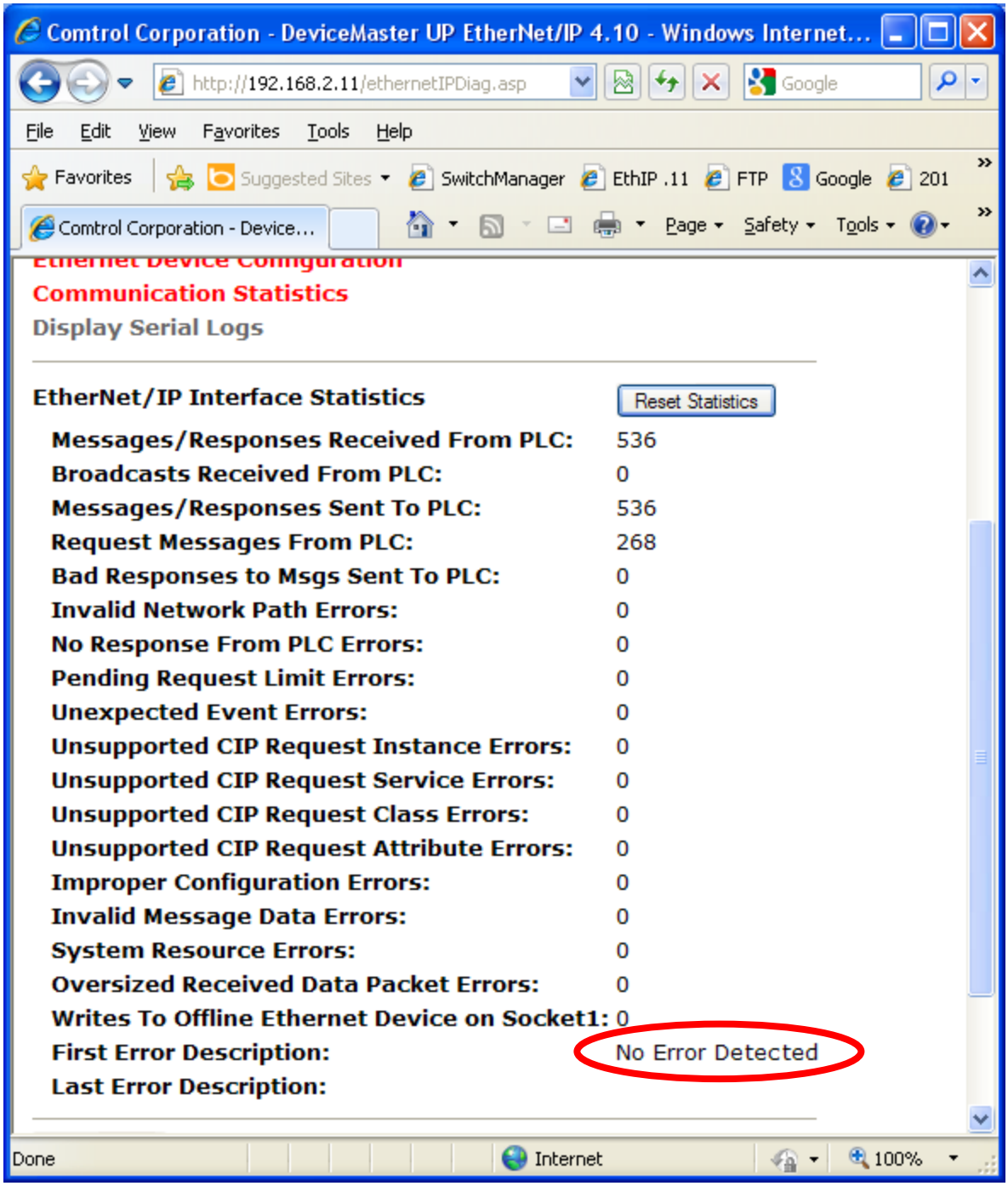


The data will look lie this.
Pkt(1): 000 00:43:33:960:Rx:ComPort1 Tes(09h)(00h)(00h)(00h)(00h)(00h)(00h)(00h)(00h)…
Pkt(2): 000 00:43:33:970:Tx:ComPort1 Tes(09h)(00h)(00h)(00h)(00h)(00h)(00h)(00h)(00h)…
No error messages are displayed.
Rx is from the serial port.
Tx is to the serial port.

Scroll up to the top of the page and select PLC Interface Diagnostics



Once you scroll down to show the statistics you will see:



In this case, there are no error messages as seen by the “First Error Description” and “Last Error Description”

We will now return to the PLC to confirm all is working as anticipated.

Data Confirmation

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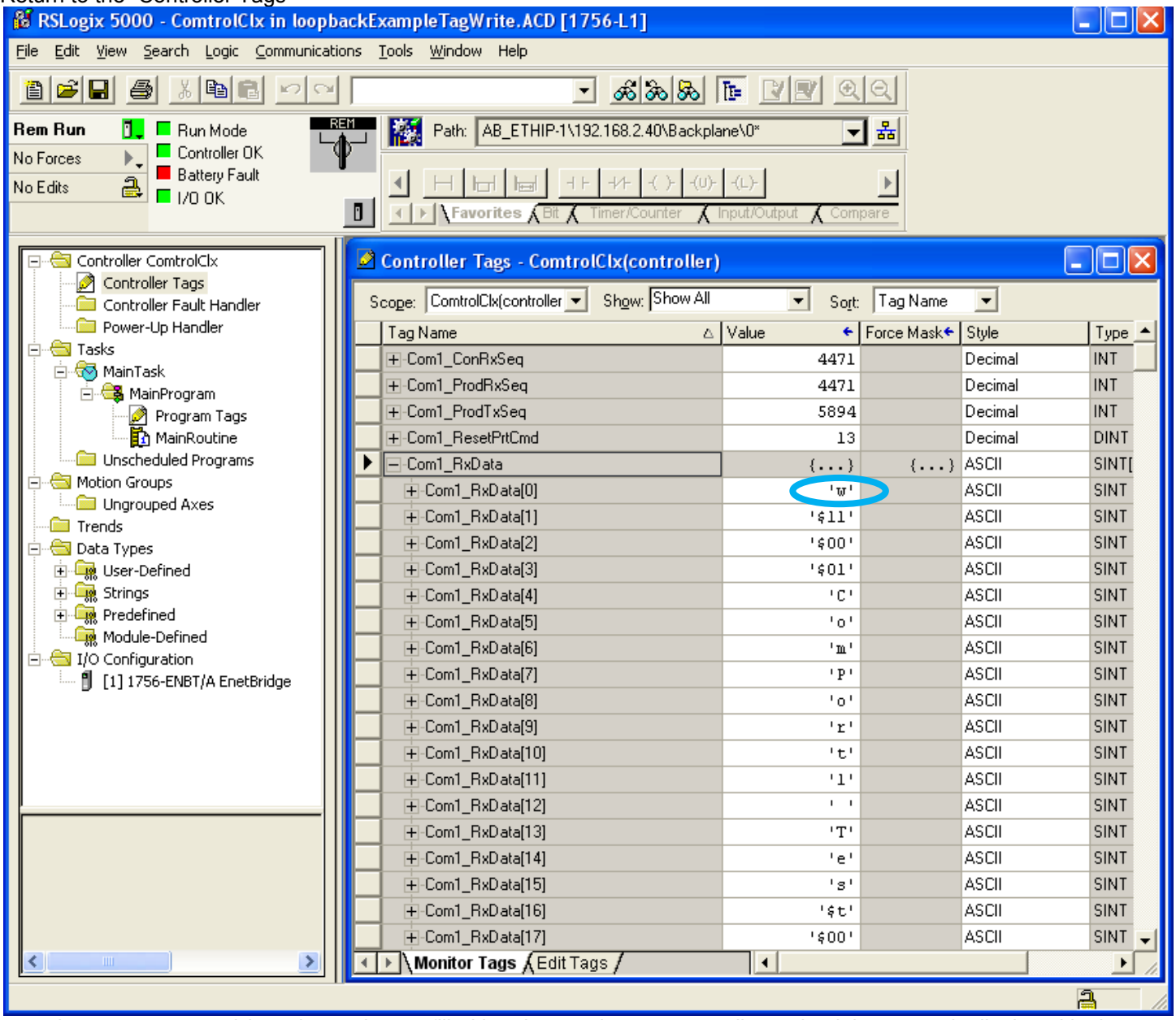
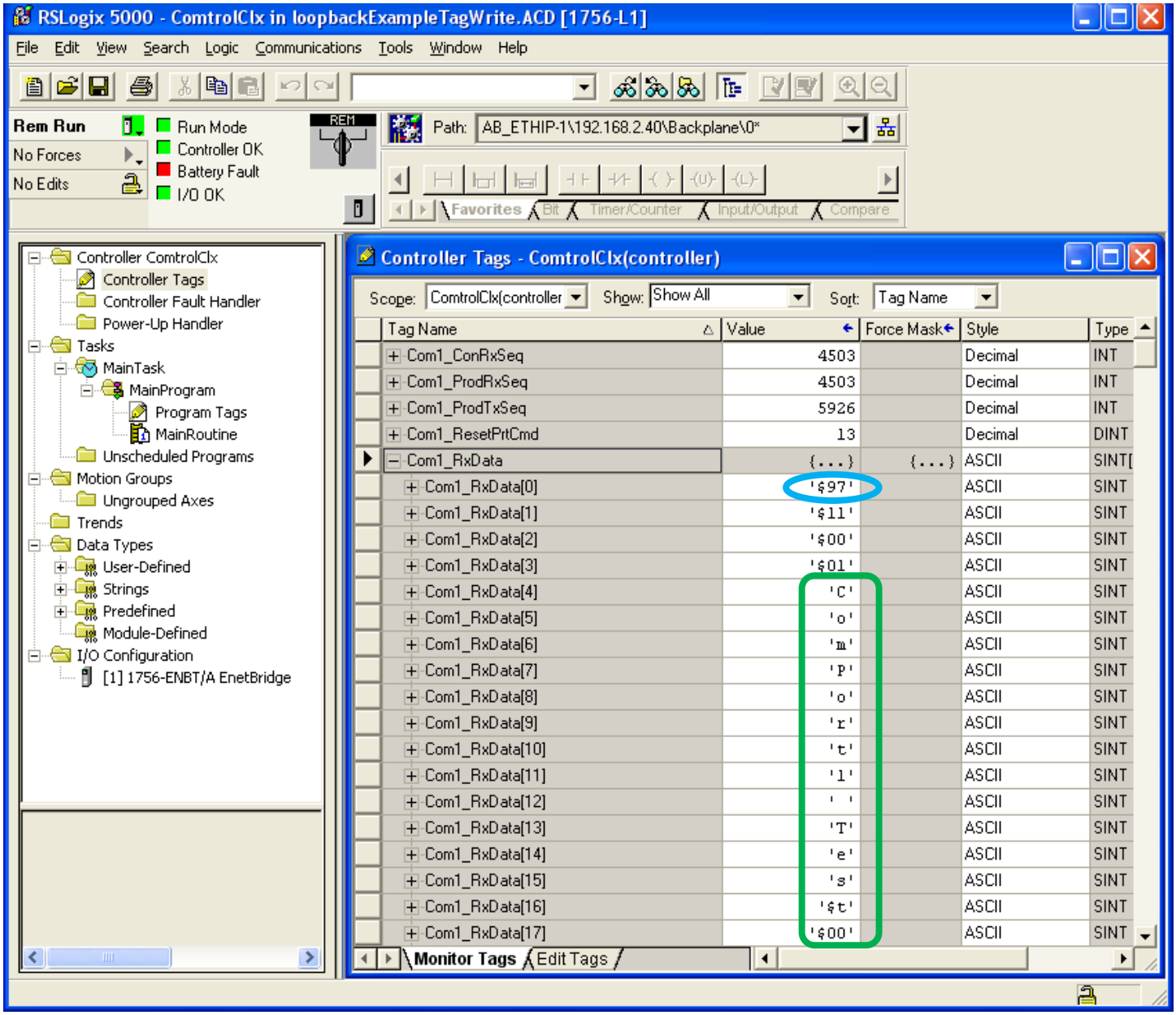
Return to the “Controller Tags”



Note the Com1_RxData(0) tag byte 1 is now filled in. These values are actually Decimal, but ACSII is displayed in these examples.
The first 2 bytes Com1_RxData(0) and Com1_RxData(1) are the 2 bytes of the sequence counter.
The next 2 bytes Com1_RxData(2) and Com1_RxData(3) are the 2 bytes of the length field.
The rest of the values are the DATA being transmitted and received.

The only values you will see changing are the first 2 bytes (Com1_RxData(0) and Com1_RxData(1)) as the length field does not change and the data does not change.

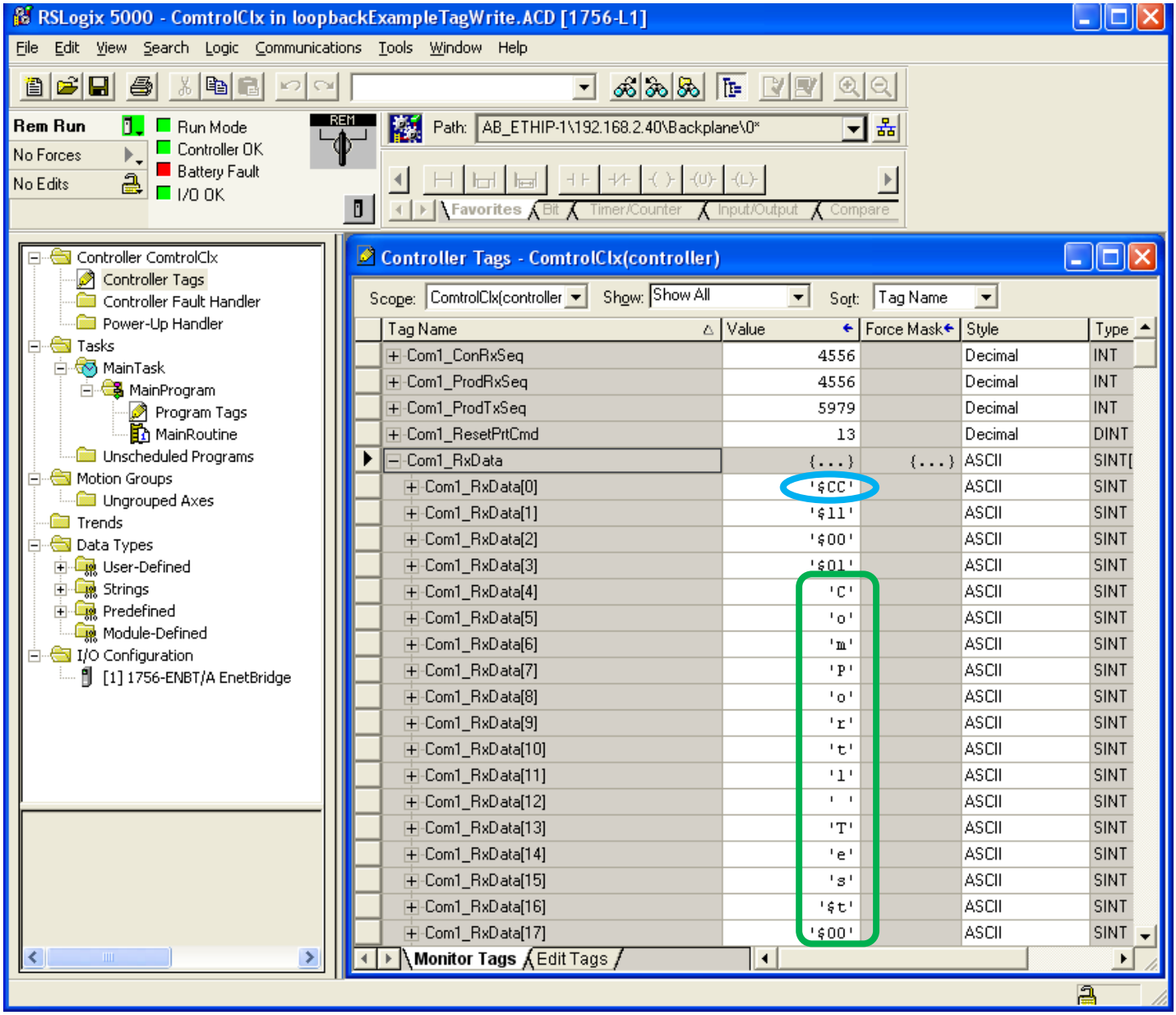
Compare the above screen shot with a screen shot taken moments later below.



Com1_RxData(0) has changed from a “(without quotes) to “97”
You can now see the data that has been sent to the PLC and written to the tag.

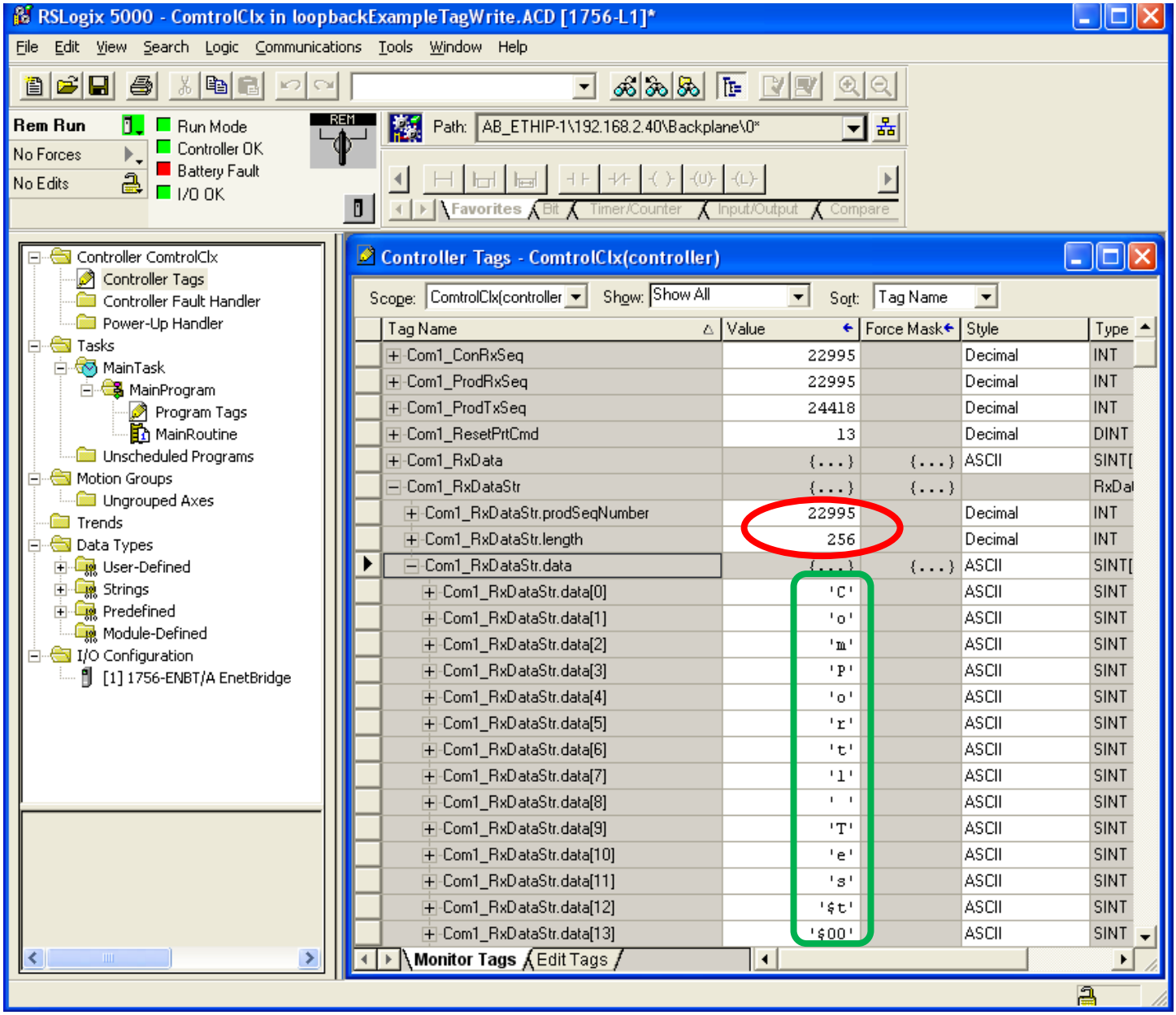
The PLC and the DeviceMaster are fully functional at this point.

You may now modify the write options if you so desire, or you may entirely eliminate the write functions in the ladder and only use the read functions.



Here is another screen shot taken a few moments later again showing the change of the Com1_RxData(0) from “97” to “CC”. The data is unchanged.

The next and last step of the project is to copy the data from the Com1_RxData and place the data into Com1_RxDataSTR.data. The data will then be seen in the next graphic.



The sequence number and length field are now displayed in the decimal format.

From this point you may modify the project to copy the data in this structure to a location where you may manipulate the data or manage the data in whatever manner you desire.

Determination of STX and ETX

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Once you have modified the MainRoutine for your requirements such as removing write commands for a read-only configuration, you will remove the Loopback Plug and replace it with your own device. In this example we will be connecting a hand held bar code scanner.

My bar code scanner adds an ETX (End of Transmission) value. This value is used to specify that the data is finished. The DeviceMaster will use this information to send the data as a single packet to the PLC. Some devices will use both an STX (Start of Transmission) and an ETX (End of Transmission) value. The DeviceMaster can show what these values are so that they can be added to the serial port configuration to improve performance, reduce delays in getting data to the PLC and reduce PLC overhead. Improper values will cause data to be (Dropped) in the serial logs, meaning that the data was not sent to the PLC at all. To determine your STX and ETX values use this quick tutorial. The procedure here is the same for both the Serial Device Logs and the Ethernet Device Logs. Just be sure to go to the appropriate log file.

These procedures are to be used after the DeviceMaster is sending data to the PLC.

Open the web page to your DeviceMaster UP. From the Home Page, click "Display Serial Logs"
Here is a sample of the Serial Interface Log file in Ethernet/IP (The Ethernet Device Logs are the same format)

Serial Receive/Transmit Logs
(Reset Serial Log)
Port1 Rx/Tx Packets (first 128 packets, max of 128 bytes):
Pkt(1): 000 04:43:06.630:Rx:test(0Dh)(0Ah)
Pkt(2): 000 05:41:04.390:Rx:17162(0Dh)(0Ah)
Pkt(3): 000 05:41:11.470:Rx:12345670(0Dh)(0Ah)

Pkt This is the descriptor for Packet
(1): This is the ID number of the packet
000 04:43:06.630 breaks down as this:
000 = day number
04: = hour number
43: = minute number
06. = second number
630 = milliseconds
The day and time values highlighted in blue are NOT the date and time of day. The DeviceMaster UP does not have a Date/Time clock. This is the period of time that the DeviceMaster UP has been running. Rebooting the DeviceMaster UP will reset all of these values back to 0.
Rx: This is the indication of a receive packet from the serial port's bar code scanner.
Tx: This is the indication of a transmit to the serial port from the PLC (There are none in this sample)

These are all the actual data from the bar code scanner.
Test
17162
12345670

(0Dh)(0Ah) = The ETX (End of Text) value provided by the scanner. These values must be converted to DECIMAL to be entered into the "Serial Device Configuration>Port#>Serial Packet Identification".
(0Dh) Indicates that a HEX value of 0D is used. This corresponds to CR (Carriage Return) in ASCII and 13 in DECIMAL.
(0Ah) Indicates that a HEX value of 0A is used. This corresponds to LF (LineFeed) in ASCII and 10 in DECIMAL.
(You may use any ASCII chart from the web to determine your translations.)

After converting to DECIMAL we now know that we use a Carriage Return and a LineFeed to define our ETX.
Open the web page to "Serial Device Configuration"
Click on the serial port # to configure.
Scroll down to the "Serial Packet Identification" section of the page. (Click to see graphic)
In the ETX (End of Transmission) Rx Detect set the number of bytes to use. In this sample we will use 2 bytes
In the Byte 1: field enter the number 13
In the Byte 2: field enter the number 10
Scroll to the bottom of the page and click on the "Submit" button.

Section 2

Change the configuration from SERIAL mode to SOCKET mode

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Here we will demonstrate the configuration for a Socket device instead of the Serial device used with the Loopback Plug. Completing the Serial mode testing prior to doing the Socket mode testing is recommended. Much of this section is based on the knowledge gained from the previous section.

We will use a telnet application included in PortVision Plus called PuTTY for our socket device simulator.

We will configure the DeviceMaster, then setup PuTTy and then modify the MainRoutine in the PLC project

Chapter 1 (page 40): Configure the DeviceMaster for an Ethernet Device
Chapter 2 (page 48): Setting up PuTTY
Chapter 3 (page 50): Change the Project's MainRoutine for an Ethernet Device
Chapter 4 (page 56): Confirmation of Socket Data Transfer

Configure the DeviceMaster for Ethernet Device

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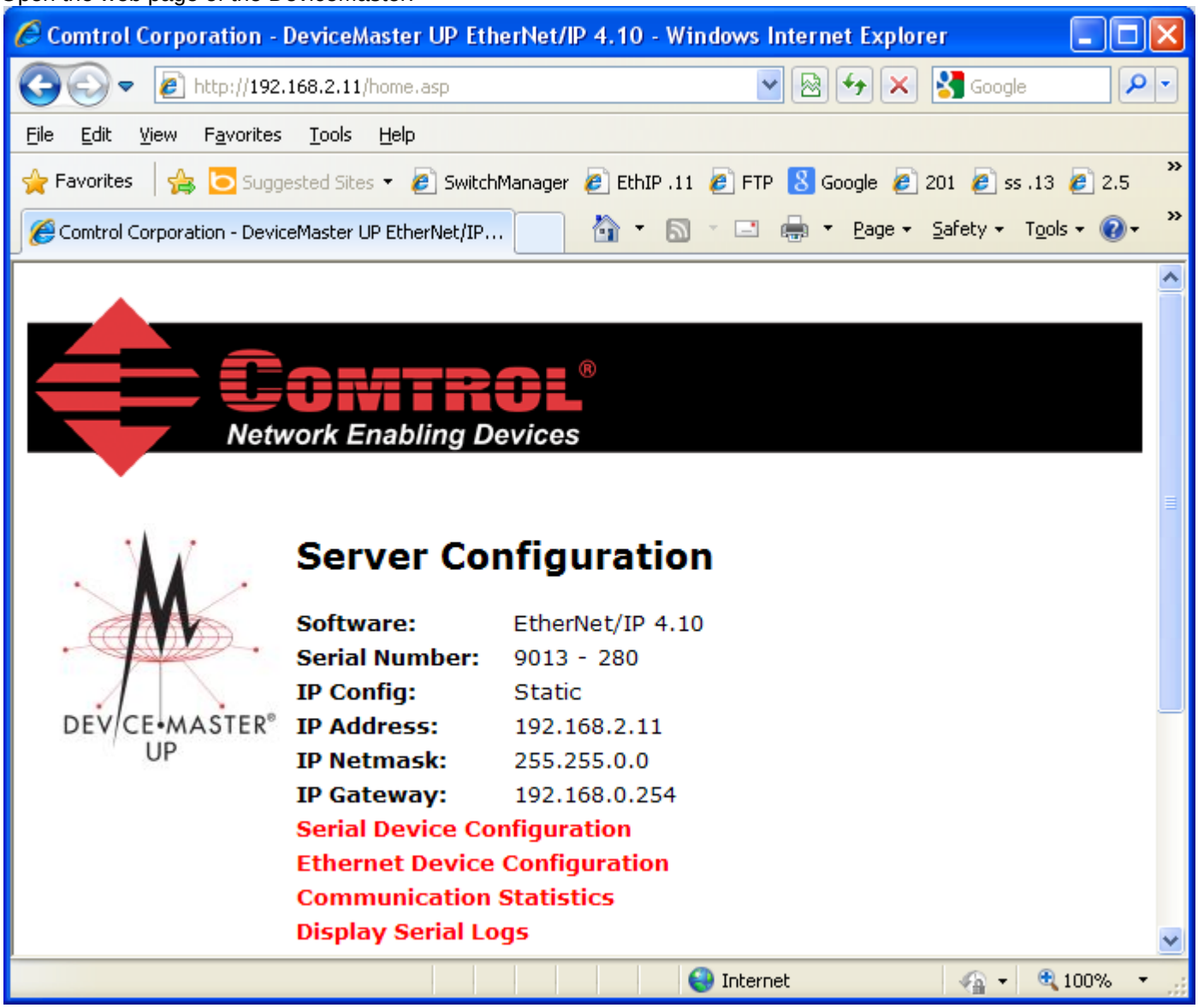
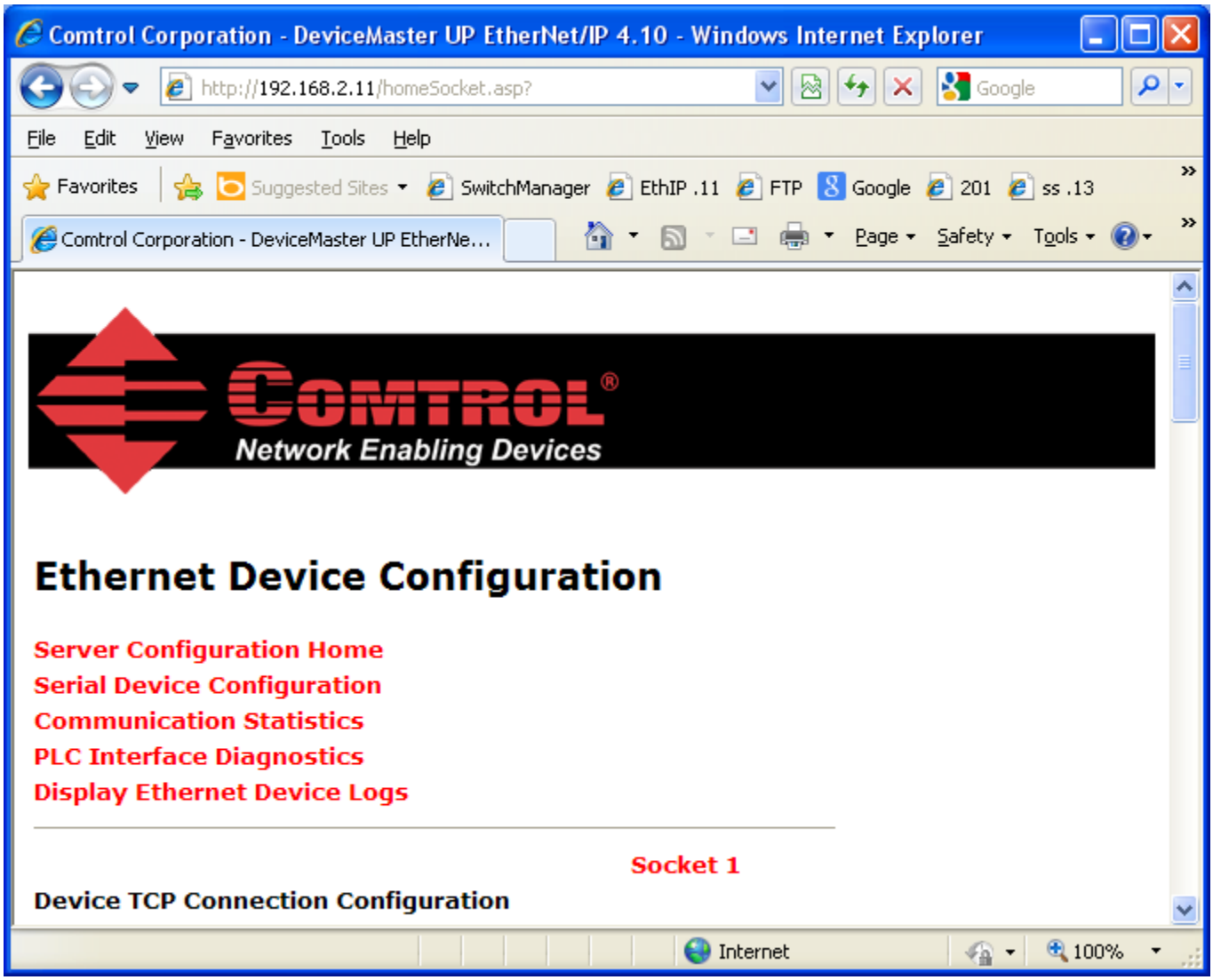
Open the web page of the DeviceMaster.

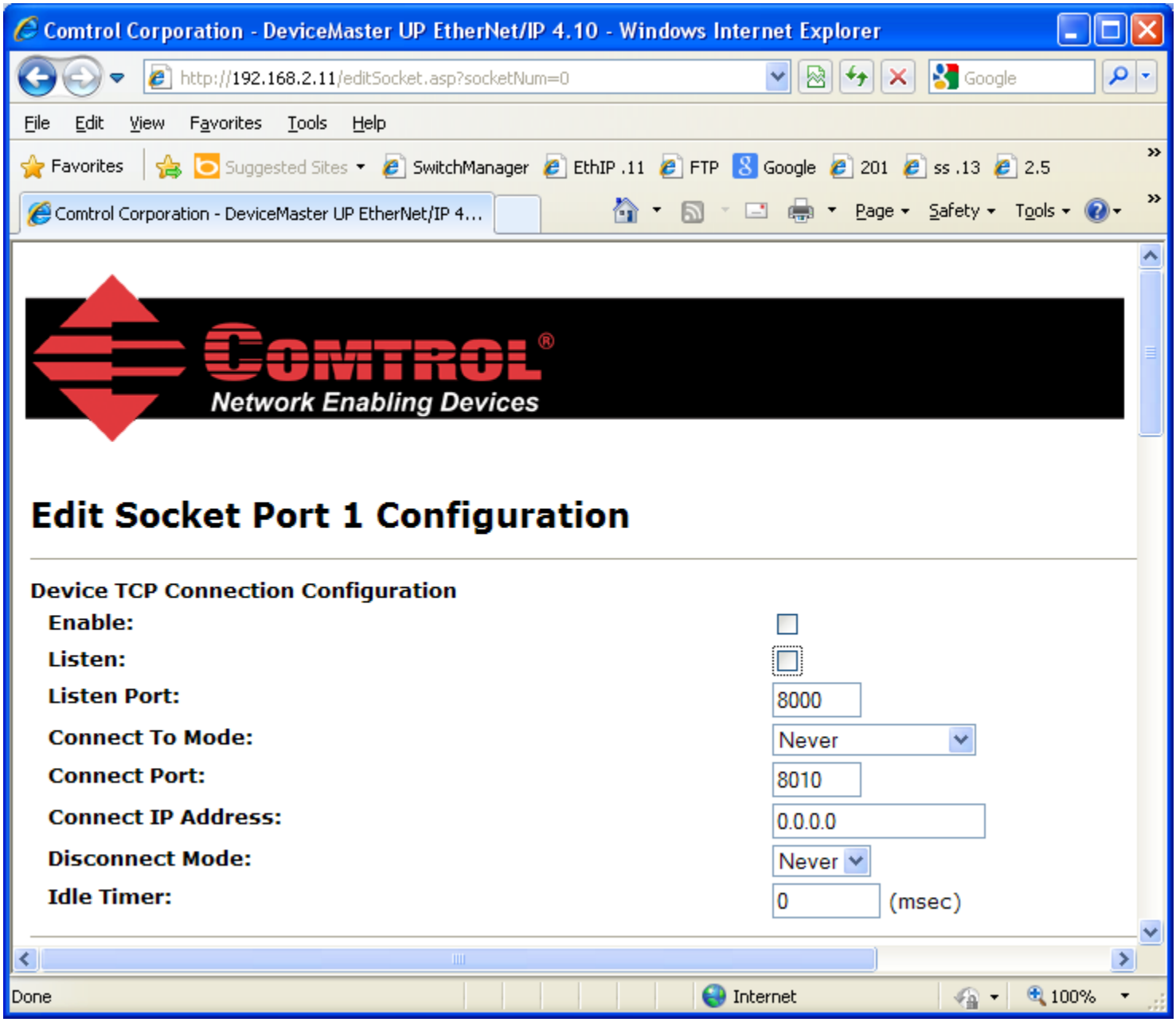


If your DeviceMaster UP does not have Ethernet/IP 4.10 shown as the “Software:” type, you will need to load in the correct firmware. Firmware is included in the same file that provided the loopbackExampleTagWrite.L5K from the proceeding steps. Use PortVision Plus to install the ethernetip-4.10.bin file to the DeviceMaster.

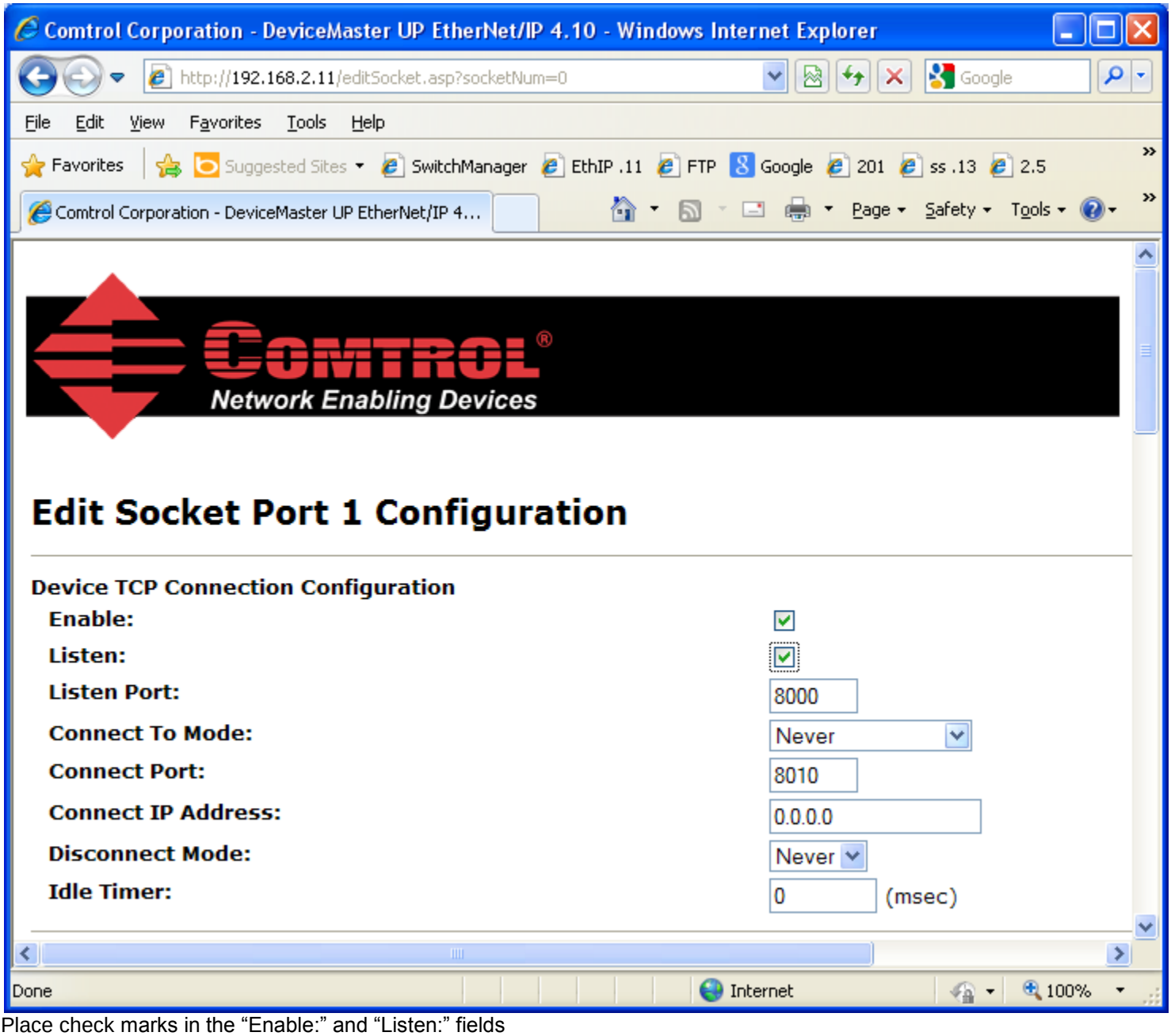
Click on Ethernet Device Configuration



Click on Socket 1

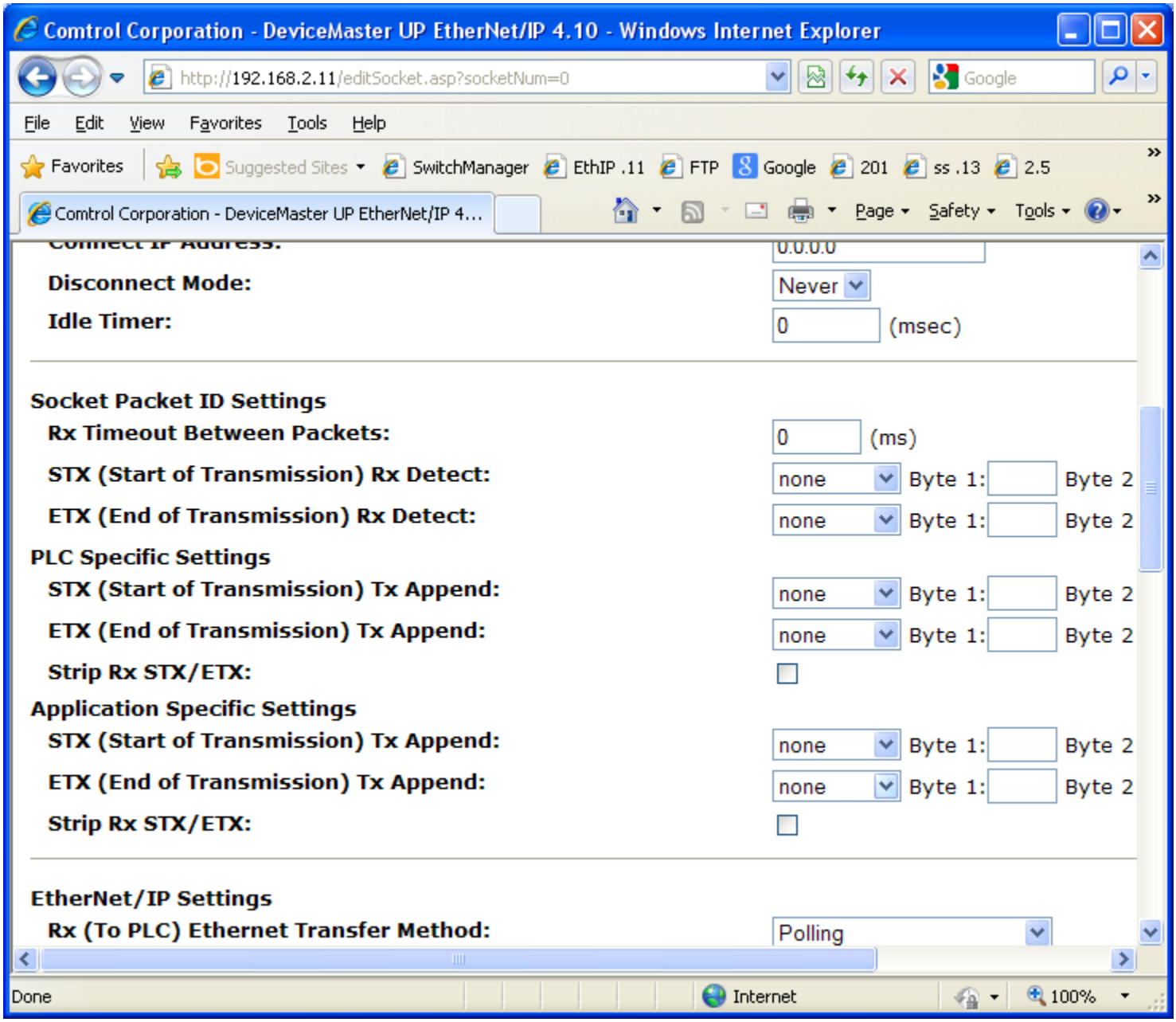


The default options for the Device TCP Connection are shown here.



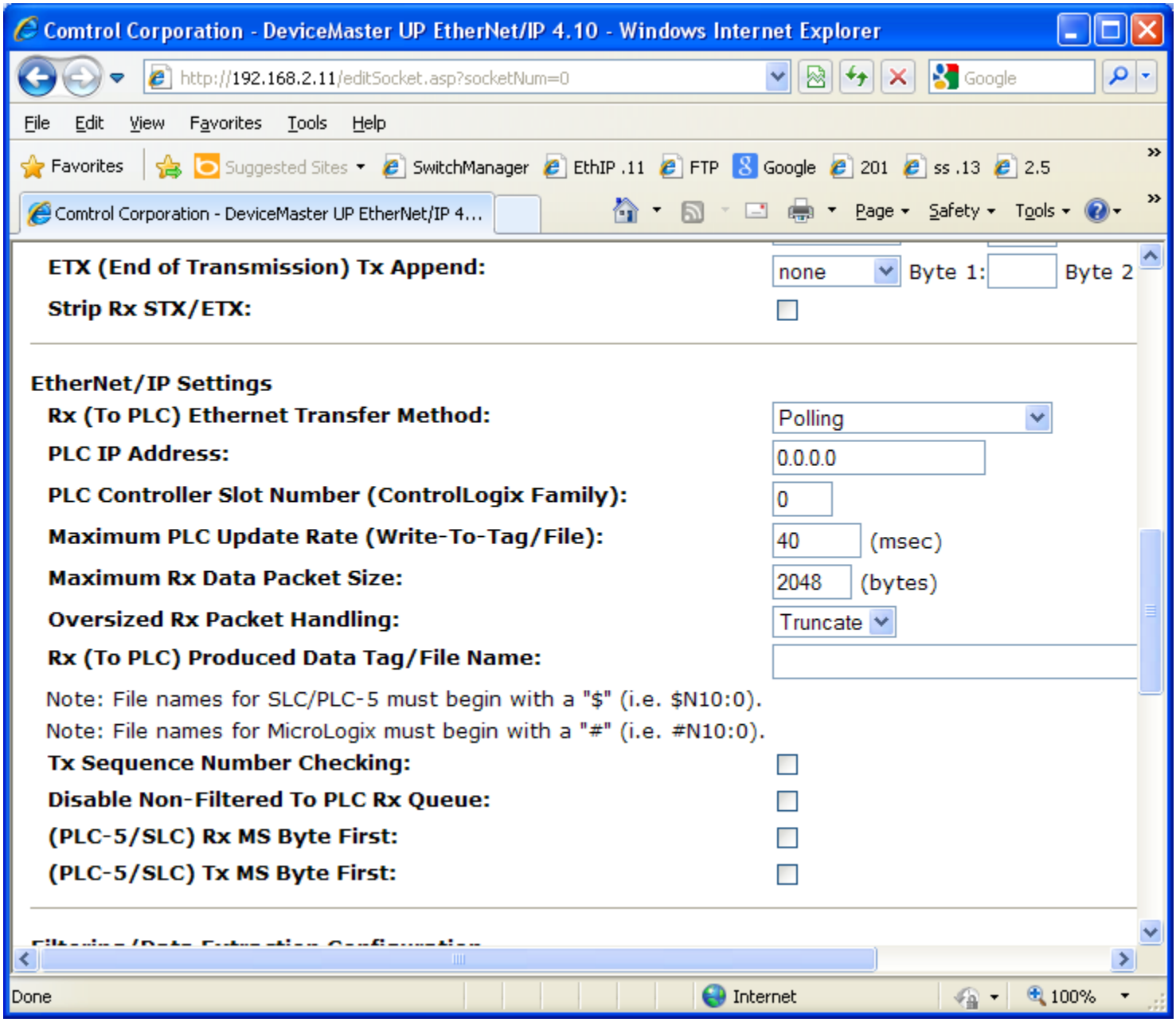
Place check marks in the “Enable:” and “Listen:” fields
The other setting may remain at default.

We are setting this up to work with PuTTY, a telnet application in a Windows system. Normally this would be configured to talk to a device of some kind and would initiate the connection. Once we have finished our testing, and you are ready to start using your device, make the following changes:
Remove the checkmark in the Listen box
Change the “Connect To Mode:” to be “Connect-Always”
Change the “Connect Port:” to be the listening port on your device which will be device specific. You will find this information in the user guide included with your specific device such as your scanner or printer.
Scroll to the bottom of the page and click the “Submit” button.

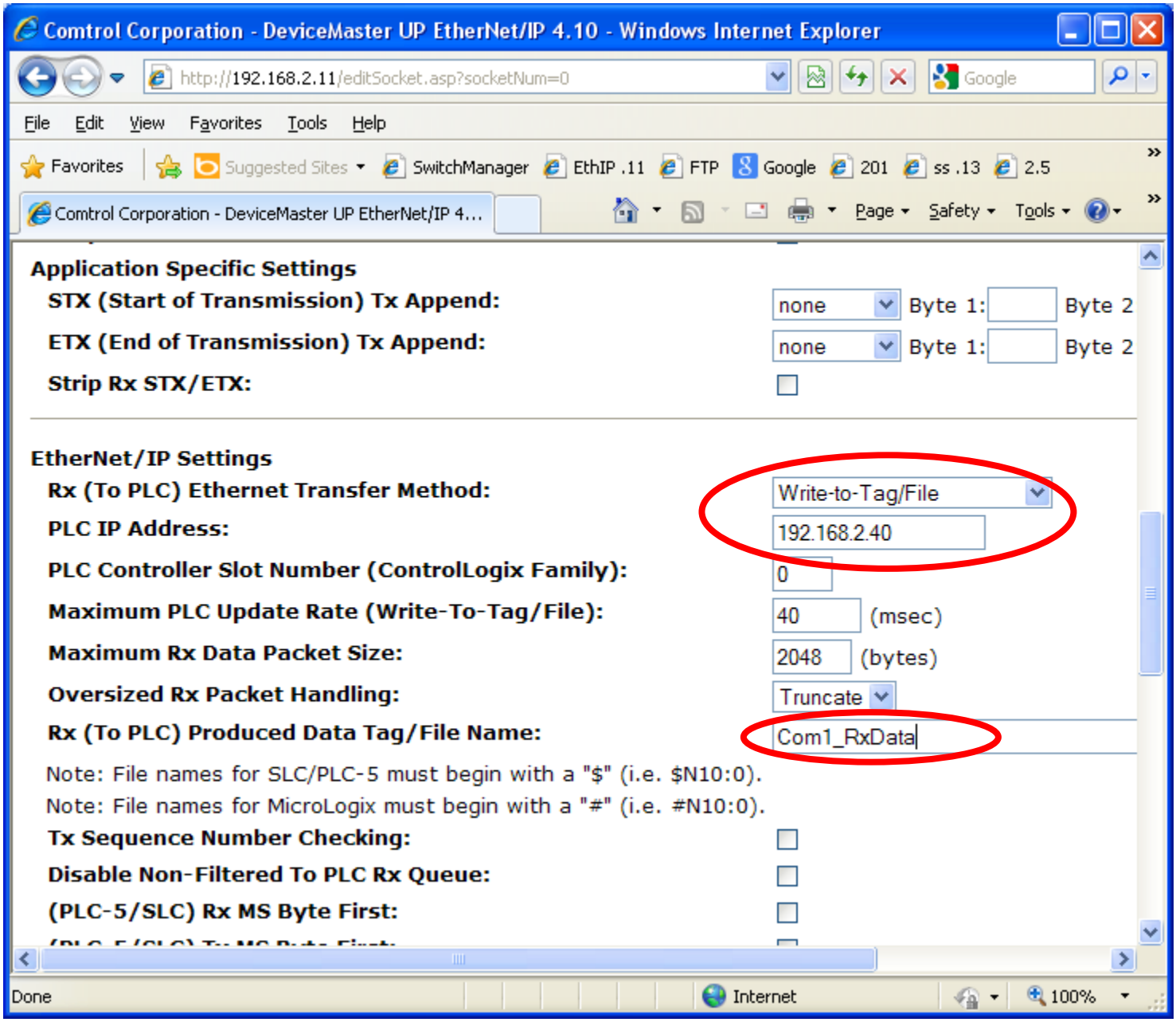


Scroll down to the “Socket Packet ID Settings.
Defaults are shown here. Nothing will be changed here until later.

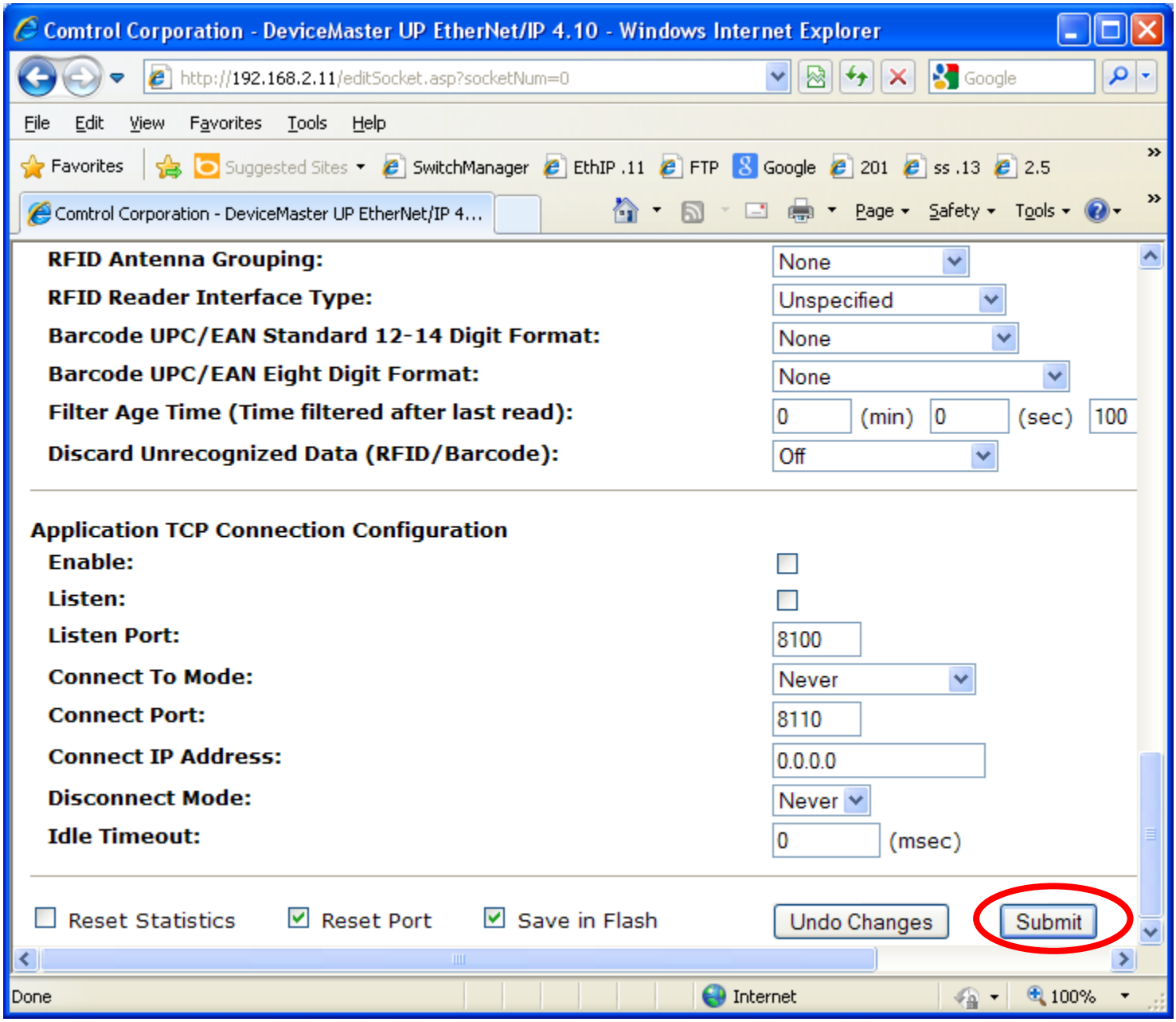
Once you have completed the testing procedure, you will want to use the Determination of STX and ETX values to find what the values are to be placed in these STX and ETX fields. You will find these values in the Display Ethernet Device Logs instead of the Serial Device Logs. Once your mew values are input, scroll to the bottom of the page and click on the “Submit” button.



Scroll down to the Ethernet/IP Settings:
Defaults are shown here.



Modify these settings as shown.
RX (To PLC) Ethernet Transfer Method: Write-to-Tag/File
PLC IP Address: The IP address of your PLC. My PLC is 192.168.2.40
RX (To PLC) Produced Data Tag/File Name: in the Sample Code we use Com1_RxData.



Scroll to the bottom of the page and click on Submit.

Setting up PuTTY

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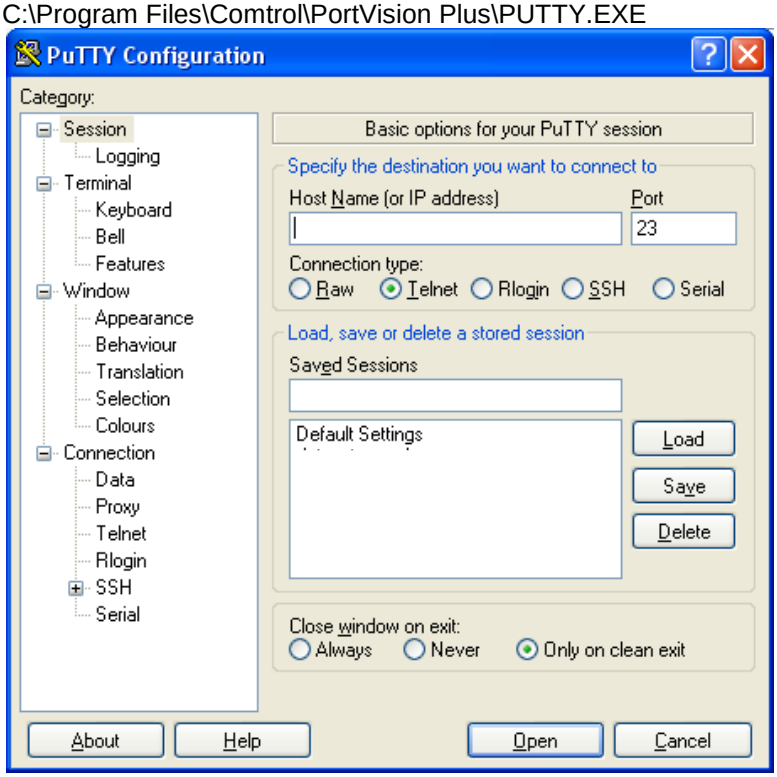
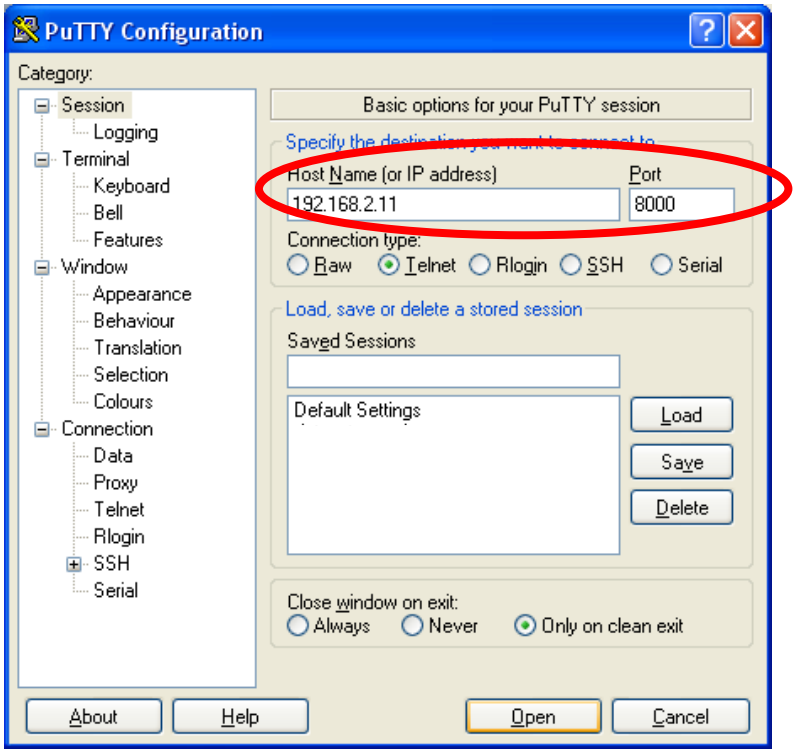
Please note: In this testing procedure we will be using PuTTY to connect to the DeviceMaster. In most cases, the DeviceMaster will connect to the Ethernet device instead of the Ethernet device connecting to the DeviceMaster. Once this testing has completed you will probably be reconfiguring the information displayed on page 42 of this guide.

Open PuTTY which is included in PortVision Plus.
C:\Program Files\Comtrol\PortVision Plus\PUTTY.EXE

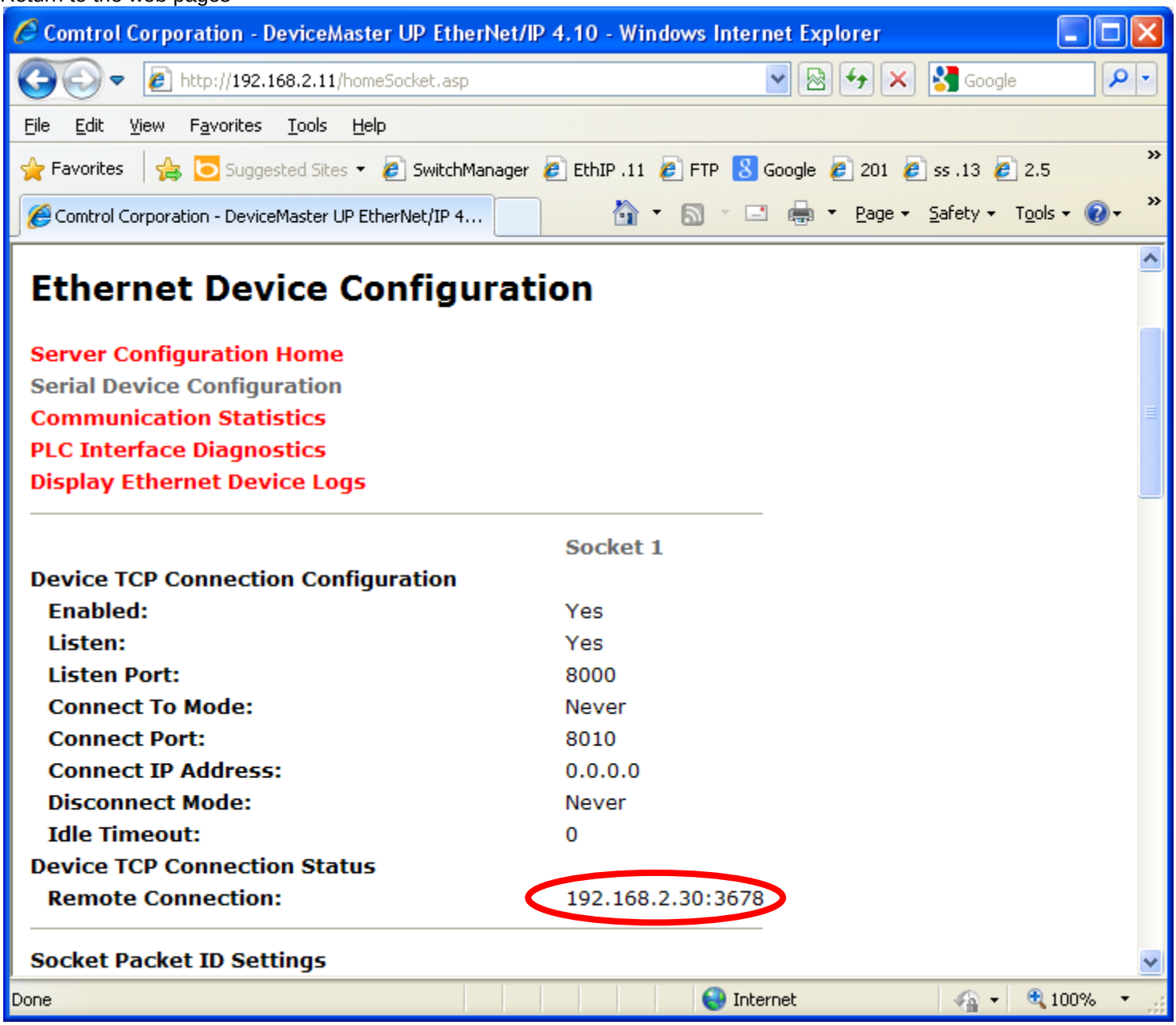


Default Settings are shown here



Enter the IP address of your DeviceMaster in the “Host Name (or IP address)” field
Set the “Port” value to 8000
Click on Open

Return to the web pages



If PuTTY successfully connected you will see in the Remote Connection: The IP address of the PC that you are running PuTTY on. In this case 192.168.2.30:3678. The value to the right of the colon is the source socket value of PuTTY which may change from connection to connection.

Change the MainRoutine in the Project for an Ethernet Device connected to the DeviceMaster

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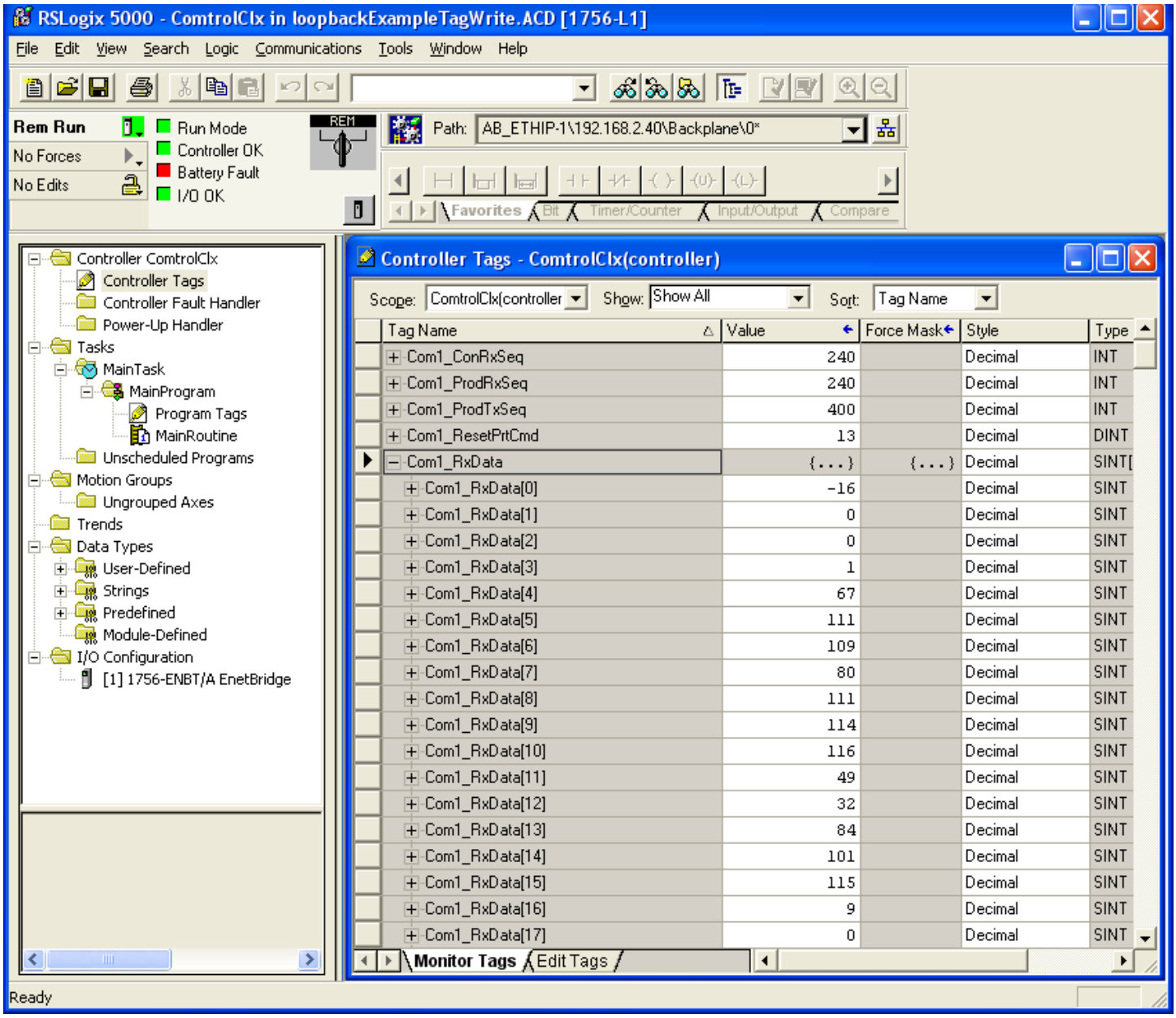
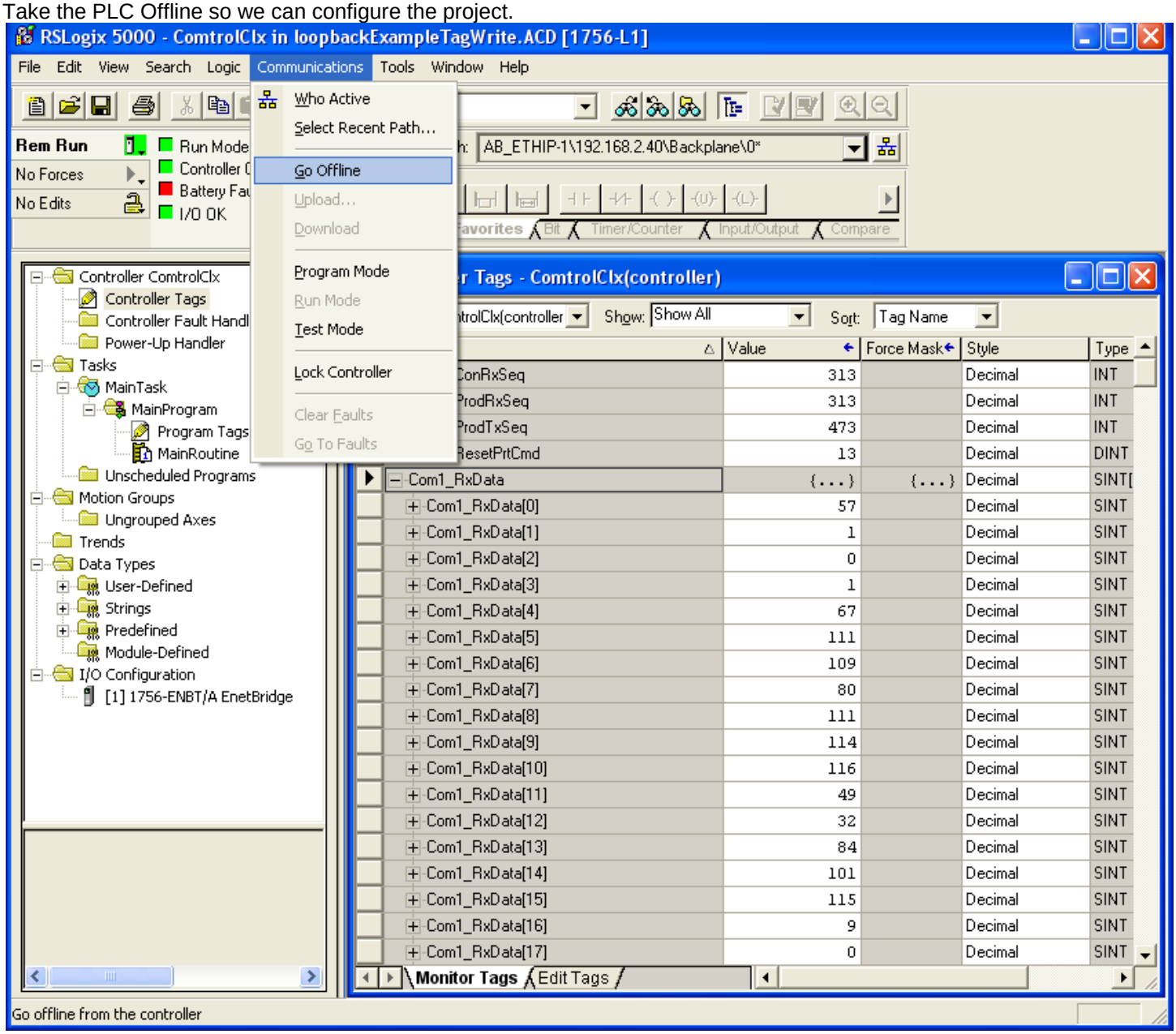
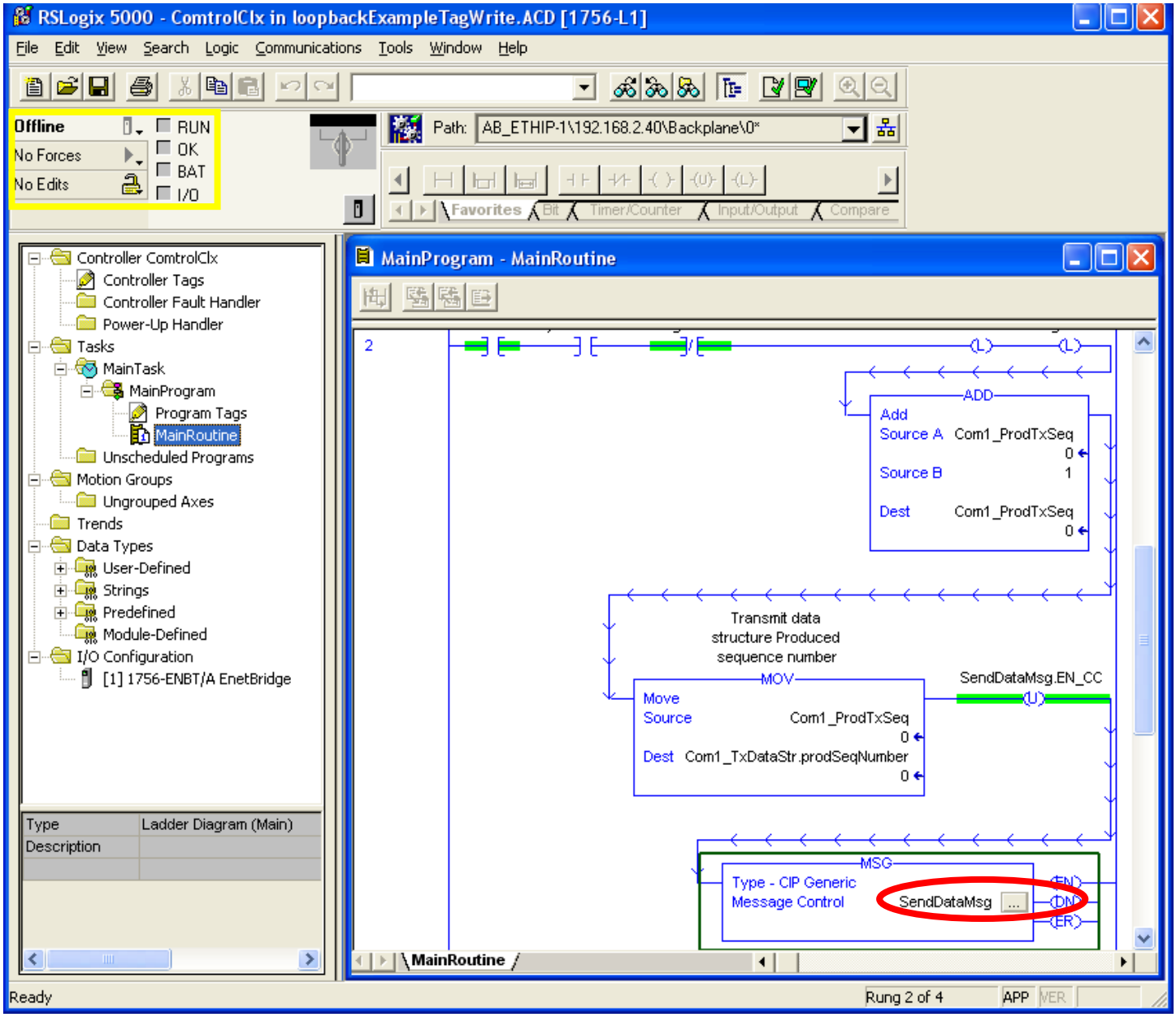
Return to the PLC



Take the PLC Offline so we can configure the project.

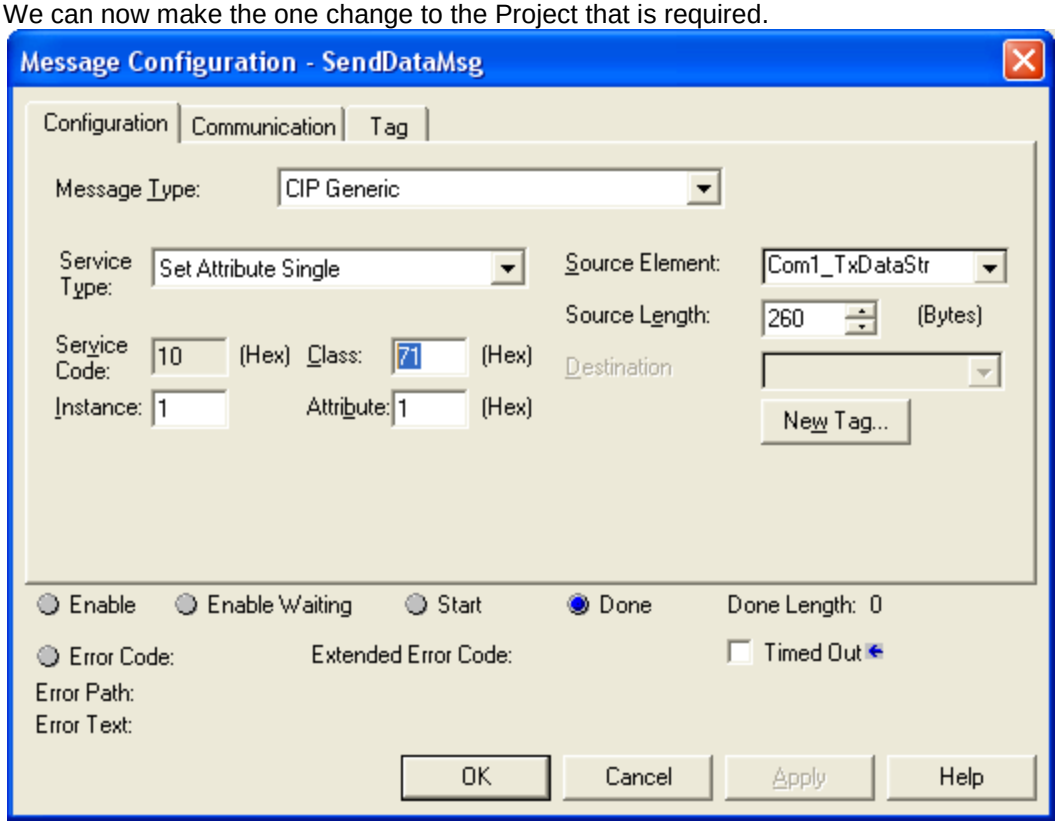


Click on the “Communications” drop down menu and select “Go Offline”

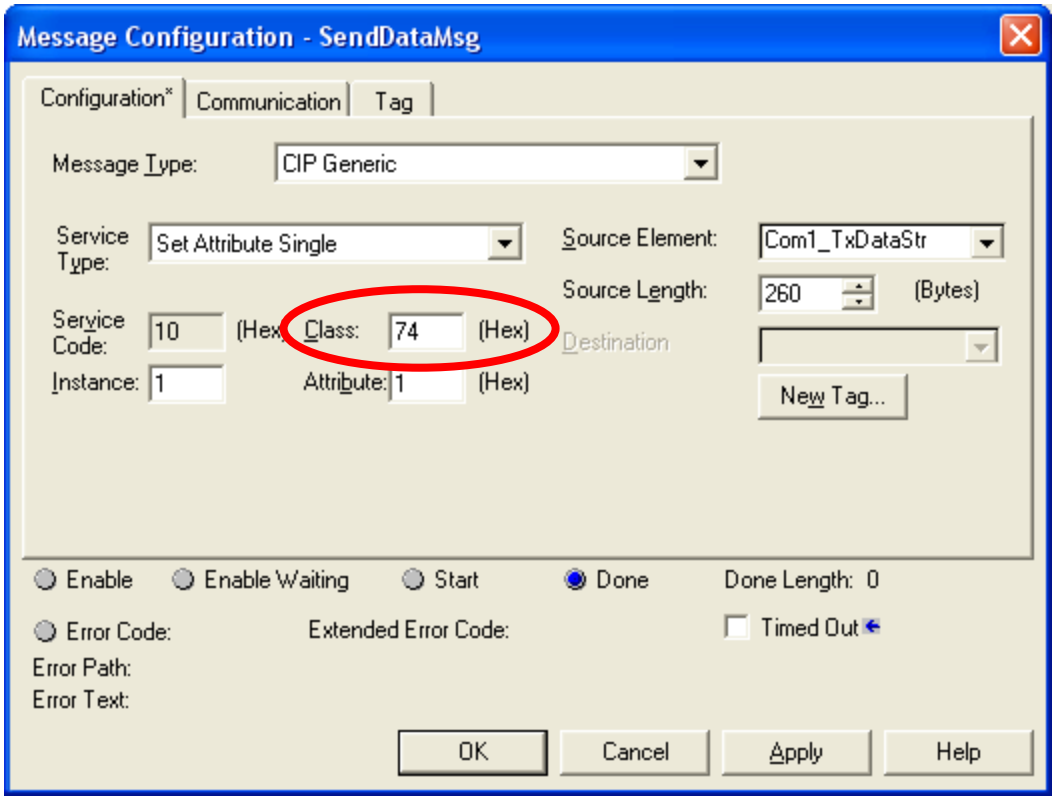


Go to the MainRoutine
Note the Offline indicator in the upper right corner.
Click on the SendDataMsg to open the configuration dialog.

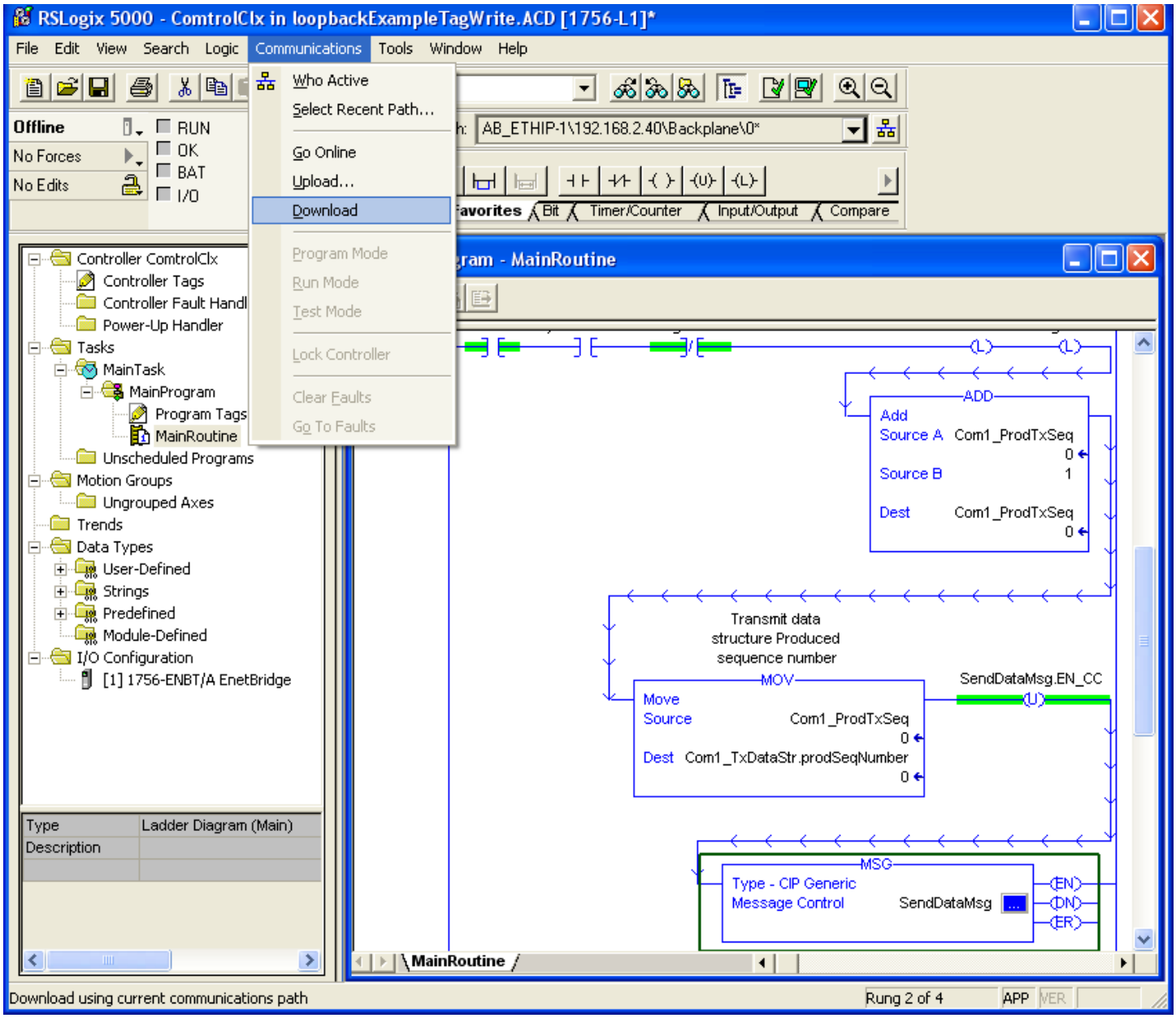
We can now make the one change to the Project that is required.



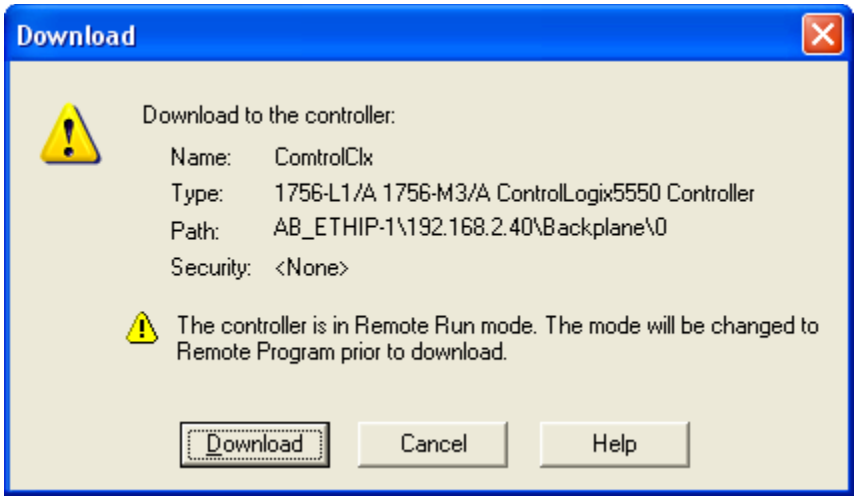
The only option we need to modify is the "Class:" attribute.



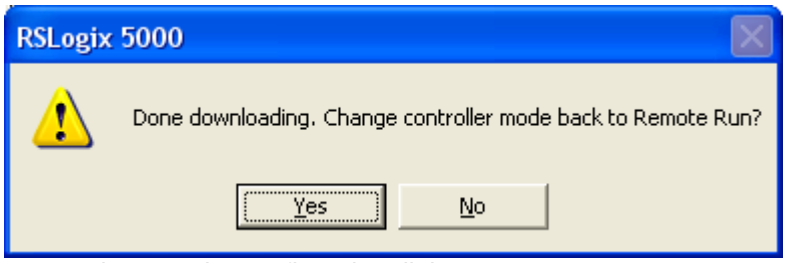
Change the "Class: from 71 to 74 as shown here.
A class of 71 indicates a serial port device is connected.
A class of 74 indicates an Ethernet device will be used. Socket 1 is the socket in use in the DeviceMaster, so the instance will remain a value of 1.
Click "Apply" and "OK"



Now we can download the project to the PLC and let it change back to Run mode.
Click the “Communications” drop down menu and select “Download”



Click the Download button



Respond Yes to the confirmation dialog

Confirmation of Socket Data Transfer

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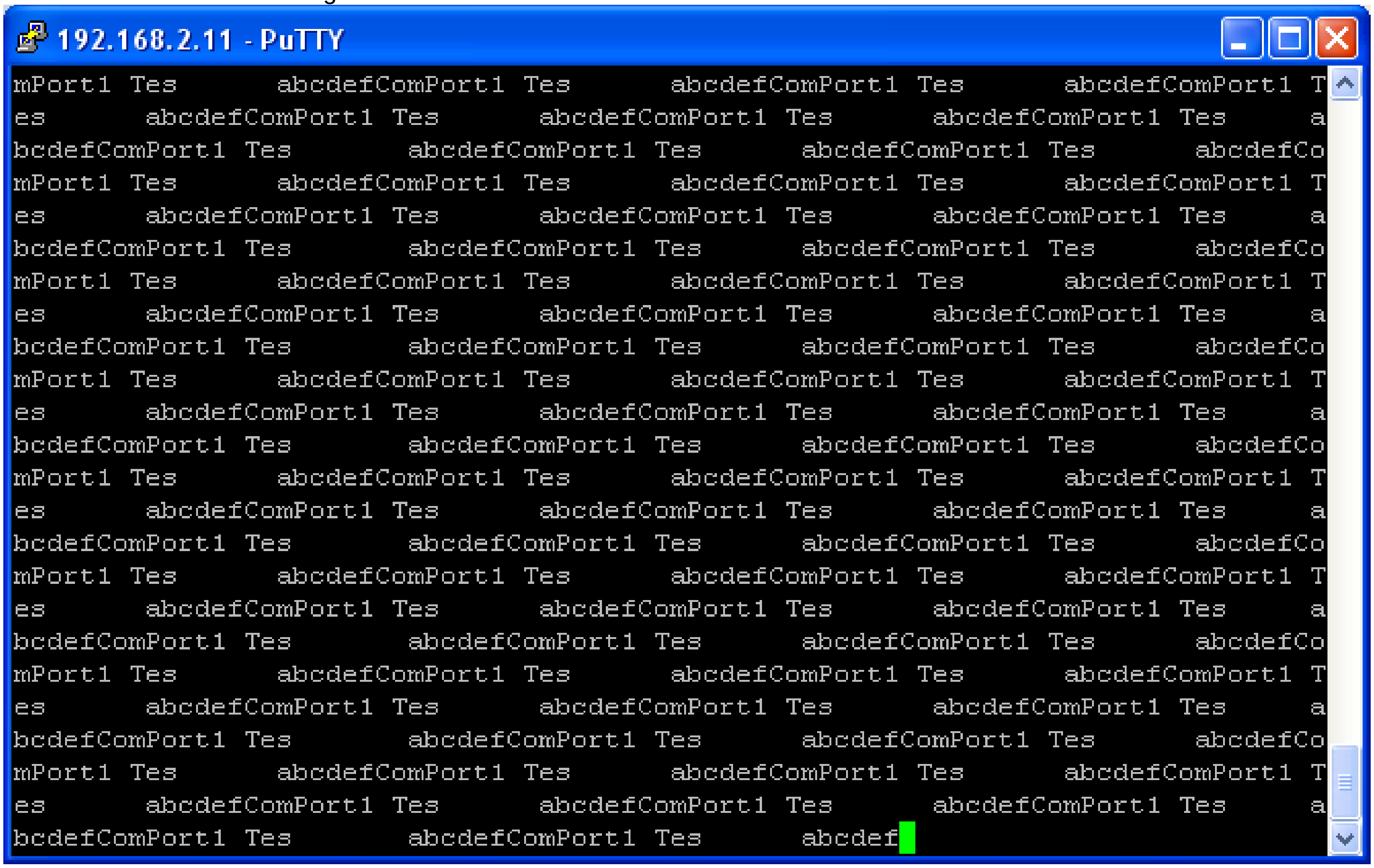
PuTTY should look something like this:



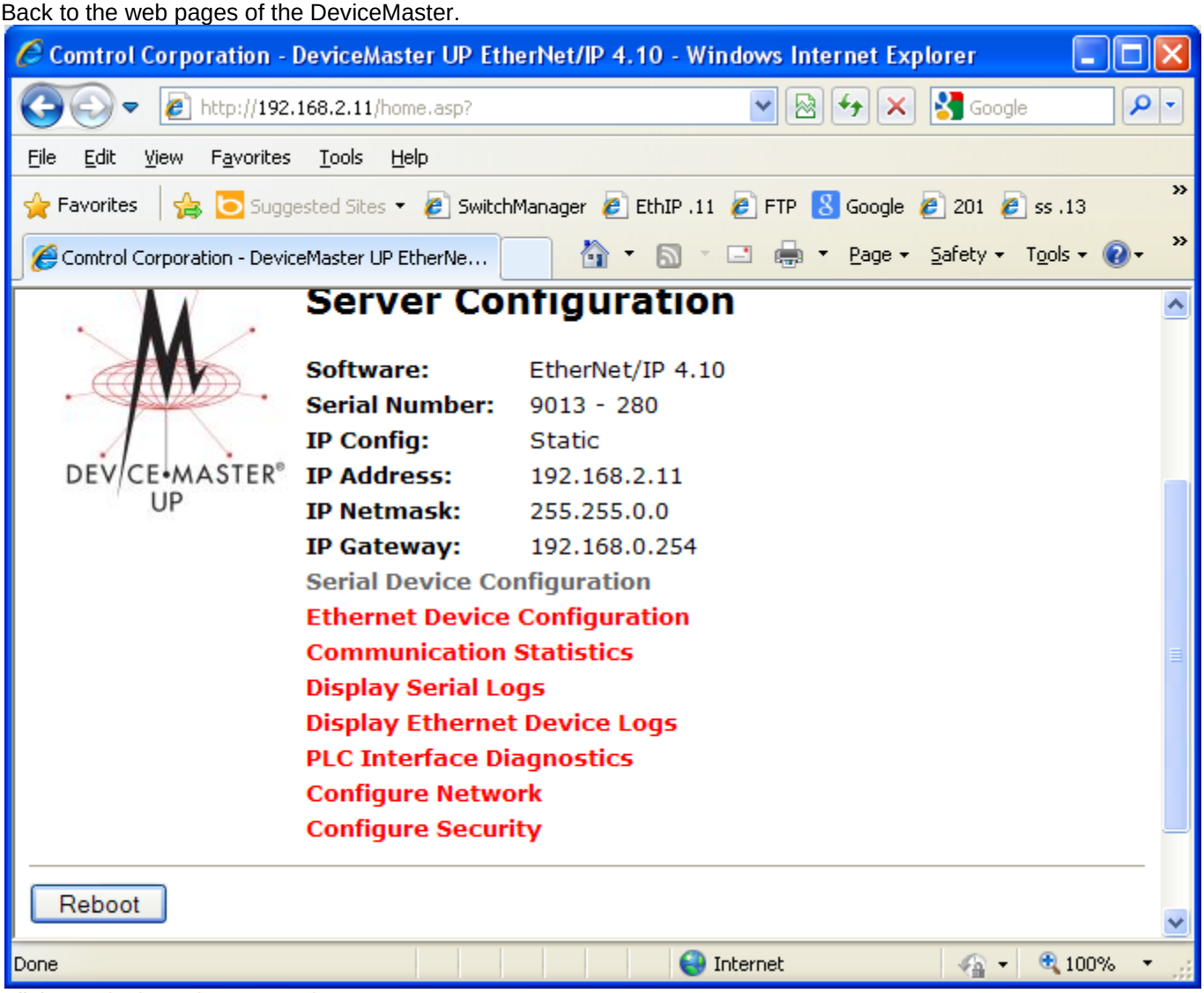
You will see received data in PuTTY. This is the data that the PLC is sending to the DeviceMaster, which is then forwarded on to the PuTTY application. The data from the PLC is being sent without the use of either an STX or ETX so it is simply displayed over and over instead of having each packet on a separate line.

You can send data at the same time, but the data will not display here.

Let's send some data. I will press and hold the letter 'a' for a moment to let it repeat a few times.
Again, it will not be see in the PuTTY display.

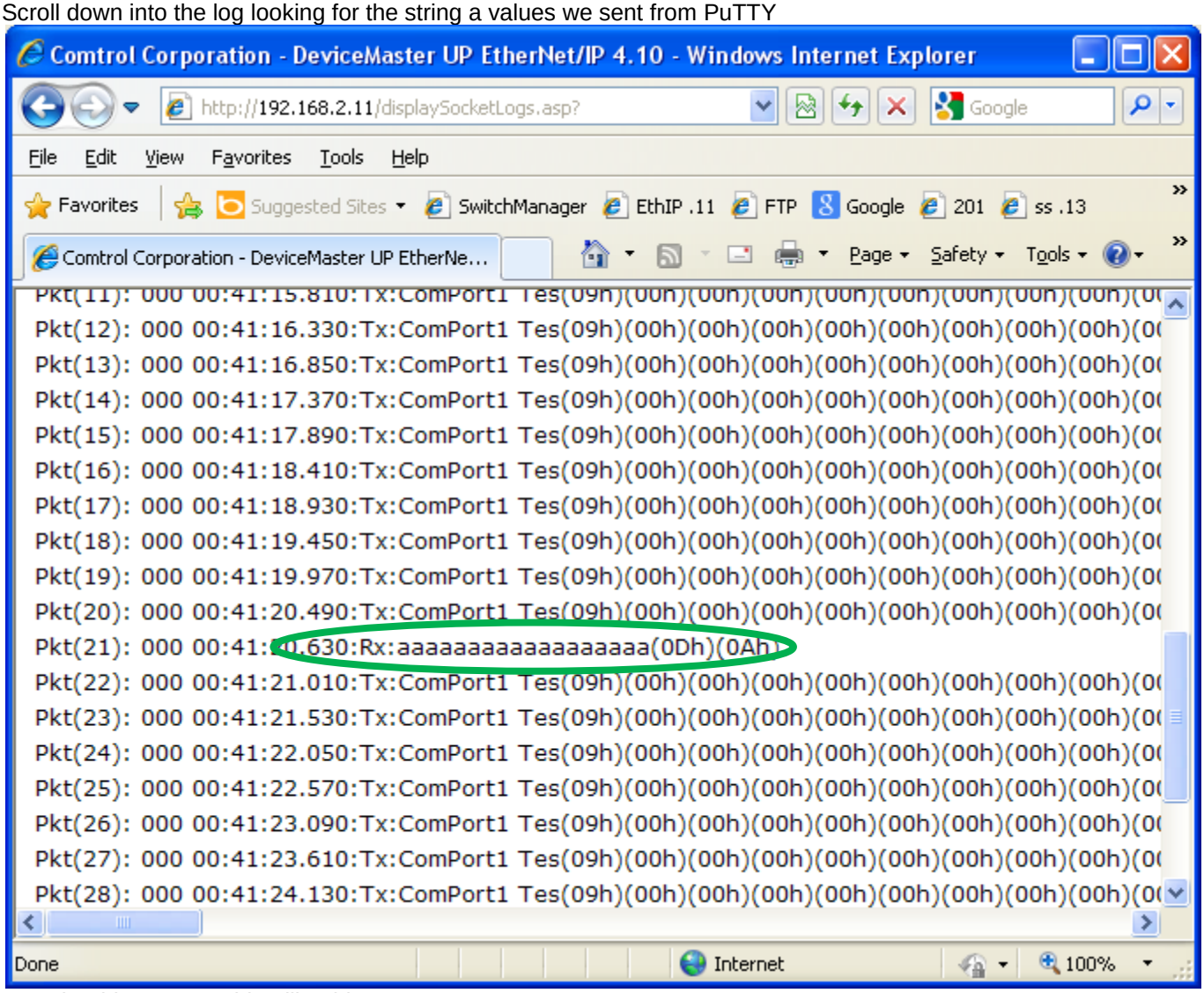
We should see both the received data and the string of 'a' values that we sent in the Display Ethernet Device Logs in a following graphic.

Back to the web pages of the DeviceMaster.



Click on Display Ethernet Device Logs

Scroll down into the log looking for the string a values we sent from PuTTY



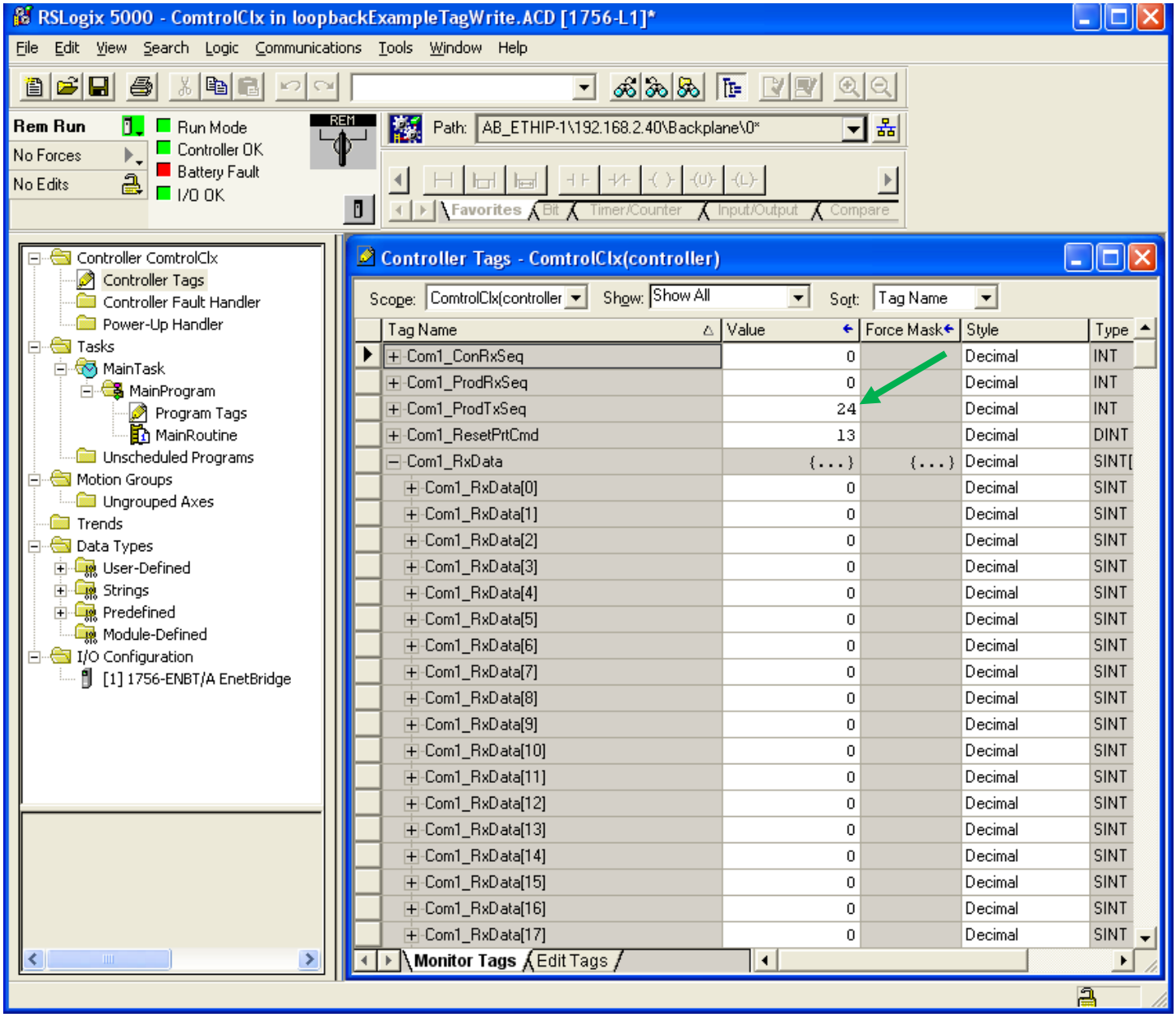
You should see something like this.
Note the Pkt(21) 000 00:41:20.630:Rx:aaaaaaaaaaaaaaaaa(0Dh)(0Ah)
The Rx packet is what was sent from PuTTY. I held the ‘a’ key down for a moment and then pressed the Enter key.
The line breaks down as this:
Pkt(21): 000 00:41:20.630:Rx:aaaaaaaaaaaaaaaaa(0Dh)(0Ah)

Pkt This is the descriptor for Packet
(21): This is the ID number of the packet
000 00:41:20.630 breaks down as this:

- 000 = day number
- 00: = hour number
- 41: = minute number
- 20. = second number
- 630 = milliseconds

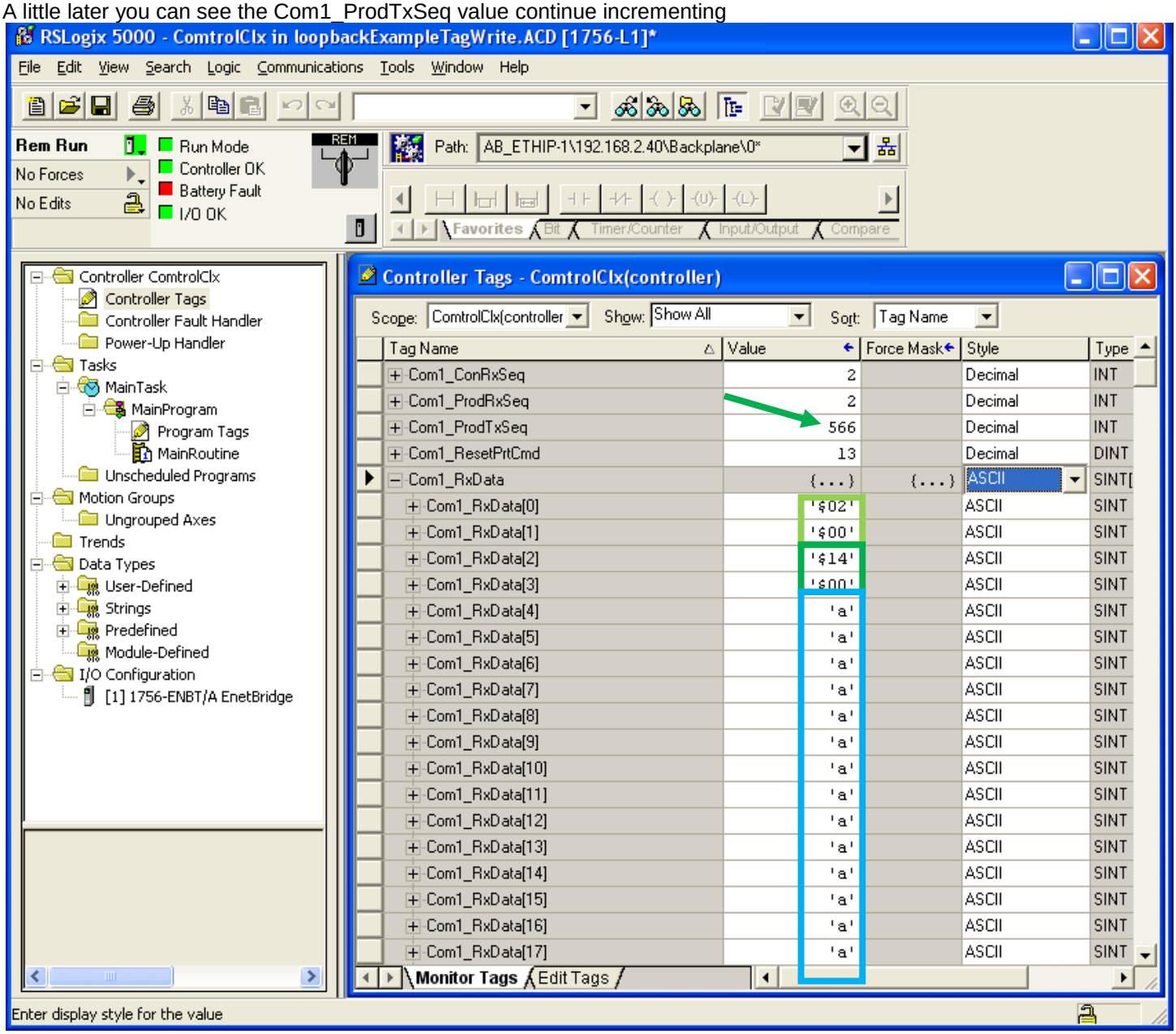
The day and time values are NOT the date and time of day. The DeviceMaster UP does not have a Date/Time clock. This is the period of time that the DeviceMaster UP has been running. Rebooting the DeviceMaster UP will reset all of these values back to 0.
Rx This is the indication of a receive from the socket port.
aaaaaaaaaaaaaaaaa This is the actual data from PuTTY.
(0Dh)(0Ah) The Enter key provided the (0Dh)(0Ah) as the carriage return, line feed. These values converted to Decimal (13 and 10) would be used in the ETX fields.

Now back to the PLC.



Now we should see the Com1_ProdTxSeq value incrementing.

A little later you can see the Com1_ProdTxSeq value continue incrementing



If we expand and look at the Com1_rxData in the PLC we see the sequence counter, the length field and data displayed.

Socket mode is operational.
You may now need to return to the DeviceMaster to configure the socket settings to match to your equipment.

Trouble Shooting and Support Assistance

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Please complete the following procedure and have this ready to send via email to your Comtrol Support Representative This will provide the most comprehensive data for the support person to work with, allowing the quickest and most comprehensive reply possible. In extremely rare case, additional information may be required.

These files will probably tell us everything we need to know as to what is causing the failure. If you use some web browser other than Microsoft Internet Explorer, I do not know if the files will create and display as expected once the support person receives them, so if possible, please use Windows Internet Explorer as the web browser.

You may contact Comtrol Technical Support at 763-957-6000

Serial Port Connected Device:

Using PortVision Plus save the DeviceMaster configuration to a file:
Open PortVision Plus
Highlight the DeviceMaster in question
Click the 'Save' icon on the launch bar
Give a name to the file to save such as your case number or your name.
Save the file to a path that you are comfortable using.

Set the DeviceMaster for "Write to Tag/File" mode using whatever method you prefer. Ether through plc commands to the DeviceMaster or via the web page of the DeviceMaster.
Once it is set to "Write to Tag/File" mode we want to reset the statistics.
Open the web page of the DeviceMaster. (These instructions assume Windows IE)
Click on Display Serial Logs
Click on "Reset Serial Log"
Once reset, click on Server Configuration Home
Click on PLC Interface Diagnostics
Click on "Reset Statistics"
Once reset, click on Server Configuration Home

Do some scans (or whatever you do that causes the error). Capturing just 2 or 3 error instances should be more than enough.

We then want to capture some web pages to have you send to Comtrol.
Click on Serial Device Configuration
Click on Port 1
Click on the "File" drop down menu and select "Save As…"
    Give the name as port1
    Make sure the page saves as type (*.mht)
Click the 'Back' button
Click on PLC Interface Diagnostics
Click on the "File" drop down menu and select "Save As…"
    Give the name as plc-diag
    Make sure the page saves as type (*.mht)
Click on Display Serial Logs
Click on the "File" drop down menu and select "Save As…"
    Give the name as serial-log
    Make sure the page saves as type (*.mht)

Capture screen shots or details of everything that you have modified in the loopbackExampleTagWrite.L5K file

Gather the configuration file from PortVision Plus and the web pages saved files and zip these files together with the details of the changes made to the loopbackExampleTagWrite.L5K and zip into a single archive file.

Ethernet Connected Device:

Using PortVision Plus save the DeviceMaster configuration to a file.
Open PortVision Plus
Highlight the DeviceMaster in question
Click the 'Save' icon on the launch bar
Give a name to the file to save such as your case number or your name.
Save the file to a path that you are comfortable using.

Set the DeviceMaster for "Write to Tag/File" mode using whatever method you prefer. Ether through plc commands to the DeviceMaster or via the web page of the DeviceMaster.
Once it is set to "Write to Tag/File" mode we want to reset the statistics.
Open the web page of the DeviceMaster. (These instructions assume Windows IE)
Click on Display Ethernet Device Logs
Click on "Reset Ethernet Log"
Once reset, click on Server Configuration Home
Click on PLC Interface Diagnostics
Click on "Reset Statistics"
Once reset, click on Server Configuration Home

Do some scans (or whatever you do that causes the error). Capturing just 2 or 3 error instances should be more than enough.

We then want to capture some web pages to have you send to Comtrol.
Click on Ethernet Device Configuration
Click on Socket 1
Click on the "File" drop down menu and select "Save As…"
    Give the name as socket1
    Make sure the page saves as type (*.mht)
Click the 'Back' button
Click on PLC Interface Diagnostics
Click on the "File" drop down menu and select "Save As…"
    Give the name as plc-diag
    Make sure the page saves as type (*.mht)
Click on Display Ethernet Device Logs
Click on the "File" drop down menu and select "Save As…"
    Give the name as socket-log
    Make sure the page saves as type (*.mht)

Capture screen shots or details of everything that you have modified in the loopbackExampleTagWrite.L5K file

Gather the configuration file from PortVision Plus and the web pages saved files and zip these files together with the details of the changes made to the loopbackExampleTagWrite.L5K and zip into a single archive file.

Version history
Document created by Mac Harned

1.1 Initial release February 20, 2013