

## **Xycom Pro Server To CJ1M Data Acquisition.**

### **PURPOSE:**

This document will show how to configure Pro Server and Gp Pro to get data to an Excel spreadsheet.

### **REQUIRED EQUIPMENT:**

- |    |           |                     |
|----|-----------|---------------------|
| 1. | CJ1M-CPUX | Omron CJ1 PLC.      |
| 2. | CJ1W-PAXX | PLC power supply.   |
| 3. | GLC2300   | Xycom HMI.          |
| 4. | PC        | Server or Computer. |

### **REQUIRED SOFTWARE:**

- |    |              |                                 |
|----|--------------|---------------------------------|
| 1. | CX-PROG V6   | Omron PLC Programming Software. |
| 2. | GP-PRO V7.25 | Xycom HMI Programming Software  |
| 3. | Pro-Server   | Xycom Data Acquisition Software |

### **REQUIRED CABLES:**

- |    |                 |  |
|----|-----------------|--|
| 1. | CS1W-CN226      | PLC Programming Cable.                       |
| 2. | Ethernet Cables | HMI/Pro Server Download Cable and Comm Cable |

### **DISK:**

- |                     |                                 |
|---------------------|---------------------------------|
| PProServer_Demo.doc | The file you are reading.       |
| dataacktest.cxp     | CX-Programmer PLC program file. |
| dataacktest.prw     | Gp Pro HMI program file.        |
| dataacktest.npj     | Pro Server program file         |

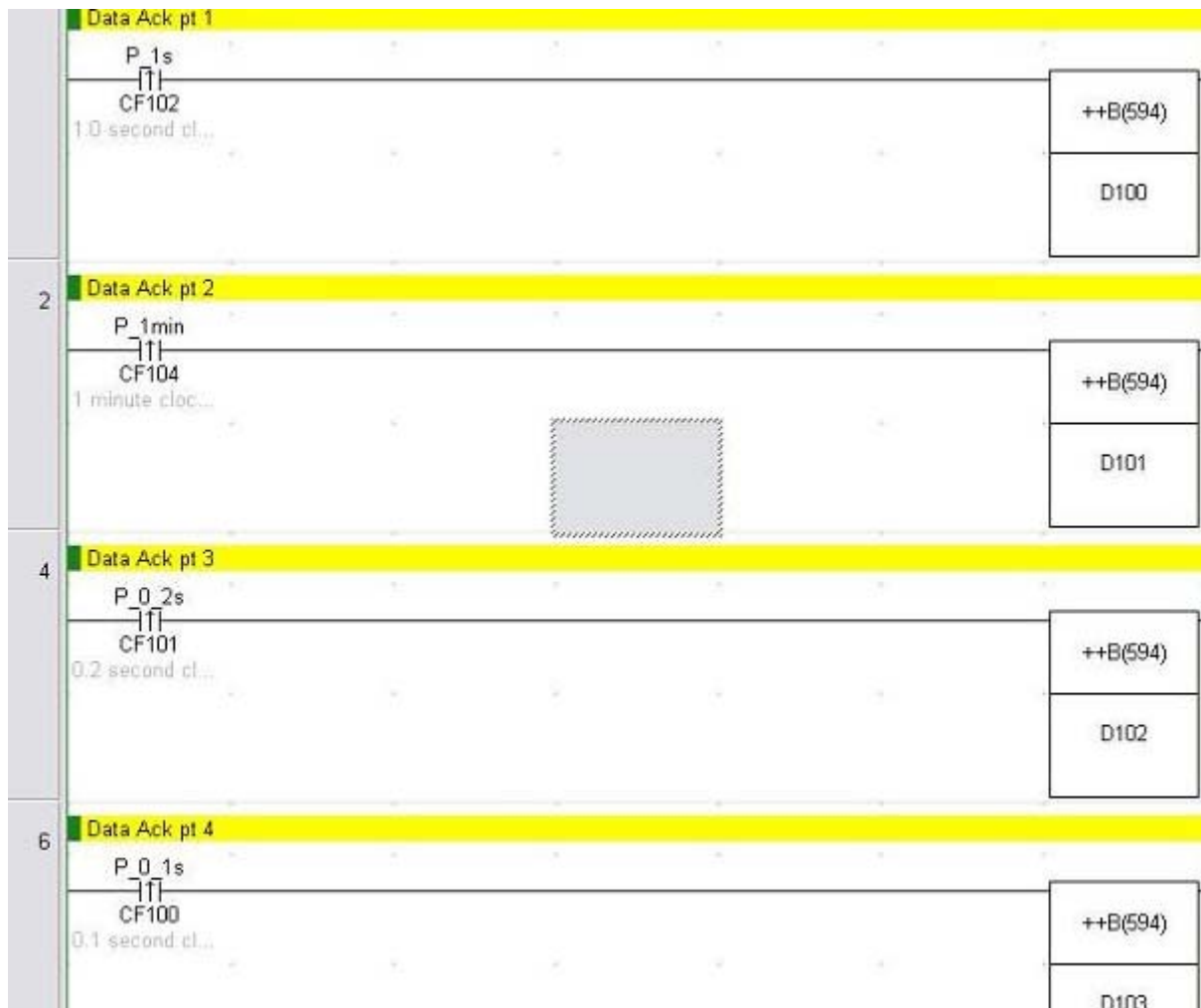
### **HELPFUL MANUALS:**

Gp-Pro – Help Files  
Pro Server – Help Files.  
W393 – CJ1 Operation Manual.

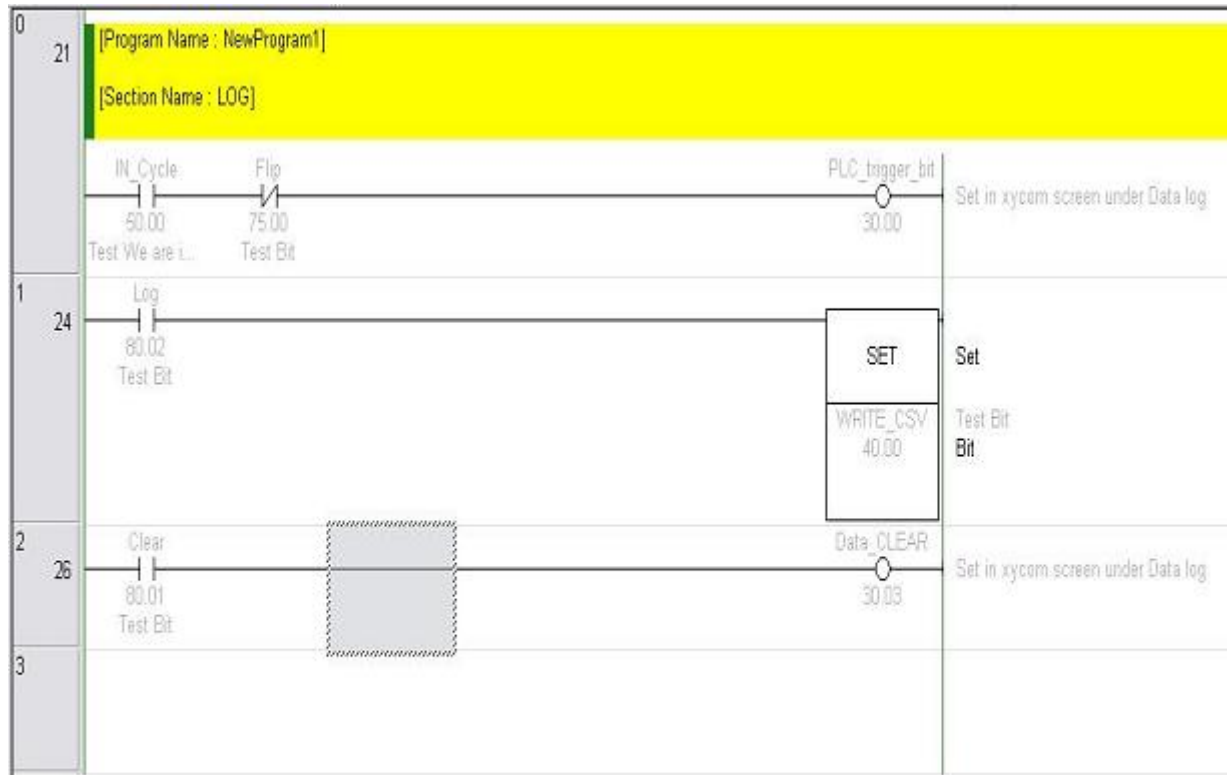
## INSTRUCTIONS:

The first thing we need is some data to log. Create your own or reference the sample program included (dataacktest.exp). I am using a CJ1M PLC. Basically get some data that changed frequently to verify accurate logging.

I am assuming that the user is a moderate user of CX-Programmer and can set up everything else they need. This Tech Connect is more about Pro Server, so if the user needs help on CX-Programmer please reference the Tech Connect on this subject. I will cover the basics for Data Logging.



Next in the program, we have to set up the program to trigger, Logging, Writing the CSV, and finally to Clear the Data. For our example purpose the user will be triggering these bits manually. NOTE: Set up the bits above to be triggered by work bits you can set, not force.



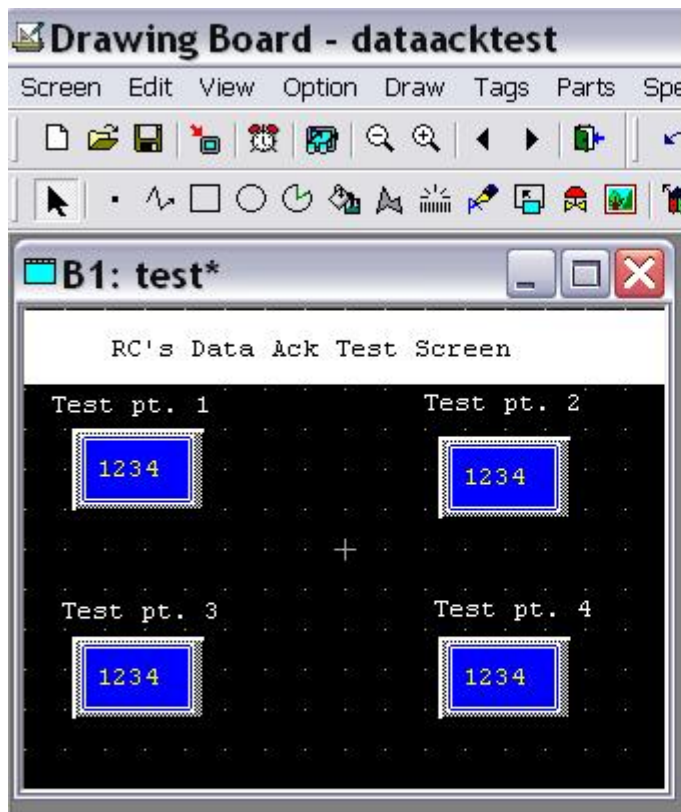
After these simple things have been set up, or just using the sample provided, the user must download the program to the PLC. After this is done we can minimize CX-Programmer.

We can now call up GP Pro. I am assuming that the user is a moderate user of GP Pro and can set up everything else they need. This Tech Connect is more about Pro Server, so if the user needs help on GP Pro please reference the Tech Connect on this subject. I will cover the basics for Data Logging.

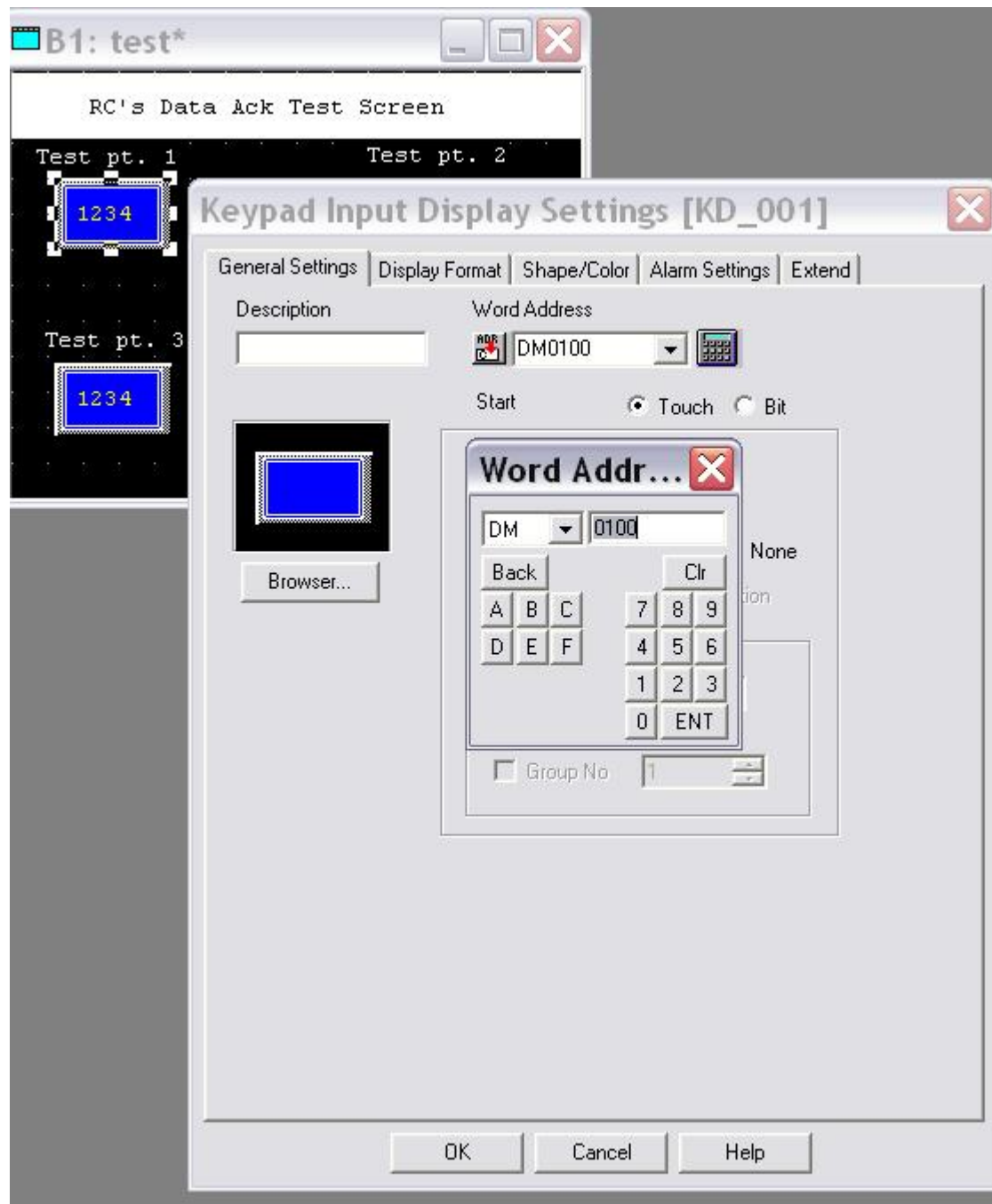
Open up GP Pro and either create a new program or use the one supplied (dataacktest.prw). As you can see I used a GLC2300, and Omron Sysmac C Series driver.



Let's make a simple screen to show our data we intend on collecting. Place the correct number of Numerical Displays or Keypad Inputs Displays on the screen. If you are using the sample program then follow along and change what is needed.

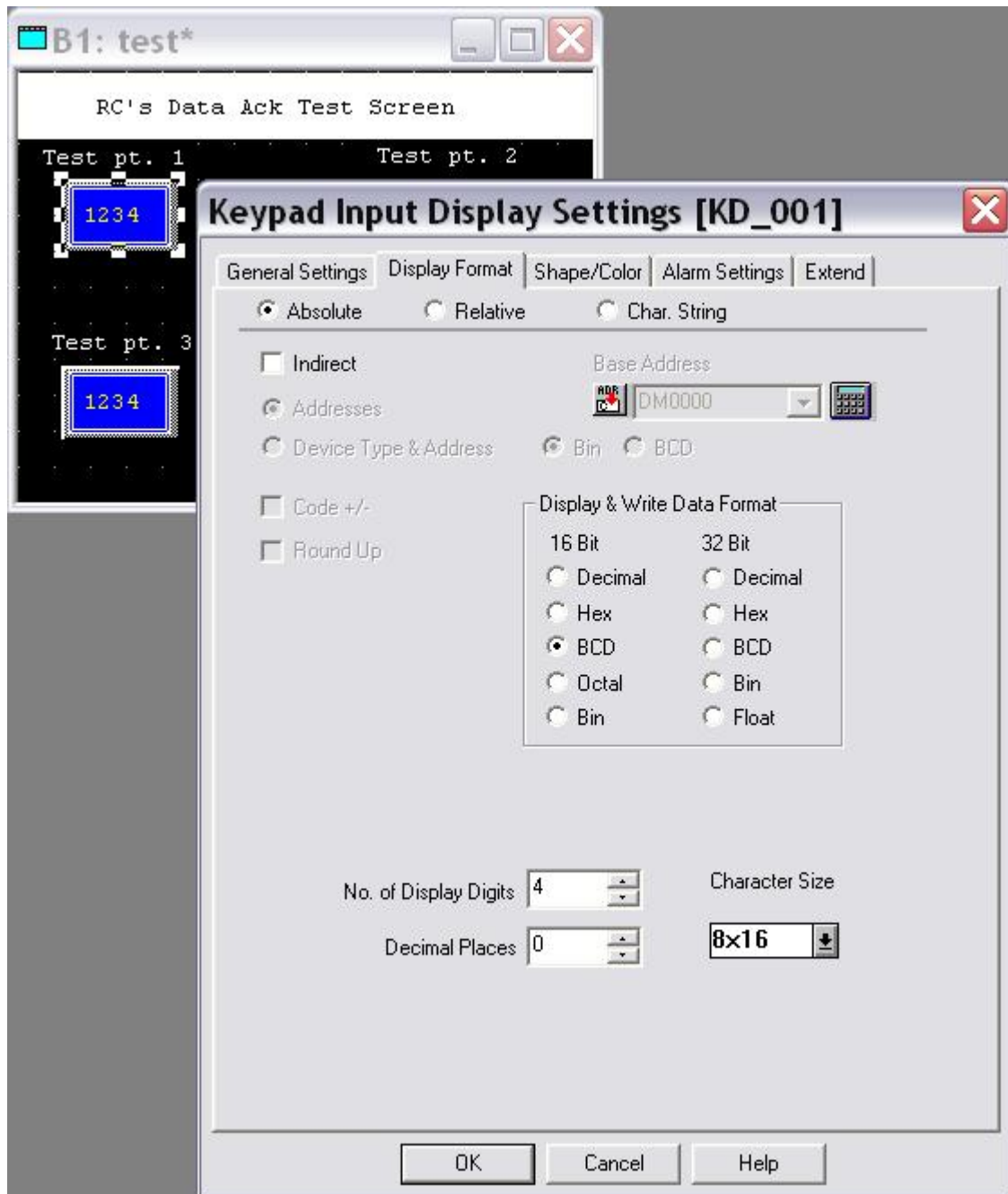


Set up the Displays for the proper data; reference the cx-programmer for correct addresses. I set mine up to display DM0100 through DM0103.





Make sure users go to the Display Format tab and set the format to BCD. Also set up the number of display digits and decimal places.



Say OK and close out of the screen section. Back at the project manager, Click on Screen/Setup, and then click on the Data Logging Settings.





Once in the Data Logging Settings, the user has to enable Logging and select the type of logging. In our case the Economy and Bit Method are selected. Place the correct address in the Data Logging Start Address. Fill in the proper number of words to log. Fill in the Read Counts as needed. The user should fill in the 4 address for PLC Trigger, GP\_ACK, File Full, and Data Clear. I used 30.00 through 30.03. These are bits and should be CIO!!

GP dataacktest.prw : test - Project Manager

Project Screen/Setup Control Utility Help

### Data Logging Settings

Trigger Settings | Display | Print | Write Settings

☒ Logging(ON/OFF)==>>    ☐ Special    ☒ Economy  
☒ Bit Method    ☐ Time Method

Data Logging Start Address: DM0100

No. of Words: 4

Read Count: 1000 (Counts/Block)

Block Count: 1

PLC Trigger Bit Address: 003000

GP\_ACK Bit Address: 003001

File Full Bit Address: 003002 ☒ Loop

Data Clear Bit Address: 003003

OK Cancel Help

Ready

Also in the Data Logging Settings, go to the Display tab. In the display tab side, the user should enable the Display, and should care about the No. of Data Col. (ours was 4 pts to log and 2 more for Date and Time) Date and Time are system variable and do not need to be logged from PLC; they are logged from the HMI. Also the user can high light the column by clicking on the header.

**Data Logging Settings**

Trigger Settings | **Display** | Print | Write Settings

☒ Display(ON/OFF) Copy from Print

**Row Settings** ⇒

☒ Display Block Name

No. of Block Name Rows:

No. of Data Rows:

No. of Calc. Rows:

**Column Settings** ↓↓↓

☐ Display Block Name

No. of Char./Item:

No. of Data Col.:

Data Char. Size: 8x16 ↓ No. of Char./Data: 8 ÷ Preview

**Display Settings( Economy )**

Settings
Option
Add
Copy
Paste
Cut

	Date/Time	Date/Time	Value	Value	Value	Value
Item	Date	Time	Test 1	Test 2	Test 3	Test 4
Data	mm/dd/yy	hh:mm:ss	xxxxx	xxxxx	xxxxx	xxxxx
Total			xxxxx	xxxxx	xxxxx	xxxxx

Once the user has the correct column selected the user can click on the Settings button to find more on that item. Go to the Data Format tab and make sure the Display Format is BCD. Users can also see the tagged address here as well.

The image shows two overlapping windows from a software application. The top window is titled "Data Logging Settings" and has tabs for "Trigger Settings", "Display", "Print", and "Write Settings". The "Display" tab is active, showing "Display Settings( Economy )". It contains a table with columns for "Settings", "Option", and four "Value" columns. The "Settings" column has rows for "Item", "Data", and "Total". The "Option" column has "Date", "Time", and "mm/dd/yy hh:mm:ss". The "Value" columns are labeled "Test 1", "Test 2", "Test 3", and "Test 4". The "Data" row shows "xxxxx" in all four value columns. The "Total" row also shows "xxxxx".

The bottom window is titled "Column Settings" and has tabs for "General Info.", "Data Format", "Size/Style", and "Alarm Settings". The "Data Format" tab is active. It has radio buttons for "Absolute" (selected) and "Relative". Below these are fields for "Address Offset" (set to 0) and "Data Logging Address" (set to DM0100). There is a section for "Display Data Format" with radio buttons for "16 Bit", "Dec", "Hex", and "BCD" (selected). There is also a checkbox for "Code +/-" which is unchecked. At the bottom are "OK", "Cancel", and "Help" buttons.

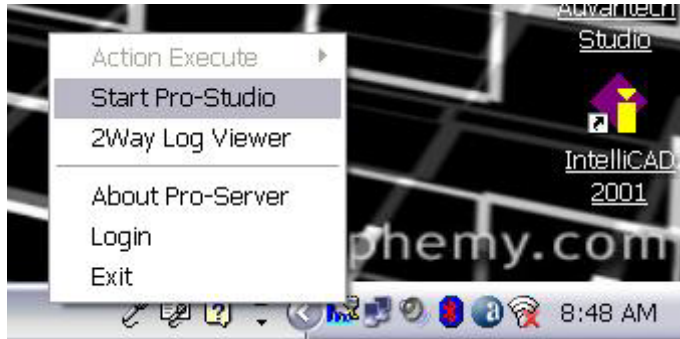
Settings	Option	Add	Copy	Paste	Cut
	Date/Time	Date/Time	Value	Value	Value
Item	Date	Time	Test 1	Test 2	Test 3
Data	mm/dd/yy	hh:mm:ss	xxxxx	xxxxx	xxxxx
Total			xxxxx	xxxxx	xxxxx

The user can now say OK and Save the project. The user can now transfer the project to the screen.



At this time we can now minimize GP-Pro. Start up Pro Server.

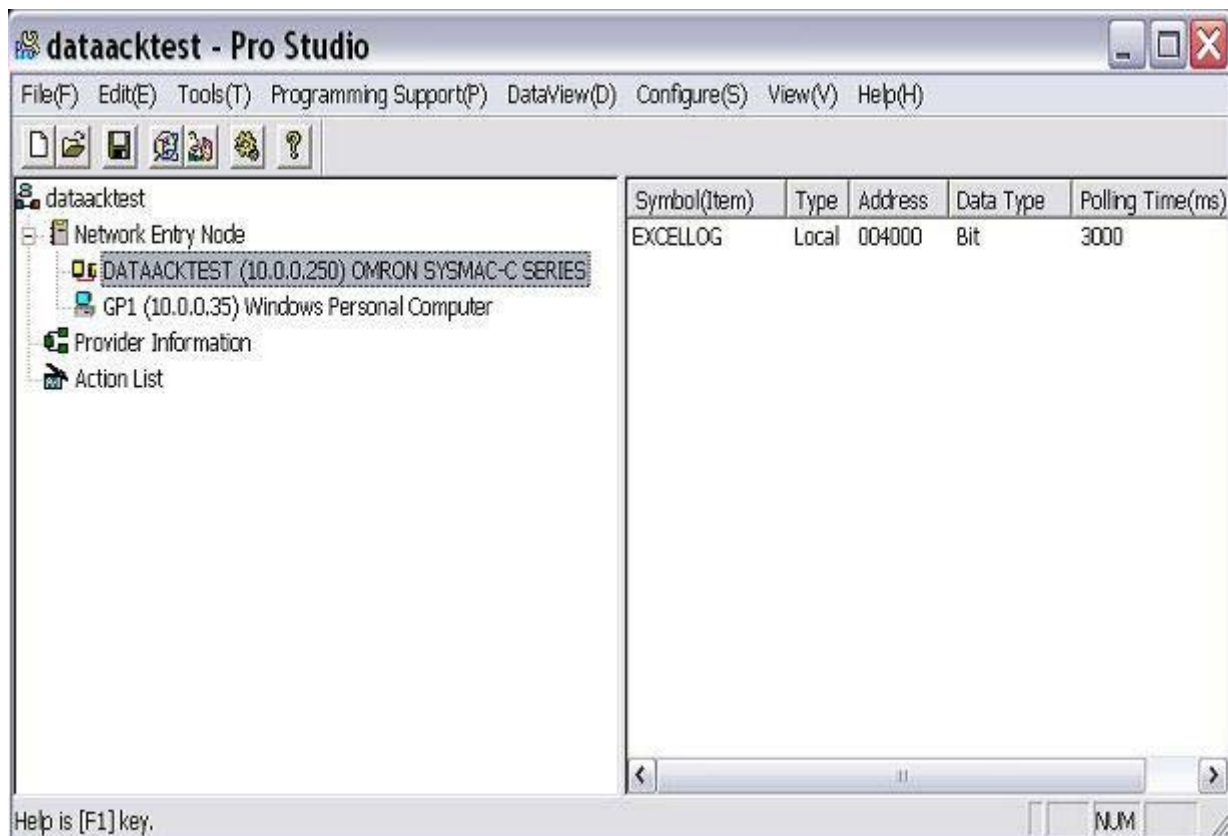
When you start up Pro Server the program will place an icon by the clock on the task bar. Users should right click on the icon and start Pro Studio. Pro Studio is the graphical interface to the Pro Server.



**NOTE: The HMI and the PC must be on the same Ethernet network.** This does not work Serial or RS232. The HMI can talk to the PLC through its Serial ports.

Start up Pro Studio and then create a new project or load up the existing project.  
(dataacktest.npj)

Now we are at the part where my test project and your real project will start to differ. Pro Studio is the interface to all the actual logging and Excel. At a quick glance you have a tree structure on the left and the symbols or actions on the right. The Help file is good for some information also. I will step through this step by step so stay with me, this section is a little long and hopefully any questions you have will be answered on the following pages.

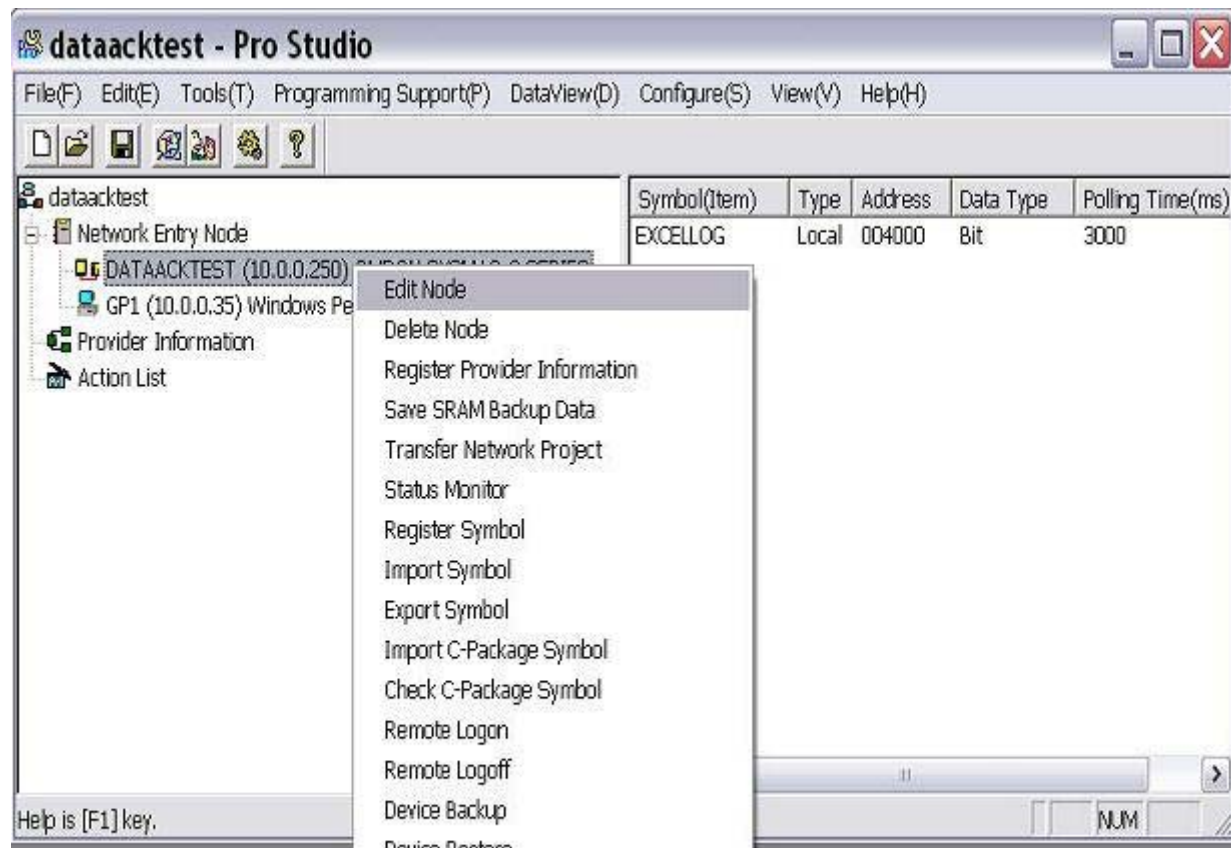




Now we will set up the Network Entry Node. We will set up a small network. We need to register the actual HMI (GP, ST, and GLC) to Pro Studio. Then we need to register a “server” (Laptop, PC, or Servers) to Pro Studio. NOTE: The server must have a static IP Address, NO DHCP!!

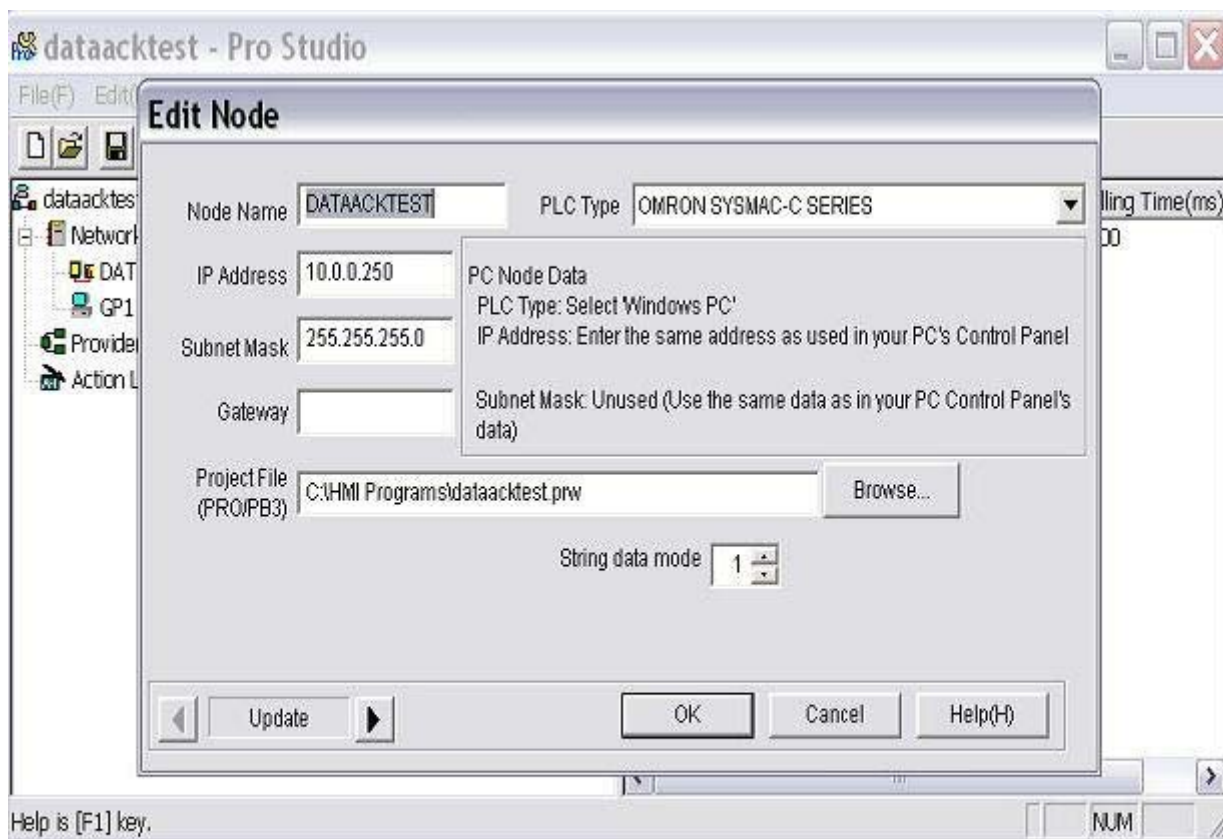
Now let’s register the HMI to Pro Studio. If you are using the sample program, right click on the Dataacktest (10.0.0.250). You will see Edit Node at the top of the list. Click on that and a new window will appear.

If you are doing a new project, right click on Network Entry Node and Register Node. Then follow steps above.



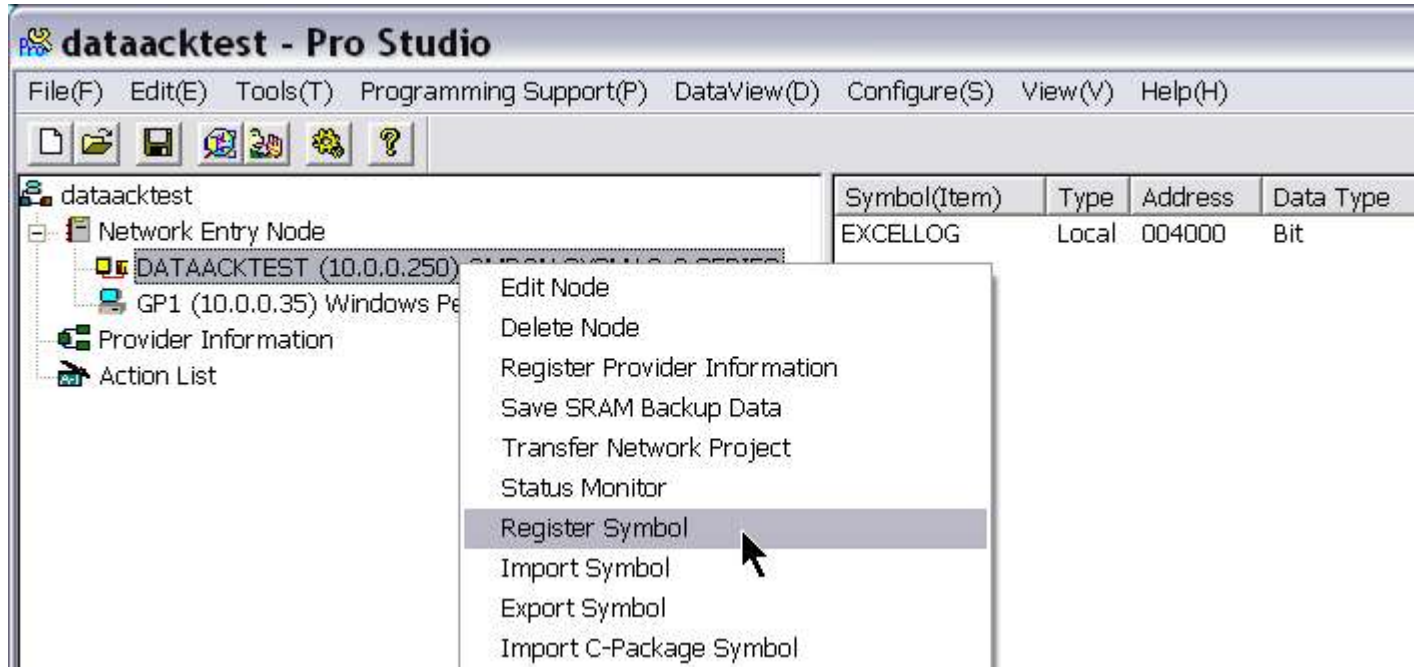
The Edit Node window should now be up. At this point the user can manually change the name or the user can select the Project File, via the Browse button. This will make the Node Name the same as the project. The PLC Type will also change when you select the project. The user needs to make sure that the IP Address is the actual address of the HMI. Also verify the Subnet Mask address matches.

Say Ok and go back to the main screen in Pro Studio.



Now we need to Register Symbol. We need to register this symbol to the Dataacktest or the HMI project.

Right click on the Dataacktest (10.0.0.250) and click on Register Symbol. A new window will pop up. Or if you are using the sample program, double click on EXCELLOG to see or change info.



The Edit Symbol window we need to give the symbol a name and an address. We called this EXCELLOG because this is the bit you will trigger to write the data to Excel. Assign this an address that is not currently being used in the CIO (Core IO) section. The address is 40.00, however in Xycom world they do it like this: xxxxxx the WORD is 4 x's or the left most 4 x's. The last 2 x's or the right most last 2 x's are the BIT. So my address is really 0040.00 (minus the dot). The blank in the left drop down box is the address pre fix (DM, HR, LS, and Blank for CIO)

Note the Polling Time and if that's OK for you, then you can say OK and go back to the main screen.

Symbol(Item)	Type	Address	Data Type	Polling Time(ms)
EXCELLOG	Local	004000	Bit	3000

### Edit Symbol

Symbol Name:

Device Address: ▼

☐ Global Symbol

Data Type:

Bit

16 Bit

32 Bit

Float

Double

String

Create from Address

Polling Time:  ms

◀ Update ▶
OK
Cancel
Help(H)

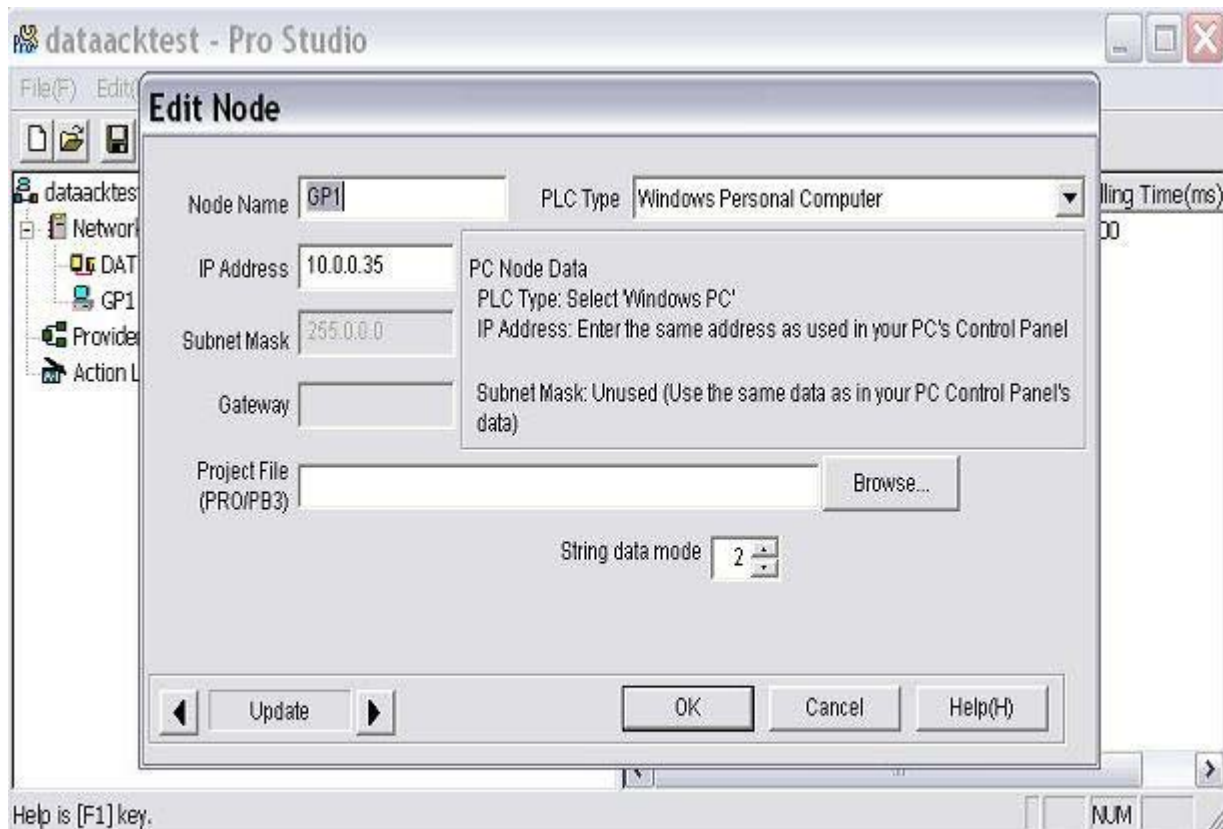
Right click on the GP1 (10.0.0.35) and Edit Node. Now we will register the server to the Pro Studio. After that a window like before will appear.

If you are doing a new project right click on Network Entry Node and Register Node.

NOTE: There is no symbol to register to the server.

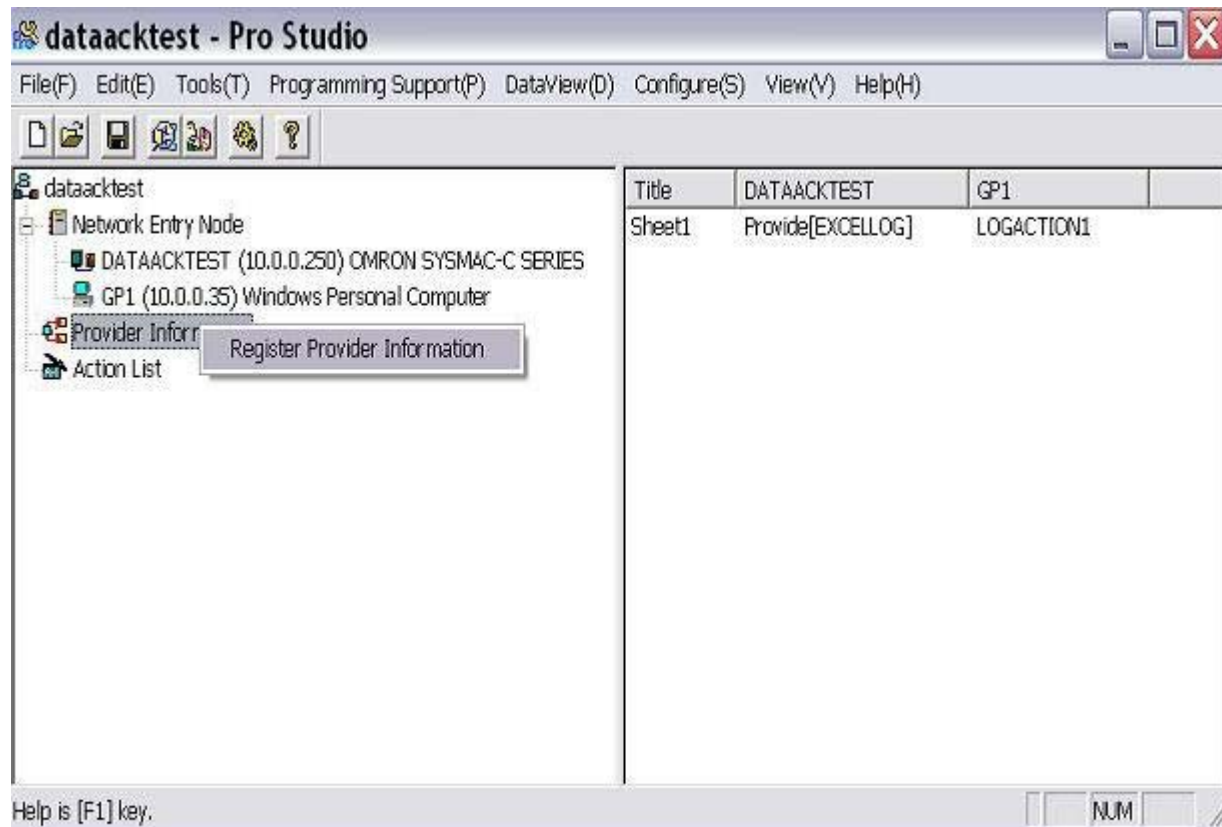


The Node Name is the name it gave to me, I just left it. The PLC Type needs to be a Windows Personal Computer. Simply set the IP Address to be the address of the PC or server you are using for this project. PLEASE NOTE: the center window makes reference to this PLC Type and gives you important information. There is no need to select a project file to this node. Say OK and go back to the main screen.





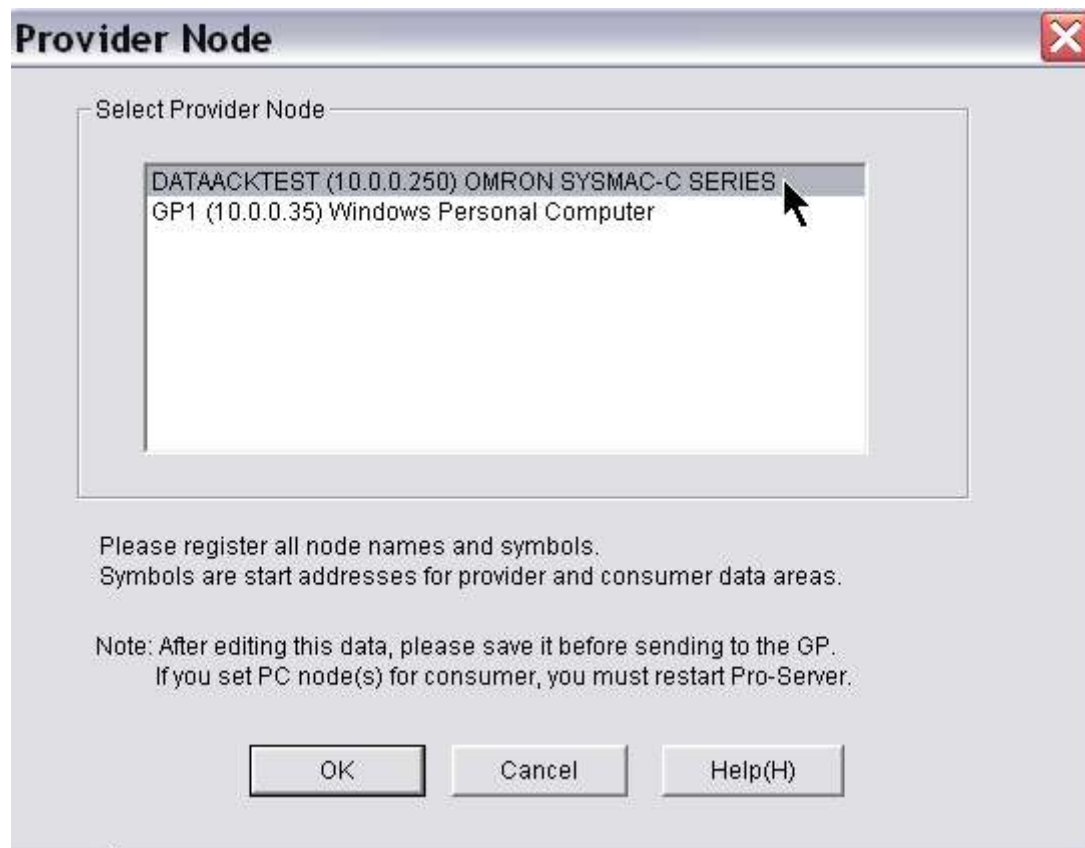
Now for the Provider Information, right click on the icon/words and Register Provider Information. If you are using the sample program double click on Sheet1.



If you are using the sample program, SKIP THIS SECTION.

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If you started a new one, you will see this Provider Node window open up and you must select the Provider you want to register to. We want to register something from the HMI. Click OK and were good.



Users will now see a window like below. If you are using the sample program this will be filled in already, if you started from a new one, fill in the info as provided below. We will need to come back to this section later on, so only fill in the top half of this section.

Important things to know, for our demo, we are only concerned with the Provider Conditions tab. The other tabs have information for advanced settings and are not needed to make it work.

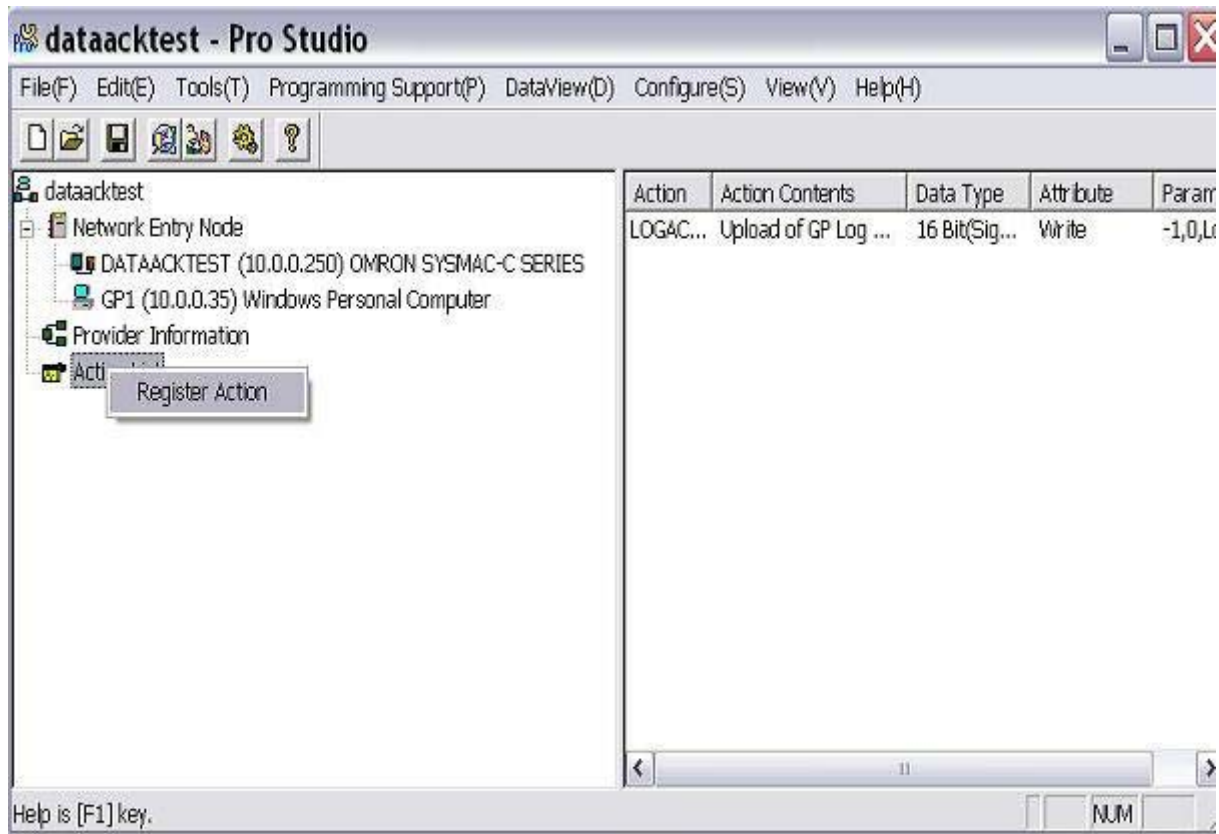
We selected an upper edge trigger (no false trigger or multiple triggers), however as you can see there are other options available. Pending the trigger option, gives you different options for the symbol and timing, click on different triggers and see. Use the drop down box and select EXCELLOG. Select Return to OFF after complete. This will cause EXCELLOG to turn OFF after its done writing it! Say OK for now and we will be back.

The screenshot shows the 'Provider Completion Settings' window. The 'Upper Edge Trigger' is selected. The 'Symbol' is set to 'EXCELLOG' and the 'Interval' is '1000 ms'. The 'Return to OFF after complete' checkbox is checked. The 'Provider Node' section contains a table with the following data:

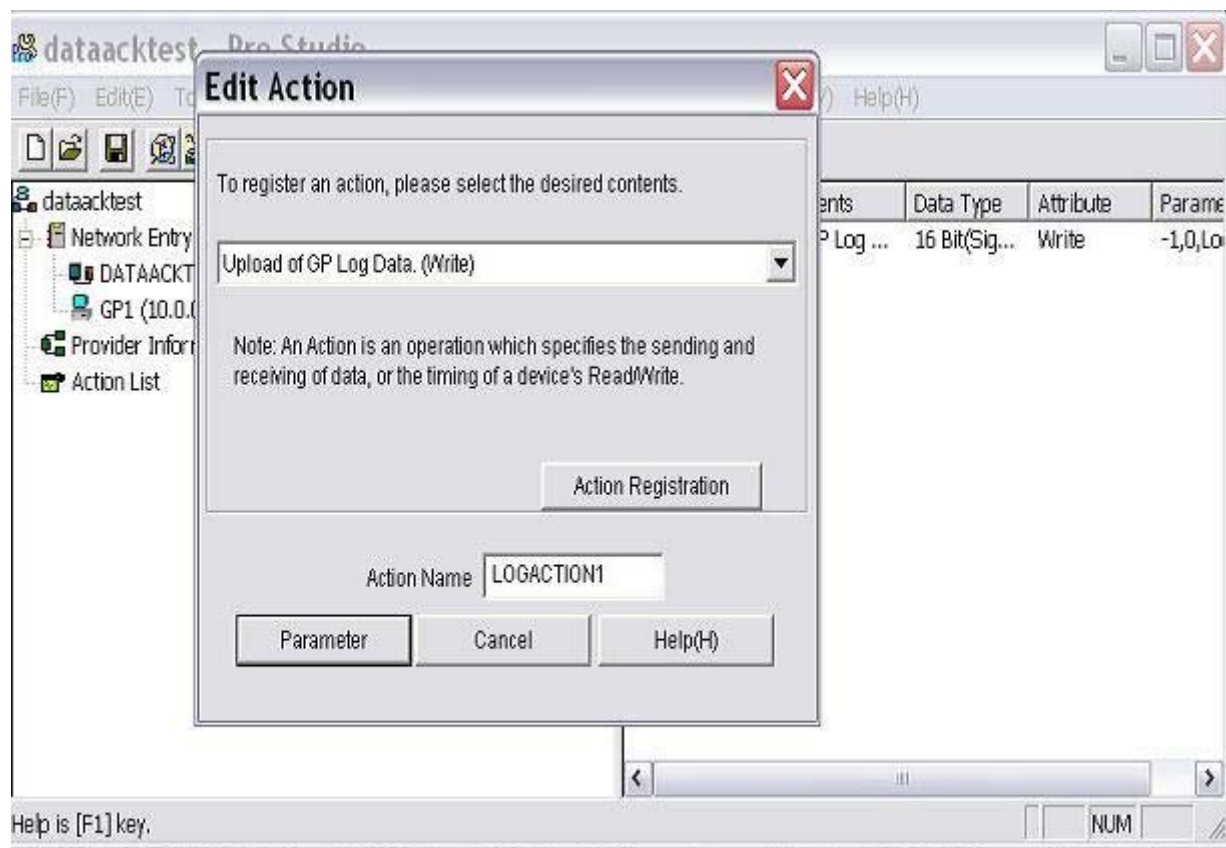
Symbol	Length	Constant Value
EXCELLOG	1	
	1	

The 'Symbol Name' dropdown is set to 'LOGACTION1'.

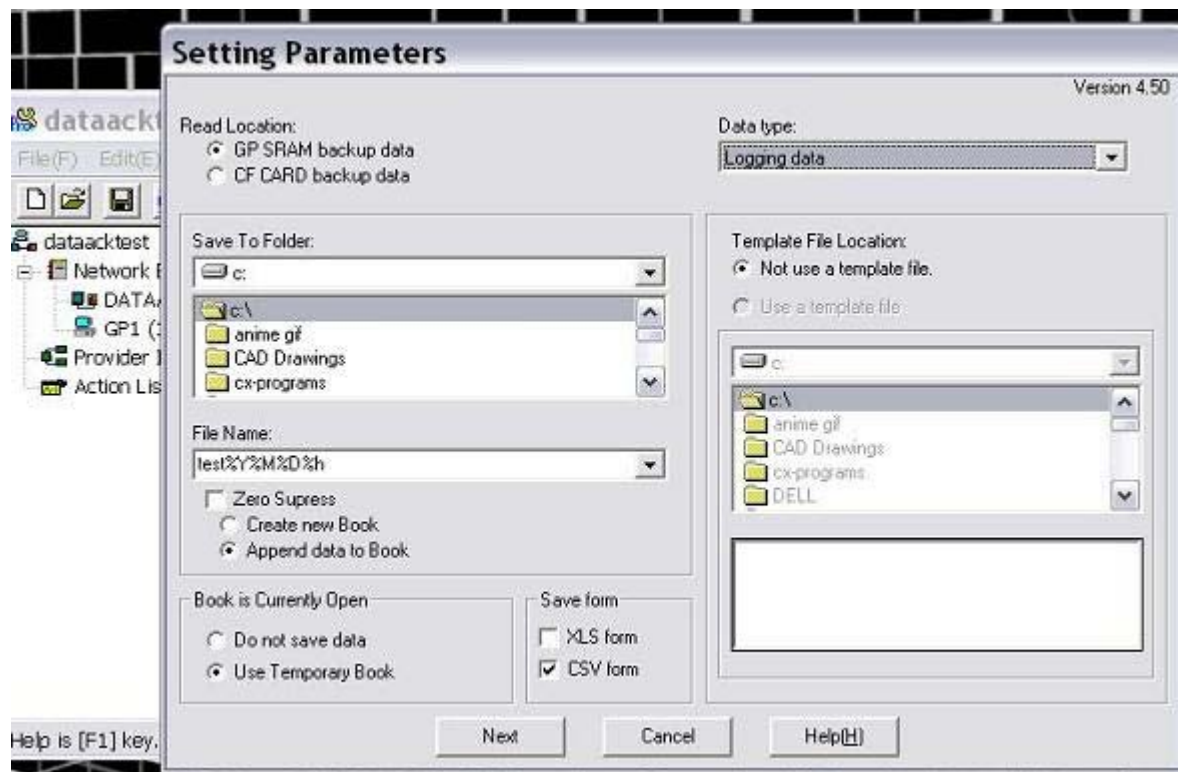
Now we can register an Action. Right click on the Action and Register Action and a new window will appear. If you are using the sample program double click on LOGACTION and a new window will appear.



The Edit Action window will appear. We need to select an action. We are interested in an Upload of GP Log Data (Write). There are many other choices in here and is worth a look to see all the other Actions this package can do. Click on Parameter and a new window will appear.



In the Setting Parameters, we must set up a few items. The first is the Read Location. We want GP SRAM backup Data. The other choice is a CF Card (Compact Flash). The Data Type is Logging Data. Again, there are many other choices in here and is worth a look to see all the other Data Type's this package can do. The users need to set up the Save To Folder section. Users just need to assign a spot for the Excel file to log to every time. The users need to set up the File Name section also. Basically you are giving the Excel file a name. FYI: test %Y%M%D%h means, test is the file name I inserted, % means an underscore ( \_ ), Y is year, M is month, D is Day, h is hour. So the file name will look like this: test\_2006\_04\_11\_11.CSV. Users can create a new book or append data to book. This basically means that you either create a new book or page in the file or you just keep adding to 1 page. Then you have to tell it in the Book is Currently Open section, what to do if the book is open, either don't save the data or use a temp book. Also you must pick the Save Form, using either an .XLS or a .CSV. At this point the user can click the Next button.

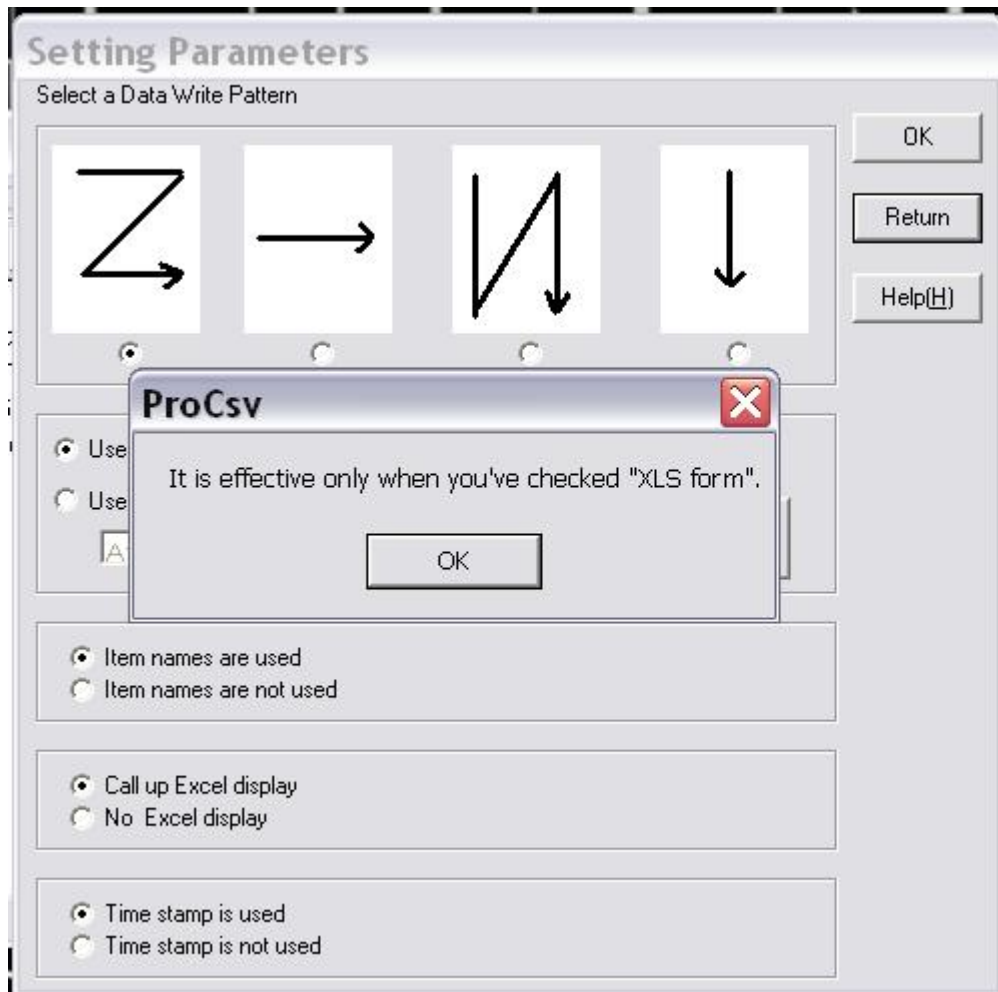


This page is for XLS Forms only. Since I selected a .csv, this page has nothing for me.



If you are ok with the .csv then user can now say OK.

However if you did select a .xls form, then you set up more things like the way the columns and rows set up, weather or not to use all the cells or a select row, item names are used or not, weather it should call up excel to the for ground on your PC or not when it writes, and weather or not to use a time stamp. The user can now say OK.



Now we need to go back and finish up the Provider Information we left from earlier. User should on Provider Information icon/word and then double click on sheet1.

Now we need to finish this bottom section of this page. The Provider Node is the HMI and all you must do is click on the drop down box and select EXCELLOG (the only bit we have register since we started Pro Studio). This will be the only choice you have. Then go to the right under Consumer Nodes and go to GP1 Symbol Name and click on the drop down box and select LOGACTION1. The arrow will then appear when the link is made. Say OK and get ready to download the project.

**Provider Information**

Title: Sheet1

Providing Condition | **Provider Completion Settings** | Receive Alert Settings | Detailed

☐ Power ON    ☐ Status ON  
☐ ON Time    ☐ Status OFF  
☐ Interval    ☐ Upper Edge Trigger  
☐ Rewrite Trigger    ☐ Lower Edge Trigger

Description: Data is provided when the value of device specified as the symbol is set to other than zero from zero.

Symbol: EXCELLOG

Interval: 1000 ms

☐ Term

☒ Return to OFF after complete

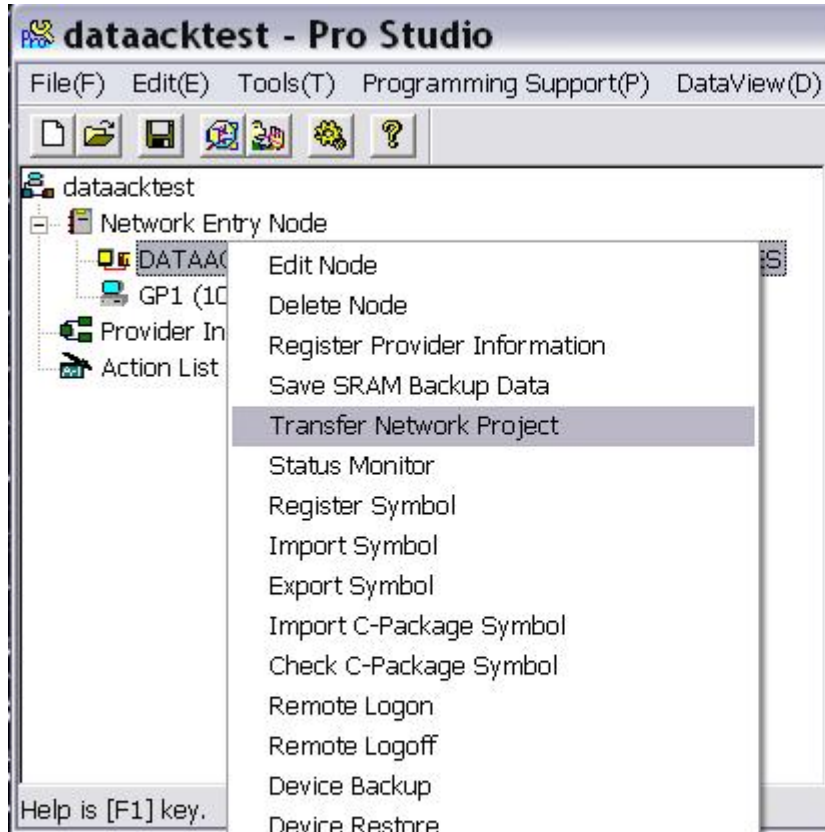
**Provider Node**

Symbol	Length	Constant Value
EXCELLOG	1	
	1	

**Symbol Name**

GP1 Symbol Name: LOGACTION1

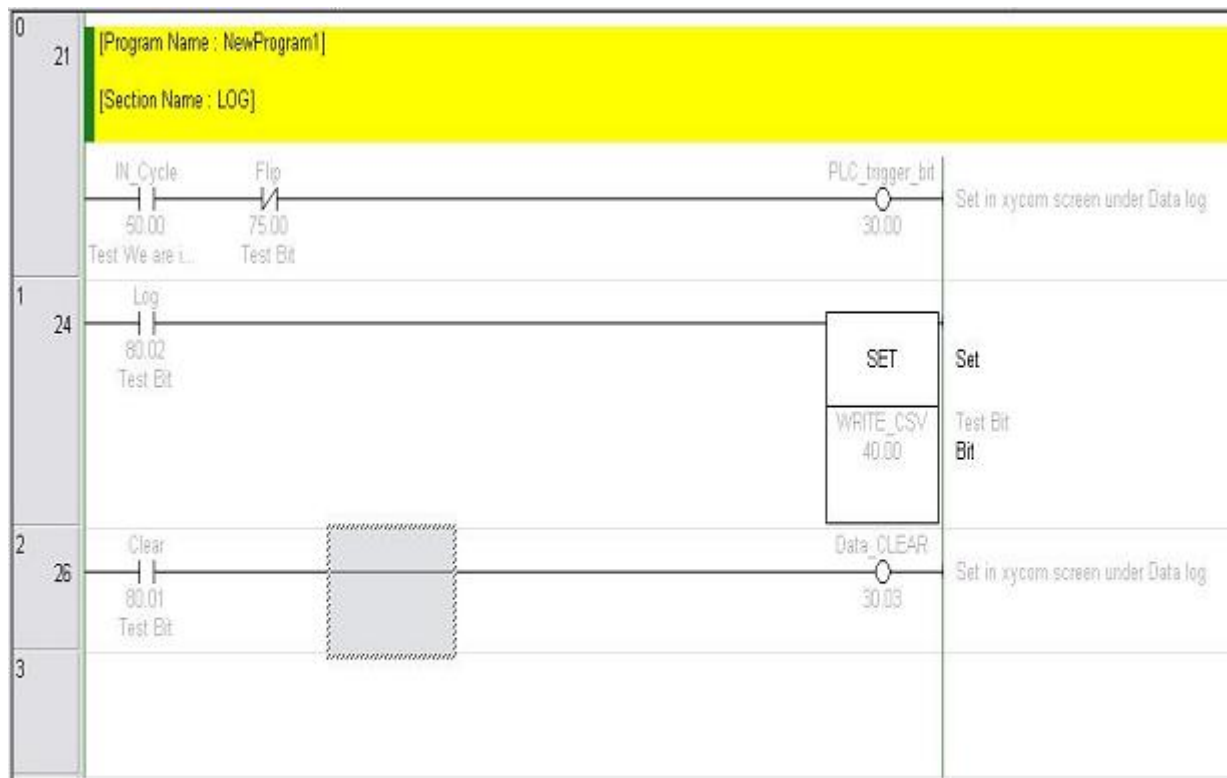
Ok, like 6 hrs later we can finally download this project! Users must click on the HMI and then right click. We want to Transfer Network Projects. So basically we are going to download the files into the HMI. This must be done via Ethernet.



So barring no major catastrophes and all the hardware/software is good and configured correctly, lets log and "The Tie In".

Go back to CX-Programmer and get Online.

Go into the section called Log. If you are using the sample program then simply click on IN\_Cycle bit and right click and set on, leave this bit on for a length of time to collect some good data. The bit Flip is for a flip flop timer that will make it log 1 point every 10 seconds. This will turn on and off PLC\_Trigger\_bit. (This bit was set up in GP Pro, under Screen/Setup, and then Data Logging Settings, PLC Trigger Bit Address) When you are feeling brave, set the IN\_Cycle bit to off. Then click on the Log bit. Right click and set on and then set back off. We just need to trigger Write\_CSV on and off (Provider Information, rising edge trigger, remember??). When it is done writing to an Excel file it will turn it self off (Provider Information, Return to OFF after complete, remember??). When the bit goes off (Write\_CSV), the user can click on the Clear bit. Right click and set on and then set off. This will turn on the Data\_Clear bit (This bit was set up in GP Pro, under Screen/Setup, and then Data Logging Settings, Data Clear Bit Address) and this will clear the data in the SRAM (where the data is stored, Read Location, in the Parameters for LOGACTION1). Pull up Windows Explorer or My Computer and go find where you set it to log to (Save To Folder in the Parameters for LOGACTION1).



As you can see it works!

Let's look at the file and finish up this tie in. We see the file name that we set up in Action, Setting Parameters, and File Name. We see the headers of Date, Time, Test 1, Test 2, Test 3, and Test 4. This was set up in GP Pro, under Screen/Setup, and then Data Logging Settings, Display tab.

I logged from 11:21:40 to 11:25 about 3 minutes.

Microsoft Excel - test\_2006\_04\_11\_11.CSV

	A	B	C	D	E	F
1	Date	Time	Test 1	Test 2	Test 3	Test 4
2	6/4/2011	11:21:40	95	37	1725	3446
3	6/4/2011	11:21:50	5	37	1775	3546
4	6/4/2011	11:22:00	15	37	1825	3646
5	6/4/2011	11:22:10	25	38	1875	3746
6	6/4/2011	11:22:20	35	38	1925	3846
7	6/4/2011	11:22:30	45	38	1974	3946
8	6/4/2011	11:22:40	55	38	2024	4045
9	6/4/2011	11:22:50	65	38	2075	4146
10	6/4/2011	11:23:00	75	38	2125	4247
11	6/4/2011	11:23:10	85	39	2175	4346
12	6/4/2011	11:23:20	95	39	2225	4447
13	6/4/2011	11:23:30	5	39	2274	4545
14	6/4/2011	11:23:40	15	39	2325	4647
15	6/4/2011	11:23:50	25	39	2374	4745
16	6/4/2011	11:24:00	35	39	2425	4847
17	6/4/2011	11:24:10	45	40	2474	4945
18	6/4/2011	11:24:20	55	40	2524	5046
19	6/4/2011	11:24:30	65	40	2575	5147
20	6/4/2011	11:24:40	75	40	2625	5246
21	6/4/2011	11:24:50	85	40	2674	5346
22	6/4/2011	11:25:00	95	40	2725	5447
23						
24						

**The END!!!**