S200-DLS Start-Up Guide

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E-Manual, M.3000.0773

S200-DLS Start-Up Guide

- This Guide will show start-up of a single axis system using a stand alone DSA control with a S200-DLS drive.

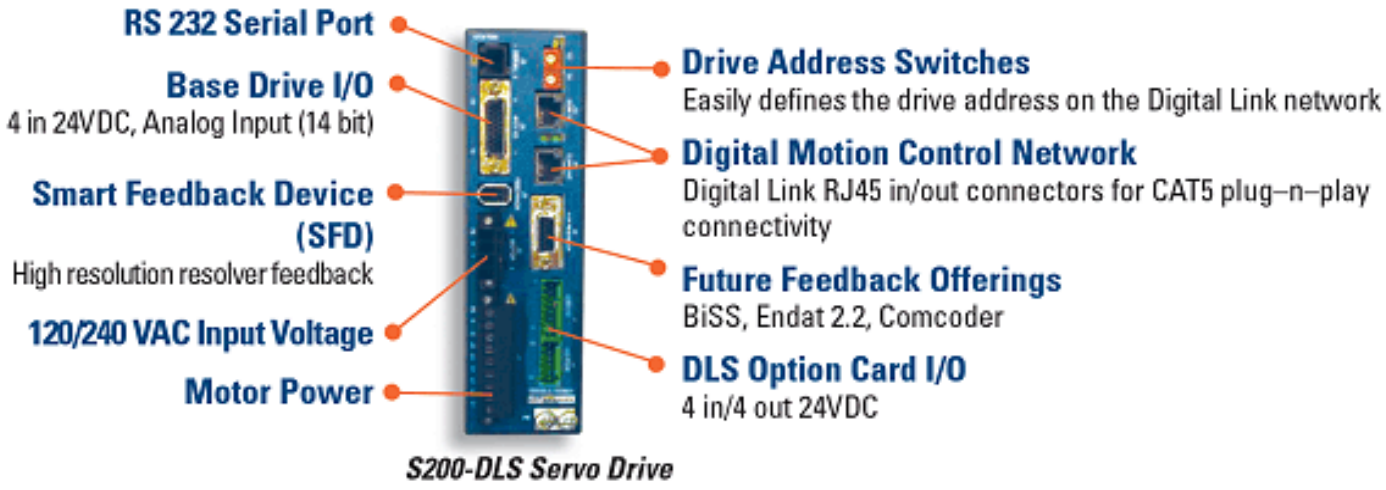
- The scope of this guide will be to begin with a new drive and control, and finish by closing the servo loop and jogging the axis.

Motors

- Motors with SFD high resolution feedback must be used. (2,097,152 counts per Rev.)
- Most AKM motors are available with this feedback option.

Connections

The drive is interfaced using the following connectors.

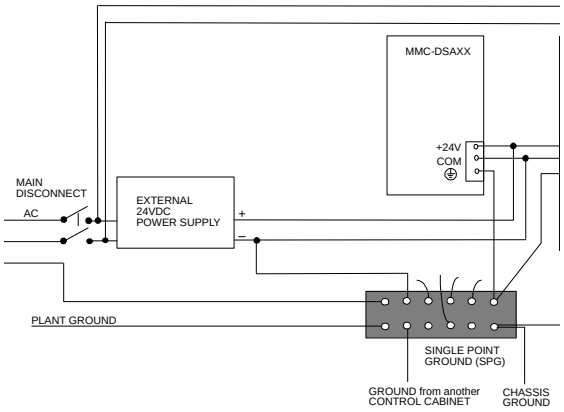


Motor Connections

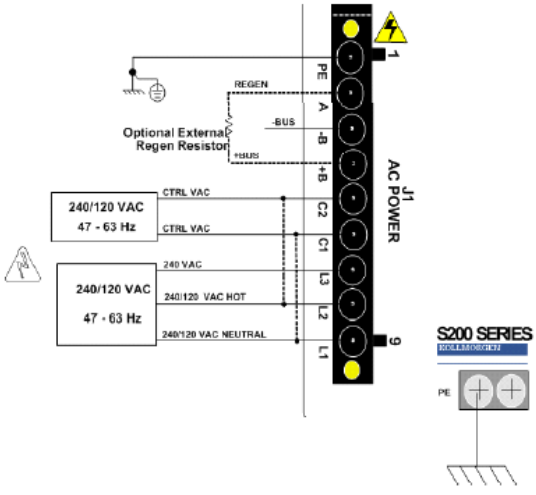
- Connect the motor power lead to the J2 connector on the drive.
- Connect the SFD to the J3 connector on the drive.

Power Connections

- Connect 24 VDC to the DSA control. Be sure to connect the common terminal back to the single point ground.



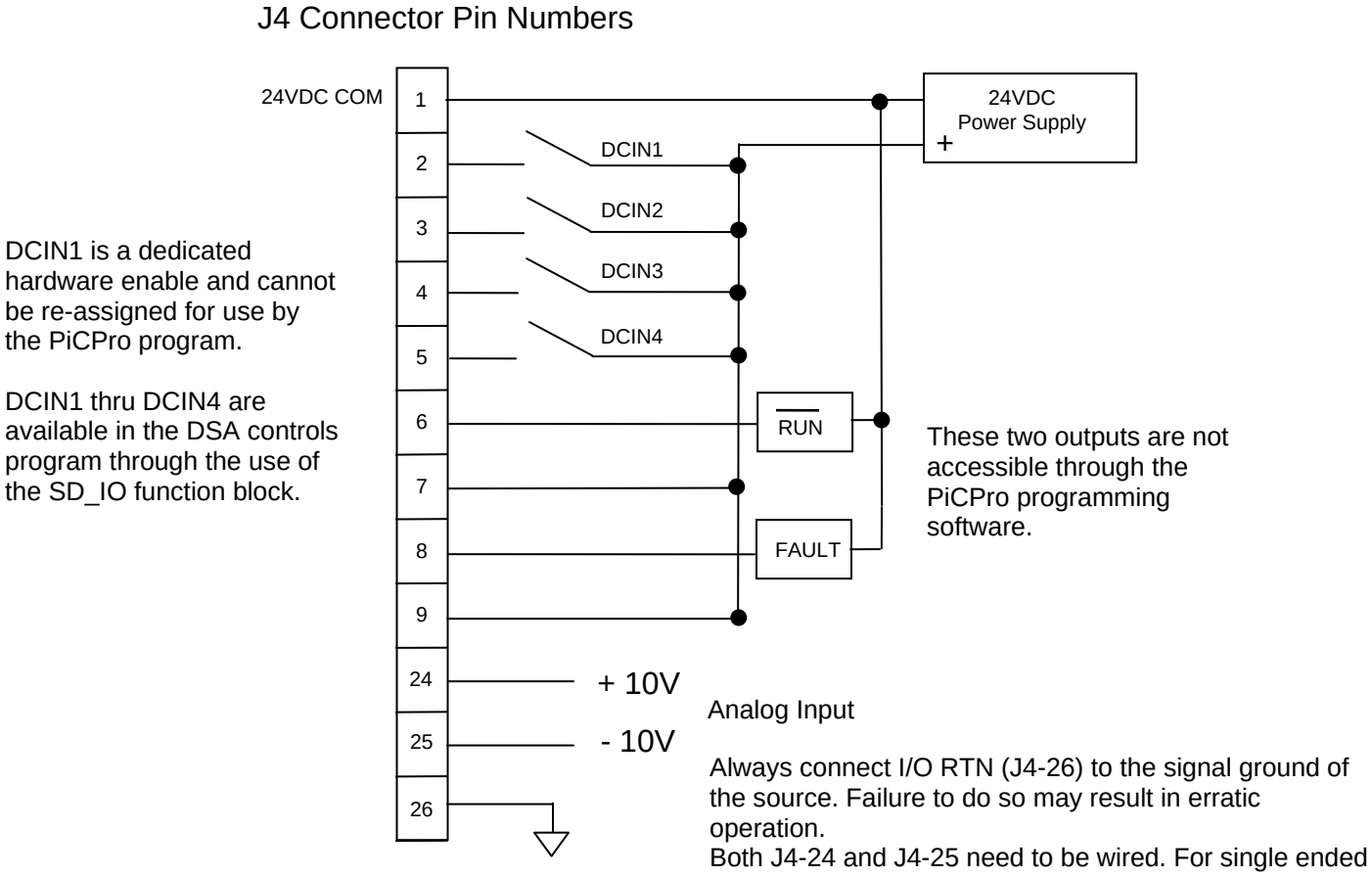
- Supply 120/240 VAC to the S200 J1 connector.



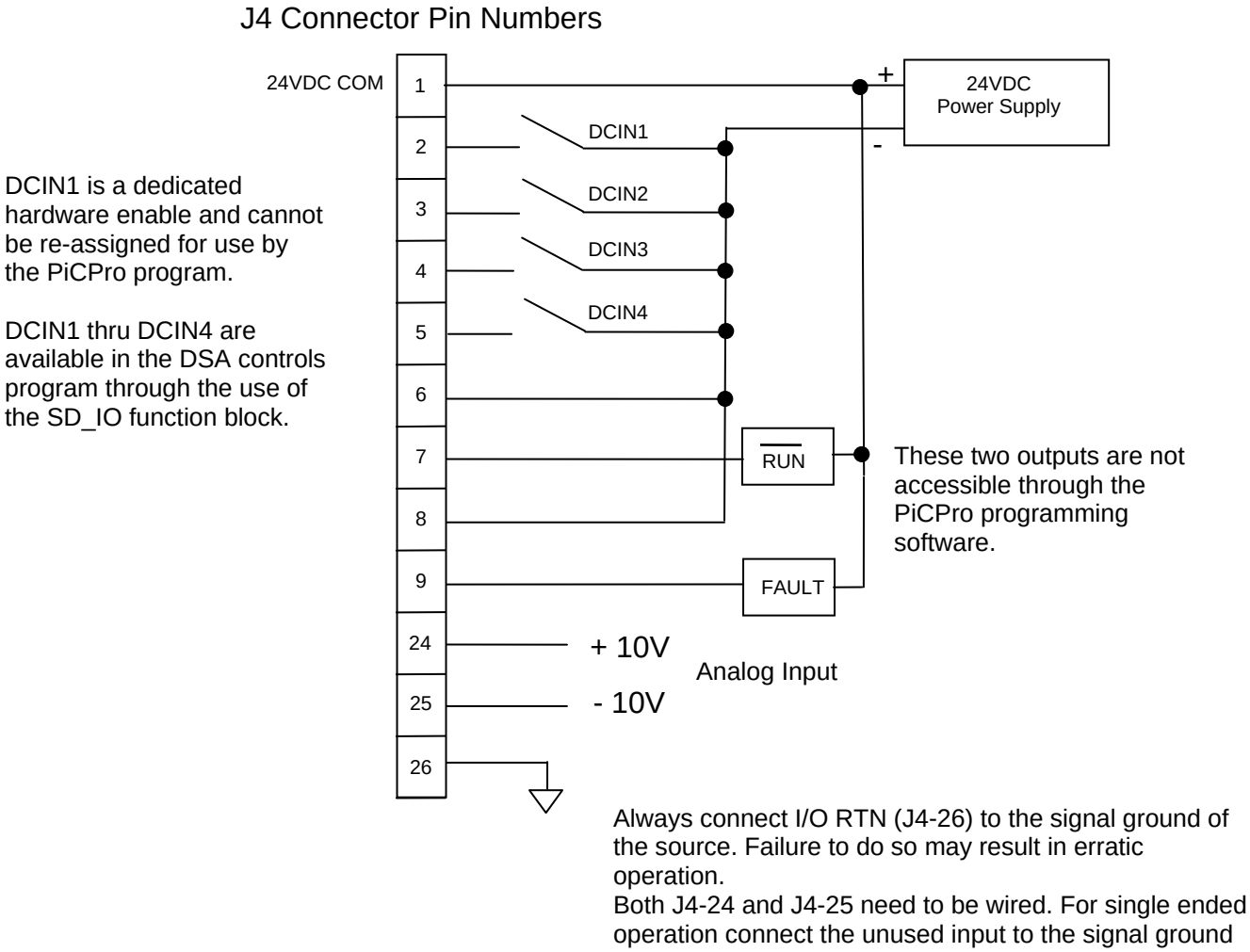
Drive I/O Connections

- Drive I/O can be connected to two locations. J4 Command I/O and J7 Drive I/O.
- J4 (Command I/O) has 4 inputs. Input 1 on J4 is the drive enable and **must** be hard wired appropriately. There are 2 outputs on this connector. They can not be used through PiCPro.

This diagram shows the connections for sourcing inputs, and sourcing outputs. Sourcing inputs are usually referred to as PNP type, and sourcing outputs switch the positive side of the load.



This diagram shows the connections for sinking inputs, and sinking outputs. Sinking inputs are usually referred to as NPN type, and sinking outputs switch the negative side of the load.

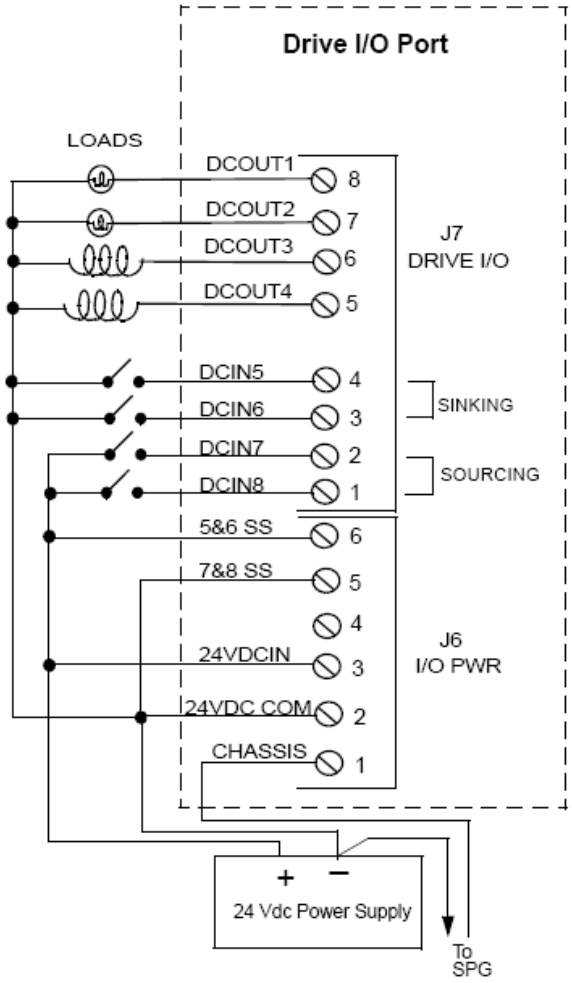


J7 (Drive I/O) has 4 inputs and 4 outputs.

Drive Input 5. The first input on the J7 connector can be configured to be a fast input.

Power for both connectors is 24 VDC and must be connected to J6 (I/O Power)

These I/O points are available in the DSA controls program through the use of the SD_IO function block.



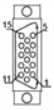
DSA I/O Connections

- The DSA controls (D2 – D16) have 8 DC inputs and 7 DC outputs available.
- They are declared as IGEN2.1 – IGEN2.8 and OGEN2.1 – OGEN 2.7

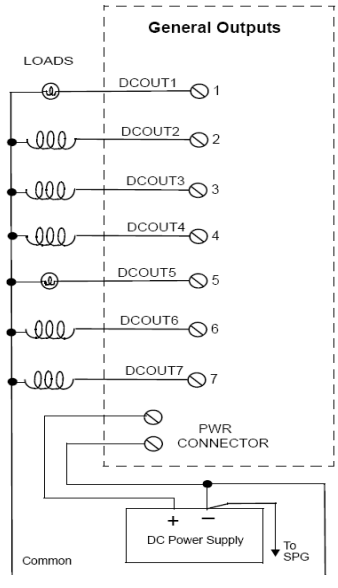
Table 6-22: General I/O Port Pin Descriptions

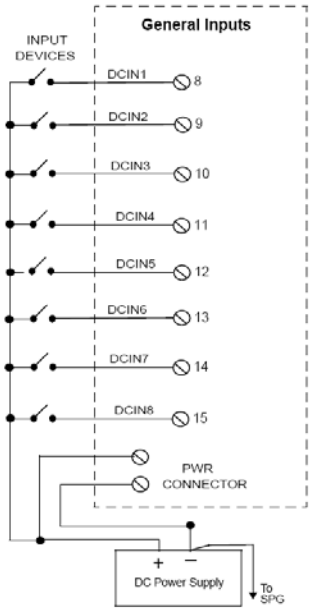
Function	Notes	Pin
DC Outputs 1-7	Nominal 24 Vdc Outputs capable of sourcing up to 250 ma	1-7
DC Inputs 1-8	Nominal 24 Vdc sourcing Inputs	8-15
Shield Ground	Provides a path for shield current through the chassis to an external single point ground.	Shell

Table 6-23: General I/O Port Pin Assignments

Pin	Signal	In/Out	Connector Pinout
1	DCOUT1	Out	15-pin HD female D-sub (face view) 
2	DCOUT2	Out	
3	DCOUT3	Out	
4	DCOUT4	Out	
5	DCOUT5	Out	
6	DCOUT6	Out	
7	DCOUT7	Out	
8	DCIN1	In	
9	DCIN2	In	
10	DCIN3	In	
11	DCIN4	In	
12	DCIN5	In	
13	DCIN6	In	
14	DCIN7	In	
15	DCIN8	In	
Shell	Drain	In	

Connecting the GEN I/O



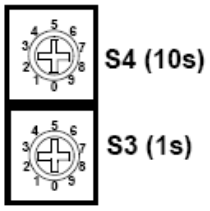


Digital Link Connection

- Connect a Cat 5 cable from the control Dlink connector to the S200 J10 (Dlink In)
- Connect the S200 J9 (Dlink Out) to each subsequent Drive.
- A “straight-through” shielded cable must be used when connecting the Control to the Drive. And from Drive to Drive.
- They are available up to 30M.

Address Switches

- The Drive address switches must be set.



The top switch is the most significant digit
The bottom switch is the least significant.

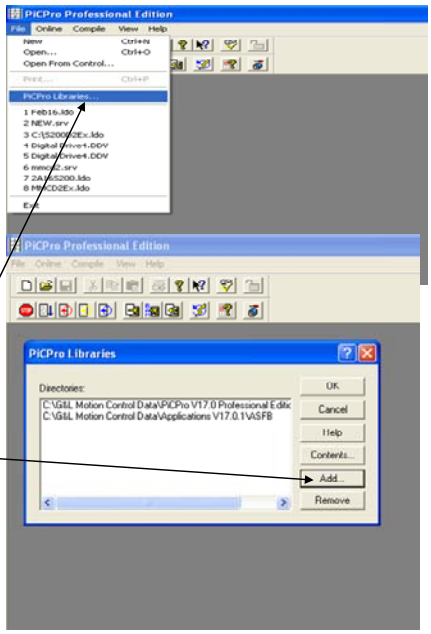
For address 1-9 the top switch will be set to zero. Etc.

These addresses are typically set consecutively starting with 1. This is not a requirement. As long as each has a unique setting between 1-64 it will work fine.

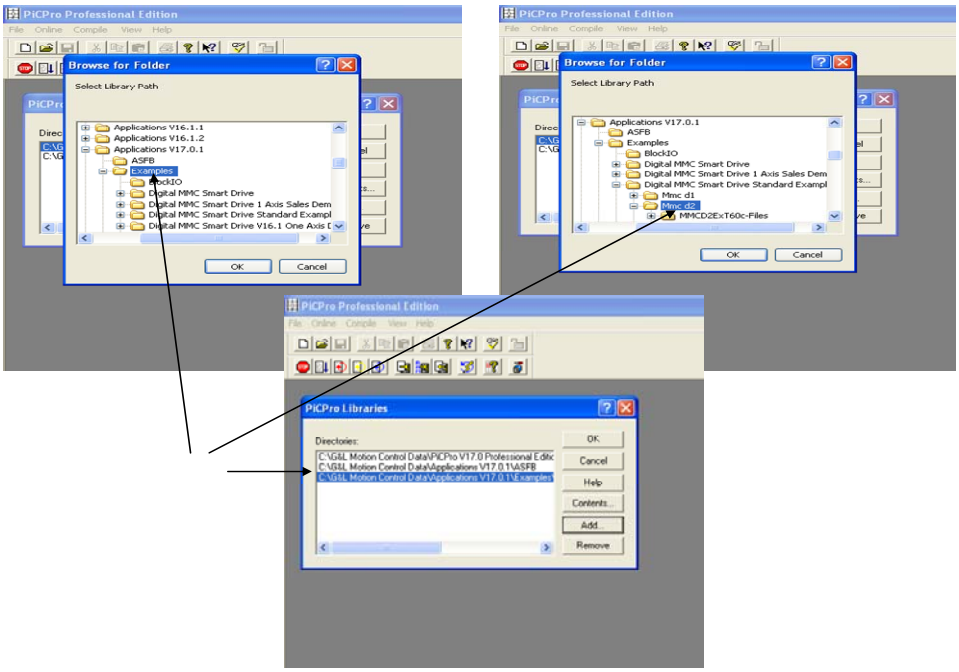
Anytime the address is changed the Drive must be power cycled.

Example Ladder for the control

- For this exercise we will use the MMCD2Ex.ldo
- It is found in the following folder.
- C:\G&L Motion Control Data\Applications V17.0.1\Examples\Digital MMC Smart Drive Standard Examples\Mmc d2
- This folder must be added to the PiCPro Libraries List.

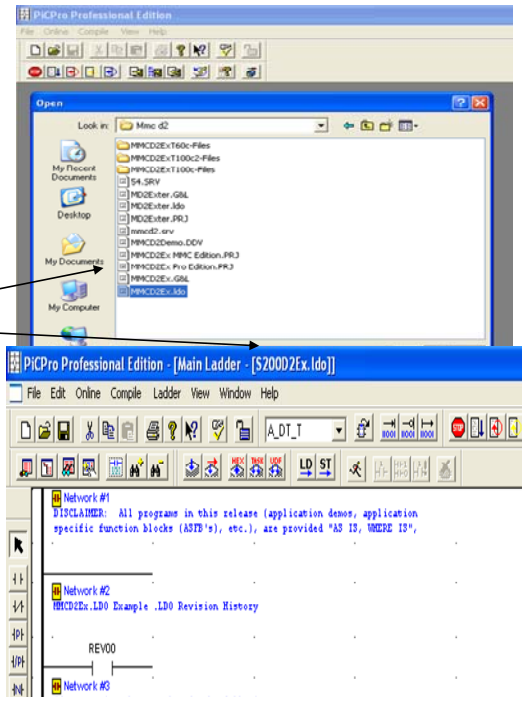


Selecting the Mmc d2 folder



MMCD2Ex.ldo

- Open MMCD2Ex.ldo using PiCPro. Then do a Save As using a new name. Example: S200D2ex.ldo
- This will now be the working ladder for this example.

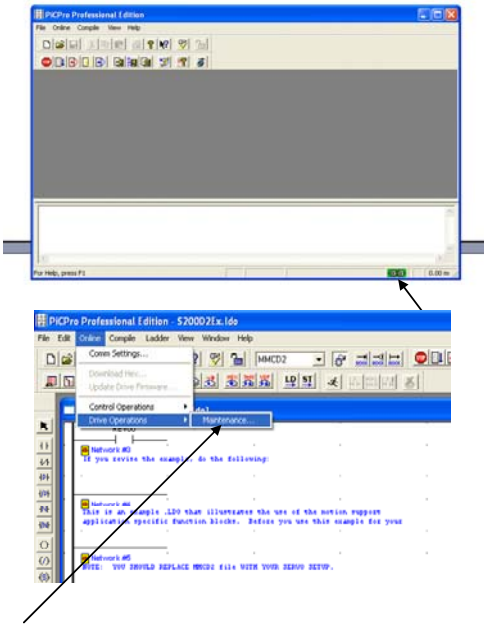


Drive Scaling

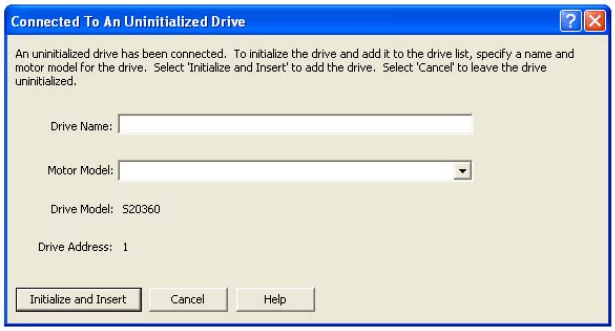
The SDF is a high resolution feedback device. It has 2,097,152 counts per rev. Although this can be used directly in the control, it may cause overflows in some calculations at high speeds. It is typically beneficial to scale this to a smaller value. For this example we will scale it to 10,000 counts or feedback units per revolution.

Online with the Drive

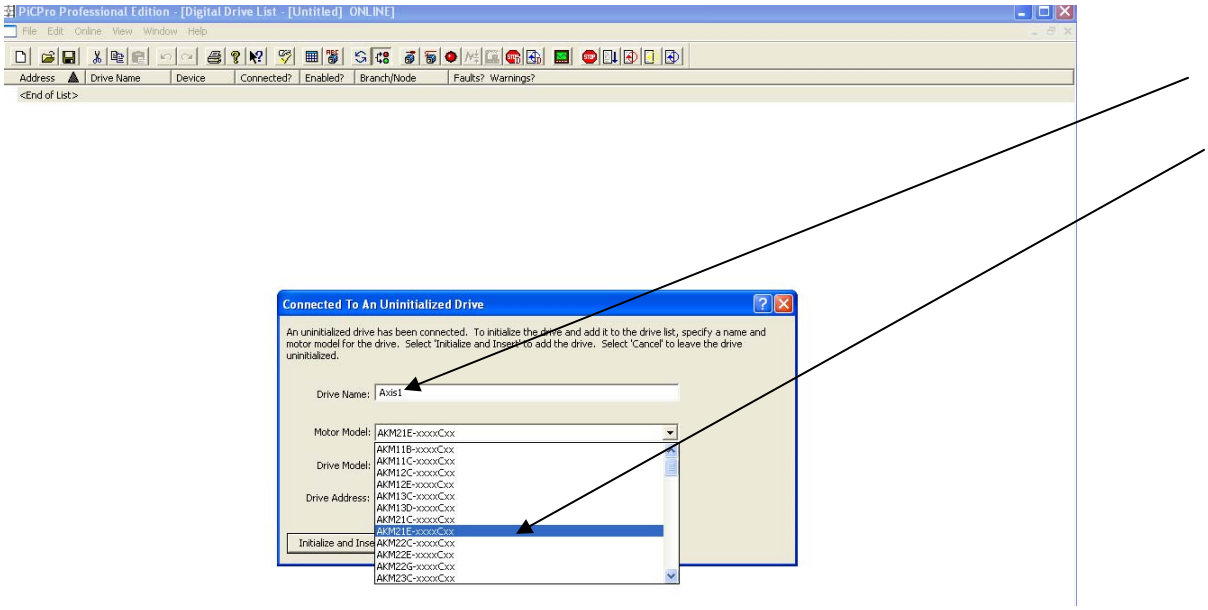
- To get online, the S200 with motor and feedback must be connected to the DSA control and powered up.
- Start the PiCPro software. Connect the PiCPro cable between the PS2 connector on the front of the DSA control and the serial port on your computer. Be sure communications is established. This is indicated by the green connector in the lower right corner.
- Access the drive by selecting Online - Drive Operations -Maintenance

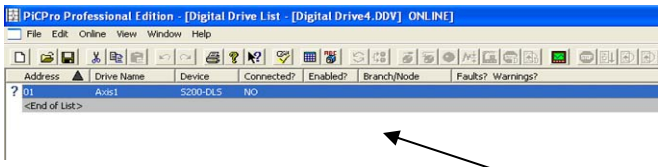


With a new drive the system will report back that an uninitialized drive has been found.

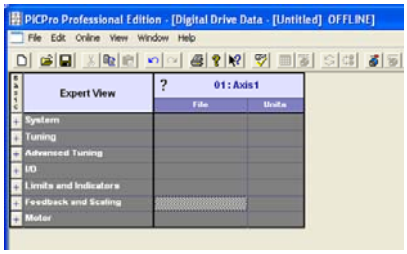


The drive must be assigned a name, and the attached motor model selected.

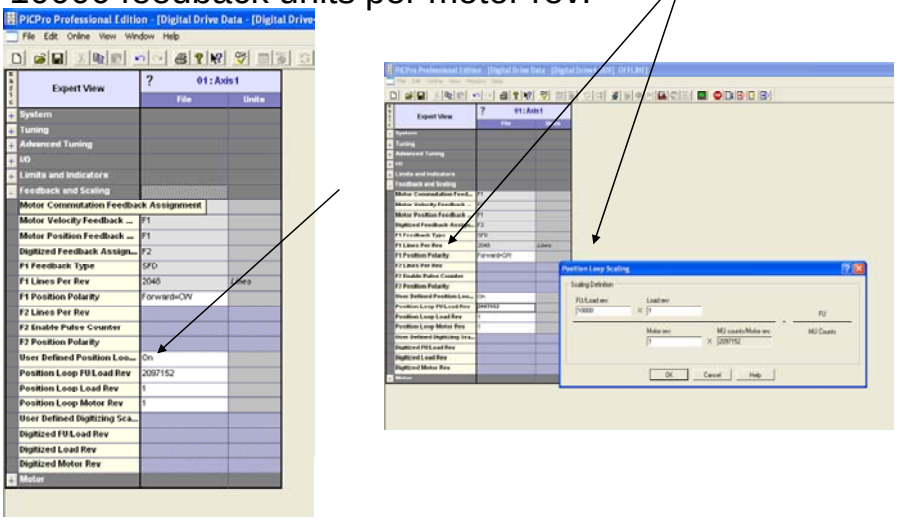




- After they are initialized the Drive list will automatically show all attached drives.
- Double Click on Axis 1. The following window should appear.



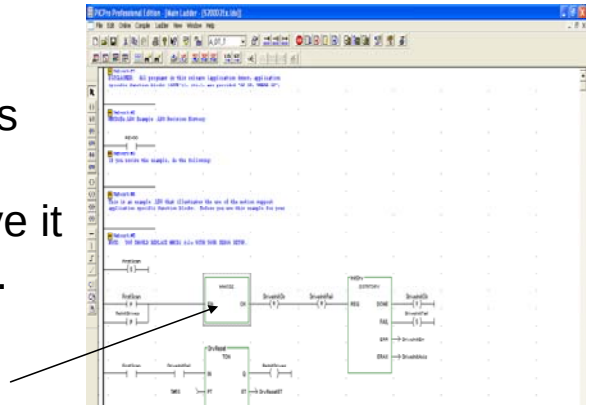
- Expand the Feedback and Scaling Menu and Scroll down
- Turn on User Defined Position loop Scaling
- Access Position Loop FU/Load Rev and set FU/Load Rev to 10000. This will set up the feedback to give us 10000 feedback units per motor rev.



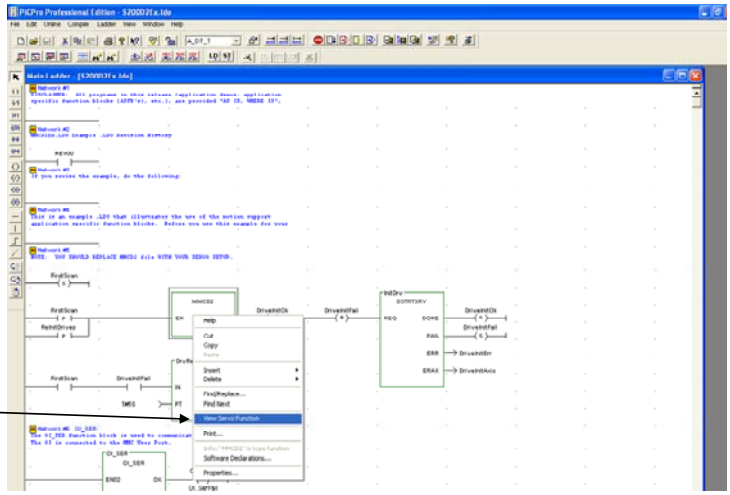
Close and save the drive window.

Servo Setup

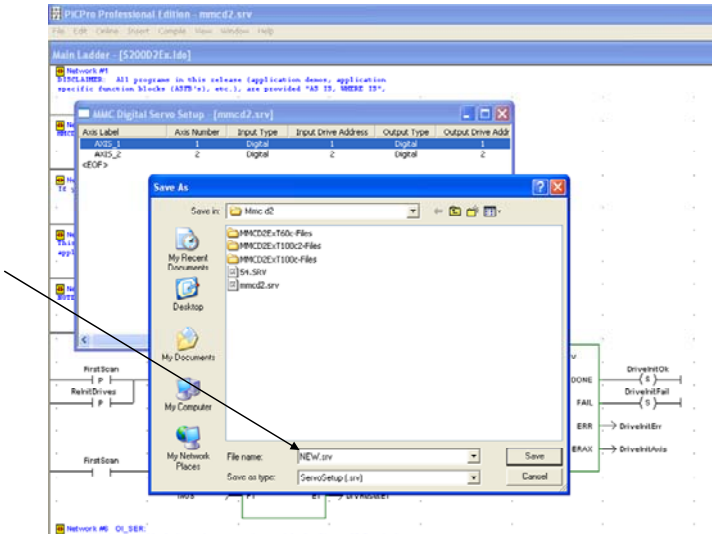
- The servo setup function in the example program is titled MMCD2. We will open it and save it under a new name.



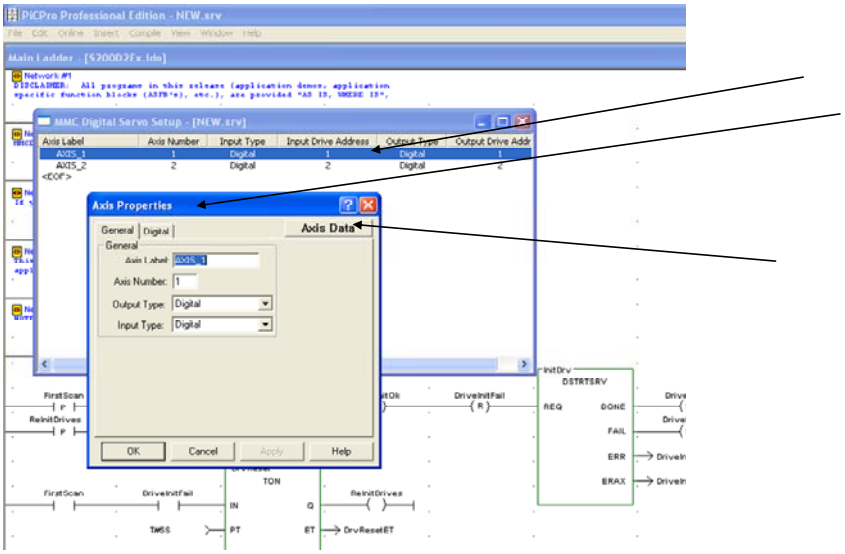
- Right click on the function and select View Servo function.



File Save As

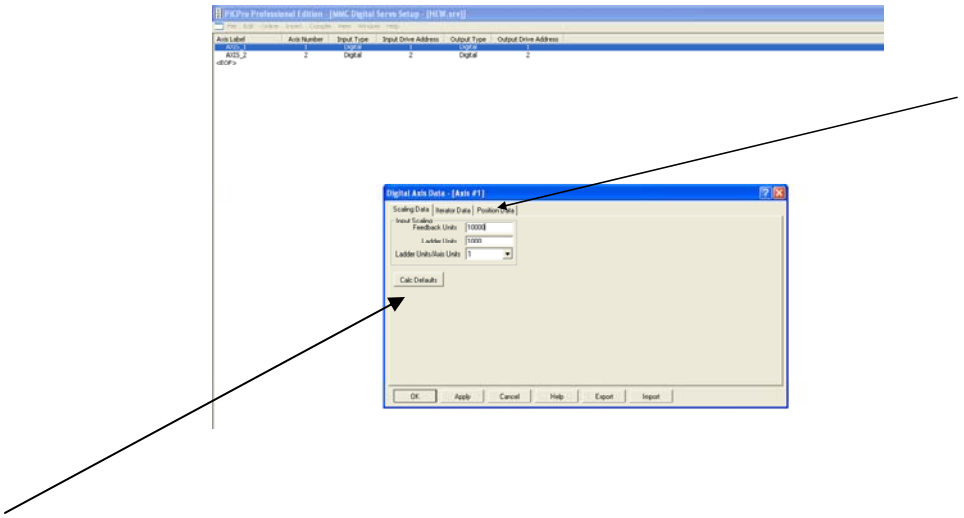


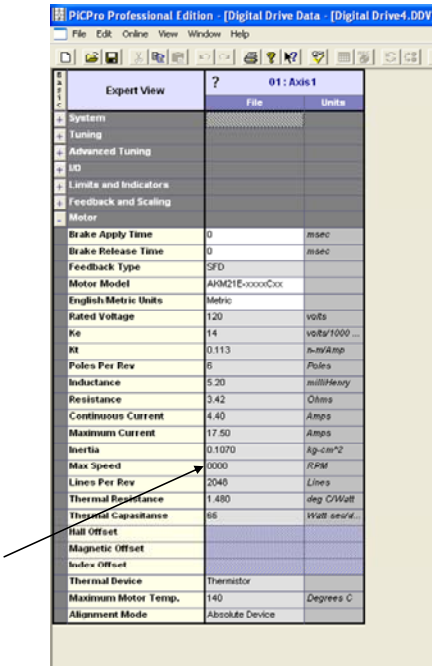
Double click on Axis 1 to access Axis Properties. Then click on Axis Data.



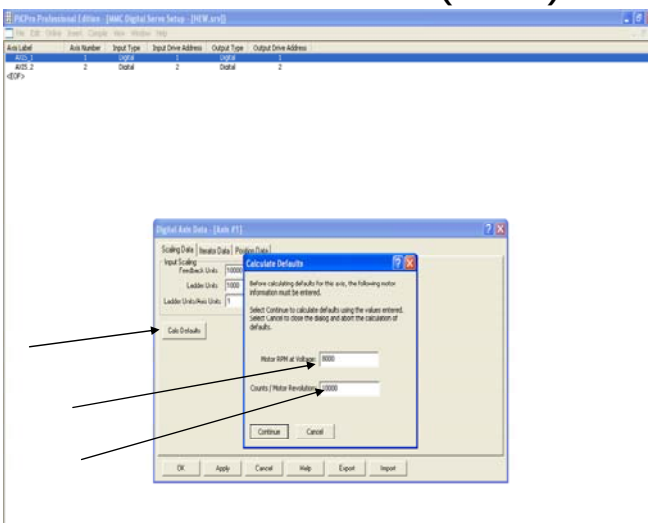
Ladder Unit Scaling

- We now want to set up the system so that a Ladder Unit (LU) is equal to 1/1000th of a Rev. Ladder Units are what you program in. They are the smallest commandable unit. Enter 10000 for Feedback Units and 1000 for Ladder units.



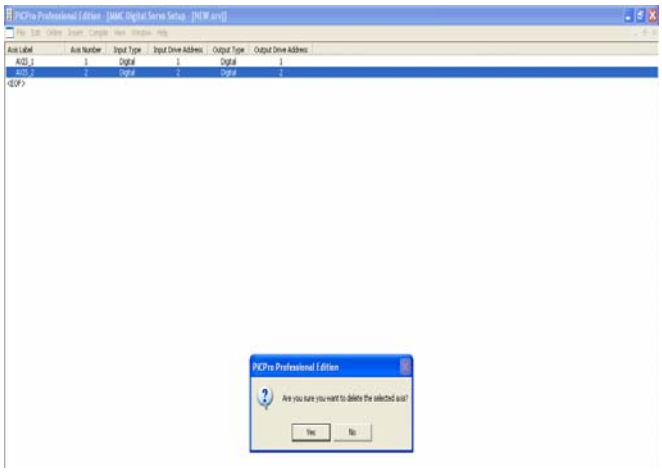


Select Calc Defaults, then enter the Max motor speed as well as the scaled number of Feedback Units (FU's)



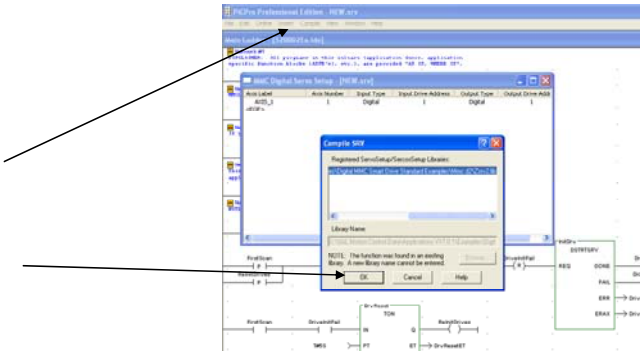
Select Apply & OK

- For this example, we are only using one axis. Select Axis 2 and press delete. It will ask you to confirm this.



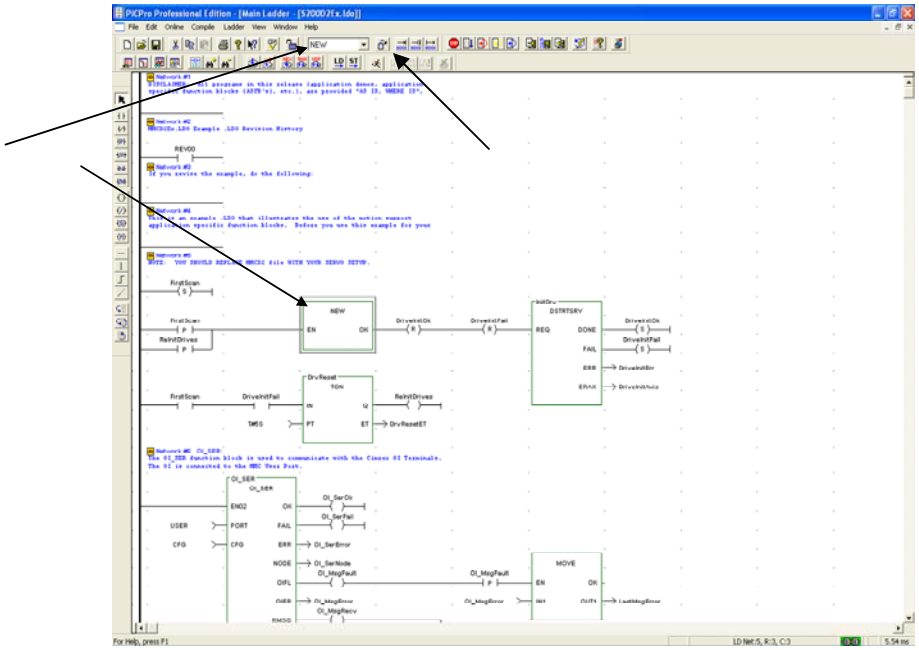
Compile Servo Function

- One must now Compile the servo function with these changes. Anytime any data in the servo function is changed it must be compiled followed by a scan stopped full download of the Ladder.

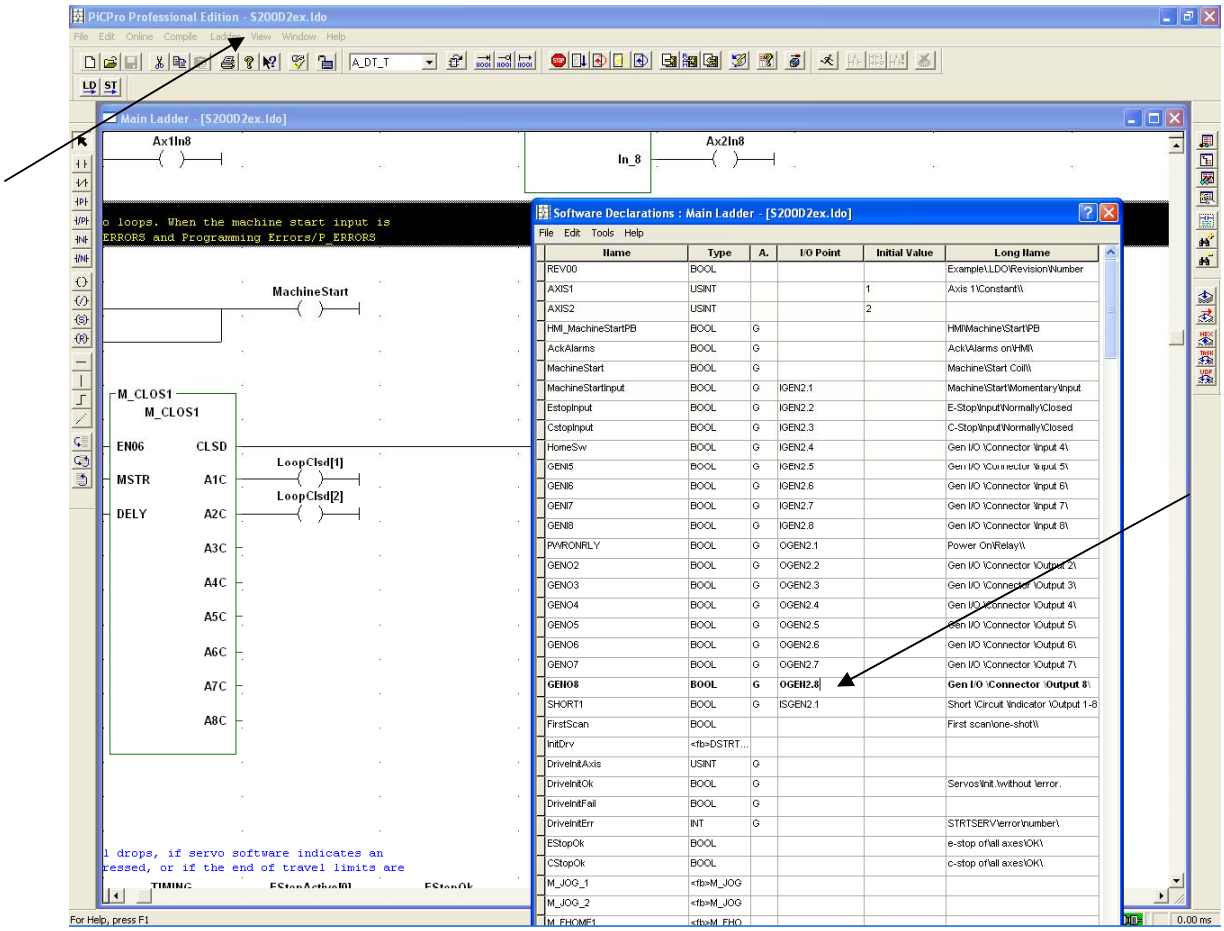


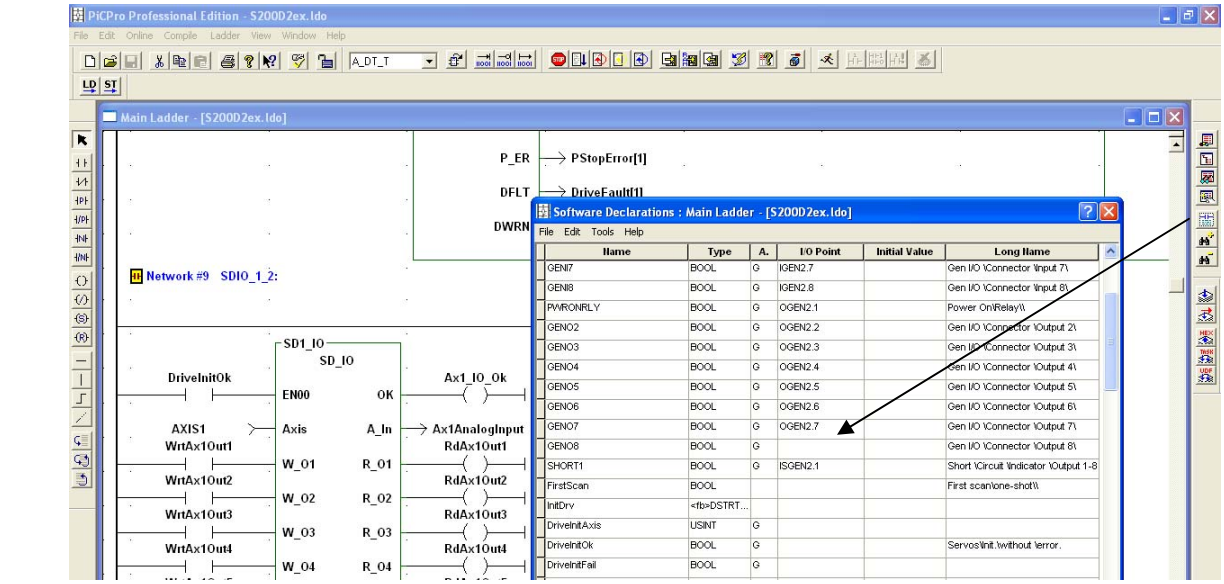
Close the Servo Setup Window

Replace the MMCD2 function with the NEW one.



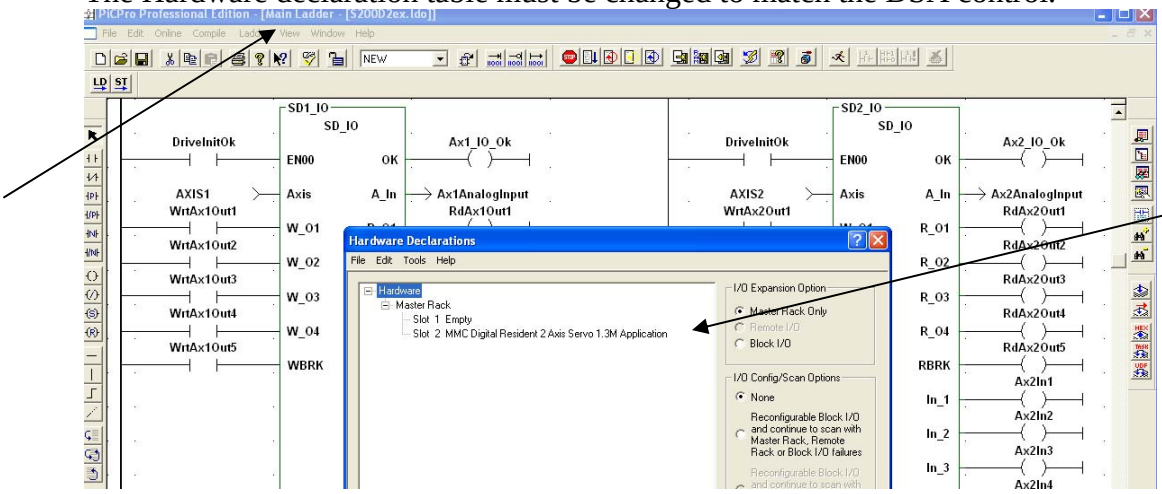
Use the VIEW menu to select Software Declarations. The MMCD2Ex ladder has 8 GEN outputs declared. The DSA control only has 7 GEN outputs available. The I/O point for the 8th output must be deleted. Select the I/O point and press the delete key.

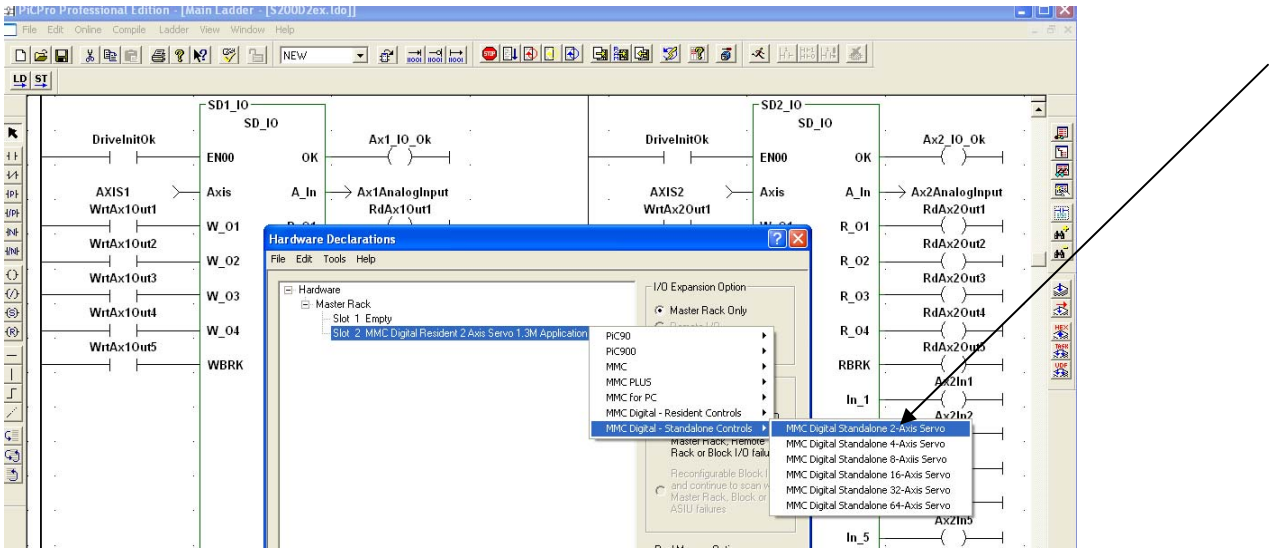




Hardware Declaration

Use the VIEW menu to select Hardware Declarations.
The Hardware declaration table must be changed to match the DSA control.

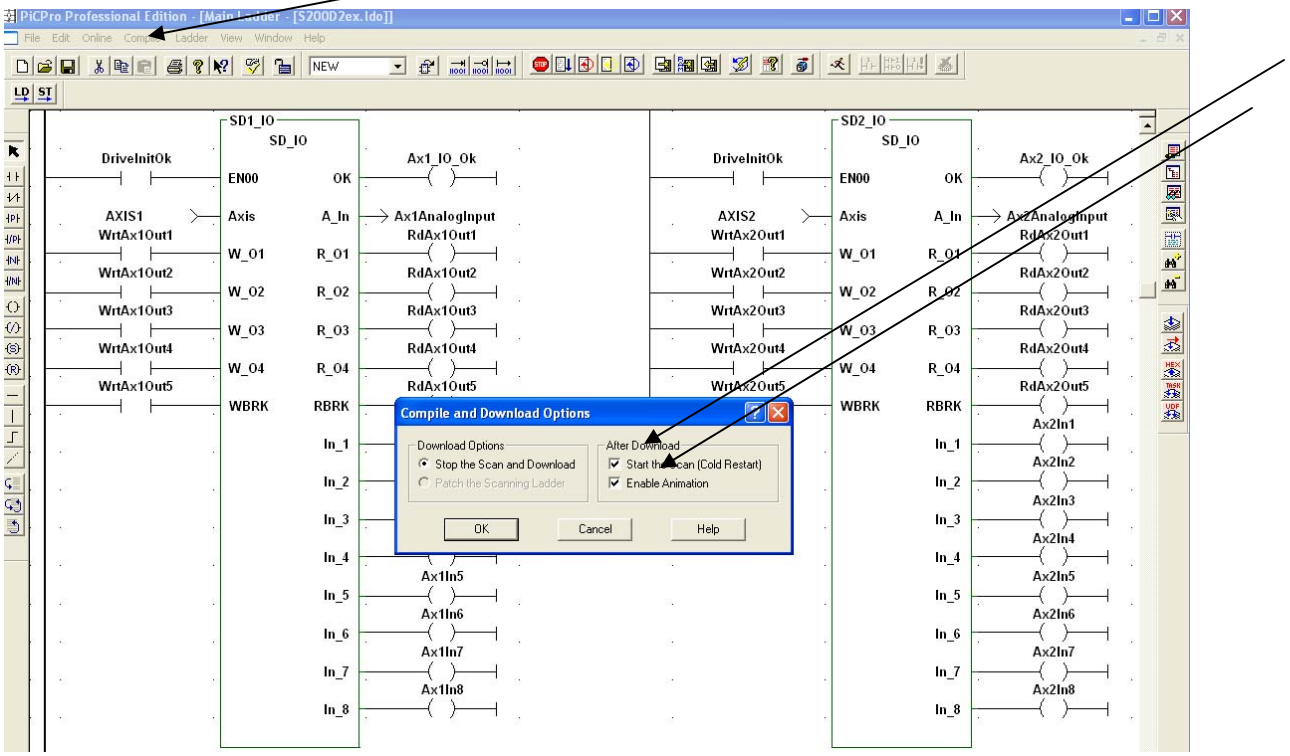




Close and Save Changes

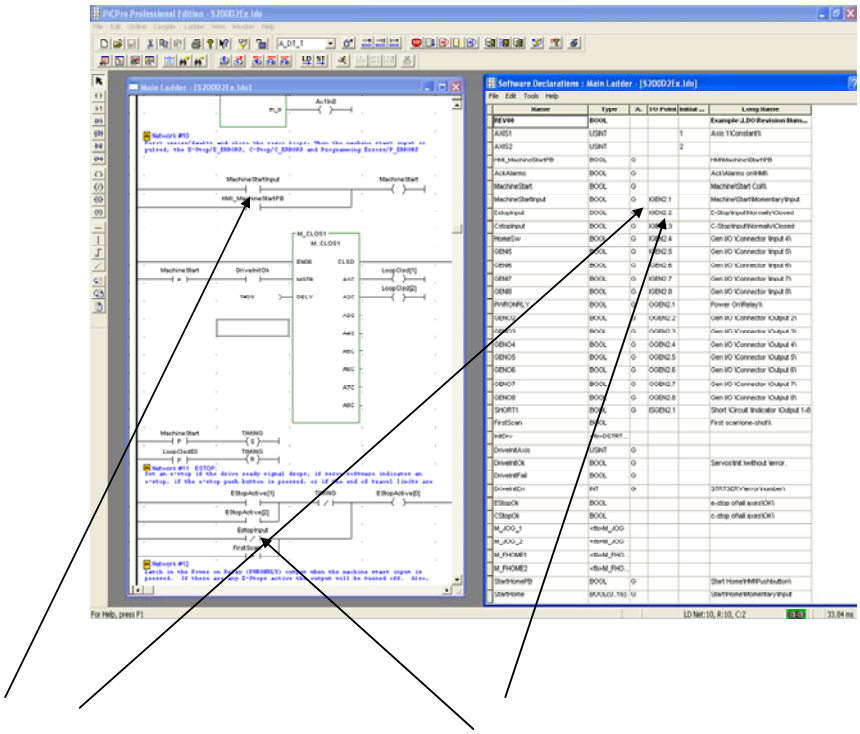
Downloading the Ladder

Select the Compile and Download Menu. Check the Start the Scan and Enable Animation buttons.



Running the Application

- Compile and Download the Ladder.
- Gen I/O is mapped in as follows:
- Machine Start IGEN2.1
- ESTOP IGEN2.2
- CSTOP IGEN2.3



The GEN I/O on the DSA Control and the S200 DLS I/O (J4 Command I/O, J6 I/O Power, J7 Drive I/O) must be wired in and available to run the application. The I/O from the S200 DLS is available in the Ladder through the SD_IO function block in Network 9.

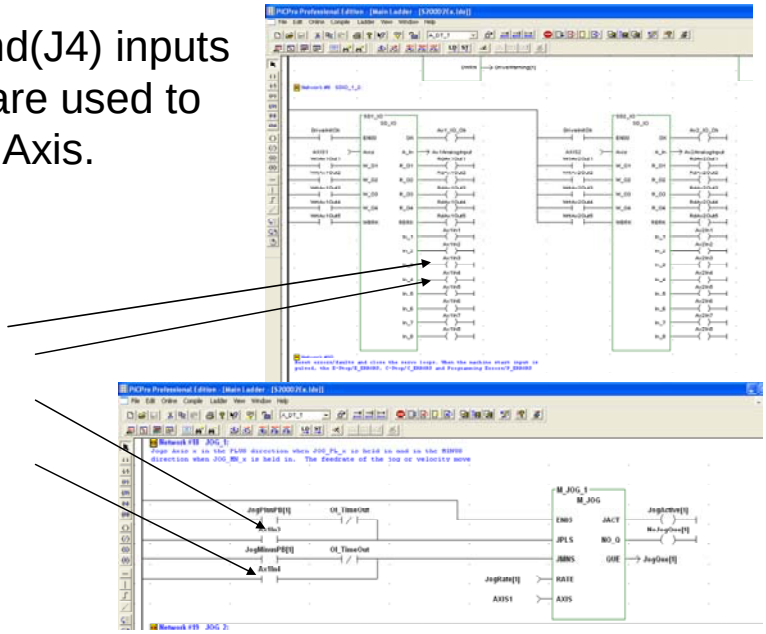
Turn on IGEN2.2 (ESTOP) and IGEN2.3 (CSTOP). These are programmed as Normally Closed contacts.

Command (J4) input 1 (drive enable) must be on.

Toggle IGEN2.1 (Machine Start). This will clear any faults and close the servo loop on the axis.

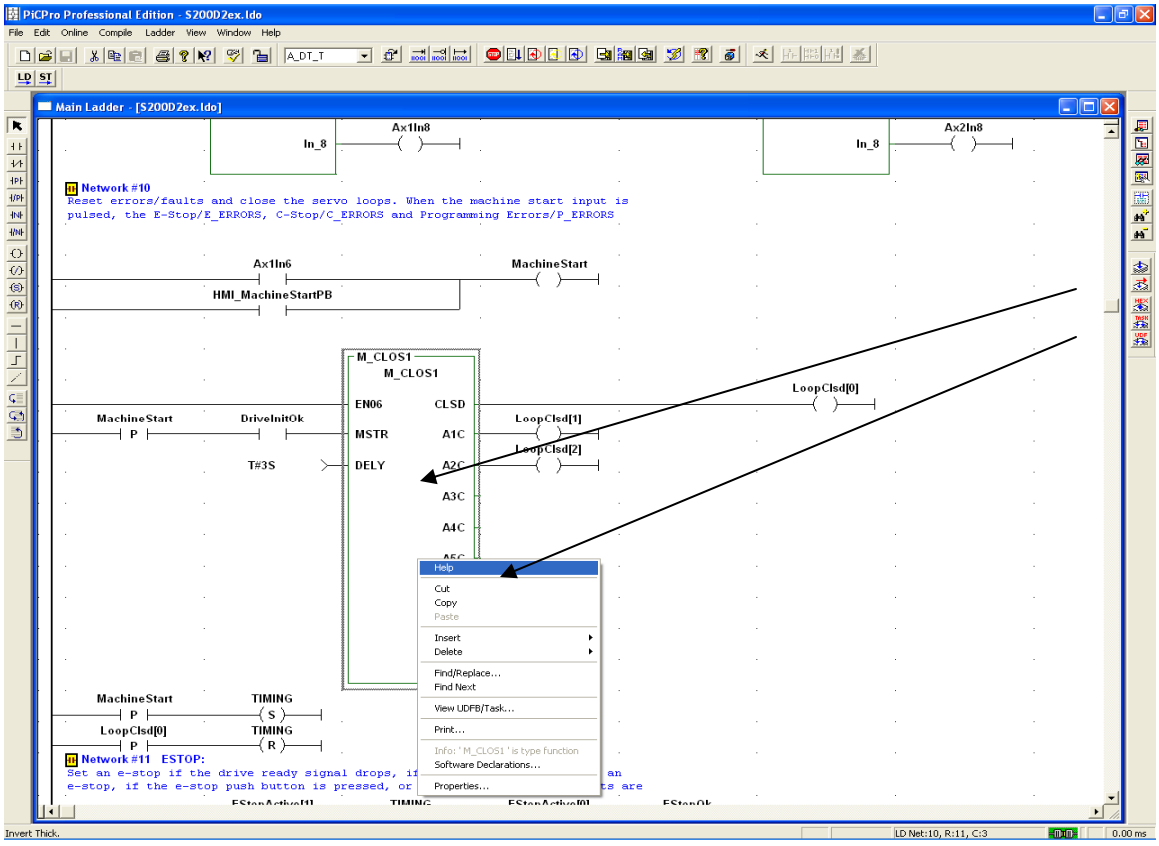
I/O is used to Jog the Axis

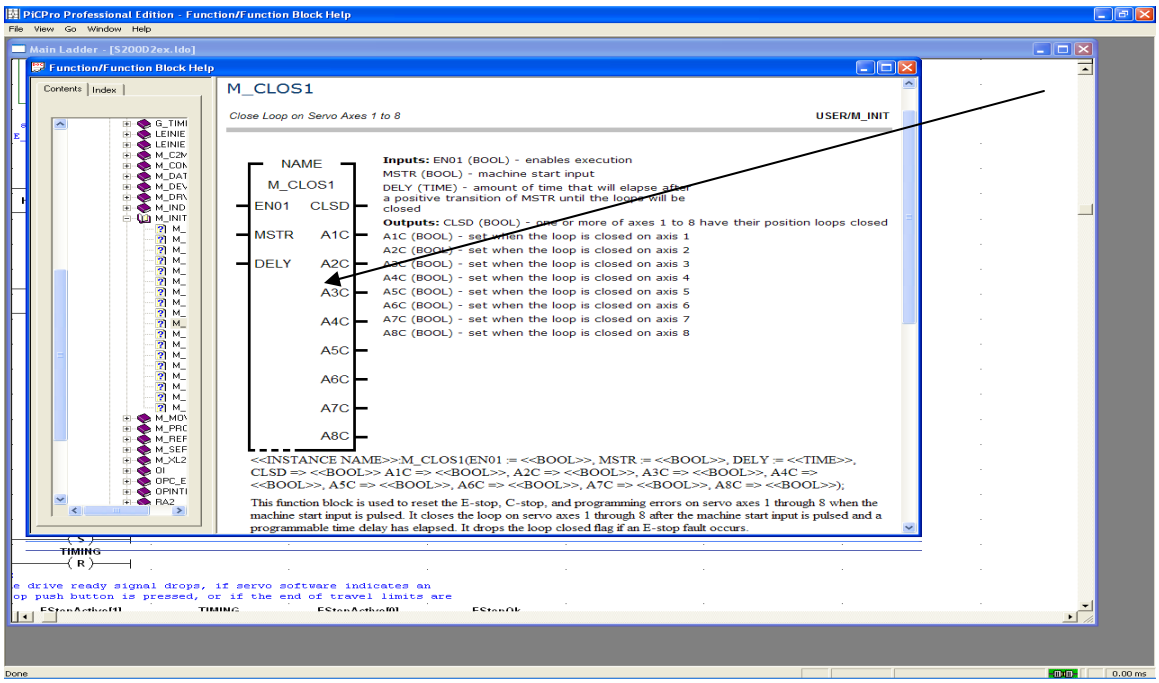
- Command(J4) inputs 3 and 4 are used to JOG the Axis.



You are now ready to jog the axis.

For more information on individual functions, point at the center of them and right click the mouse. Select help. The online documentation for that function will appear on the screen.





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