



M Y N A H SM

Foxboro 762C/743CB Controllers Programmable Serial Interface Card

USER MANUAL

Rev. 1.0

October, 2000

DeltaV is a trademark of Emerson Process Management, Inc © Emerson Process Management, Inc. 1998, 1999. All rights reserved.

Printed in the U.S.A.

While this information is presented in good faith and believed to be accurate, MYNAH Technologies does not guarantee satisfactory results from reliance upon such information. *Nothing contained herein is to be construed as a warranty or guarantee, express or implied, regarding the performance, merchantability, fitness or any other matter with respect to the products*, nor as a recommendation to use any product or process in conflict with any patent. MYNAH Technologies reserves the right, without notice, to alter or improve the designs or specifications of the products described herein.



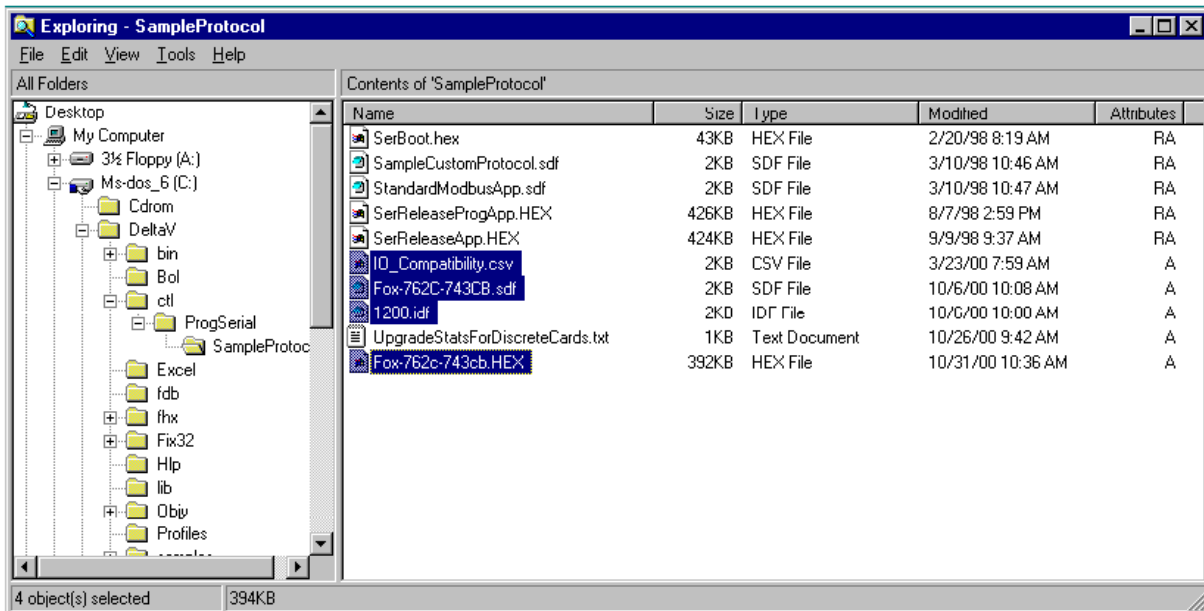
Interface to Foxboro 762C/743CB Controllers
Release Notes

Driver Installation

The driver software comprises 4 files, distributed on a 3.5" diskette. These files must be copied to the DeltaV directory on your ProPlus Workstation. The path is:

\\DeltaV\ctl\ProgSerial\SampleProtocol

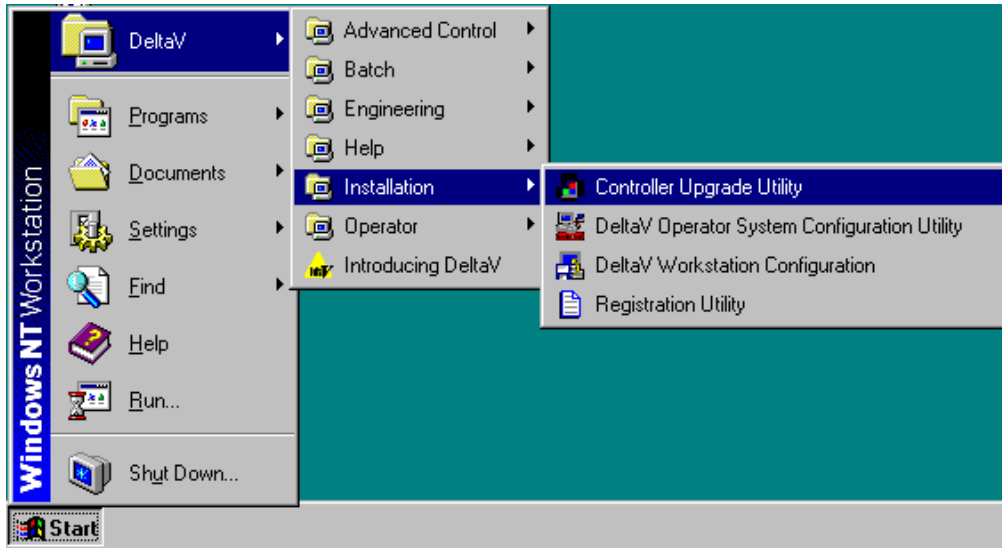
The following shows a completed copy operation:



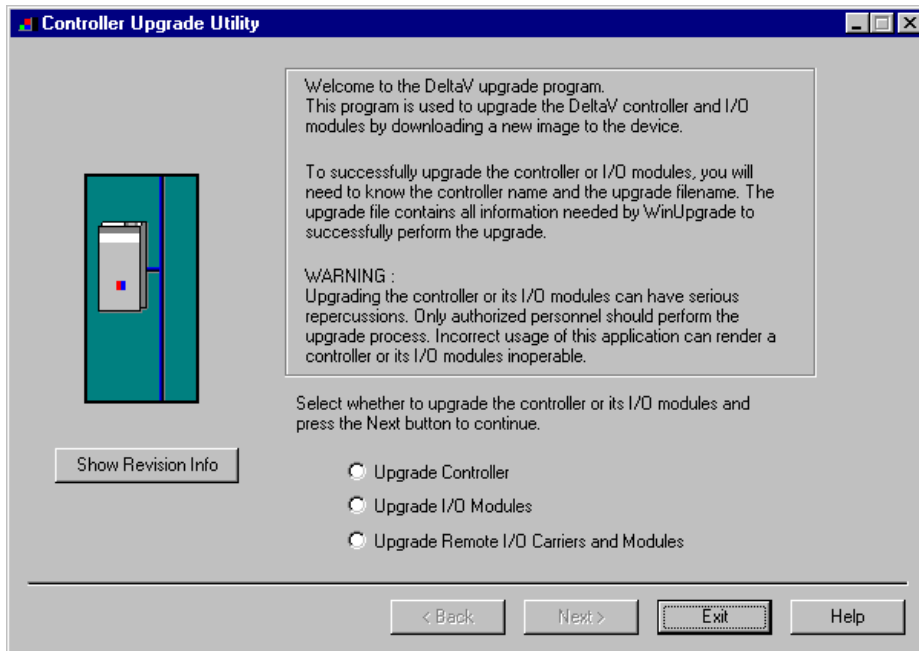


After copy completion, you are ready to program (or upgrade) the Programmable Serial Card with the supplied custom driver software. The steps are as follows:

1. Click on the Start button and select DeltaV, Installation, Controller Upgrade Utility as shown below.

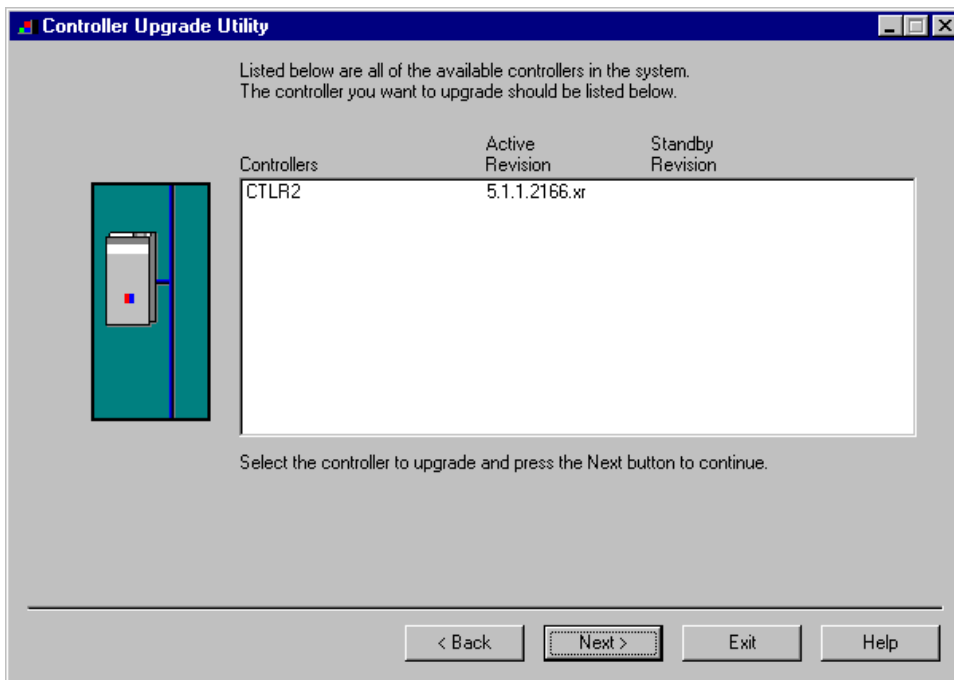
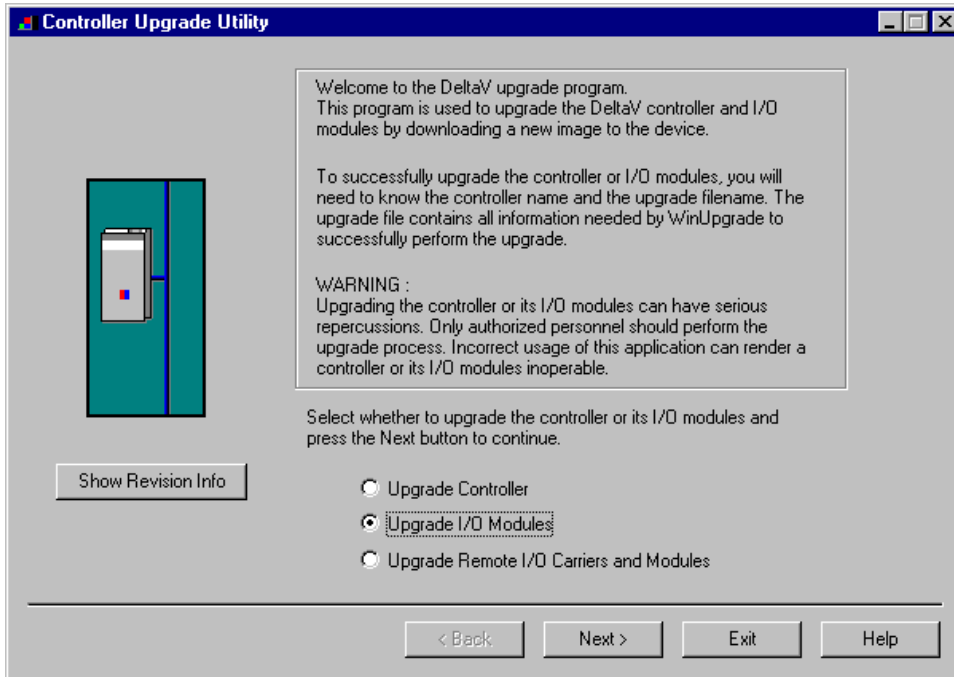


The following dialog will appear:

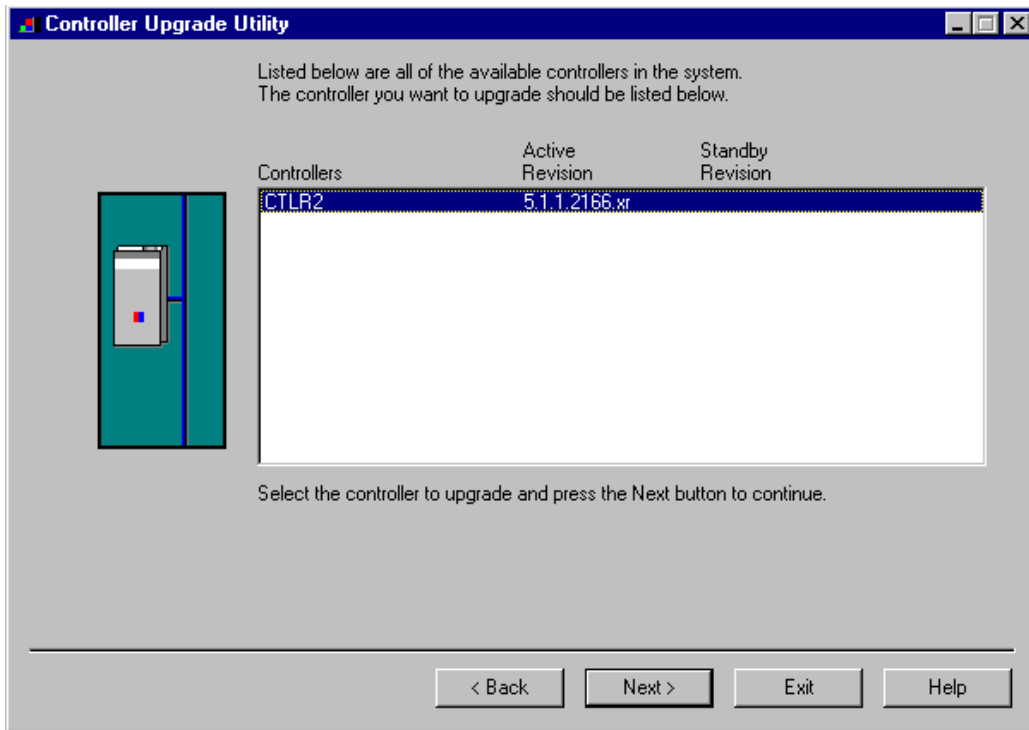




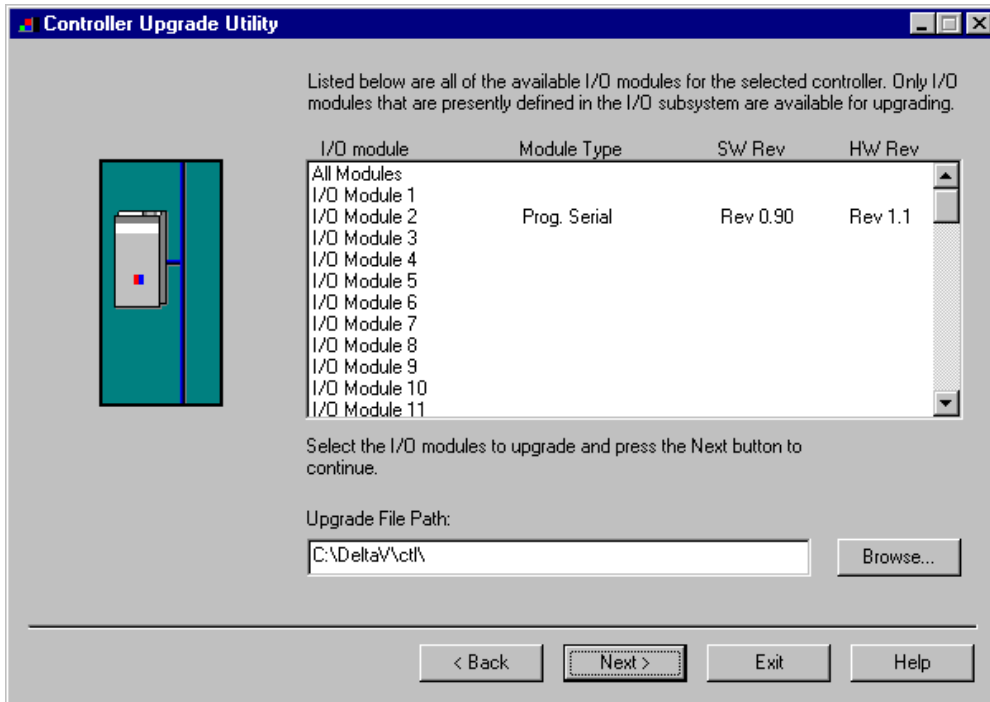
Click on the Upgrade I/O Modules radio button, and then click Next.



The above dialog will appear, listing all the available Controllers in your network. From this dialog, select the appropriate Controller and then Click Next as shown below.



After you Click Next, the following dialog will appear, listing all the I/O modules in your selected Controller. The shown list of I/O modules is an example only. Your list will be different.



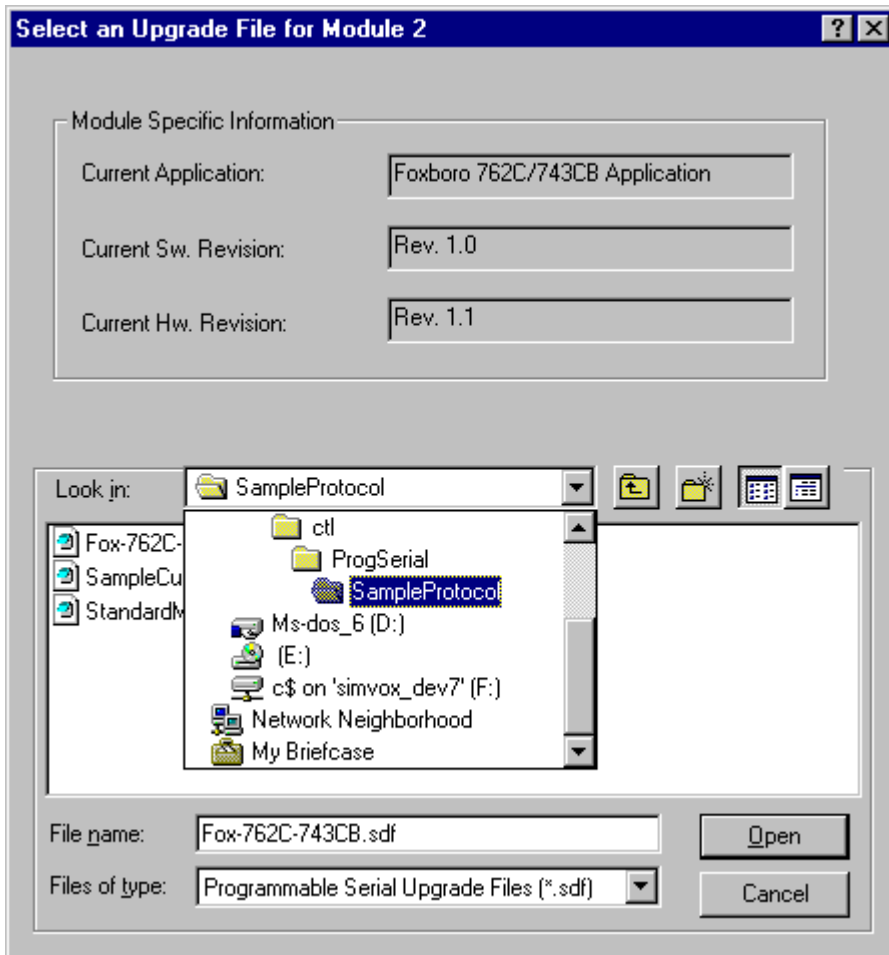


From this dialog, select the Programmable Serial Card I/O Module in the list. For example, we will select I/O Module 2. This will give you the following dialog, from which you will select the file path to where the driver software is located. This will be:

\\Delta\ctl\ProgSerial\SampleProtocol.

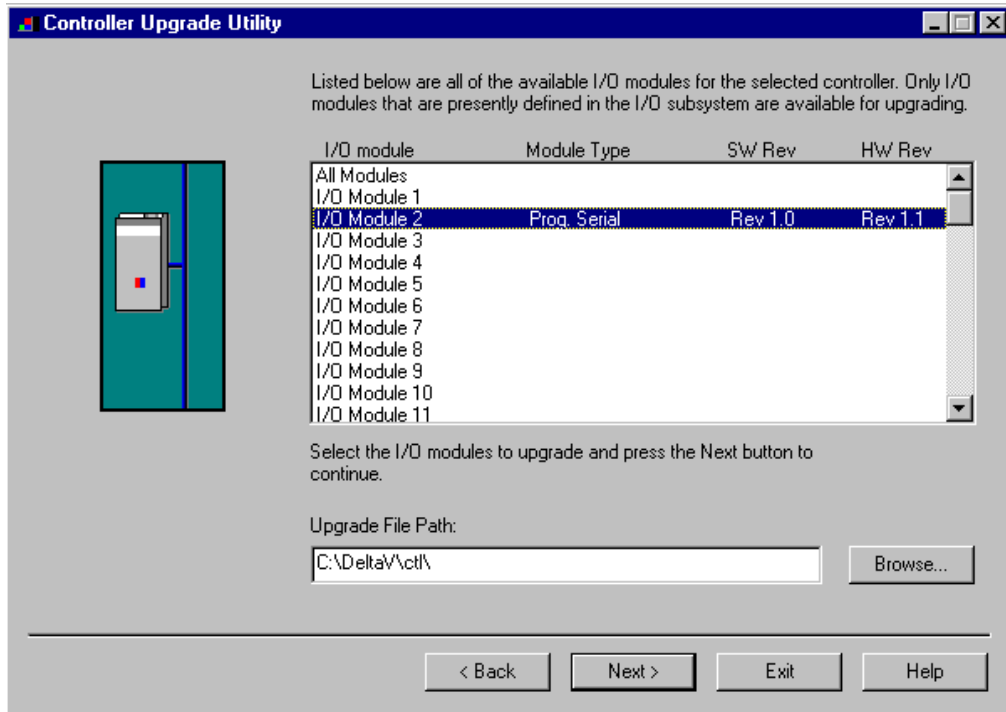
Once you are in the specified directory, you will need to select the following file:

Fox-762C-743CB.SDF

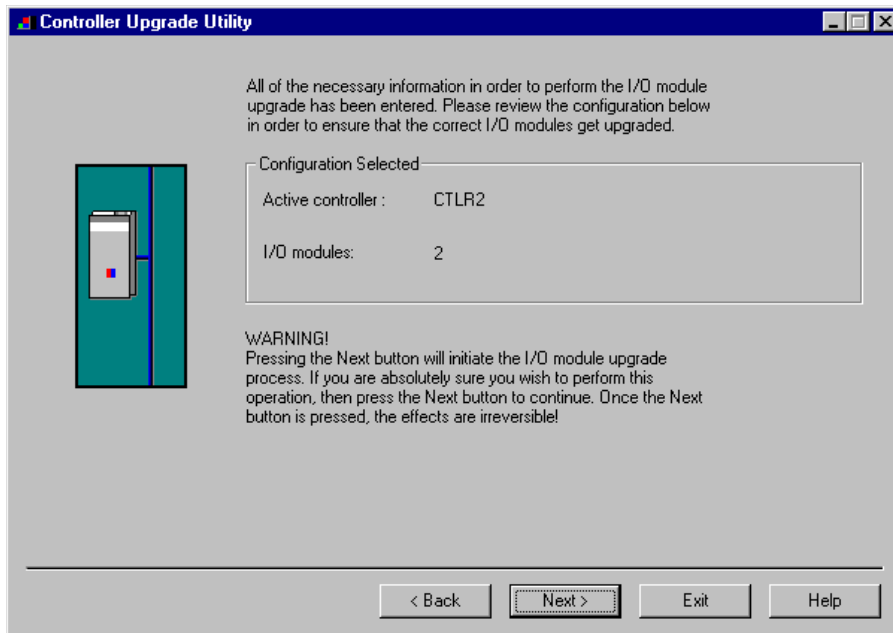




After selecting the .SDF file, Click on Open. This dialog will close and you will be back to the following:

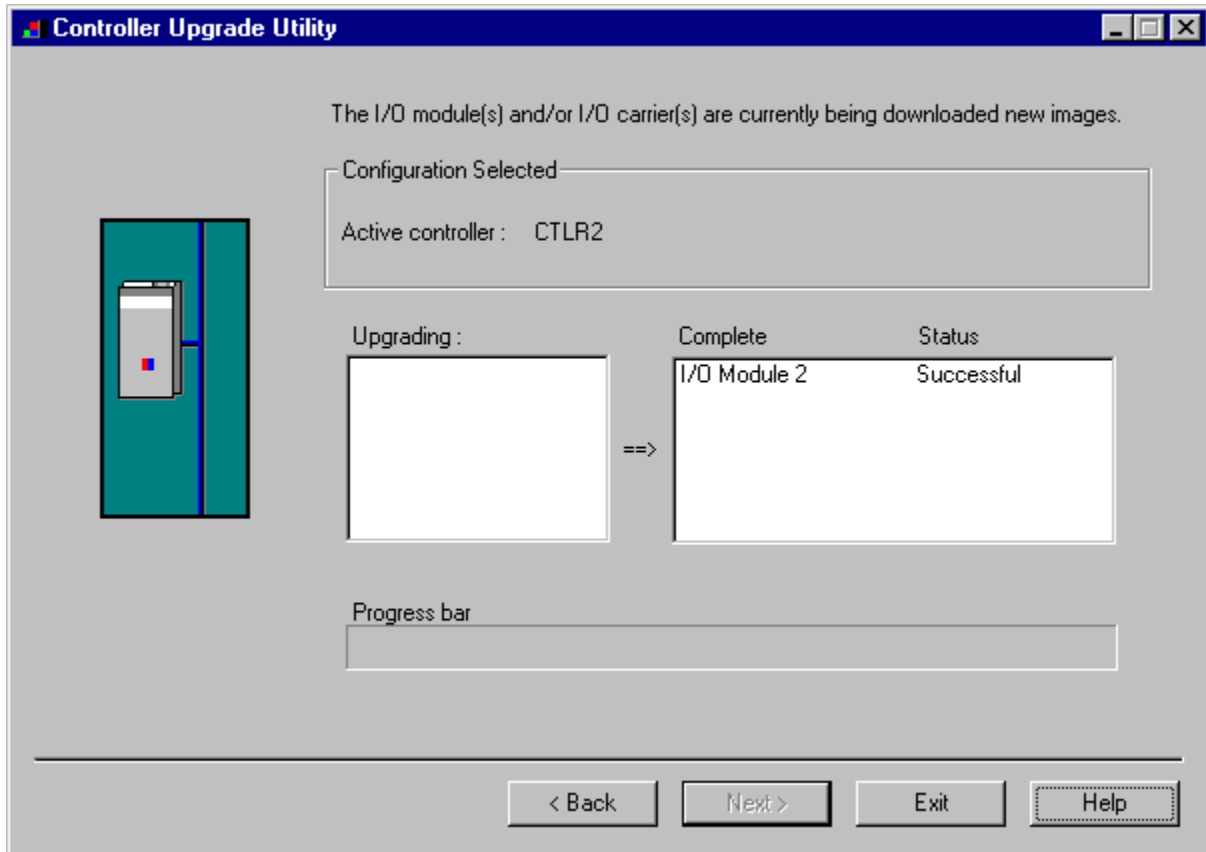


In this dialog, Click Next again. You will get the following dialog, confirming the Controller and I/O Module to program.





Click Next and the I/O Module upgrade process will begin. After completion, you will receive the following dialog, indicating success.



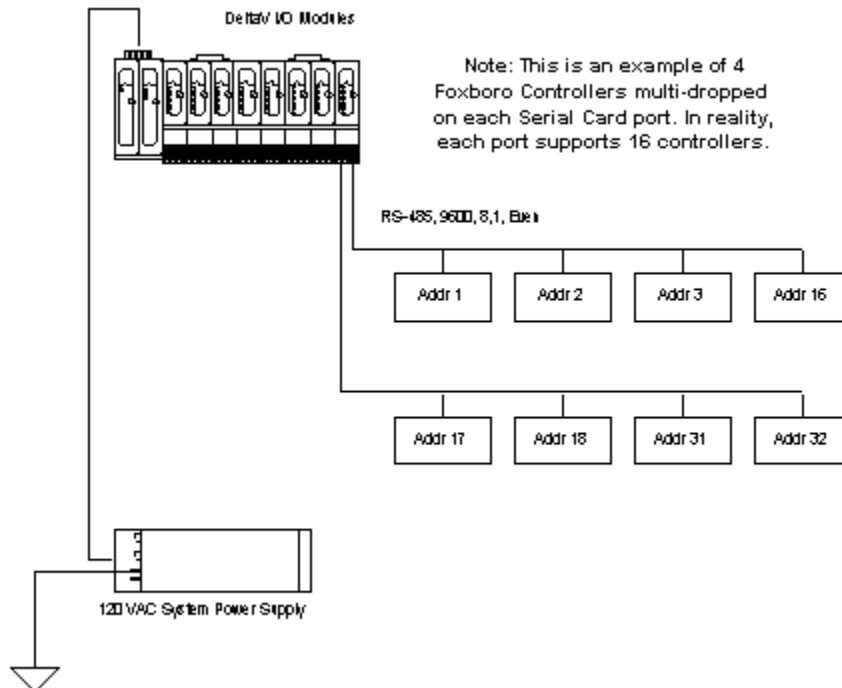
This completes the I/O Module upgrade process.



Serial Card Hookup – RS-485

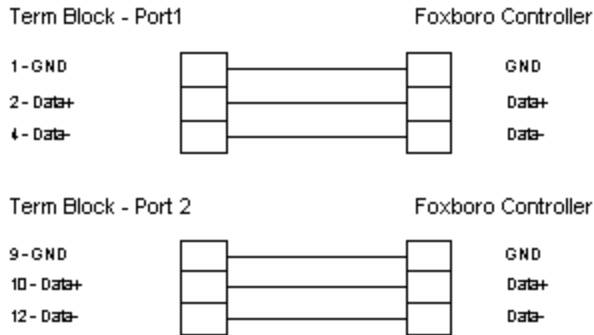
The Programmable Serial Card will communicate with the Foxboro 762C and 743CB Controllers using RS-485 half duplex (2-wire) only. Each serial card supports 2 RS-485 ports, which are independently connected to Foxboro Controllers. The Foxboro Controllers are multi-dropped, with 16 Controllers per port. This allows a single serial card to communicate with 32 Foxboro Controllers. The distance between the serial card and the Foxboro Controllers can be as much as 5000 feet, per the RS-485 standard. The following is an RS-485 hookup.

The Controller addresses must be in the range 1-255. Not all Controllers need to be attached at all times.



The serial card will report data for only those defined Controllers which respond to the Poll.

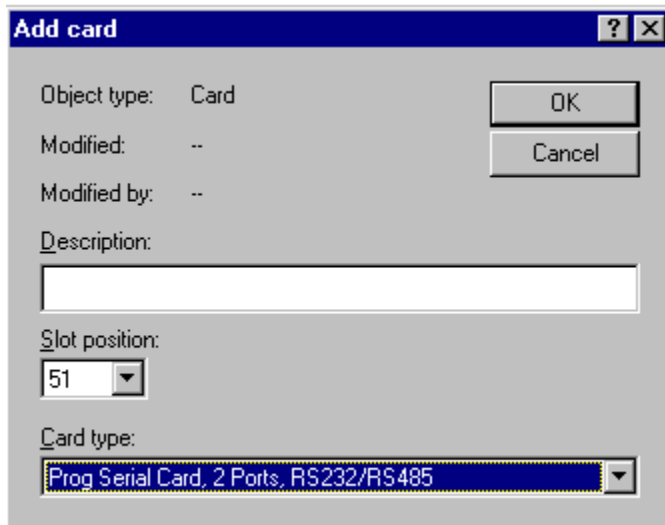
The RS-485 cable pinout is as follows.



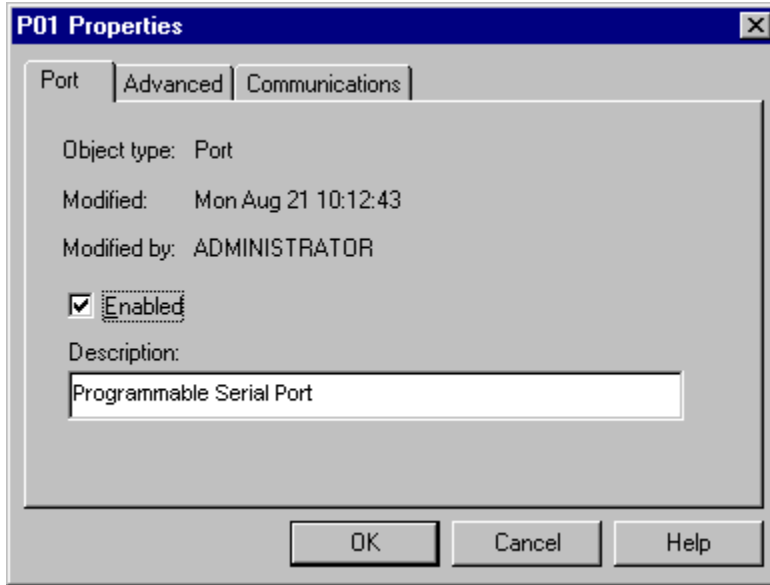
Using the Driver

To have the Programmable Serial Card communicate with the Controllers, follow these steps:

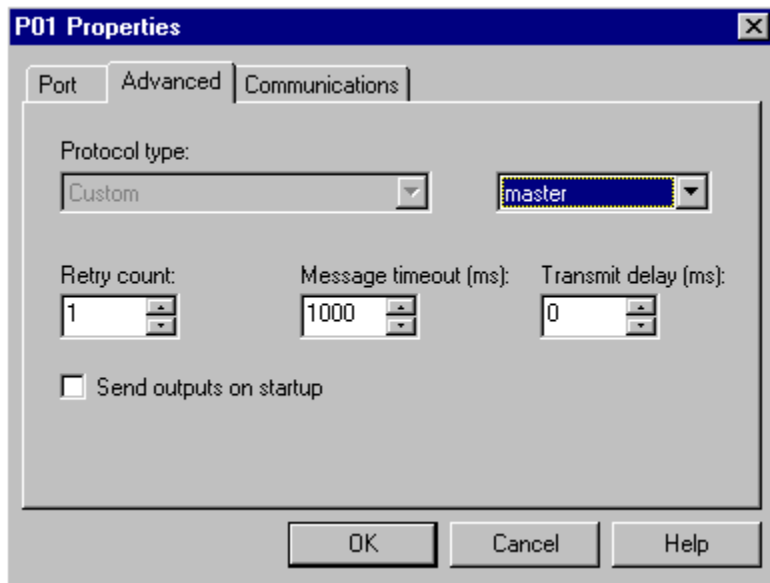
1. In DeltaV, configure the serial card. This will create a Programmable Serial Card and define 2 ports under it, P01 and P02.



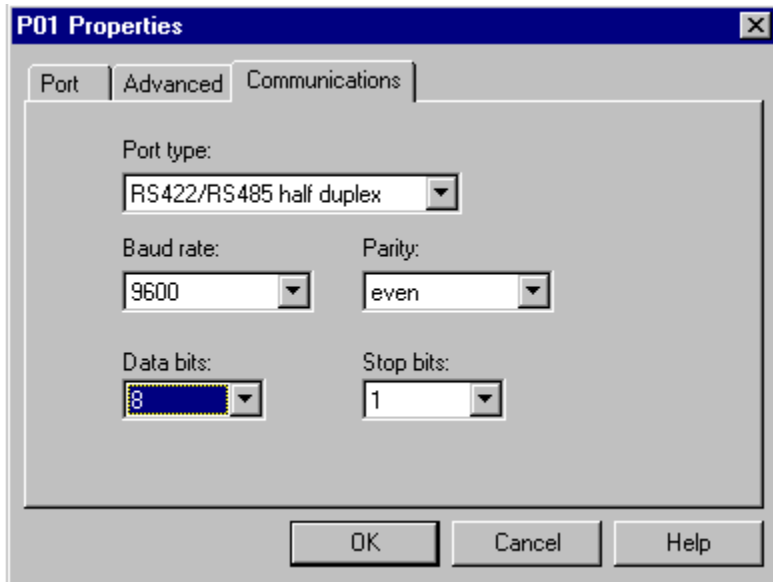
2. Right mouse click on Port 1. The following dialog will appear.



Click on the Enabled checkbox to enable the Port. Next select the Advanced tab. The following dialog will appear.

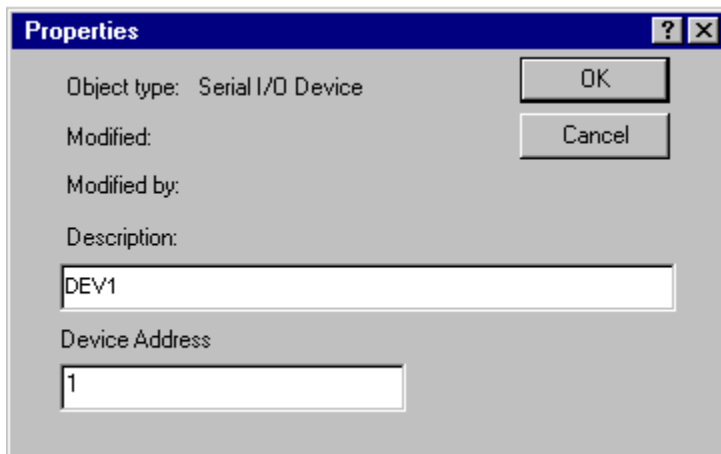


In this dialog, select Master since the card will be the master in communications. Also, select the message time parameters. Next, click the Communications tab. The following dialog will appear.



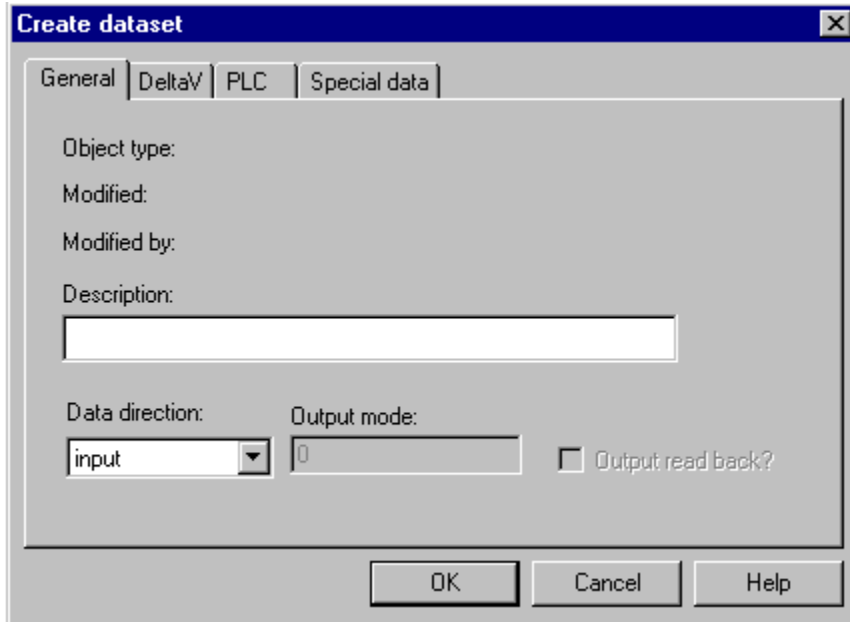
Specify Port type and the required baud rate parameters and click OK. The Port type will always be RS422/RS485 Half Duplex.

3. Configure a Serial Device under the Port by doing a Right Mouse click and selecting New Serial Device. The following dialog will appear:

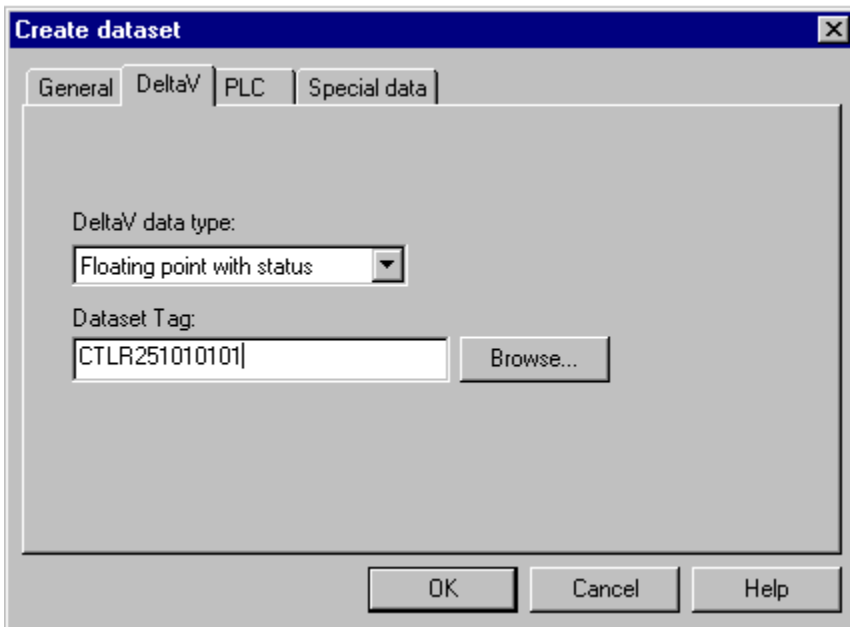


Specify the device address and description. Then click OK. This will add the serial device. You can define a maximum of 16 devices per port, representing 16 multi-dropped Foxboro Controllers. The Device Address corresponds to the Foxboro Controller address. The driver will communicate with the Controller using this device address.

4. Next, configure datasets in the Serial Device. For this application, each device must have 1 dataset under it. The dataset will be of type Input and Floating Point. The following dialog will appear.

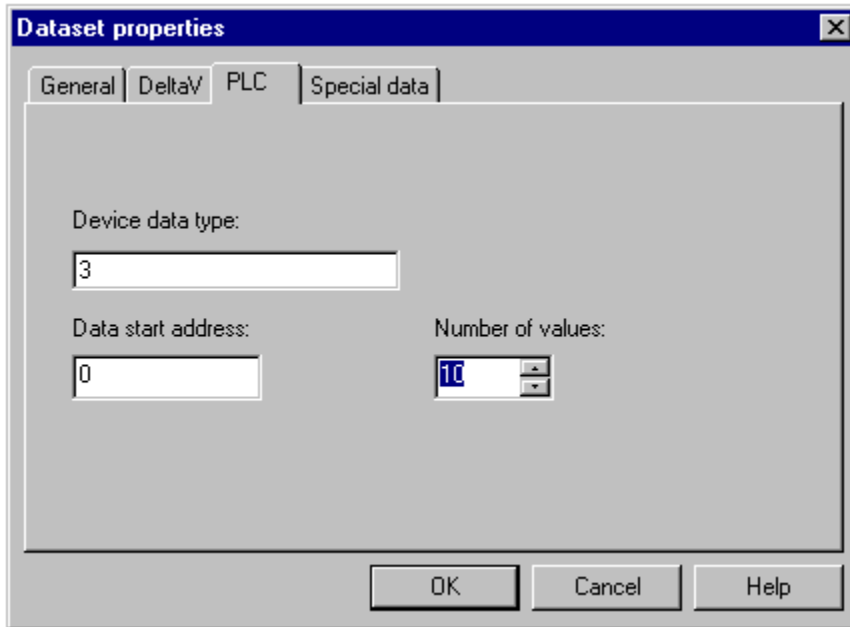


Configure the data direction to be input. Next click on the DeltaV tab. The following dialog will appear.



In this dialog, configure the data type needed for DeltaV. You can see the available types by clicking on the drop down list. Remember for this application, the dataset data type is Floating point.

Next click the PLC tab. The following dialog will appear.



In this dialog, select the parameters as shown above. No parameters are defined under the Special data tab. Click OK to complete dataset definition.

Driver Communications

The driver will continuously communicate with the Foxboro Controllers using only the Function 1 Poll Message as documented in the 762C/743CB Serial Communications Guide.

The Serial Card will send out two Poll commands to the Controllers by address. The Poll commands are Function 1 Poll (0x0B) and Function 2 Poll (0x12). It is assumed that Function 1 Poll retrieves data for Loop 1, and Function Poll 2 retrieves data for Loop 2.

The Serial Card receives the returned data packet, parses it out and makes the data available to DeltaV in the configured registers.

If there are communication errors, these are reported up to DeltaV. The reported Controller values will always be available in the following configured dataset registers.

Data Name	Data Type	Loop 1 - Assigned Register	Loop 2 – Assigned Register
Setpoint	Floating Point The received 16-bit number is divided by 40 to produce a percent of scale number between [-2, +102]	R1	R6
Measurement Value	Floating Point	R2	R7



	The received 16-bit number is divided by 40 to produce a percent of scale number between [-2, +102]		
Output Value	Floating Point The received 16-bit number is divided by 40 to produce a percent of scale number between [-2, +102]	R3	R8
Flag Byte	Unsigned Integer 8 converted to Floating Point	R4	R9
Alarm Byte	Unsigned Integer 8 converted to Floating Point	R5	R10

Note: It is the users responsibility to convert the returned percent of scale values to engineering units. The expression for this conversion is as follows:

$$EU = \frac{R_n [EUH - EUL]}{100} + EUL$$

Where R_n is the returned register, EUH and EUL are the configured engineering high and low units, respectively.



M Y N A H™

Powerful Solutions for Digital Plants

Technical Support

For technical support or to report a defect, please give MYNAH Technologies . a call at (636) 681-1555. If a defect is discovered, please document it in as much detail as possible and then fax your report to us at (636) 681 681-1660.

For Product functionality questions, ask for the people in the following order:

1. Nobin William
2. Dean Cook

For Commercial issues, ask for people in the following order:

1. Martin Berutti
2. Jane Wagner

For all other driver and related questions, ask for Nobin William.

You can also send us your questions via e-mail. Our addresses are:

support@mynah.com

Thank you for using DeltaV.