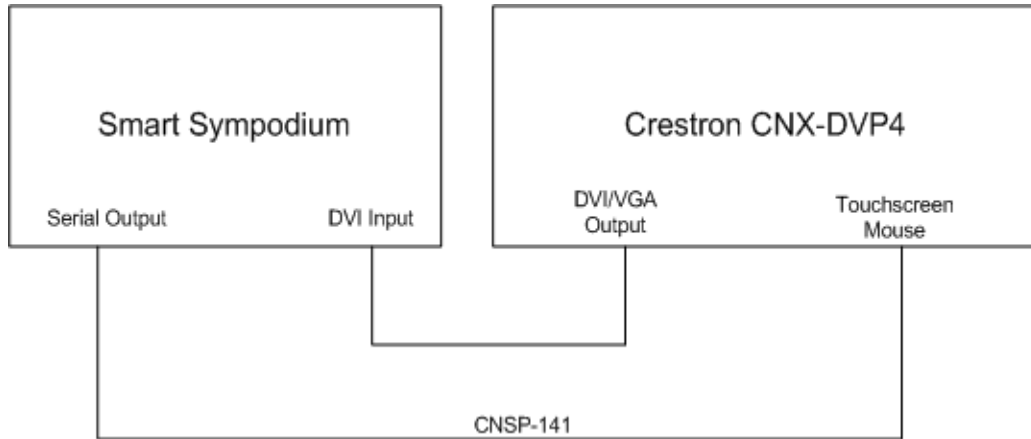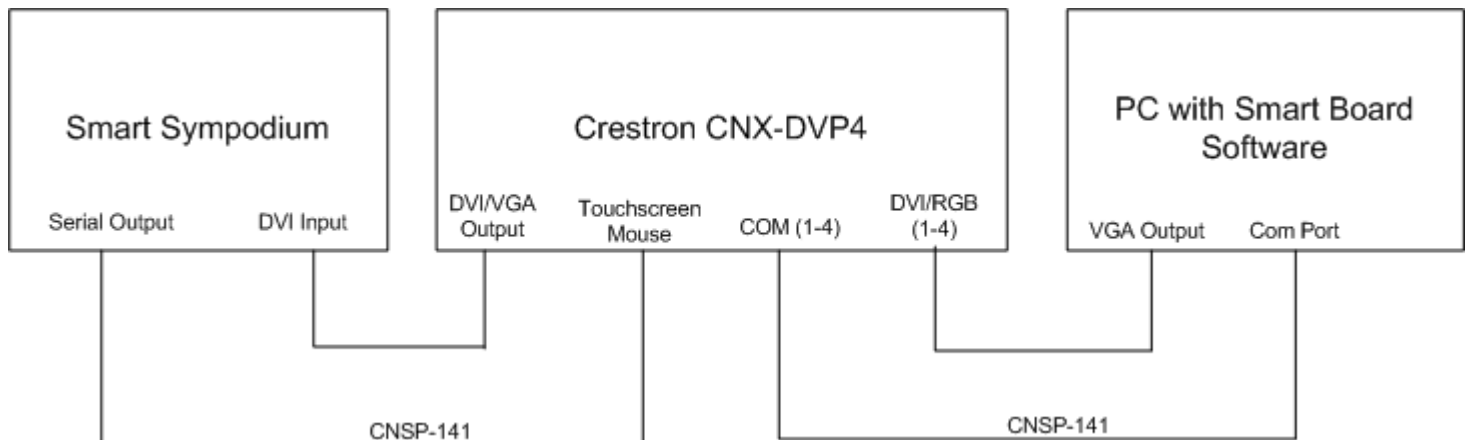# Smart Sympodium / Crestron CNX-DVP4 System Overview:

There are several ways the Smart Sympodium can be integrated with the Crestron CNX-DVP4 Video/Graphics Processor:

Option 1: The Sympodium can be used as the touch input for the DVP4. This will allow the Sympodium to function as a Crestron touch panel. The DVP4 will generate the VGA display, which will be shown on the Sympodium. This display can consist of multiple video/s-video/vga windows, as well as the standard Crestron control buttons and graphics. The Sympodium will be able to activate buttons as if it were a standard Crestron touch panel.

```
+---------------------------+        +---------------------------+
|                           |        |                           |
|    Smart Sympodium        |        |    Crestron CNX-DVP4       |
|                           |        |                           |
|                           |        |  DVI/VGA        Touchscreen|
| Serial Output   DVI Input |        |  Output          Mouse    |
+--------|----------|-------+        +----|-------------|--------+
         |          |                     |             |
         |          +---------------------+             |
         |                                              |
         +----------------------------------------------+
                          CNSP-141
```

Option 2: In addition to the functionality of option 1 (above), a PC running the Smart software can be controlled. This allows the ability to control the PC, and to telestrate and access the rest of the Smart software on the PC. In this configuration, you can also use the hard buttons located at the top of the Sympodium for selecting colors, etc.

```
+-------------------+    +---------------------------------------+    +---------------------+
|                   |    |                                       |    |  PC with Smart Board|
|  Smart Sympodium  |    |       Crestron CNX-DVP4               |    |      Software       |
|                   |    |                                       |    |                     |
|                   |    | DVI/VGA  Touchscreen        DVI/RGB   |    |                     |
| Serial Output DVI |    | Output    Mouse    COM (1-4) (1-4)    |    | VGA Output  Com Port|
+------|--------|---+    +---|--------|---------|--------|-------+    +----|----------|-----+
       |        |            |        |         |        |                |          |
       |        +------------+        |         |        +----------------+          |
       |                              |         |                                    |
       +------------------------------+         +------------------------------------+
                  CNSP-141                                   CNSP-141
```

Option 3: In addition to options 1 and 2 (above), a Crestron TPS-series touch panel can be used concurrently with the Sympodium. This way, you can access all the functionality described in options 1 and 2 (above), using the pad area of a Video/VGA window on a touch panel.
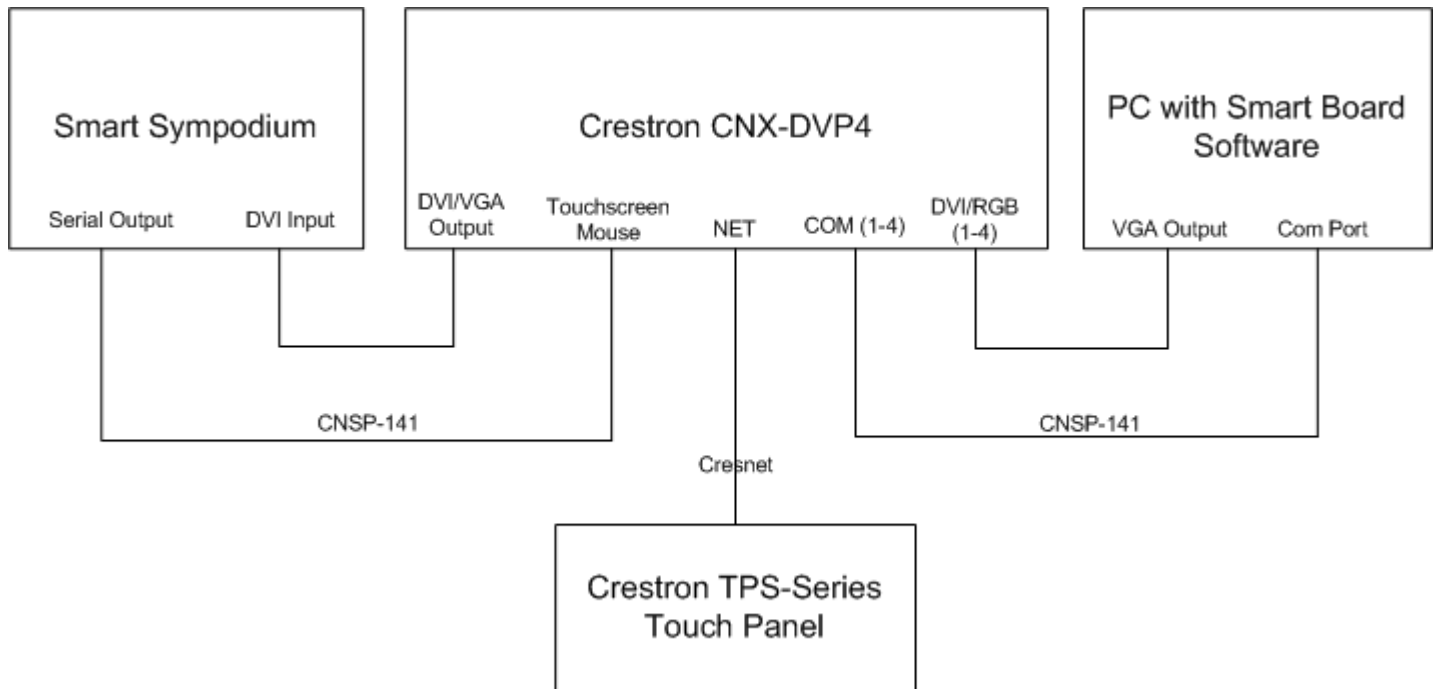
System Setup:

Configuring the DVP-4 to work with the Sympodium:
1. From Viewport establish communication with the DVP4.
2. When new, the DVP4 will be in slave mode. Type "CNET 2<enter>" to put it into master mode.
3. Type "reboot<enter>" to reboot the DVP4.
4. Load DVP4 firmware Version 3.017 or higher into the DVP4.
5. Use the console command **touch** to set up the DVP4. Type "touch 3 <enter>". This will select the Smart mode.
6. Type "reboot <enter>" to reboot the DVP4.

Configuring the Sympodium to work with the DVP4:
1. Load Smart Board software supplied by Smart into the computer to be controlled by the Sympodium.
2. Verify that the Sympodium and PC are working properly together by connecting the PC to the Sympodium – bypassing the Crestron system.

Connecting the DVP4 to the Sympodium:
1. Connect the DVP4 to the Sympodium and computer as shown in the diagrams above. It is very important to use CNSP-141 cables for the serial connections. This is a 5-wire straight through cable, with only pins 2, 3, 5, 7, and 8 connected.
2. Switch the Sympodium to Analog input as detailed in the Smart documentation.
3. Power up the Sympodium. The Ready Led should stop flashing red, and turn to a steady green.
4. From Viewport, type "Caltouch <enter>". The DVP4 will generate a calibration screen, displayed on the Sympodium. Perform the calibration. This will calibrate the DVP4 to the Sympodium.

Loading and Testing the DVP4/Sympodium Demo Program:
1. Using Viewport, load the program file "Smart Sympodium Control from CNX-DVP4 Demo.spz" into the DVP4.
2. Load the touch panel file ""Smart Sympodium Control from CNX-DVP4 Demo.vtz" into the DVP4.

The demo program will display two windows….one composite video signal, which should be connected to input 1A, and one DVI/RGB signal, which should be connected to DVI/RGB input 1. If the computer is to be controlled by the Sympodium/DVP4, connect the com port on the computer to the COM 1 port on the DVP4.

Troubleshooting:

Sympodium to DVP4 Communications:
If the Sympodium and DVP4 are communicating properly, the LED at the top of the Sympodium should be green. If the LED is flashing RED, the two systems are not communicating properly, and you should check the following:
1. Verify that the correct cable is being used between the serial port on the Sympodium, and the Touchscreen/Mouse port on the DVP4.
2. Verify that the DVP4 has been configured for the correct **touchout** mode.
3. Verify that the correct operating system is loaded into the DVP4.

DVP4 to Computer Communications:
If the DVP4 and Smart computer are communicating properly, you will be able to control the computer and telestrate from the VGA window displayed on the Sympodium. If this does not work, check the following:
1. Verify that the Smart Board software is running on the PC. You should see the Smart toolbar on the screen.
2. Verify that the correct cable is connected from the com port on the PC, to the COM 1 port on the DVP4.
3. On the computer, you can have the Smart Board software search for a valid Smart tablet, by going into the Control Panel menu, then select "Connect", then select "Detect Smart Hardware". It should search all com ports, and automatically establish communications with the DVP4.
4. You may need to calibrate the computer to the DVP4. This is done by selecting "Orient" from the Control Panel menu of the Smart software. Follow the instructions to complete the calibration.

SimplWindows Programming Considerations:

The firmware of the DVP4 handles most of the interactions required to operate with the Sympodium. However, in some configurations, a small amount of SimplWindows programming will be necessary.

Option 1: If you are just using the Sympodium as the touch input device for the DVP4, and there is no computer being used for telestration/control, there is no special SimplWindows programming needed.

Option 2: If you are using the Sympodium as the touch input device, and you are using a computer for telestration/control, the following SimplWindows programming will be needed:

1. The pad area information (the coordinates corresponding to where you touch) will be sent into the SimplWindows program on the C2I-TPS Touchpanel Interface definition in the SimplWindows program. The information will be a serial (text) input , corresponding to which VGA/video signal is being displayed in the pad area which is being touched. DVI/VGA input 1 pad information will be sent on Serial join #1. DVI/VGA input 2 will be on serial join 2, and so on. This allows the SimplWindows program to always know which display signal is being touched.
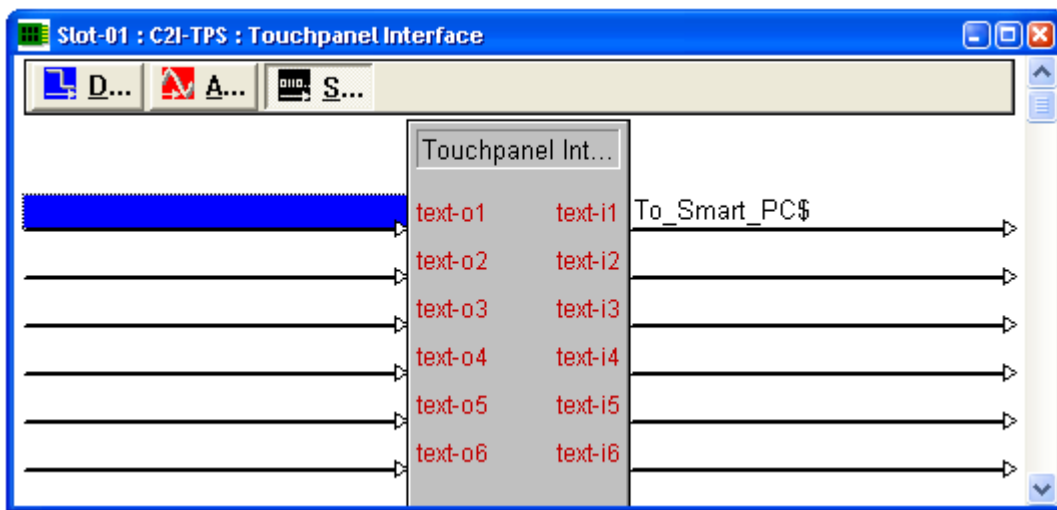

2. There is also a "heartbeat" which is sent from the Sympodium to the PC. This "heartbeat" must be sent independent of which VGA window is currently being displayed. This information will be received into the SimplWindows program on Port E of the C2I-COM5 card. This port corresponds to the Touchscreen/Mouse port.
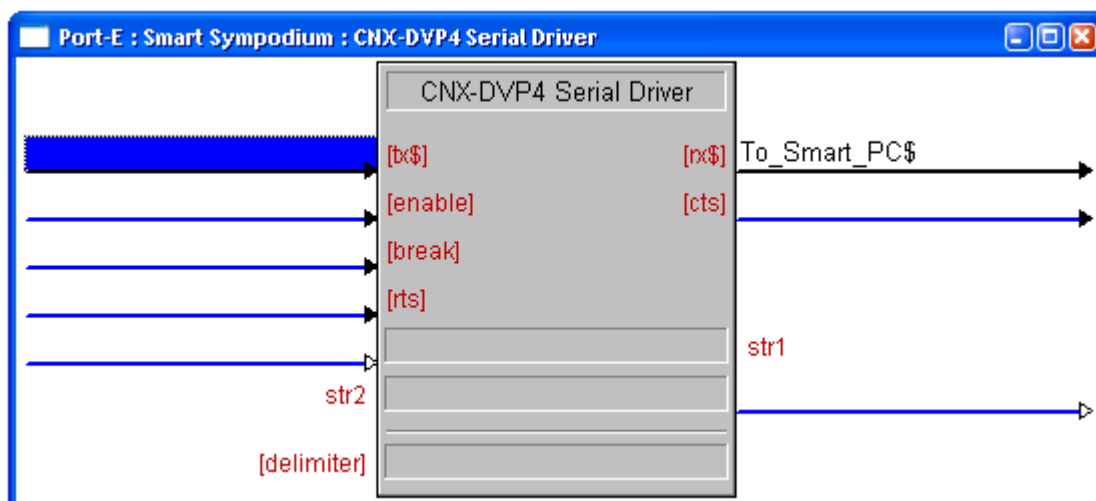
3. You must take the pad area information received on the C2I-TPS definition, and the "heartbeat" received on port E of the C2I-COM5 card, and route them to the com port (1-4) which is connected to the computer. Note that you could have up to four separate pad areas, corresponding to four separate DVI/VGA inputs, controlling four separate computers.
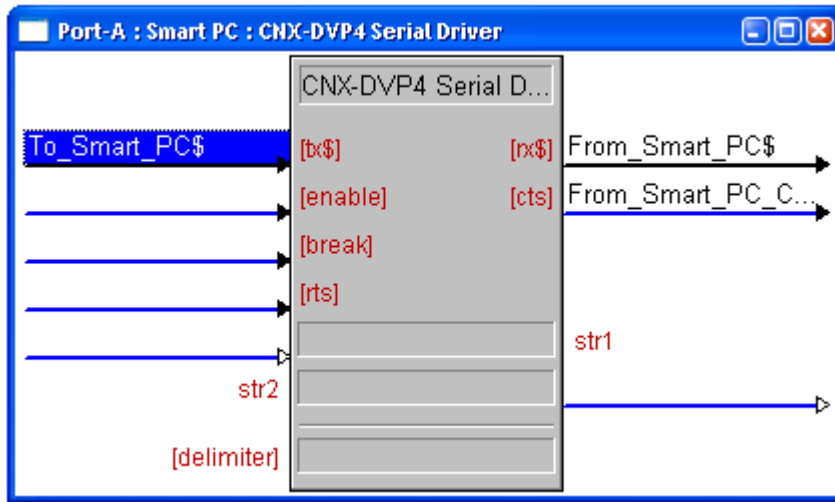
4. In addition, you will need a module (Smart Sympodium PC – CNX-DVP4 Interface v2.umc) connected to each com port which is connected to a computer. This module will interact with the computer, and cause it to believe that it is connected directly to a Sympodium.
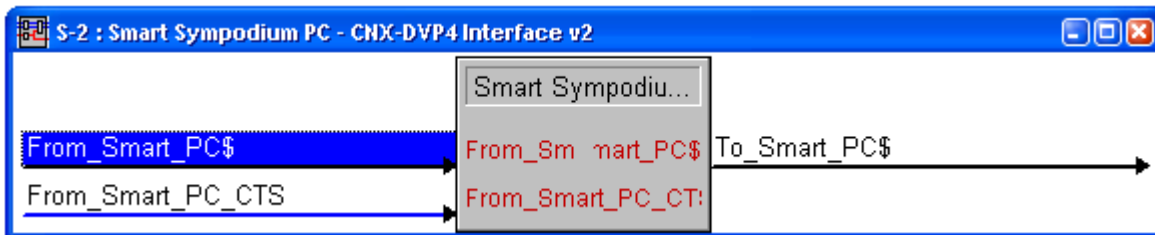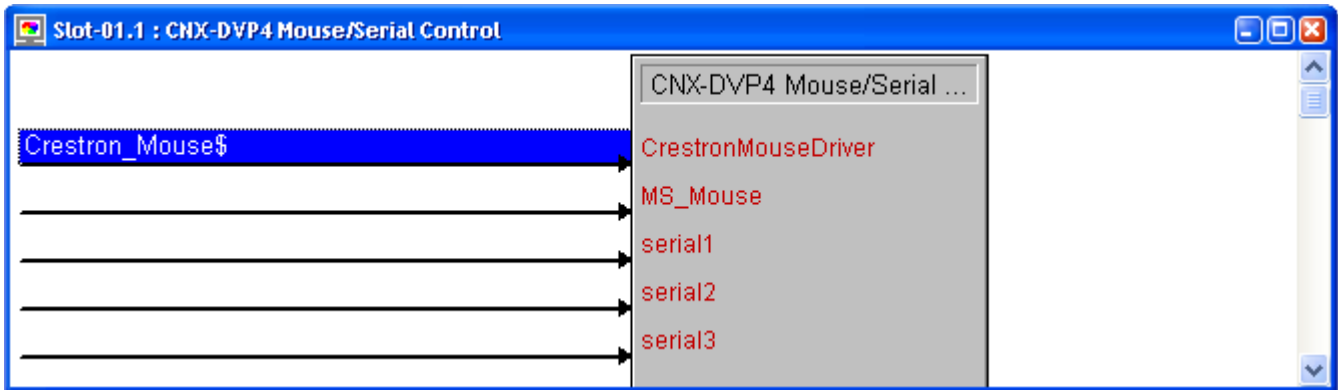

5. You will also need to add a device extender to the C2I-TPS Touchpanel Interface definition. This is done by right-clicking on the C2I-TPS definition in Program View, and selecting "Insert Device Extender" from the drop-down menu. Select CNX-DVP4 Telestrator/Mouse Configuration. This allows you to specify what type of commands should be sent for each VGA window. A value of 3d corresponds to "Smart" mode. (1d = Crestron Mouse mode, 2d = Boeckeler telestrator mode). You can use an Analog Initialize symbol to specify the value.
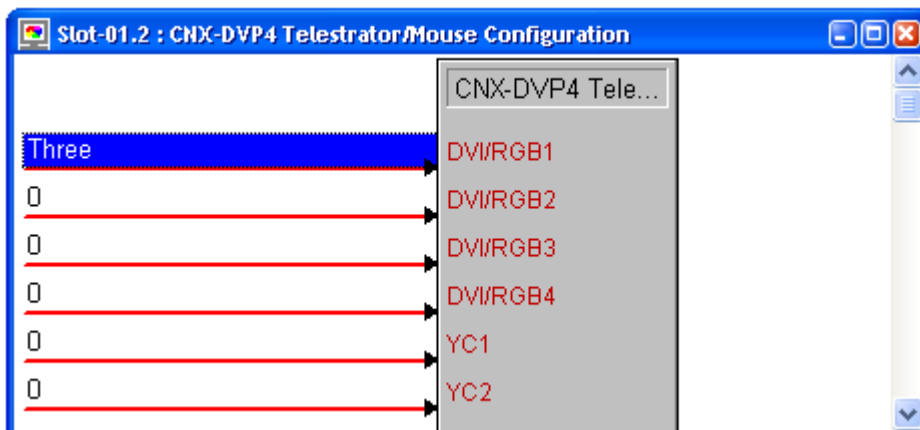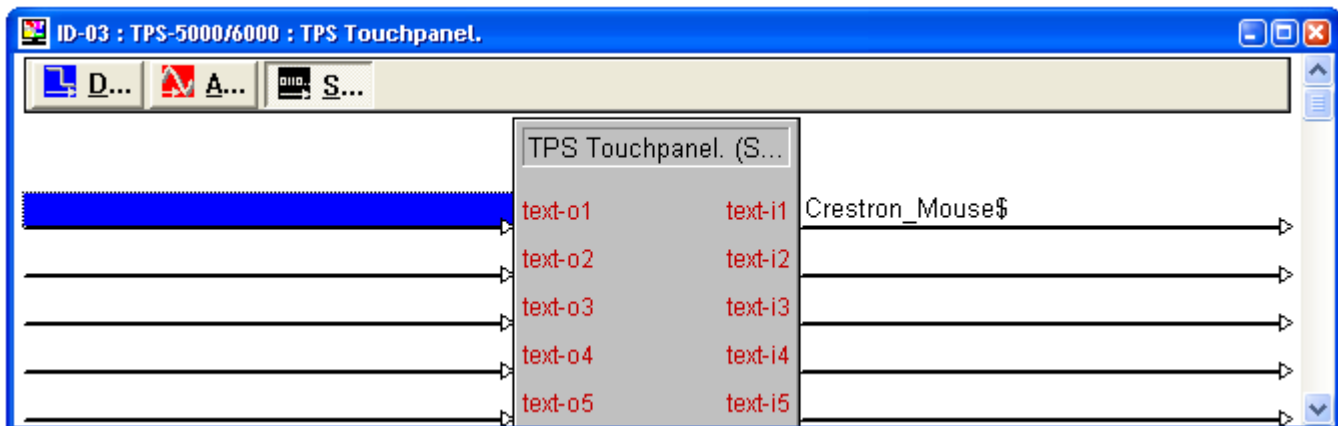

Note: When you set up the com port to communicate with the computer, the proper settings are 9600 baud, no parity, 8 data bits, 1 stop bit, and no handshaking.

Option 3: If you are using a touch panel as a touch input device, as well as the Sympodium, you will need to perform the programming described for option 2, as well as the following additions:

    1. You will need to add a device extender to the C2I-TPS Touchpanel Interface definition. This is done by right-clicking on the C2I-TPS definition in Program View, and selecting "Insert Device Extender" from the drop-down menu. Select CNX-DVP4 Mouse/Serial Control. Add a new signal name as shown below:

Slot-01.1 : CNX-DVP4 Mouse/Serial Control

	CNX-DVP4 Mouse/Serial ...
Crestron_Mouse$	CrestronMouseDriver
	MS_Mouse
	serial1
	serial2
	serial3

    2. Add the TPS-series touchpanel to the project. Connect the signal added in step 1 (above) to the serial input, which corresponds to the pad area as defined in the touch panel file.

ID-03 : TPS-5000/6000 : TPS Touchpanel.

D... A... S...

TPS Touchpanel. (S...	
text-o1	text-i1 Crestron_Mouse$
text-o2	text-i2
text-o3	text-i3
text-o4	text-i4
text-o5	text-i5

   This will allow Crestron Mouse type commands to be used as a touch input for the DVP4.

VTPro-e Programming Considerations:

Depending upon your configuration, some additional VTPro-e programming may be necessary.

Option 1: No special VTPro-e programming is needed.

Option 2: You will need to configure the touch/pad area of the video window as follows:
1. Create a DVP4 project
2. Create a new page, and add a Video window
3. Double click on the video window to bring up it's properties
4. Select the Design tab and enable the Touch/Pad Area.
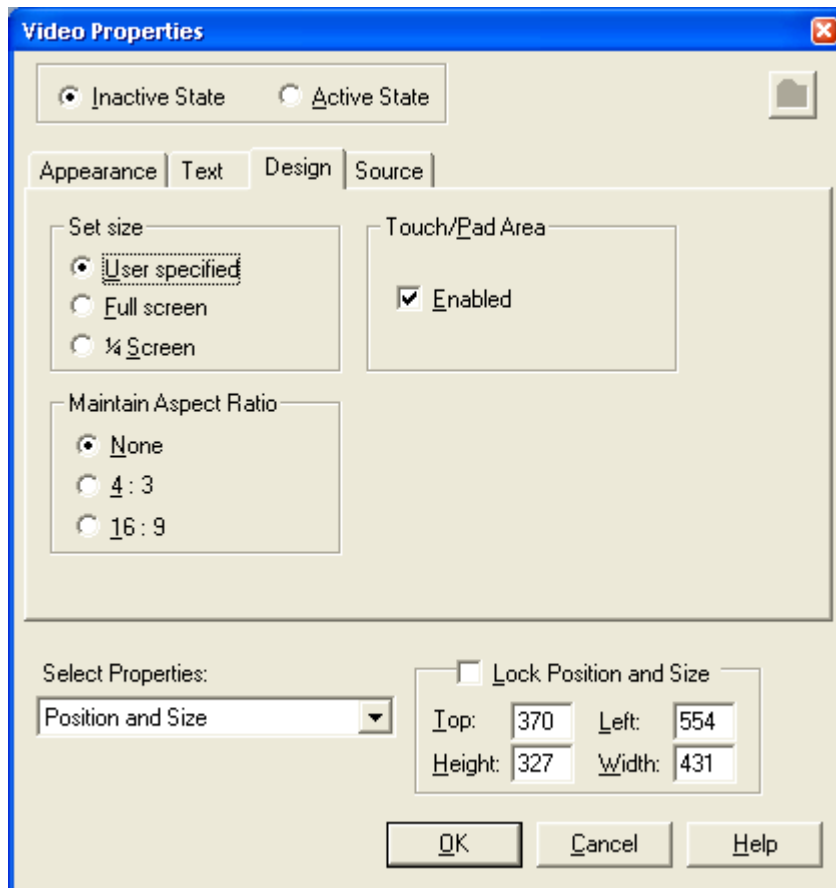
5. Select the source tab, and select the appropriate DVI/VGA input being used
6. Compile and load the project.

Option 3: If you are implementing Option 3 (TPS-series touchpanel control), you will also need to create the TPS touchpanel file. You could typically create a file with a single page, consisting of a single RGB window, which will be full screen. A Touch/Pad area (1 or 2) must be enabled. Under "Project Properties", you will need to define what type of pad area to use, and which serial join to use. You should select "Mouse" as the type. You can send the information over either Cresnet or Ethernet. You can pick whichever serial join you want.
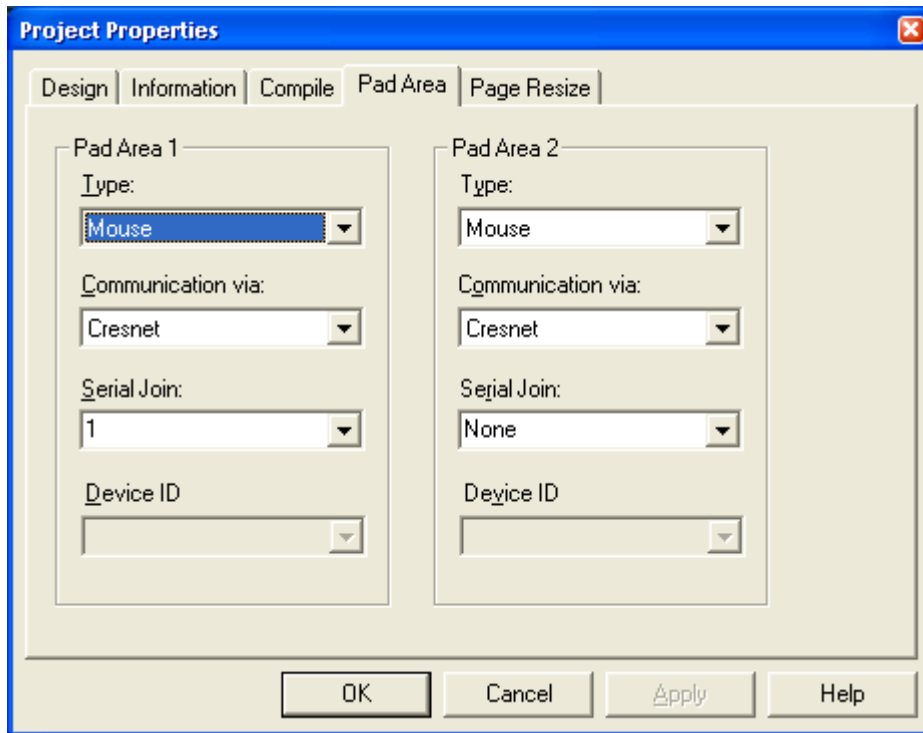
You can now compile and load the project.