Crestron **C2N-DVP4DI**
Digital Video Processor
Operations Guide

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Digital Video Processor: C2N-DVP4DI

Introduction

This manual contains the basic operation and installation information for the C2N-DVP4DI. Additional detailed information is located in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron® website (www.crestron.com).

The C2N-DVP4DI Digital Video Processor can simultaneously display four windows, with any combination of high-resolution computer or video sources, on a single large high-resolution monitor, projector or plasma screen, while also operating as an integrated seamless switcher, mouse and touchpanel control.

The C2N-DVP4DI accepts both digital and analog inputs with RGB (VGA) resolutions up to 1600x1200, as well as NTSC/PAL composite, S-video or component video sources. The output can be scaled from 800 x 600 to 1600 x 1200 to match the desired display resolution. Built-in flexibility provides the ability to change window sizes and aspect ratios, as well as simultaneous display of multiple input resolutions. Coupled with its seamless switching, these features make the C2N-DVP4DI ideal for information-intensive applications like command and control centers.

Functional Summary

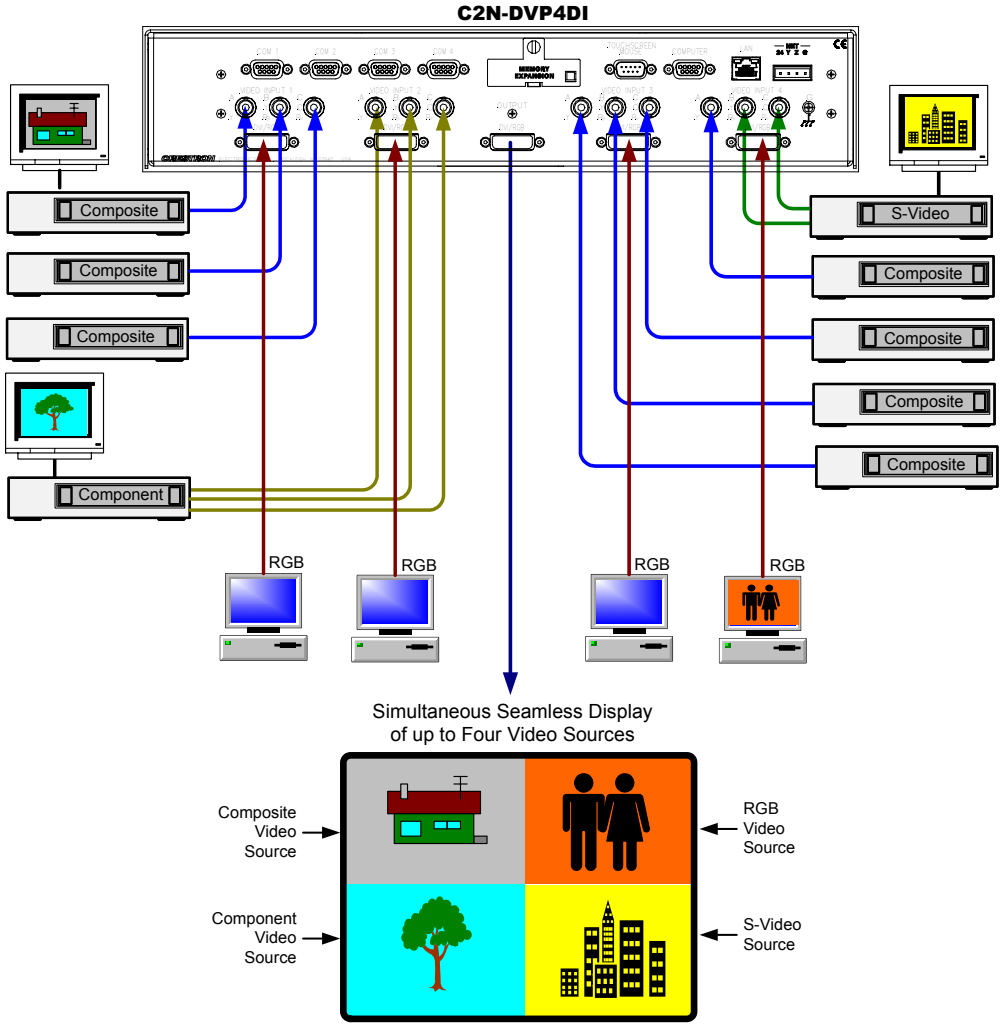
- Four DVI/analog inputs for RGB computer sources up to 1600x1200
- Four sets of BNC inputs for up to twelve NTSC/PAL composite, four S-video sources, or four component video sources in various combinations.
- One DVI/analog output for GUI/display
- Output resolution selectable from: 800x600 to 1600x1200 (analog) 800x600 to 1280x1024 (digital). Inputs 480p, 720p and 1080i require signal conversion to RGB
- Displays up to four computer/video windows simultaneously
- Four RS-232 outputs for interfacing with serial mouse (for "Touch the PC"), telestrator, or other A/V devices
- One RS-232 input for mouse or touch sensitive overlay
- One RS-232 computer console for processor communication
- Ethernet capabilities, one 10/100 BaseT Ethernet connector
- Memory upgradeable to 4GB compact flash. Ships with a 32MB compact flash
- Cresnet master or slave mode capability (ships as slave ID 54)
- 2-Series control engine

The breakthrough 2-Series control engine is based on the 257 MIPS, 32-bit Motorola ColdFire® processor. The standard 68MB memory (32MB SDRAM, 4MB flash ROM, 32MB compact flash) can be enhanced by replacing the supplied compact flash with a larger flash memory, allowing: an on-board storage of program, room and equipment profiles, upgrades, databases, and schedules. The internal 10/100 BaseT Ethernet supports static IP and dynamic addressing, TCP/IP and UDP/IP. The built-in Web Server uses memory storage on a compact flash card for remote access and control.

The C2N-DVP4DI Digital Video Processor can accept the following inputs:

– Up to twelve composite video inputs
– Up to four RGB inputs
– Up to four S-video inputs
– Up to four component video inputs

These inputs may be in various combinations. The C2N-DVP4DI can display any four inputs simultaneously on a display device.

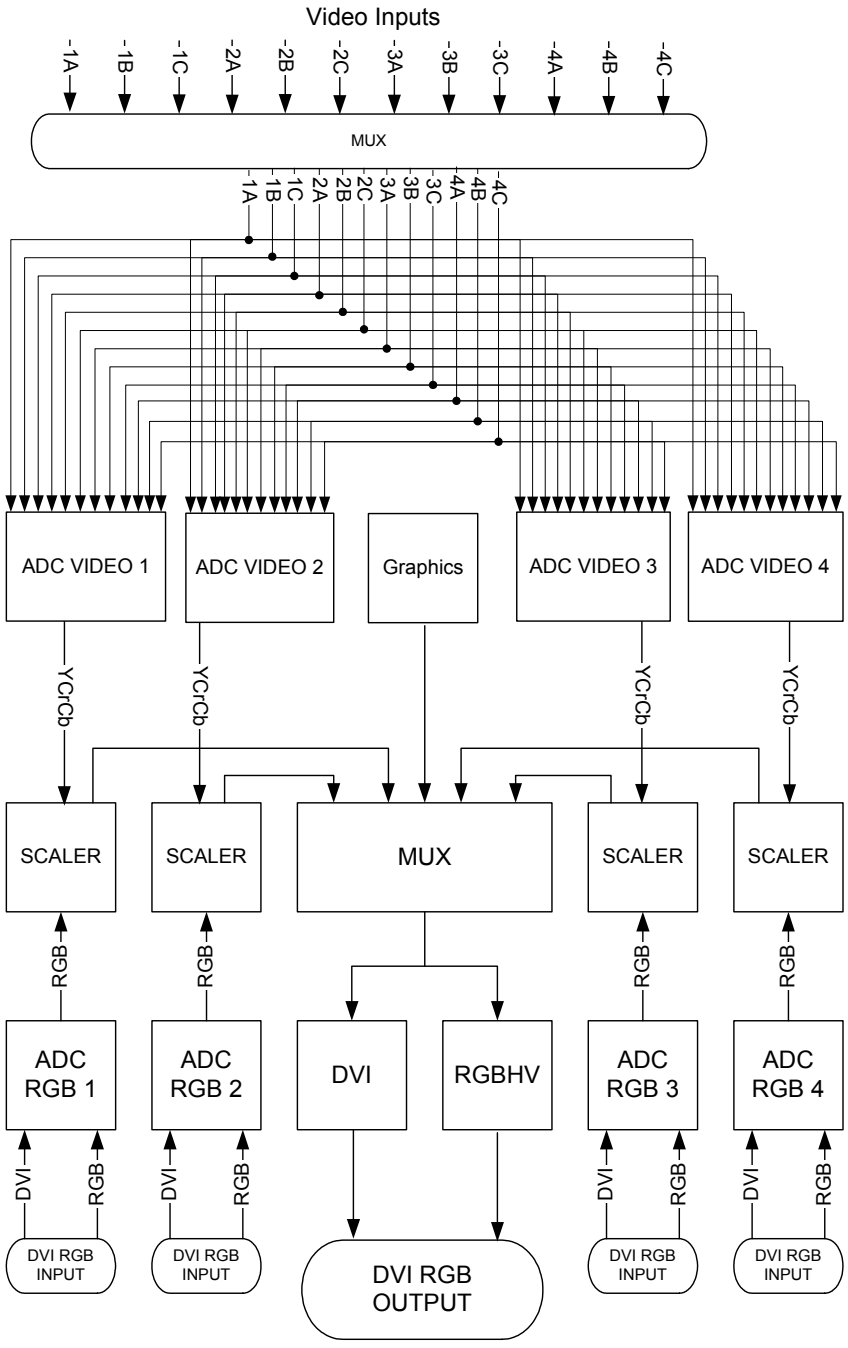


Each video window can be programmed to appear on the display using a special effect. For pan, fade, dissolve, and zoom effects, refer to "Creating a C2N-DVP4DI Project with VT Pro-e" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com). For stretch effect, refer to page 31.

How the Video Scalers Work in the C2N-DVP4DI

The C2N-DVP4DI has four built-in video scalers to allow you to have up to four video sources on the screen at one time. The C2N-DVP4DI auto-selects the scaler. The eight video and four SVHS video inputs can use any of the four scalers. The four RGB inputs are dedicated to a specific scaler. The C2N-DVP4DI always makes decisions base on the current information. Refer to the following figure.

Internal Logic



For example: Selecting video 1a causes the C2N-DVP4DI to choose scaler 1. Selecting video 1b causes the C2N-DVP4DI to select scaler 2. If you then select RGB1, the C2N-DVP4DI moves video 1a to scaler 3 and then brings up RGB 1.

Operation Modes

There are two modes of operation for the C2N-DVP4DI, master and slave. In the master mode, the C2N-DVP4DI is a standalone device. In the slave mode, the C2N-DVP4DI is either a Cresnet® device or an Ethernet device connected to a 2-Series control system.

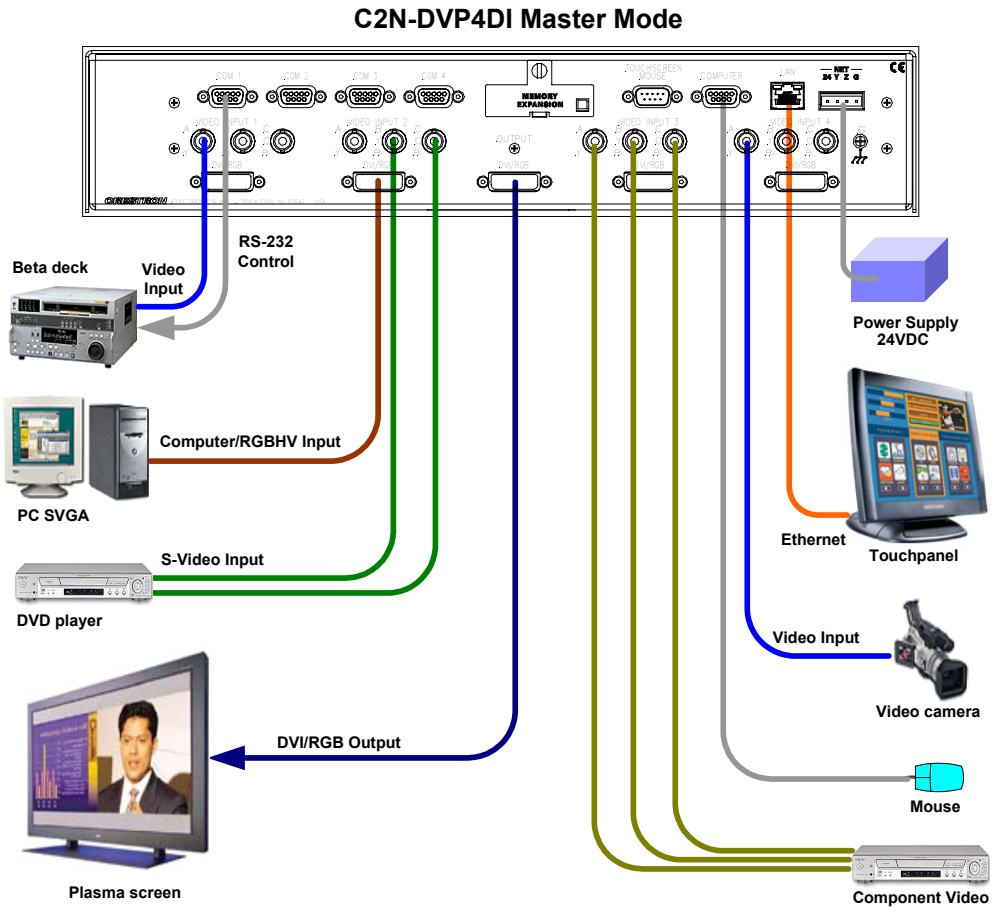
MODE OF OPERATION	VIEWPORT PROMPT DISPLAYED	IDENTITY CODE
Cresnet Slave Mode	CSLAVE_DVP4DI	Cresnet ID 03 or higher
Ethernet Slave Mode	ESLAVE_DVP4DI	Cresnet ID 02 (IP Table entry required)
Master Mode	DVP4DI	Cresnet ID 02

NOTE: Refer to "Interface Menu" on page 15 for Cresnet ID setup procedures.

Master Mode

In master mode, the C2N-DVP4DI is a standalone 2-Series control system that can control RS-232 serial, Cresnet or Ethernet devices, while still taking advantage of its video effect capabilities. In the simplified example that follows, buttons on the touchpanel control start or stop functions on the Beta deck and the four video input sources displayed on the plasma screen.

Master Mode Example



Slave Mode

In slave mode, the C2N-DVP4DI operates as either a Cresnet or Ethernet device as part of a 2-Series control system. No program is required within the C2N-DVP4DI when it is operating as a slave.

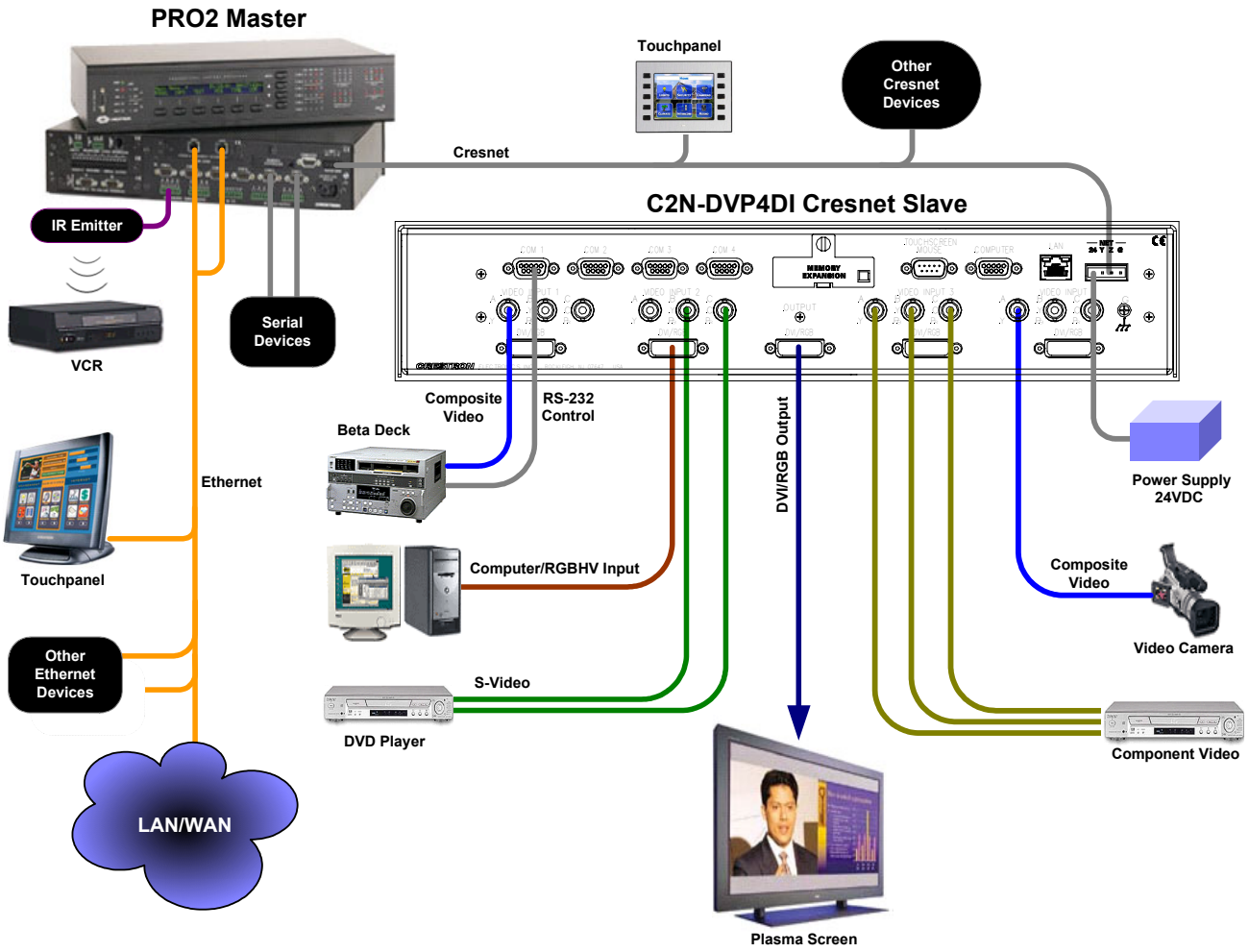
In this simplified example, the C2N-DVP4DI is part of a control system that includes IR, RS-232 serial, and Cresnet devices. The control programming is loaded in the PRO2. The touchpanels operate the C2N-DVP4DI through the PRO2.

NOTE: The C2N-DVP4DI can be controlled only by a 2-Series control system.

NOTE: Host control system firmware (.cuz file) version 3.053 or later is required if the C2N-DVP4DI is operated as a slave.

NOTE: The slave mode example shows the C2N-DVP4DI as a Cresnet device.

Slave Mode Example



Minimum Equipment Required for Setup

1. CNPWS-75 75W Power Supply (not included).

CAUTION: Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

2. Serial Mouse (9-pin)/Pointing Device (touch-screen sensitive screen overlay connected to RS-232) for setup menu selection of the C2N-DVP4DI.

NOTE: The C2N-DVP4DI is supplied with a serial 9-pin mouse. The part number for this mouse is OEMX-A0013-1.

3. Display device (projector, monitor, etc.).
4. Sources: video (composite, S-video, component), computer (RGB).
5. Video diagnostic program or pattern generator (installed on the PC).
6. Touchpanel (with RGB card) to setup the C2N-DVP4DI.

C2N-DVP4DI Setup Checklist

The following setup checklist permits a rapid setup of the C2N-DVP4DI. Details are found on the appropriate page of this guide. Additional detailed information is contained in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

NOTE: If this unit is to be mounted in a rack, refer to "Rack Mounting" on page 8.

Hardware Hookup

Refer to page 9 for a hardware hookup diagram.

Connect the hardware in following order:

1. Connect video source(s): RGBHV, S-video, composite, and component video sources to the inputs as specified by your SIMPL Windows and Crestron VisionTools® Pro-e (VT Pro-e) projects.
2. Connect the RGB video output to a display device; for example, an LCD panel or a projector.
3. Connect the Crestron supplied mouse and a touchscreen. Refer to "Pointing Devices" on page 37, and to "Connecting a Pointing Device" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).
4. Install compact flash. Refer to page 10.
5. Connect Cresnet power.
6. Connect RS-232 (DB9) Computer port for communication between the C2N-DVP4DI and the PC (PC must have Viewport installed and open).
7. If the display device functions after power-up, go to the video output procedure, step 11. If not, follow steps 8-10.

Configuration

8. Open Viewport and establish communications with the C2N-DVP4DI (refer to page 10, "Serial Connection" for more information).
9. Type **`output`** at the C2N-DVP4DI prompt in Viewport and press **Enter** to view the current resolution setting. Refer to page 23.
10. Set the output resolution of the C2N-DVP4DI in Viewport to match the native resolution of the display device.

Master/Slave Mode Setup

Refer to "Interface Menu" on page 15.

11. Open the MAIN MENU using the touchscreen, select **Setup** under *System*.
12. Select **Interface**.
13. Select **MASTER** or **SLAVE** (Cresnet ID change required if in Cresnet slave mode. IP table entry required for Ethernet slave mode).

Video Output Setup

Perform output setting before adjusting input. Refer to page 20.

14. Open the MAIN MENU using the touchscreen.
15. Select **RGB and Video SETUP** under *DVI, RGB and Video* startup options.
16. Select **Check Output**.
17. Select **Grid** and the project/display device. Adjust the grid as needed using a grid test pattern to fill the screen.
18. Select **Vertical Lines**, adjust coarse or clock on the projector/display device, then phase or fine.
19. Custom resolution is set in Viewport.

RGB Video Input Adjustment

Refer to page 25 (requires a video diagnostic program or pattern generator installed on the PC).

20. Select **RGB and Video SETUP** from the MAIN MENU.
21. Choose **Select Input**.
22. Select an RGB source (1-4).
23. Open a video diagnostic program on the RGB source.
24. Display a grid on the RGB source. Adjust to fill the screen.
25. Select a Vertical line pattern from a video diagnostic program. Display a test pattern of vertical lines (similar to video output vertical lines).
26. Adjust coarse setting as desired.
27. Adjust fine setting as desired.

S-/Composite/Component Video Source Setup

28. Select **RGB and Video SETUP** under *DVI, RGB and Video* startup options.
29. Choose **Select Input** and choose the source to be adjusted.
30. Select **Color**.
31. Adjust Brightness, Contrast, Hue, or Saturation as desired.

Load Programs

(Master mode only) refer to page 34.

32. Load programs via Viewport: SPZ (SIMPL Windows) and load VTZ (Crestron VisionTools Pro-e) project files.

Connect Pointing Device

33. Refer to page 37, and to "Connecting a Pointing Device" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

Rack Mounting

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- The unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

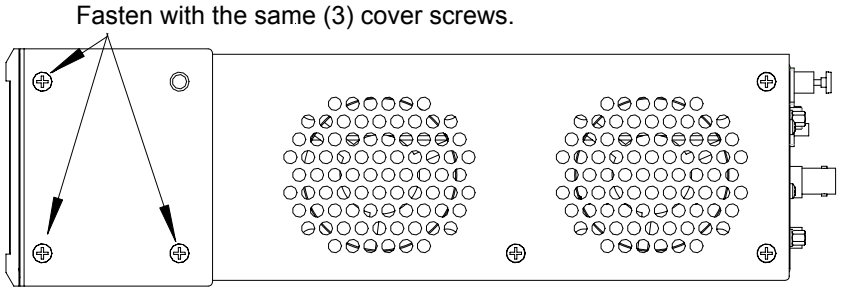
NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

NOTE: Reliable earthing (grounding) of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit. (e.g., use of power strips).

Two rack "ears" are provided with the C2N-DVP4DI so that the unit can be rack mounted. These ears must be installed prior to mounting. Complete the following procedure to attach ears to the unit. A #2 Phillips screwdriver is required.

1. Using a #2 Phillips screwdriver, remove the three screws closest to the front panel from one side of the unit.
2. Position a rack ear so that its mounting holes align with the holes vacated by the screws in step 1.
3. Attach the ear to the unit with three screws from step 1, as shown in the following illustration.

Ear Attachment for Rack Mounting



Right side view of C2N-DVP4DI with optional rack mounting ears installed.

NOTE: Do not block fan vents.

4. Repeat procedure (steps 1 through 3) to attach other ear to opposite side.

Hardware Hookup

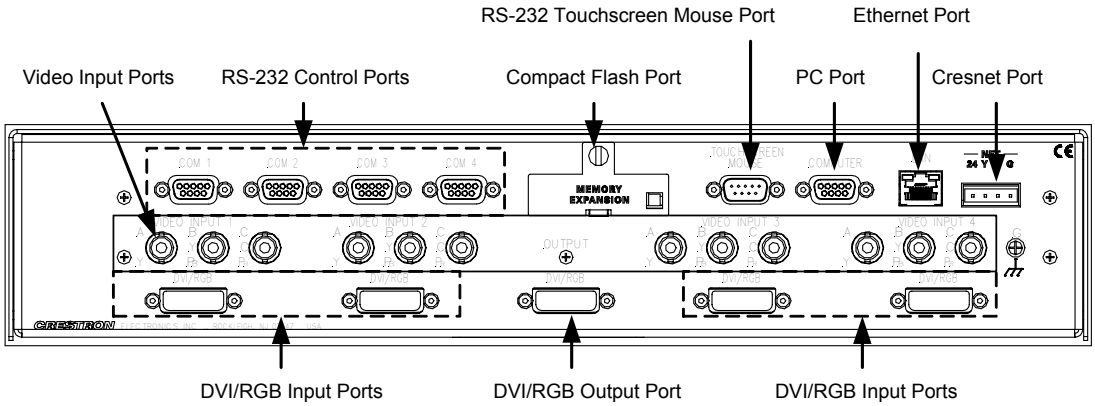
Refer to the following diagram and complete the connections as needed in any order.

For additional connection information refer to "Connector Information" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications in the Reference Guide (Doc. 6177). Consideration must be given if installed in a closed or multi-unit rack assembly since the operating ambient temperature of the rack environment may be greater than the room ambient (occupies two rack spaces). Contact with thermal insulating materials should be avoided on all sides of the unit. Do not block fan vents.

NOTE: The maximum continuous current from equipment under any external load conditions shall not exceed a current limit that is suitable for the minimum wire gauge used in interconnecting cables. The ratings on the connecting unit's supply input should be considered to prevent overloading the wiring.

Hookup Connections for the C2N-DVP4DI



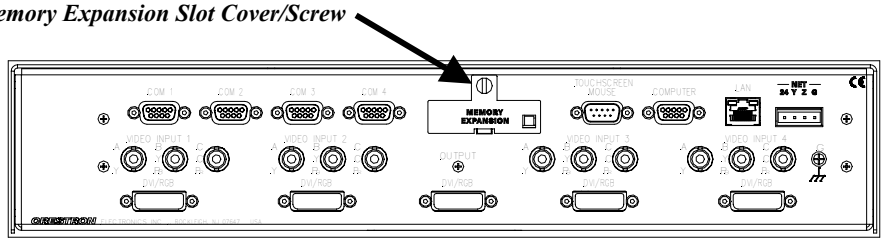
Compact Flash Installation

The C2N-DVP4DI onboard memory is enhanced with an expansion slot that supports off-the-shelf Type II compact flash memory (a required 32MB compact flash card is provided). Optionally, you may add an IBM Microdrive® hard drive. The slot is accessible on the back panel of the unit (Memory Expansion). Complete the following procedure to install the compact flash. Make sure power is disconnected before installing the compact flash. Refer to the illustration following the procedure.

NOTE: Compact Flash format is FAT not FAT32.

1. Loosen the screw and remove the memory expansion cover located on the back panel.
2. Observe handling precautions of the compact flash manufacturer and insert it into the open slot.
3. Align and reposition cover over slot.
4. Tighten the screw.

Memory Expansion Slot Cover/Screw



Establishing Communication with the Control System

If you are using the C2N-DVPDI as a master control system, you must connect the control system to the PC to upload the control system program or perform diagnostic functions. This connection can be serial or TCP/IP.

NOTE: For laptops and other PCs without a built-in RS-232 port, Crestron recommends the use of PCMCIA cards, rather than USB-to-serial adapters. If a USB-to-serial adapter must be used, Crestron has tested the following devices with good results:

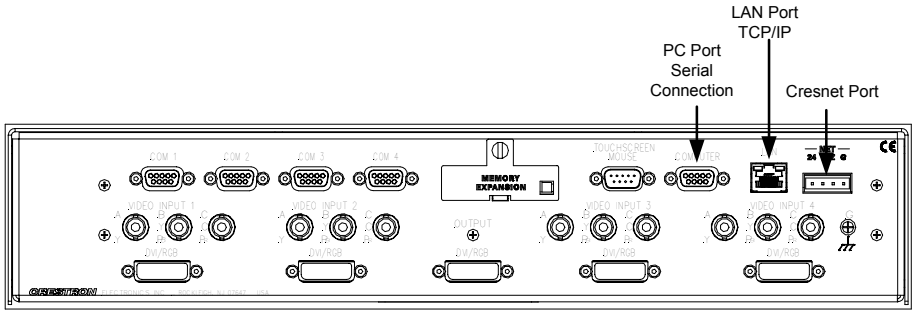
Belkin (large model) F5U103
I/O Gear GUC232A
Keyspan USA-19QW

Other models, even from the same manufacturer, may not yield the same results.

Serial Connection

Connect the COMPUTER port on the C2N-DVP4DI to one of the COM ports (usually COM 1) on the PC. Use a straight through RS-232 cable with a DB9 male connector on one end and a DB9 female connector on the other. Most commercially available cables are acceptable; they should have at least five pins for transmit, receive, ground, and hardware handshaking (pins 2, 3, 5, 7, and 8).

Programming Connections



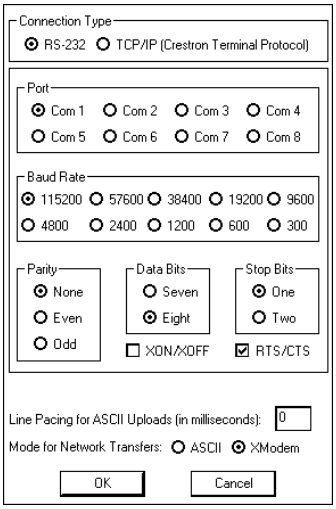
NOTE: The Viewport utility performs multiple system tasks, primarily via an RS-232 or TCP/IP connection between the control system and a PC. It is used to observe system processes, upload new operating systems and firmware, change system and network parameters, and communicate with network device consoles and touchpanels, among many other tasks. Viewport can also function as a terminal emulator for generic file transfer. All of these functions are accessed through the commands and options in the Viewport menus.

Open the Crestron Viewport and click **Setup | Communication Settings** to display the "Port Settings" window. Then click **RS-232** as the connection type.

The PC communication settings specified here should match the protocol that the C2N-DVP4DI expects. The settings (defaults) are as follows:

- Port = COM 1 through COM 8. Select the correct COM port on the PC.
- Baud rate = 115200 (use with new .cuz files, version 3.0.17 and higher)
  57600 (use with older .cuz files)
  You can set the PC and the control system to a different baud rate, by using the **Functions | Set Baud Rate** command.
- Parity = None.
- Number of data bits = 8.
- Number of stop bits = 1.
- Hardware handshaking (RTS/CTS) selected (must be enabled).
- Software handshaking (XON/XOFF) not selected.

Default Port Settings for RS-232 Communication with the C2N-DVP4DI



To verify communication, click **Diagnostics | Establish Communications (Find Rack)**. This displays a window that gives the COM port and baud rate.

TCP/IP Connection

Before you can communicate with the C2N-DVP4DI over TCP/IP, you must use the RS-232 connection just described to configure the unit's TCP/IP settings.

1. Open Viewport and click **Functions | Set Control System IP Information.**
2. Enter the IP address, IP mask and default router in the text fields. (All of these terms are explained in detail in the latest version of the Crestron e-Control Reference Guide (Doc. 6052), available as a PDF on the Downloads | Product Manuals section of the Crestron website (www.crestron.com).
3. Click **OK** to set the new IP information.

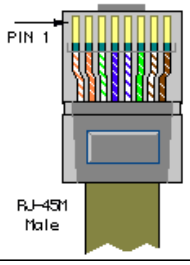
Once you have assigned the IP settings, you can continue to communicate with the C2N-DVP4DI using the RS-232 connection, or you can establish a TCP/IP connection.

For TCP/IP, use CAT5 cables with 8-pin RJ45 connectors to connect the LAN port on the C2N-DVP4DI and the LAN port on the PC to the Ethernet hub. Alternatively, you can use a CAT5 crossover cable to connect the two LAN ports directly, without using a hub.

The following figure illustrates pinouts for straight through and crossover RJ-45 cables. Pins 4, 5, 7, and 8 are not used.

RJ-45 Pinouts

Crossover Cable	
RJ-45 PIN	RJ-45 PIN
1 Rx+	3 Tx+
2 Rc-	6 Tx-
3 Tx+	1 Rc+
6 Tx-	2 Rc-



Straight Through Cable	
RJ-45 PIN	RJ-45 PIN
1 Tx+	1 Rc+
2 Tx-	2 Rc-
3 Rc+	3 Tx+
6 Rc-	6 Tx-

Once the cable connections are made, open the Crestron Viewport and click **Setup | Communication Settings** on the menu to display the "Port Settings" window. Then click TCP/IP as the connection type. Enter the IP address of the C2N-DVP4DI and click **OK**.

To verify communication, click **Diagnostics | Establish Communications (Find Rack).** This should display a window that gives the IP address and port number.

If communication has not been established, check for proper cabling and connection. Ensure that the Ethernet is enabled on the C2N-DVP4DI by checking the "Diagnostics Menu" (refer to page 18).

Configuring the C2N-DVP4DI

To configure the C2N-DVP4DI, a series of setup screens must be accessed before viewing run-time video windows on a display device (projector, plasma display, etc.). These screens are accessed from the setup option on the MAIN MENU.

NOTE: Due to the complexities of the C2N-DVP4DI, it may take approximately 25 seconds to reboot.

NOTE: Throughout this manual, the phrase "Video Source" means all of the following: S-video, composite video, component video, RGB, or DVI sources, unless otherwise specified.

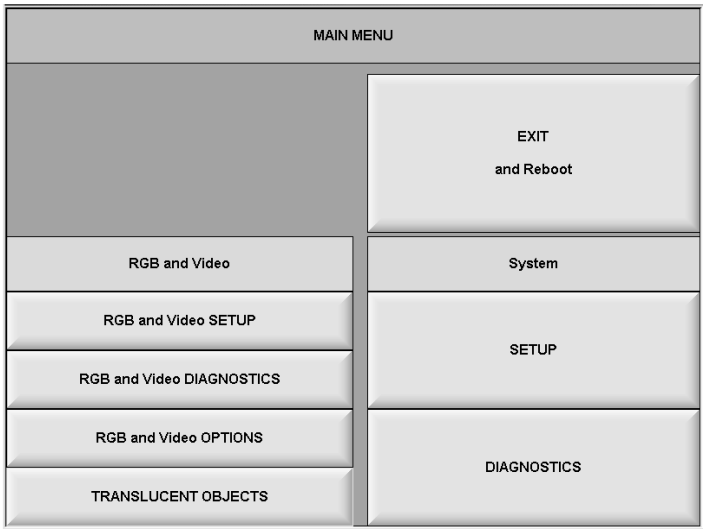
The following are the configuration prerequisites:

- Display device connected to the output DVI/RGB port. If display connector is VGA, 15-pin, use the supplied DVI-I/RGB adapter.
- Minimum of one video input, connected to the input DVI/RGB, S-video, composite, or component port. If the video source connector is VGA, 15-pin, use the supplied DVI-I/RGB adapter.
- Cresnet power (from Cresnet power supply) connected to the Cresnet port.
- A touchscreen and a serial mouse connected to the touchscreen/mouse port are required to use the setup screens.
- Test pattern screens (third party application): Color bar, grid, gray scale and vertical line pattern test screens.
- PC connected to the C2N-DVP4DI with Viewport open.

Open the MAIN MENU by doing one of the following:

1. While the C2N-DVP4DI is powering up, hold down the left mouse button, or with a touchscreen, hold a finger to the touchscreen until the MAIN MENU screen opens (If using a mouse, the mouse must be moved while the C2N-DVP4DI is starting).
2. If the compact flash is not installed or the installed compact flash is blank, you will be prompted to touch (or click with a cursor) the screen to open the MAIN MENU.
3. If the compact flash is installed with a loaded program, open Viewport, connect to the C2N-DVP4DI (refer to "Establishing Communication with the C2N-DVP4DI" on page 10) and type **`setup`** at the `DVP4>` (master) prompt, `CSLAVE_DVP4DI>` (slave) prompt, or `ESLAVE_DVP4DI>` (Ethernet slave) prompt.

Main Menu



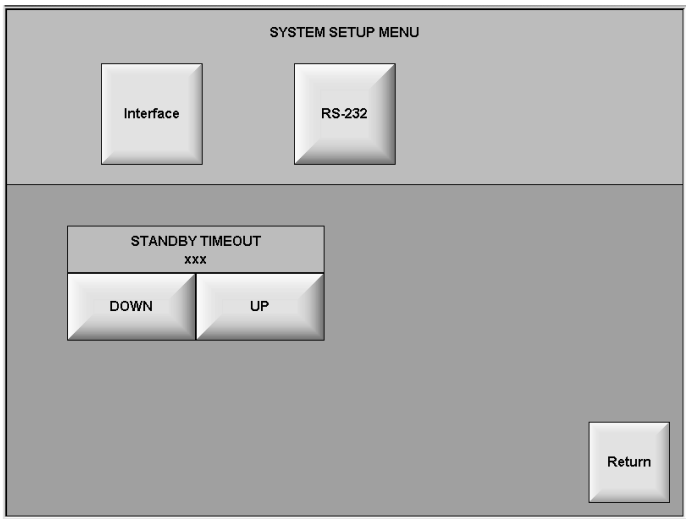
The MAIN MENU contains the following button selections:

- **EXIT and Reboot -** This button verifies that all of the setup information has been saved to the EEPROM, reboots the system, and displays the main page that has been programmed into your system.
- **SETUP** (Under *System*) **–** Used to configure the standby timeout, interface and RS-232 port. Refer to page 14.
- **DIAGNOSTICS** (Under *System*) **–** Used for the touchscreen test and to enable/disable the Ethernet. Refer to page 18.
- **RGB and Video SETUP** (Under *RGB and Video*) **–** Permits adjustment of video inputs and output. Refer to page 19.
- **RGB and Video DIAGNOSTICS** (Under *RGB and Video*) **–** Used to check color ramp, grid output, and video paths. Refer to page 31.
- **RGB and Video OPTIONS** (Under *RGB and Video*) **–** Used to select the on-screen to on-screen effect (stretch and fade). Refer to page 31.
- **TRANSLUCENT OBJECTS** (Under *RGB and Video*) – Used to make objects/buttons transparent over video. Refer to page 33.

System Setup Menu

The SYSTEM SETUP MENU, accessed from the right side of the MAIN MEMU, contains three sub menus: Interface, RS-232, and Standby Timeout. After these setup parameters have been entered, select the **Return** button to return to the MAIN MENU.

System Setup Menu



STANDBY TIMEOUT, located at the middle of the SYSTEM SETUP MENU can turn off the C2N-DVP4DI output to the display device when it is inactive for a specified time frame (minutes). When the display is reactivated from the "sleep" mode, the last screen shown reappears. Minutes can vary from 0 to 120, where 0 disables the timeout. Timeout is adjustable in 1-minute increments between 0-10, and in 10-minute increments between 20 and 120. **DOWN** and **UP** buttons decrease and increase the timeout, respectively.

NOTE: Do not use Standby Timeout to turn of the display if you do not have a mouse or an external touchpanel connected to the mouse COM port. To get around this, program an external button to initiate/end sleep mode. A Device Extender symbol is available for this purpose, the Touchpanel Sleep/Wake Manager. Refer to

"Programming with SIMPL Windows" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

Interface Menu

The INTERFACE MENU is a submenu of the SYSTEM SETUP MENU. The C2N-DVP4DI communicates with a control system to activate other controls or to display feedback from components within the system. The INTERFACE MENU (refer to the illustration on page 17) allows you to set the correct Cresnet ID to communicate with a control system or other Cresnet devices. The INTERFACE MENU also allows you to select master mode, Ethernet slave mode, or Cresnet slave mode. Use master mode when you want the C2N-DVP4DI to operate as a stand-alone control system. Use the slave mode when you want a control system to operate and control the C2N-DVP4DI via Cresnet.

The CRESNET ID is a two-digit hexadecimal number. This number can range from 02 to FE and must correspond to the NET ID set in the SIMPL Windows program of the Cresnet system. Matching IDs between the C2N-DVP4DI and SIMPL Windows program is required if data is to be successfully transferred. NET ID is factory set to **54** in Cresnet slave mode. Two side-by-side buttons beneath the hexadecimal display, **DOWN** and **UP**, decrease and increase the ID by one, respectively.

- To set the master mode, select **MASTER.** This sets and locks the NET ID to **02**.
- To set the Cresnet (CSLAVE) slave mode, select **SLAVE** and set the Cresnet ID to a number from 03 to FE.
- To set the Ethernet (ESLAVE) slave mode, select **MASTER**. This sets and locks the NET ID to **02,** then setup the IP table (refer to the following directions).

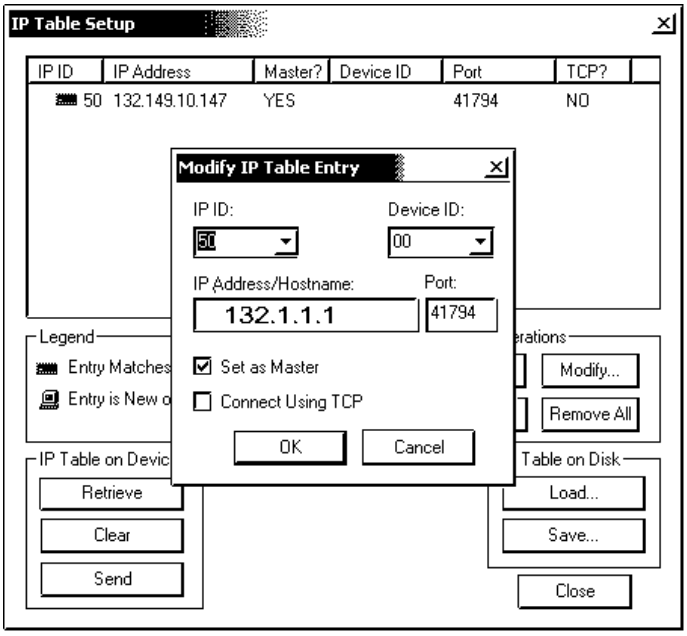
IP Table Setup for Ethernet Slave Mode

1. Refer to "Ethernet Setup (Master/Slave Mode)" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com) and set the IP address and IP Mask for network operation.
2. In Viewport, select **Functions | Set up IP Table**.

NOTE: If you are in Cresnet Slave mode, you will not be able to enter Ethernet Slave mode. Cresnet slave mode overrides Ethernet slave mode.

NOTE: The IP address and IP mask must be assigned to the C2N-DVP4DI for the IP table to function.

IP Table Setup



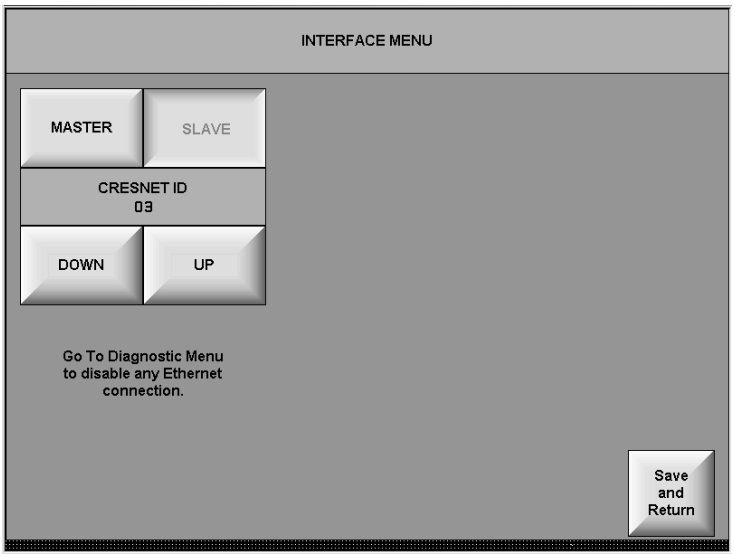
3. Enter the IP ID from SIMPL Windows.
4. Enter the Device ID if it has been programmed in VT Pro-e; otherwise leave Device ID at 00.
5. Enter the IP Address or hostname of the Master and click *Set as Master*. When operating as a slave device, the C2N-DVP4DI can accept commands only from one control system. Therefore, there must only be one entry in the IP Table.
6. After sending the IP Table, close the Window. The C2N-DVP4DI reboots and comes up in the Ethernet slave mode. The Viewport prompt **EslaveDVP4DI>** is displayed.

To return the C2N-DVP4DI to the master mode, open the IP Table, delete the IP address of the master, uncheck *Set as Master* and send the changes.

The following rules apply when setting the C2N-DVP4DI as an Ethernet slave:

- You cannot hang Cresnet devices off of the Ethernet slave (slaves do not have networks). If you have a valid program running on the C2N-DVP4DI (internal or Compact Flash) and then convert to Cresnet slave or Ethernet slave, the program is ignored and the C2N-DVP4DI only obeys its master.
- If you have a valid e-Control 1 or e-Control 2 program running on the C2N-DVP4DI (internal or Compact Flash) and then convert to Cresnet slave or Ethernet slave, you will not be able to load pages because the IP stack is no longer running.

Interface Menu – Slave Mode Selected – Cresnet ID 03



After interface parameters have been set, select the **Save and Return** button, located at the bottom right corner of the INTERFACE MENU. This returns you to the SYSTEM SETUP MENU.

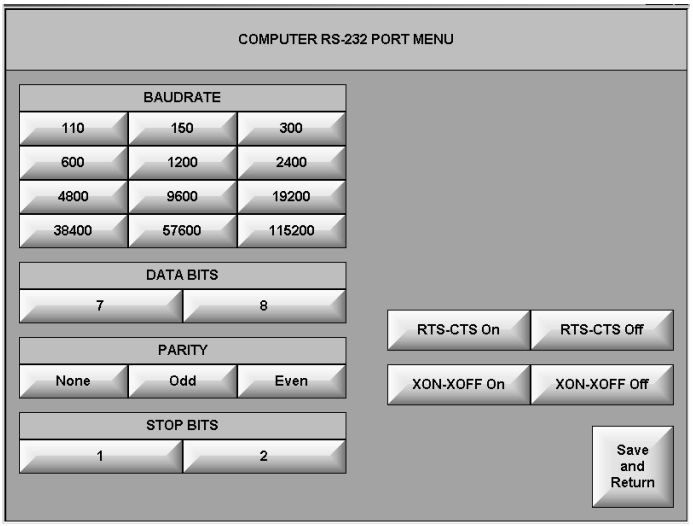
Computer RS-232 Port Menu

Click **RS-232** on the SYSTEM SETUP MENU. The RS-232 parameters for the C2N-DVP4DI must be set for communicating with Viewport via an RS-232 port. Options for baud rate, data bits, parity, stop bits, and handshaking are available from COMPUTER RS-232 PORT MENU. Text within the selected button changes color from black to red.

RS-232 settings for the C2N-DVP4DI (defaults):

- **Baud Rate**: 115200 (use with newer .cuz files, version 3.0.17 and higher)
  57600 (use with older .cuz files)
- **Data Bits**: 8
- **Parity**: None
- **Stop Bits**: 1
- **RTS/CTS**: On
- **XON-XOFF**: Off

Computer RS-232 Port Menu



NOTE: Make sure these settings match the Port Settings for RS-232 in Viewport.

After parameters have been set, select the **Save and Return** button, located at the bottom right corner of the COMPUTER RS-232 PORT MENU to return to the SYSTEM SETUP MENU.

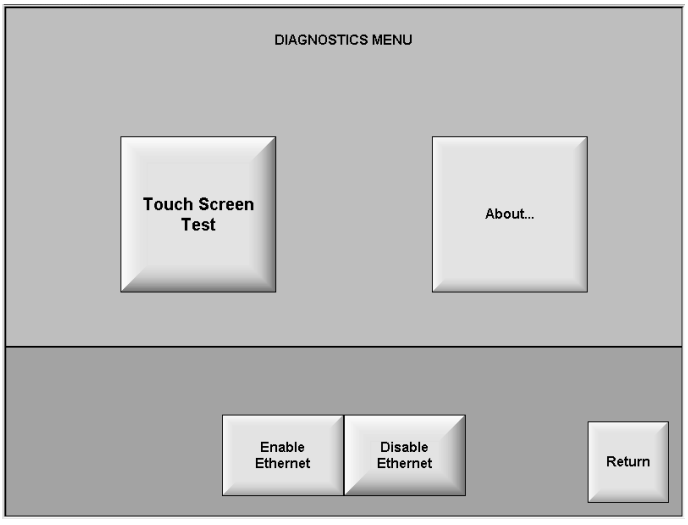
Click the RETURN button in the lower left of the SYSTEM SETUP MENU to return to the MAIN MENU.

Diagnostics Menu

From the MAIN MENU, click **DIAGNOSTICS**. Use this menu to initiate the touchscreen test and enable/disable the Ethernet.

Press the **About** button to display the current firmware version information.

Diagnostics Menu



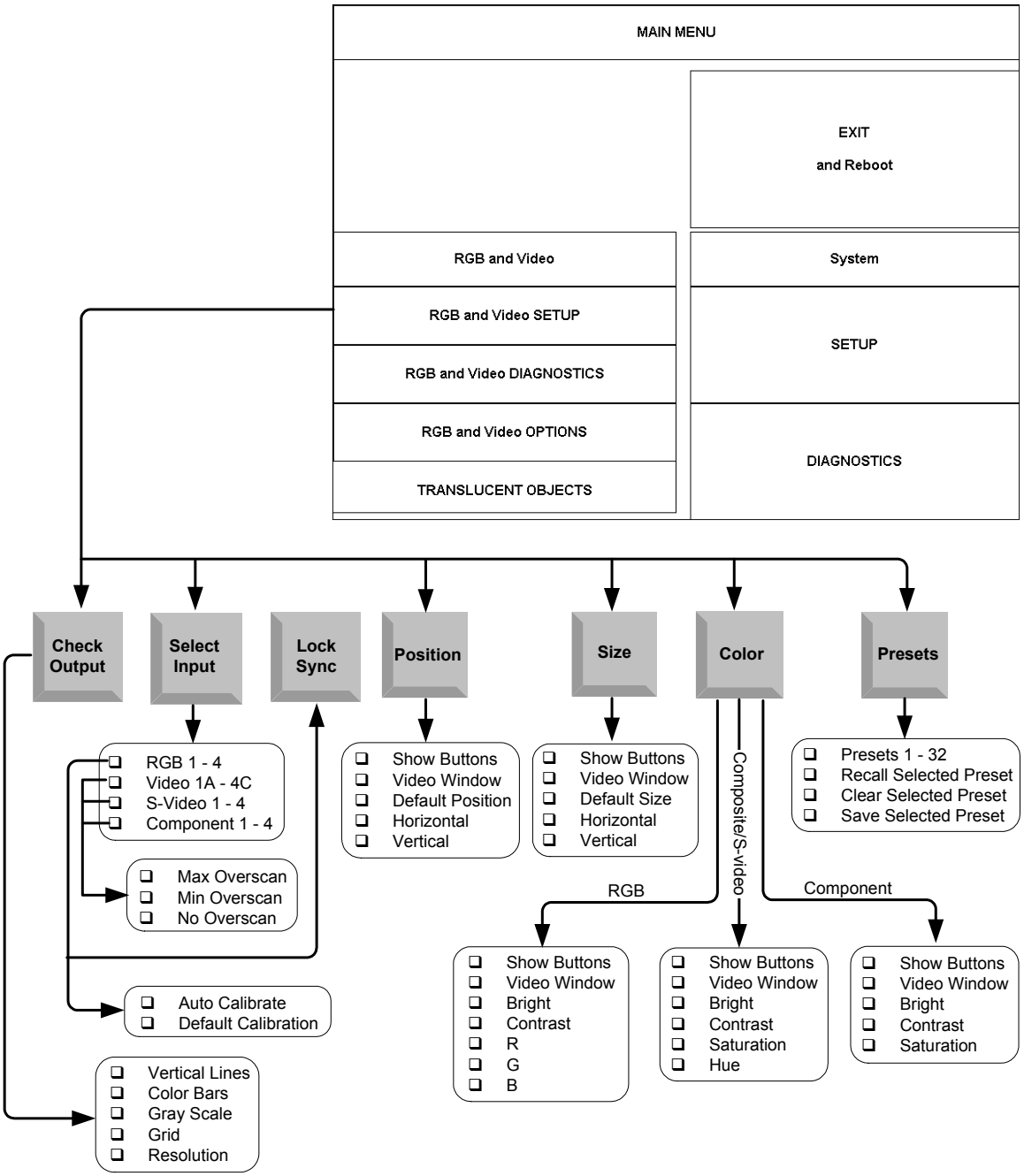
Click **Return** to go back to the MAIN MENU.

RGB and Video Setup

Selection of the **RGB and Video SETUP** button on the MAIN MENU allows the user to adjust both input (from a video source) and output (to a display device) for optimal performance. Refer to "Connector Information | DVI/RGB Adaptor" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com), for additional information on DVI video.

NOTE: Crestron recommends setting up the output prior to setting up the inputs.

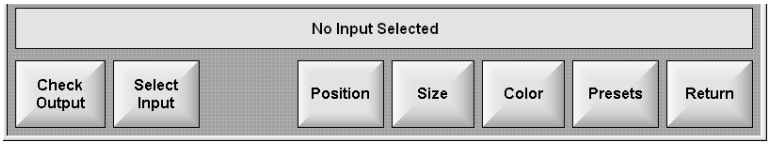
RGB and Video Setup Menu Selections



C2N-DVP4DI Output Settings Setup

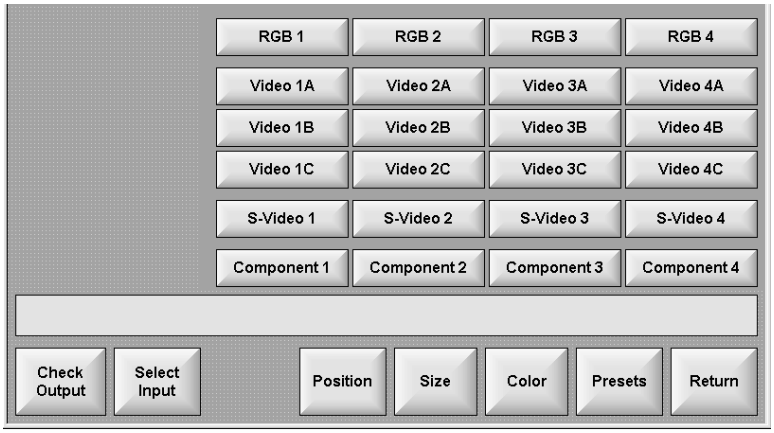
From the MAIN MENU, select **RGB and Video SETUP** to open the setup selections window.

Setup Selections



Click **Select Input**.

Input Selection Buttons



Each of the inputs is selected and adjusted from this menu. Click on an input and the current settings (preset number, resolution, horizontal and vertical frequency) for the selected input are displayed.

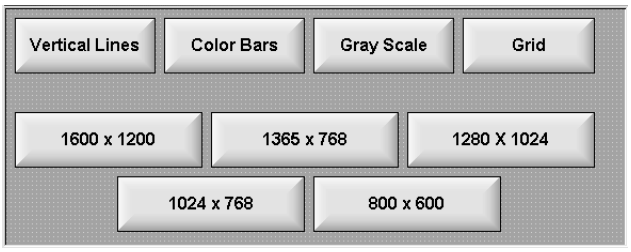
RGB/DVI Resolution and Sync Options

The **Check Output** button is used to adjust the display device (using grid test patterns) to the C2N-DVP4DI output, and to set the C2N-DVP4DI output resolution. The output of the C2N-DVP4DI should always match the native resolution of the display device.

NOTE: Custom resolution is set-up in Viewport. Refer to page 23.

1 Select the **Check Output** button to open the RGB/DVI resolution and sync options.

Check Output - RGB/DVI Resolution and Sync Options



NOTE: Some of the following subsections use the Crestron Viewport. Refer to the latest revision of 2-Series Console Commands (Doc. 6002) for console command details.

2. Select the output resolution that matches the optimal resolution of the display device.

NOTE: After changing the output resolution of the C2N-DVP4DI, you may have to perform a calibration of the pointing device, refer to "Connecting a Pointing Device" in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

NOTE: Most LCD, plasma and DLP displays are not able to auto sync (fine tune) the incoming video for optimal resolution performance. The C2N-DVP4DI provides setup screens that allow the user to 'fine tune' the display device. Access these screens by using the **Vertical Lines**, **Color Bars**, **Gray Scale**, or **Grid** buttons.

NOTE: Always adjust **Grid** first, then **Vertical Lines**.

Grid – Most displays have *Horizontal* and *Vertical* sizing and positioning adjustments on the display setup menu. Adjust the display so that the white border of the grid is edge-to-edge for optimal resolution.

Vertical Lines – Most displays have *Coarse* or *Clock* and *Phase* or *Fine Tuning* adjustments on the display setup menu. Adjust these as needed. The vertical line test pattern should look uniform. If you see dark vertical bars in the test pattern, adjust *Coarse* or *Clock* to eliminate bands. If you see only horizontal noise, adjust *Phase* or *Fine* to reduce or eliminate noise. You may also need to perform the vertical line adjustment again after changing the size of the display image.

Color Bars and **Gray Scale** – Most displays have *Brightness*, *Contrast*, *RGB Level* and *Black Level* adjustments on the display setup menu. Adjust as needed.

NOTE: The output can be adjusted in Viewport. To access the output command in Viewport, type: **`OUTPUT`**
At the prompt, type **`OUTPUT 1`** and the horizontal resolution output number for a standard VGA setting, for example, XGA is 1024 x768. Type the following at the C2N-DVP4DI prompt:

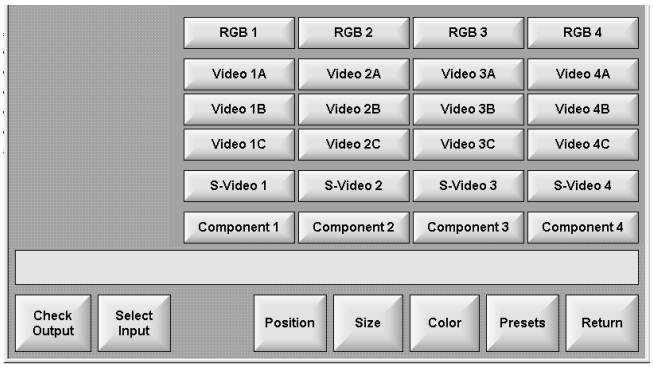
```
DVP4DI>OUTPUT 1 1024
```

and press **Enter** (You must reboot for the change to take effect).
Refer to "RGB/DVI Output Customization" on page 23 and the latest version of the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com), for customizing the output to a non-standard display.

Video Output Setup

1. From the MAIN MENU, select **RGB and Video SETUP** under the *RGB and Video* options to open the setup options.

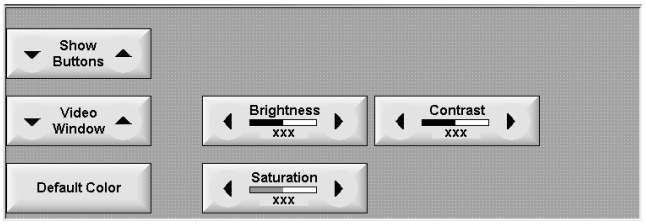
Video Input Selection Buttons



2. Select one of the inputs:
   – **RGB 1** through **RGB 4** (RGB/DVI)
   – **Video 1A** through **4C** (composite)
   – **S-Video 1** through **S-Video 4**
   – **Component 1** through **Component 4**
3. Select **Color**. The video color adjustment buttons appear, depending on which input you selected (refer to the following graphics).

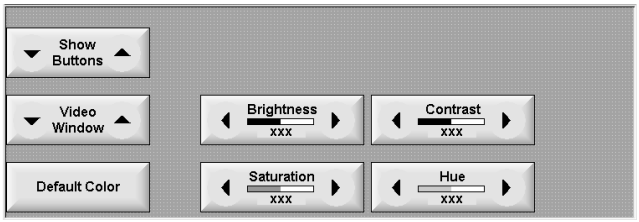
   Component Video - Adjust brightness, contrast and saturation.

   Component Video Color Adjustments



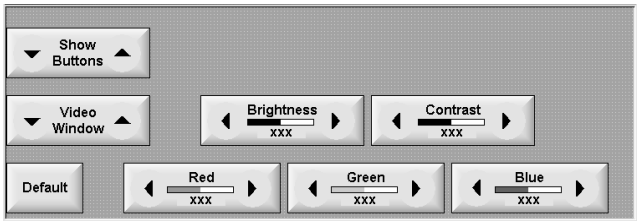
   Composite and S-Video - Adjust brightness, contrast, saturation and hue.

   Composite Video Color Adjustments



   RGB Video - Adjust brightness, contrast, red, green and blue.

   RGB Video Color Adjustments



NOTE: DVI inputs do not have color or lock sync adjustments.

RGB/DVI Output Customization

The output of the C2N-DVP4DI can be customized to match nearly any output display device through Viewport commands. You *must* know all of the parameters specified to achieve proper results. Any parameter not specified is inserted by the nearest known standard in memory, which may not function properly with the display device.

NOTE: Obtain the required parameters from the manufacturer of the display device.

There are 11 adjustable parameters in Viewport. Horizontal resolution is expressed as pixels; vertical resolution is expressed as lines.

- To display the current settings, type output at the C2N-DVP4DI prompt:
  DVP4DI>output
  To display a list of the standard available options, type
  output ?
  The format is "OUTPUT X" where "X" is one of the C2N-DVP4DI standard horizontal resolutions or HDTV resolutions. Available Standard Horizontal Resolutions: 800, 1024, 1152, 1280, 1365, or 1600. Available HDTV: 720P. For a Custom Horizontal Resolution, Format is "OUTPUT 1 X"
- To change the settings, type:
  output<space>parameter number (1-11)<space>new setting
  and press **Enter**

Example, selecting output 2 and changing the vertical resolution to 600:

```
DVP4DI>output 2 600
New Custom Output Resolution: 1024 x 600  @ 60 Hz
Reboot to take effect.
```

NOTE: The output vertical resolution of the C2N-DVP4DI is from 60 Hz to 85 Hz except for 1600 x 1200 where the maximum is 60 Hz.

NOTE: A warning message appears when changing vertical frequency on Viewport. "You have Stretch turned ON in Setup/Options/On Screen to On Screen Effect. To Enable Stretch, set all RGB Inputs to match DVP4 Output Refresh Rate."

NOTE: Type: **output** to display current settings.
Type: **output ?** to display the list of available standard options.

Adjustable Video Output Parameters in Viewport

PARAMETER	DEFINITION
Output Parameter 1: 1024 Active Horizontal Pixels	Actual number of horizontal pixels displayed (Minimum 800, maximum 2000)
Output Parameter 2: 600 Active Vertical Lines	Actual number of vertical pixels displayed (Minimum 600, maximum 1200)
Output Parameter 3: 60 Hz Refresh Rate	Refresh rate depends on resolution; the clock speed settings determine this parameter. Example: If parameter 1 is 1600, the maximum rate is 60 Hz
Output Parameter 4: Negative HSync Polarity	Choose negative or positive
Output Parameter 5: Negative VSync Polarity	Choose negative or positive
Output Parameter 6: 1344 Pixel Clocks Horizontal Total Time	Total number of horizontal pixels. Cannot be less than the sum of: parameter 1, plus clock duration, plus back-porch pulse sync width.
Output Parameter 7: 136 Pixel Clocks HSync Duration	Pulse width sync
Output Parameter 8: 160 Pixel Clocks Horizontal Back Porch	Horizontal Back porch
Output Parameter 9: 806 Lines Total Time	Total vertical lines. Cannot be less than the sum of parameter 2, plus front and back-porch
Output Parameter 10: 6 Lines VSync Duration	Lines of vertical sync duration
Output Parameter 11: 29 Lines Vertical Back Porch	Vertical Back-porch

You cannot enter an invalid resolution (less than the minimum).
Example, entering a horizontal resolution of 768:

```
DVP4DI>output 1 768
Invalid Resolution
```

The C2N-DVP4DI will accept all valid entries. When the C2N-DVP4DI encounters a number not in the firmware, the following message is displayed:

Example, entering a horizontal resolution of 875:

```
DVP4DI>output 875
875 is not in the C2N-DVP4DI table of Standard
Horizontal Resolutions.
You can set a Custom Horizontal Resolution by
typing:  Output 1 875
```

NOTE: You must reboot for changes to take effect.

NOTE: In this example, the C2N-DVP4DI prompts you with the output number (1) for horizontal resolution.

NOTE: The C2N-DVP4DI will output 800 x 600 in this example until all the other parameters are set to make it function properly for the new output.

NOTE: Also ensure that you have created the correct page size in VT Pro-e before creating a page for the new output.

NOTE: There are two additional standard output resolutions for the C2N-DVP4DI, 1152 x 864 (RGBHV) and 720P. The 720P is HDTV with a resolution of 1280 x 720 (progressive scan) but it outputs as RGBHV and not Y, P_R, P_B. To change the output setting, use the command: **`output 720P`**

Video Input Setup

NOTE: Make sure you perform the Video Output Setup procedure first (refer to page 20).

NOTE: Crestron recommends that you setup all RGB, S-video, component and composite video sources.

RGB Input Setup

RGB video is setup using the **Size, Position, Color**, and **Lock Sync**, buttons (at the bottom of the screen).

NOTE: The **Lock Sync, Auto Calibrate, and Default Calibrate** buttons only appear for RGB video.

NOTE: DVI inputs do not have color or lock sync adjustments.

Lock Sync – A vertical (alternating black/white lines) line pattern screen is recommended.

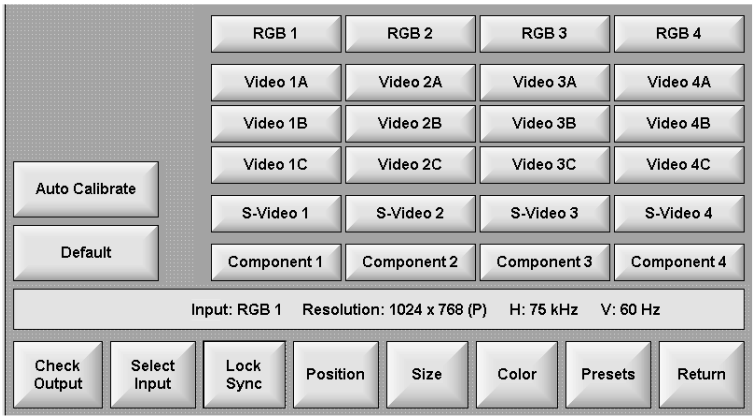
Size and Position – A vertical/horizontal line grid screen is recommended.

Color – Color bar and gray scale screens are recommended.

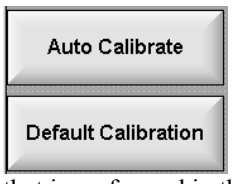
RGB Video Source Calibration

1. Click the **Select Input** button at the bottom of the screen and select input **RGB 1**, **2**, **3** or **4**. The RGB buttons appear (refer to the following graphic).

RGB1 Selected



2. Select **Auto Calibrate** or **Default Calibration**.



Auto Calibrate automatically adjusts the input setting. It looks at the sync for front and back porch, and sets them for the selected input. Auto calibrate is a one-time setting that is performed in this Setup Menu for each input. You must select the source and have it display before pressing **Auto Calibrate**. You can return to this setup screen when you want to perform auto calibrate in the future.

NOTE: Auto Calibration is not available for DVI sources. Use default calibration for DVI sources.

Calibration Adjustments Using Viewport

Auto calibrate, default calibrate, no overscan, and lock calibration are also accessed through Viewport using the **input** command. Type **input** at the prompt to display all connected inputs to the C2N-DVP4DI:

```
DVP4DI>input
Input RGB 1 Default Horizontal Resolution:  640
Input RGB 2 no signal present.
Input RGB 3 Default Horizontal Resolution:  1280
Input RGB 4 Default Horizontal Resolution:  1024
```

Type **input ?** to access the input adjustments:

```
DVP4DI>input ?
Format is "INPUT 1 2", where Parameter 1 is 1,
2, 3, or 4 to select one of the four RGB inputs,
and Parameter 2 is the new Horizontal
Resolution, from 320 to 1920,
or "A" to Auto Calibrate this input,
or "D" for Default for this input,
or "N" for No HDTV Overscan for this input,
or "L" to Lock Auto Calibrate On for this input.
```

For example: Typing: **input 1 L** locks auto calibrate for RGB source 1.

If this selection does not look correct, select **Default Calibration** or manually set the parameters as described in this manual.

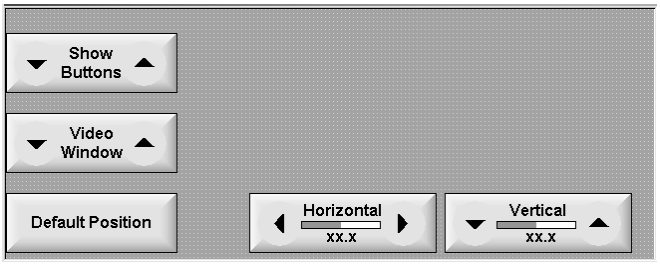
Default Calibration sets the input setting to the factory defaults. If **AUTO Calibrate** or **Default Calibration** settings are not perfect, continue with the following steps.

NOTE: If you are unable to obtain a stable RGB window, perform the Lock Sync adjustment before continuing with the color, size and position adjustments.

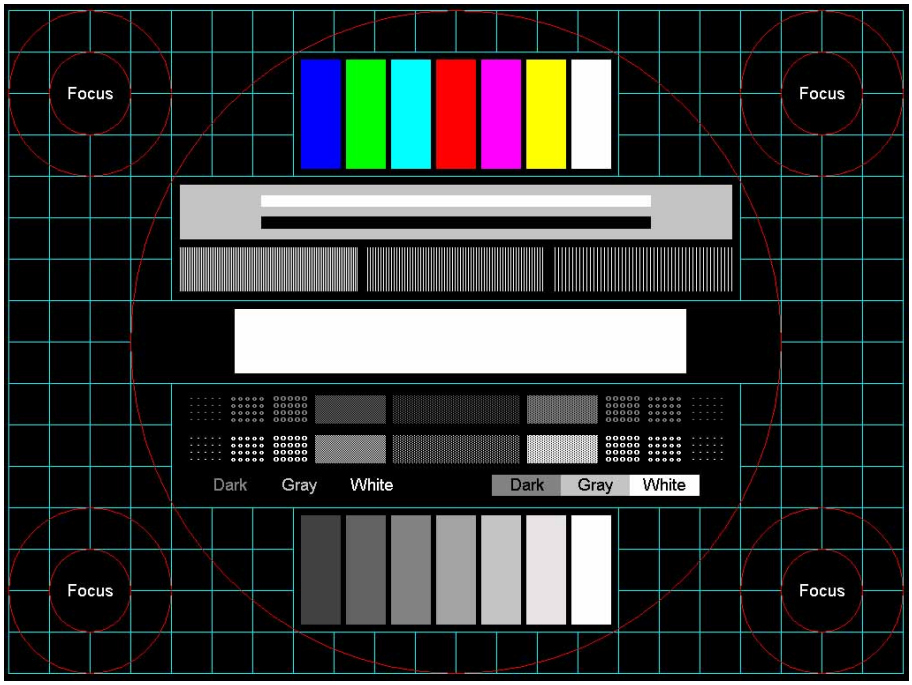
RGB Position Adjustment

Select a vertical/horizontal line grid to display in RGB window, and select **Position**. The position buttons appear (refer to the following graphics).

Position Buttons



Grid Test Pattern



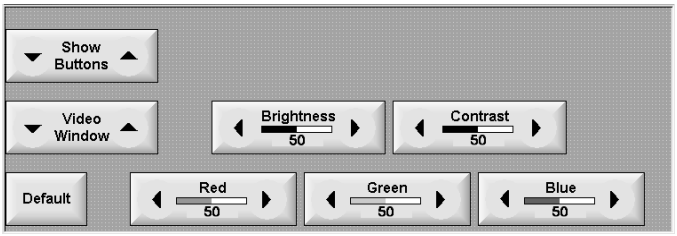
Adjust position as desired.

RGB Color Adjustment

1. Select a color bar to display in the RGB window, and select **Color**. The color buttons appear (refer to the following graphic).

NOTE: You may need to compare color bar and gray scale test patterns to determine the correct adjustment.

RGB Color Buttons



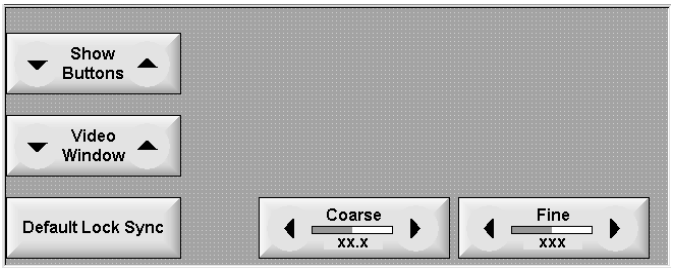
2. **Show Buttons** control the translucency of the setup buttons. **Show Buttons** is similar to the translucent object except that it is available only in the Setup mode. The translucent object is only available in VT Pro-e projects as a property feature (refer to "Translucent Objects" on page 33). **Show Buttons** has three settings for displaying buttons in the setup mode: full on (opaque), 50% translucent, and 100% translucent (invisible). The up and down arrows steps through these selections.
3. The **Video Window** button resizes the current window so that you can see the edges of the source and adjust the source to the edge of the display.
4. Adjust RGB color as desired.
5. Select a gray scale test pattern to display in RGB window, and check for any color in gray patterns.
6. Adjust as desired, and then continue to the Lock Sync adjustment.

RGB Lock Sync Adjustment

NOTE: Select **Lock Sync** *after* the size and position adjustments.

1 Select a vertical line pattern to display in the RGB window, and select **Lock Sync**. The **Lock Sync Coarse** and **Fine** buttons appear (refer to the following illustration).

Coarse and Fine Controls



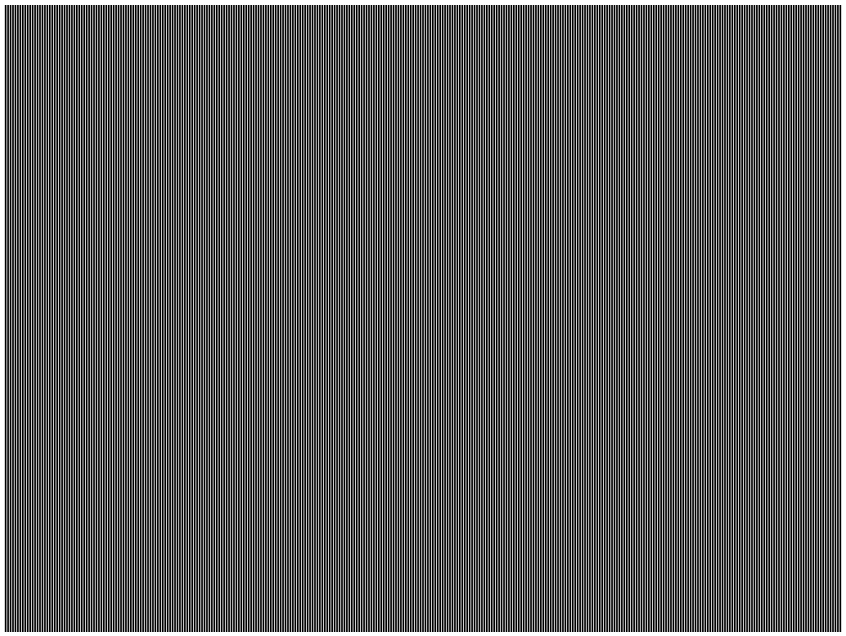
NOTE: The preferred setup method is *auto-calibrate* for RGB.

NOTE: The vertical line test pattern should look uniform. If you see dark vertical bars in the test pattern, adjust 'Coarse' or 'Clock' to eliminate bands. If you see only horizontal noise, adjust 'Phase' or 'Fine' to reduce or eliminate noise. You may also need to perform the vertical line adjustment again after changing the size of the display image.

NOTE: The screen resolution of an older laptop may not allow you to see the complete adjustment. For example, going from 800 to 1200, you may have to scroll the screen to view the entire image.

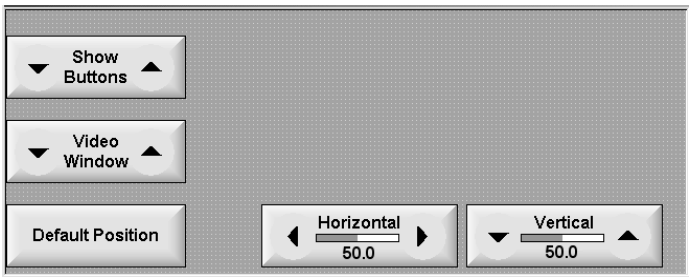
2. Adjust vertical line pattern to look flat and uniform (no color shades, dark areas, etc.). Refer to the following figure.

Vertical Line Test Pattern



3. Select a vertical/horizontal pattern to display in RGB window, and select **Size**. The size buttons appears (refer to the following graphic).

Size Buttons



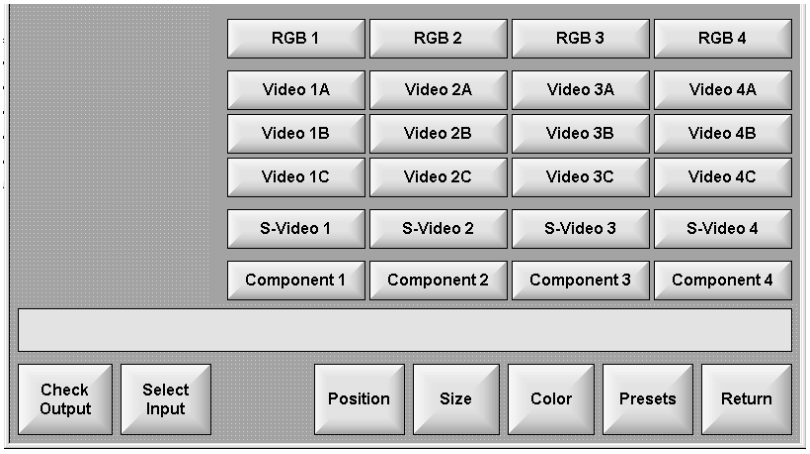
4. Adjust size as desired.

S-Video, Component Video and Composite Video Setup

S-video, component video and composite video are all setup in the same manner.

1. Select an input to adjust:
   Composite Video 1A through **4C**
   S-Video 1 through **4**
   Component 1 through **4**

Video Input Selection Buttons

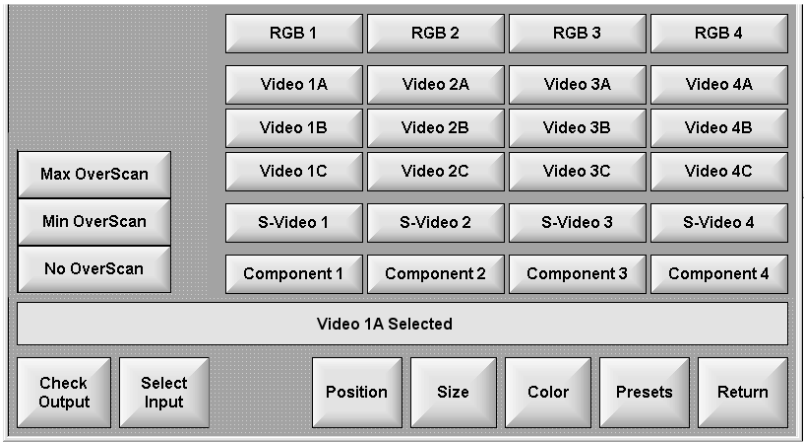


2. Use the Position, Size and Color buttons to adjust the inputs.

   Size and **Position** – A vertical/horizontal line grid screen is recommended.

   Color – Color bar and gray scale screens are recommended.

Video 1A Selected

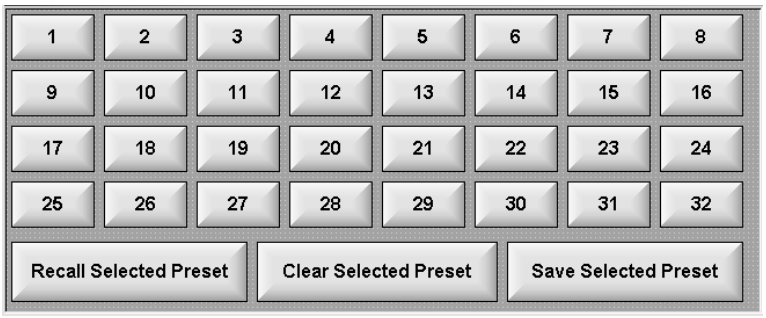


The Overscan feature is only available for composite, component, and S-video sources. OverScan is the active image area in a video picture that is outside the edges of the display device. Overscan first came about because of noise and other artifacts at the beginning and end of the scan lines. To reliably eliminate the noise and fill the screen with a picture, the outside edge of the active picture area was pushed out past the edge of the display area. The average or targeted overscan loss is about 5 to 10% of the image on each edge. Digital images have nearly eliminated the noise and other artifacts at the edge of the picture, so you can safely show more of the video image. Use the overscan selection when sizing and positioning the video windows.

Presets

The C2N-DVP4DI allows you to save 32 presets. These are useful when you are receiving multiple video sources from a remote location such as a matrix switcher. You can assign specific properties (color adjustments, size, position, etc.) to each preset. To recall presets, select the preset number and click **Recall Selected Preset**.

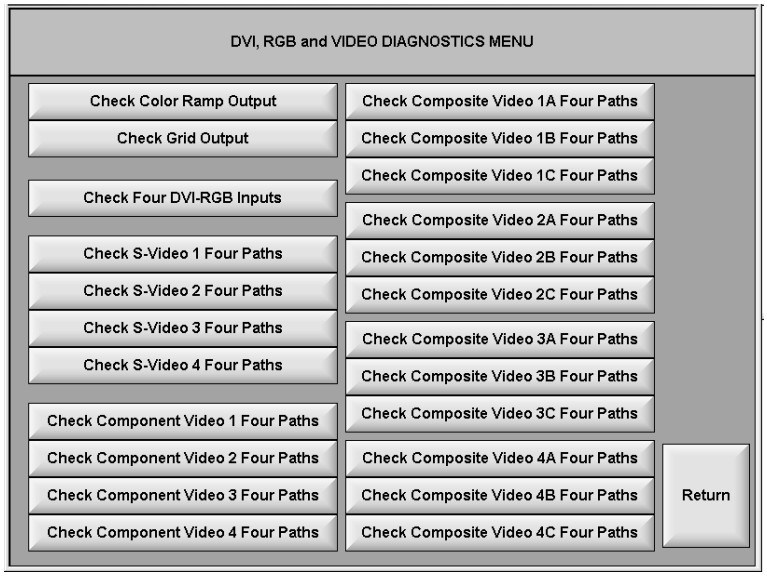
Presets



RGB and Video Diagnostics

Select **RGB and Video Diagnostics** under the *RGB and Video* options on the MAIN MENU to access the DVI, RGB and VIDEO DIAGNOSTICS MENU. Use this menu to test and diagnose the RGB output. Adjust as necessary.

DVI, RGB and Video Diagnostics Menu



1. The **Check Color Ramp Output** displays graduated shaded red, green, blue, and gray scale test bars. The bars should appear smoothly graduated.
2. The **Check Grid Output** is a black and white image with two diagonal lines forming an X from one corner of the screen to the other. All grid boxes should appear uniform, the lines perfectly vertical and horizontal, and all the same size. Use this to correct linearity problems, using pincushion, keystone, and trapezoid, controls.
3. The **Check Four DVI-RGB** Inputs displays all four sources in a quad grid simultaneously.
4. The **Check S-Video (1-4) Four Paths** buttons display the same S-video source on four windows. All color should match on each channel (refer to the following note).

NOTE: If any of these inputs are composite, they are displayed in black and white.

5. The **Check Component Video (1-4) Four Paths** checks each video input in each quadrant of the screen.
6. The **Composite Video Four Paths** displays the same composite video source in color, in four windows.

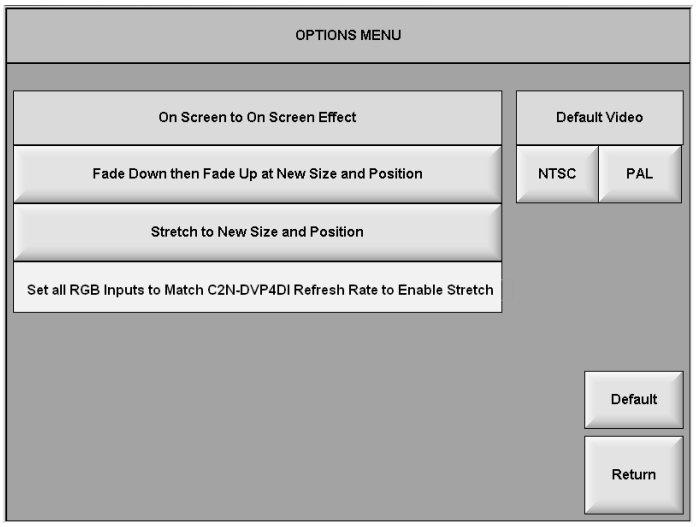
RGB and Video Options

From the MAIN MENU, select **RGB and Video OPTIONS** to access the OPTIONS MENU.

When a video or RGB window moves from off-screen to on-screen, or from on-screen to off-screen, the window is moved using the default or analog value transition effect as assigned in VT Pro-e.

However, when a source is on-screen and ends on-screen, there are two options available from the OPTIONS MENU, **Fade Down then Fade Up at New Size and Position** and **Stretch to New Size and Position**:

Options Menu



The **Fade Down then Fade Up at New Size and Position** button: If the current source is going to change size and position, then this button fades down the current source and repositions and sizes the source to the new position. This selection overrides the default transition and the analog join programming in VT Pro-e.

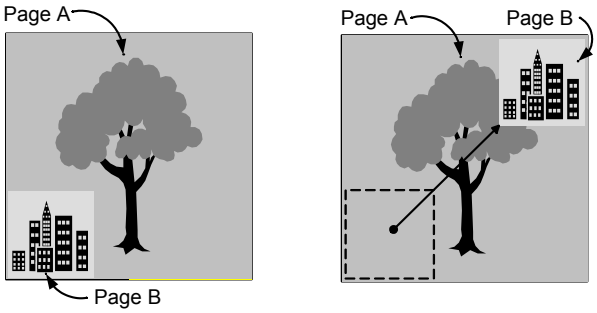
The **Stretch to New Size and Position** button: Stretch allows a seamless transition from small to a large video window or large to small video window. The video window appears to zoom in, even though behind the scenes, the C2N-DVP4DI is flipping from a page with a small video window to a page with a larger window. If the source and the C2N-DVP4DI have the same vertical frequency (example: 60 Hz as the C2N-DVP4DI output vertical frequency), then the source on screen will change size in real time. If the frequencies of the C2N-DVP4DI and the source do not match, then the source will only fade down and fade up. The transition time (duration) is taken from the default time set in VT Pro-e. When **Stretch to New Size and Position** is selected, the note *Set all RGB inputs to match the C2N-DVP4DI refresh rate to enable stretch* appears.

If the fade or stretch option is selected in the OPTIONS MENU, then when a source changes size and/or position on screen, neither the default transition that was assigned in VT Pro-e nor the analog value assign transition is performed. The C2N-DVP4DI will always do a fade off/on to the new position or performs the stretch and move transition depending on the option selected in the OPTIONS MENU.

The **Default** Button sets the default to the fade down on-screen effect, and sets the default video to NTSC.

The on-screen to on-screen transition default effect fades down a source and then fades up the source to the new size and position. This on-screen to on-screen effect only affects the transition of sources that are on-screen and are changing to a new size and/or position. If the source does not change size and/or position, and remains on the screen, then no effect occurs, even if a page flip or sub page has changed.

Page Flip (Page B changing position only)



- The C2N-DVP4DI uses either the default timing or analog value from VT Pro-e for the duration of the on-screen to on-screen transition. Duration is not set in this menu.
- The on-screen to on-screen effect applies to all sources (RGB, DVI, S-video, component video, and composite video).
- For the new size and position option to operate, the vertical frequency of the RGB sources must be the same as the C2N-DVP4DI output vertical frequency. Otherwise the C2N-DVP4DI defaults to the fade down/fade up effect, overriding the SETUP | OPTION setting.
- Video sources are scaled to the C2N-DVP4DI output resolution and frequency so they will allow the stretch effect to work.

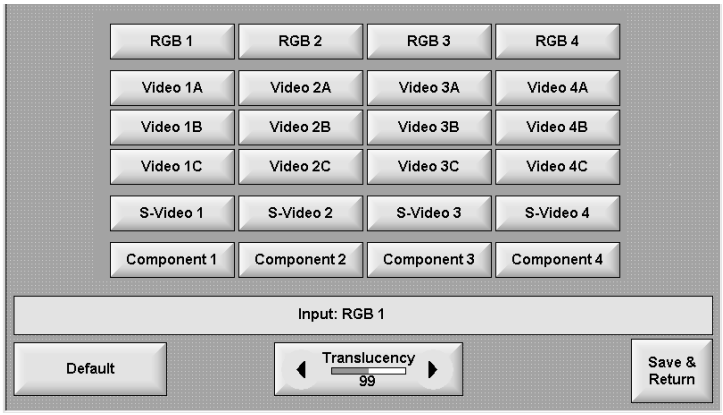
The *Default Video* buttons (**NTSC** and **PAL**) permit a choice of which kind of video is searched for first, and works for both composite and S-video. For example: If **NTSC** is selected, the C2N-DVP4DI searches for NTSC first, and then searches for PAL.

Translucent Objects

This MAIN MENU **TRANSLUCENT OBJECTS** option allows the user to change the translucency of displayed buttons. The default is 50% transparent. 100% is invisible, 0% is opaque (refer to following graphic).

NOTE: Setup screens are always displayed as 800 x 600. When the buttons are full off (100% transparent), pressing anywhere within this 800 x 600 setup page returns the buttons to 50% translucency. This disappearing button feature is very useful when fine-tuning color, size, etc.

Translucency



Compiling and Uploading a Program to the Control System

Cable Connection for Programming

Cable Hardware

- DB9 RS-232 Cable (male/female, straight-through)
- RJ45 10/100 BaseT Ethernet Cable
- Cresnet Cable (for power)

The C2N-DVP4DI may be programmed using the compact flash with the program already written to it, or by downloading the program via serial cable or via Ethernet cable. Refer to "Network Wiring" in the latest version of the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com) when making network connections. The following is for cable connections only. Refer to "Establishing Communication with the Control System" on page 10 for typical connections.

NOTE: The C2N-DVP4DI only accepts programming in the master mode.

1. Ensure that 75 watts of power is available at the Cresnet port.
2. If programming using RS-232, attach the RS-232 cable to the COMPUTER port and an available computer COM port of the PC. Refer to "Establishing Communication with the Control System" on page 10.
3. If programming using Ethernet, attach the Ethernet cable to the LAN port and the Ethernet port of the PC. Refer to "TCP/IP Connection" on page 12.

Compile and Upload Programming

After you have completed your SIMPL Windows program you must compile and upload the program to the control system.

To compile the program, simply click the **Convert/Compile** button  on the SIMPL Windows toolbar, or select **Project | Convert/Compile** (you can also press **F12**). A status bar will indicate the progress of the compile operation. After the operation is complete, a window will display information about the program such as the number and type of signals, and memory usage.

The compiled program will be stored as an SPZ file in the same directory as the source file. There are several ways to upload an SPZ file to the control system.

Immediately after compiling the program you are prompted to transfer the file to the control system.

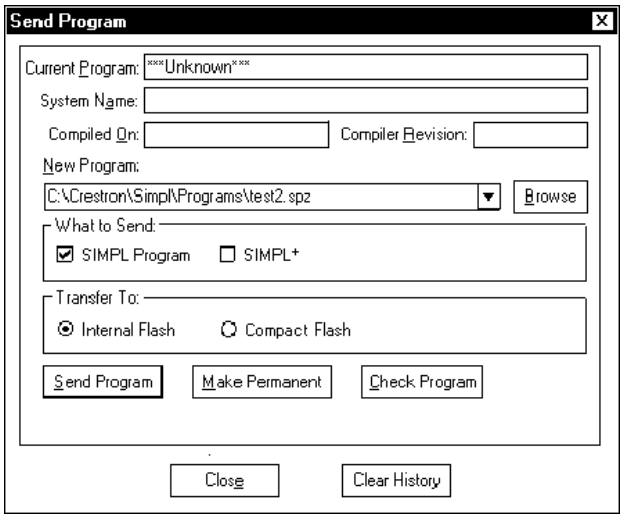
Click the **Transfer** button  on the SIMPL Windows toolbar to open the "Send Program" window (refer to the following graphic). Click **Browse**, locate the SPZ file and click **Open**. This will display the program header information and enable one or both of the *What to Send* check boxes. If the program does not contain any SIMPL+ modules only the *SIMPL Program* check box will be enabled. If it does contain SIMPL+ modules, then the *SIMPL+* check box will also be enabled. Select one or both check boxes and then click **Send Program** to begin the transfer.

NOTE: You can also click **Check Program** to display the header information of the currently loaded program.

Open Viewport and select **File Transfer | Send Program**.

NOTE: Unlike X-Generation processors, the 2-Series processor does not require a permanent memory image. Also, the 2-Series adds the ability to automatically retrieve the currently compiled program from the control system. Simply verify that the *Retrieve Current Program before overwriting* check box is selected.

"Send Program" Window



Uploading Touchpanel Projects

You can use the network connection to upload VT Pro-e projects to any Cresnet touchpanel. Compiled projects for TPS panels are contained in VTZ files; projects for all other touchpanels are contained in HEX files.

Before uploading, open Viewport and click **Diagnostics | Report Network Devices** to verify that the touchpanel is being detected by the control system. (As with any network device, touchpanels must be identified by unique hexadecimal network IDs. These IDs are set in the SIMPL Windows program.)

To upload a project:

1. From VT Pro-e: Click the **Project | Upload** button  on the toolbar, or click **File | Upload Project.**

   From Viewport: Click **File Transfer | Send Touchpanel** or press **Alt+T**.
2. Select the network ID of the touchpanel, as set in SIMPL Windows, from the drop-down list.
3. Browse to the HEX or VTZ file to be uploaded. If the file is a HEX file, click **Open** to begin the transfer.

   If the file is a VTZ file, choose the pages to send to the TPS panel. The choices are as follows:

   - **All Files in Project**: sends the entire project.
   - **Only Changed Files**: sends only the files that are different from those that are currently stored in the panel.

NOTE: Panels that are not present in the uploaded project are deleted.

- Additional choices include: **Do not send graphic files** and **Do not send sound files**. These are often very large files that need not be reloaded with every transfer.

Updating the Operating System

As with all 2-Series control systems, operating system files have a .cuz extension. You can obtain .cuz updates (when available) from the Downloads | Software Updates section of the Crestron website. To download an update, click the .cuz file, choose the **Save to Disk** option, and then specify the directory where the update is stored.

NOTE: In some cases Microsoft's Internet Explorer may append a .zip extension to a downloaded .cuz file. For example, a file called "C2-1008.cuz" may appear as "C2-1008.cuz.zip." If this happens, rename the file, removing the .zip extension.

NOTE: Crestron software and any files on the website are for Authorized Crestron dealers and Crestron Authorized Independent Programmers (CAIP) only. New users may be required to register to obtain access to certain areas of the site (including the FTP site).

To upload the new .cuz to the control system:

1. Open Viewport and select **File** | **Update Control System**.
2. Browse to the .cuz file and click **Open** to start the transfer.
3. After the transfer is complete, the control system automatically reboots. To confirm the transfer, click **Diagnostics | Check Ops Version**. The Viewport console should display the new .cuz version number.

Uploading Web Pages to the C2N-DVP4DI

The C2N-DVP4DI provides a built-in Web server for e-Control applications. The C2N-DVP4DI allots Web pages, mailbox, and the compiled SPZ file to be downloaded to compact flash. The only limit is the size of your compact flash card and your project assigned files.

VisionTools Pro-e

In most cases, you create a VT Pro-e browser project to generate the Web pages for uploading to the C2N-DVP4DI.

For e-Control projects:

When an e-Control browser project is created, VT Pro-e automatically creates a folder with the name of the project and a .web extension. This web project folder itself contains a Java subfolder, in addition to all the HTML files that are sent to the C2N-DVP4DI. In VT Pro-e, the target type is BROWSER.

For e-Control 2 projects:

When an e-Control 2 project is created, VT Pro-e automatically creates a folder with the name of the project and a .xweb extension. The web project folder contains all the necessary e-Control 2 files. In VT Pro-e, the target type is XPANEL.

In designing and creating a browser project, keep in mind that you must assign an IP ID to all the project pages and specify the IP address of the C2N-DVP4DI (For further information on this procedure, refer to the VT Pro-e online help file).

SIMPL Windows

For each IP ID in the VT Pro-e browser project, there must be one corresponding e-Control PC Interface symbol defined in the SIMPL Windows program. The PC Interface symbol is one of the Ethernet Modules that can be dropped on the C2ENET-1 card slot.

As with all Ethernet devices, the PC Interface must receive an entry in the IP Table of the C2N-DVP4DI. Here the IP ID must match the IP ID that was assigned in VT Pro-e, while the IP address must be set to local host: 127.0.0.1.

Viewport

To transfer the Web pages to the C2N-DVP4DI, use the **File Transfer | Send Web Pages** command.

The options are to send an entire project, only files that have changed, or a single HTML file. With the *Transfer Entire Project* option, click **OK** when reminded to select a default page, and then browse to the appropriate VT Pro-e .web project folder. Select the file that was designated as the "first" page of the project. This will be the default Web page that is displayed whenever the IP address of the control system is accessed by a Web browser. Click **Open**, and then **OK** to begin the transfer.

If any files in the VT Pro-e project change, the changed files can be transferred to the C2N-DVP4DI without resending the entire project by choosing the *Only Transfer Files that have Changed* option. Here again, browse to the .web project folder and select the default page. Click **Open**, and then **OK** to transfer the changed files.

Finally, selecting *Transfer Single File* can send a single HTML file. Browse to the file and click **Open**. Then specify the file's relative path (from the root directory) and click **OK**.

Pointing Devices

The C2N-DVP4DI is shipped with a Microsoft compatible 9-pin mouse.

After connecting a pointing device to the Touchscreen/Mouse port, you must use Viewport to inform the C2N-DVP4DI the kind of device that has been installed.

Set the Crestron supplied serial mouse input parameters in Viewport using the following instructions.

1. To select the input mouse type using Viewport, type: `Touch ?` and press **Enter** at the prompt for a list of input devices (refer to the following graphic). Type: `Touch 1` for a Microsoft mouse.

NOTE: Selecting 0 disables all other inputs and permits only program control. Refer to "Connecting a Pointing Device" in the latest version of the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

NOTE: If you are using a Smart Technologies pointing device (such as Smart Sympodium, etc.) the serial cable (DB9) must have the Data Terminal Ready (DTR – pin 6) and Data Set Ready (DSR – pin 4) connections removed. Use Crestron part number CNSP-141. Refer to "Smart Sympodium" in the latest version of the C2N-

DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com). for additional information.

2. From the Viewport, type `Caltouch`, and follow the instructions on the output screen of the C2N-DVP4DI (This command is not required if using a mouse).

NOTE: Take note of the output resolution of the C2N-DVP4DI. You will need this when performing a calibration if the pointing device is not a mouse.

```
DVP4DI>touch ?
TOUCH [input]
       where input =
              0 - Program Control
              1 - Microsoft mouse*
              2 - Smart (SC3,SC4,SC5)
              3 - Smart (SC6,SC7,..)
              4 - Microtouch
              5 - Dynapro SC3
              6 - Dynapro SC4
              7 - Elo Graphics
              8 - Crestron Tablet
              9 - Mouse Systems Mouse
             10 - Logitech MouseMan
             11 - Wacom Tablet
             12 - QTC Touch Controller
       No parameter - current input selection
```

NOTE: Additional pointing device installation instructions, including using touchpanels, built-in Telestrator, and Sympodium, are in the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com).

Problem Solving

Troubleshooting

The following tables provide corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

C2N-DVP4DI Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
C2N-DVP4DI does not function.	C2N-DVP4DI is not receiving Cresnet power.	Verify Cresnet power to unit.
	Incorrect firmware/software.	Update firmware/software versions as per those listed in the Specifications section.
	SIMPL Windows program for PRO2 or other 2-Series control system installed on compact flash.	Remove program from compact flash via Viewport.
	Incorrect cable connections.	Follow connection procedures in this guide and inspect connector pins.
	Various (for example, wrong firmware).	Refer to "System Monitor Mode" procedure in the C2N-DVP4DI Reference Guide.
	Incorrect power supply.	Use a Crestron power supply.
No video output displayed.	Incorrect cable connection.	Verify DVI/RGB output cable connection to unit and video display.
	Output resolution incorrect.	Set output resolution via Viewport.
C2N-DVP4DI does not boot properly.	Program needs to be reloaded.	Power down unit, remove compact flash card and power back up. After boot up, install compact flash and down load new project(s) using Viewport.
Wrong source or video displayed.	Wrong VT Pro-e or SIMPL Windows programs.	Verify correct programs.
	VT Pro-e project not set up correctly.	Verify proper video set up for each video window displayed.
Video from RGB source is garbled or no output.	Incorrect cable connections.	Verify horizontal/vertical BNC cable connections. Verify 15-pin cable connection.
Incorrect video effect in video window.	VT Pro-e project not set up correctly.	Verify correct video effect selected for video window.
Video effect is different than expected.	Wrong effect selected in "Video Properties".	Select correct effect in "Video Properties".
	Analog join value has been set.	Change analog join value to zero (0).
	Default effect is only effect selected in the C2N-DVP4DI Options screen.	Select correct effect in the C2N-DVP4DI **Setup | Options screen**.

C2N-DVP4DI Troubleshooting (Continued)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Pages do not flip.	Join numbers on "Page Properties" in VT-Pro-e not set.	Set join numbers in "Page Properties".
Cresnet does not work after C2N-DVP4DI is plugged into PRO2 control system.	C2N-DVP4DI is set to master mode.	Set C2N-DVP4DI to slave mode via Viewport.
Viewport displays the following message: Warning: another CTP port is open. Type KILLSOCKET CTP1 to kill connection.	Two Viewport sessions are open, or Viewport and Test Manager are open.	Close one session of Viewport or Test Manager.*
C2N-DVP4DI does not respond to ping command.	IP address not correct (LAN green and amber LEDs are off).	Assign correct IP address to C2N-DVP4DI.
	IP mask not correct (LAN green and amber LEDs are on).	Assign correct IP mask.
Mouse or touchpanel does not work.	Incorrect Touch settings.	At C2N-DVP4DI prompt in Viewport, type **touch** to check and adjust settings.
No cursor on screen.	Cursor is set to OFF in Viewport.	At C2N-DVP4DI prompt in Viewport, type **cursor on** to have cursor appear on screen.

* The Test Manager utility is used for testing and debugging a SIMPL Windows program by monitoring the status of selected signals in real time. For additional information, refer to the SIMPL Windows Help file.

Refer to the latest version of the C2N-DVP4DI Reference Guide (Doc. 6177), available from the Crestron website (www.crestron.com), for System Monitor Mode information.

Further Inquiries

If after reviewing this Operations Guide, you cannot locate specific information or have questions, please take advantage of the Crestron award winning customer service team by calling:

- In the US and Canada, call Crestron corporate headquarters at 1-888-CRESTRON [1-888-273-7876].
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- In Asia, call Crestron Asia at +852-2341-2016.
- In Latin America, call Crestron Latin America at +5255-5093-2160.
- In Australia and New Zealand, call Creston Pacific at +613-9480-2999

Firmware Upgrades

To take advantage of all the C2N-DVP4DI features, it is important that the unit contains the latest firmware available. Therefore, please check the Crestron website (http://www.crestron.com/downloads/software_updates.asp) for the latest version of firmware. Not every product has a firmware upgrade, but as Crestron improves functions, adds new features, and extends the capabilities of its products, firmware

upgrades are posted. If you have questions regarding upgrades procedures, contact Crestron customer service.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the C2N-DVP4DI, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website (www.crestron.com) periodically for manual update availability and its subjective value. Updates are available from the Download | Product Manuals section and are identified as an "Addendum" in the Download column.

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