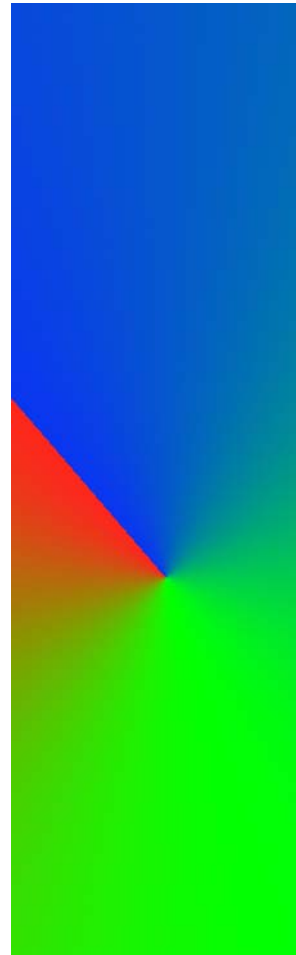


# **View 2+2 User Guide**



**SPECTRUM**



## DOCUMENT

---

- View 2+2 User Guide
- P/N 350-8387
- Revision 1.00, April 21st 2006
- Printed in U.S.A

## COPYRIGHT

---

© 2006 RGB Spectrum, Inc. All rights reserved.

This document, in whole or in part, may not be reproduced, translated or reduced to any machine-readable form without prior written approval from RGB Spectrum, Inc.

Microsoft, Windows and Windows XP are registered trademarks or trademarks of Microsoft Corporation in the United States and or other countries.

## NOTICE

---

RGB Spectrum reserves the right to make any modification to this guide or the information contained herein at any time without notice.

All features, functions, and specifications are subject to change without notice or obligation.

## COMPANY ADDRESS

---

RGB Spectrum  
950 Marina Village Pkwy.  
Alameda, CA 94501

- Telephone: (510) 814-7000
- Fax: (510) 814-7026



## LIMITED WARRANTY

---

RGB Spectrum (RGB) warrants that this product will be free from defects in material and workmanship, under normal use and service when correctly installed and maintained, for a period of one (1) year from date of shipment. RGB's liability under this warranty is limited solely to replacing, repairing or issuing credit for any product which is shown to be defective during the warranty period. Purchaser shall (i) notify RGB Spectrum promptly in writing of any claims, and (ii) provide RGB Spectrum with an opportunity to inspect and test the product claimed to be defective. Warranty does not cover misuse, abuse, improper installation or application, improper maintenance or repair, alteration, accident or negligence in use, improper temperature, humidity or other environmental condition, storage, transportation or handling. RGB Spectrum shall have no obligations under this warranty with respect to any defect unless it receives notice and a description of such defect no later than five (5) business days following the expiration of the warranty period.

THE WARRANTIES STATED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING (BUT NOT LIMITED TO) ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL RGB SPECTRUM BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR LOSS, DAMAGE OR EXPENSE DIRECTLY OR INDIRECTLY ARISING FROM THE PURCHASER'S INABILITY TO USE THE PRODUCT EITHER SEPARATELY OR IN COMBINATION WITH ANY OTHER EQUIPMENT OR FACILITIES, OR FROM ANY OTHER CAUSE.

## EXTENDED WARRANTY

---

An annual extended warranty may be purchased. Should the product fail to operate properly during the covered period, RGB Spectrum will repair the product and restore it to normal operation without charge for labor and parts. For further information on obtaining an extended warranty, email [support@rgb.com](mailto:support@rgb.com) or call (510) 814-7000.



# TABLE OF CONTENTS

Chapter 1 Introduction . . . . . 1

- In This Chapter . . . . . 1
- Product Overview . . . . . 1
- Input and Output . . . . . 2
  - Graphics Inputs . . . . . 2
  - Video Inputs . . . . . 3
  - System Outputs . . . . . 3
- Scan System . . . . . 3
  - Horizontal Scan Rate . . . . . 3
  - Vertical Scan Rate . . . . . 3
  - Progressive Scan . . . . . 3
  - Interlaced Scan . . . . . 3
  - Pixel Rate . . . . . 3
- Control . . . . . 4
- View 2+2 Feature Summary . . . . . 5

Chapter 2 Installation & Setup . . . . . 6

- In This Chapter . . . . . 6
- System Connections . . . . . 7
  - Video Input Connections . . . . . 7
  - Graphics Input Connections . . . . . 7
  - Output Connections . . . . . 7
  - Control Connections . . . . . 8
  - Power Connections . . . . . 8
- Communications . . . . . 8
  - RS-232 Connection . . . . . 9
  - Ethernet Connection . . . . . 9
    - IP Address . . . . . 9
    - Direct Connection . . . . . 9
    - Command Line Network Connection . . . . . 10
  - Launching the Graphical User Interface . . . . . 11
- View 2+2 Setup . . . . . 12



<b>Chapter 3</b>	<b>Operations . . . . .</b>	<b>13</b>
	In This Chapter . . . . .	13
	Web Control Panel (WCP) . . . . .	13
	Control Panel Organization . . . . .	13
	Starting the Web Control Panel . . . . .	14
	Virtual Screen Page . . . . .	15
	Setting Window Position and Size . . . . .	16
	Resetting Window Size . . . . .	16
	Making a Window Full Size . . . . .	17
	Freezing a Window . . . . .	17
	Window Adjustments . . . . .	18
	Selecting a Window Input . . . . .	18
	Graphics Input Selection . . . . .	18
	Video Input Selection . . . . .	19
	Image Adjustments . . . . .	19
	Adjusting Brightness, Contrast, Hue & SaT . . . . .	19
	Sharpness Adjustment . . . . .	20
	Restoring Default Image Settings . . . . .	20
	Selecting a Quad Split Display . . . . .	20
	Setting Window Size & Position . . . . .	21
	Window Enable . . . . .	22
	Window Priority and Overlapped windows . . . . .	22
	Zooming & Pan within a Window . . . . .	23
	Setting the Zoom Level . . . . .	23
	Panning within a Window . . . . .	24
	Window Borders . . . . .	25
	Window Labels . . . . .	26
	Window Presets . . . . .	27
	Background selection . . . . .	28
	Selecting a Solid Color Background . . . . .	28
	Selecting a Shaded Color Background . . . . .	29
<b>Chapter 4</b>	<b>Control Commands . . . . .</b>	<b>30</b>
	In this Chapter . . . . .	30
	Control Overview . . . . .	31
	Command Format . . . . .	31
	Command Line Usage . . . . .	31
	Command Help . . . . .	32
	Predefined Parameter Values . . . . .	32
	Query the Current Setting . . . . .	32
	Parameter Ranges . . . . .	32
	Addressable Commands . . . . .	33
	Optional Parameters . . . . .	33
	Command Summary . . . . .	34
	Command Index . . . . .	34



Input Commands . . . . .	36
Input Command Descriptions . . . . .	37
Timing List Commands . . . . .	39
Timing list Command Descriptions . . . . .	39
Output Commands . . . . .	41
Output Command Descriptions . . . . .	42
Window Commands . . . . .	44
Window Command Descriptions . . . . .	45
Image Control Commands . . . . .	54
Image Control Command Descriptions . . . . .	55
Serial Port Commands . . . . .	56
Serial Port Command Descriptions . . . . .	56
Network Commands . . . . .	57
Network Command Descriptions . . . . .	57
Miscellaneous Commands . . . . .	59
Miscellaneous Command Descriptions . . . . .	60
Timing Parameters . . . . .	64
Factory Timing List . . . . .	66

**Chapter 5                   Advanced Setup . . . . .                   68**

In This Chapter . . . . .	68
Web Control Panel . . . . .	68
Starting the Web Control Panel . . . . .	68
SetUp Controls . . . . .	69
System Settings . . . . .	69
Serial Port Settings . . . . .	70
Network Settings . . . . .	70
Output Settings . . . . .	71
Output Timing . . . . .	71
Selecting New Timing Settings . . . . .	72
Viewing Current Output Timing Settings . . . . .	72
Manually Setting Output Timing . . . . .	72
Interactive Output Timing Adjustment . . . . .	73
Input Settings . . . . .	74
Input Timing . . . . .	74
Loading from the Timing List . . . . .	75
Creating a new Timing Entry . . . . .	75
Interactive Timing . . . . .	75
Input Converter Clock Phase . . . . .	76

**Appendix A                   Technical Specifications . . . . .                   77**

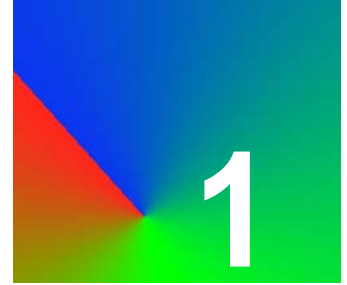
In This Appendix . . . . .	77
System Specifications . . . . .	77
General Specifications . . . . .	78



Digital Input Specifications . . . . .	78
Analog Input Specifications . . . . .	79
Composite Video Input Specifications . . . . .	80
S-Video Input Specifications . . . . .	80
Graphic Output Specifications . . . . .	81
Window Control Specifications . . . . .	81
Control Specifications . . . . .	82
Power and Physical Specifications . . . . .	83
Connectors and Pinouts . . . . .	84
DVI-I Connector . . . . .	84
Connector Type and Pinouts . . . . .	84
Input Cables . . . . .	85
Output Cables . . . . .	85
Composite Video Connector . . . . .	86
Ethernet Connector . . . . .	87
Connector Type and Pinouts . . . . .	87
Standard Cables . . . . .	87
Crossover Cables . . . . .	87
RS-232 Connector . . . . .	88
Connector Type and Pinouts . . . . .	88
Null Modem . . . . .	89

# INTRODUCTION

---



## IN THIS CHAPTER

---

This chapter provides an overview of window systems and features of the View 2+2™ multiple window display product.

## PRODUCT OVERVIEW

---

The View 2+2 is a high performance, compact video windowing system that displays up to four live windows on a single high-resolution display.

Two of these windows provide a choice between the following types of input signals:

- RGB / YP<sub>b</sub>P<sub>r</sub> component
- DVI
- Composite video
- S-Video

The other two windows provide a choice between the following types of input signals:

- Composite video
- S-Video



Text, graphics and video windows displayed simultaneously

**Figure 1-1. View 2+2 Displays Four Inputs on a Single Monitor**

The View 2+2 provides both an analog RGB and digital DVI output signal. On your high-resolution display, different types of input sources can be mixed and



matched simultaneously, and each input can be independently scaled, positioned, zoomed and panned.

## INPUT AND OUTPUT

The figure below illustrates a simplified block diagram of the View 2+2, showing the four window inputs and dual format output.

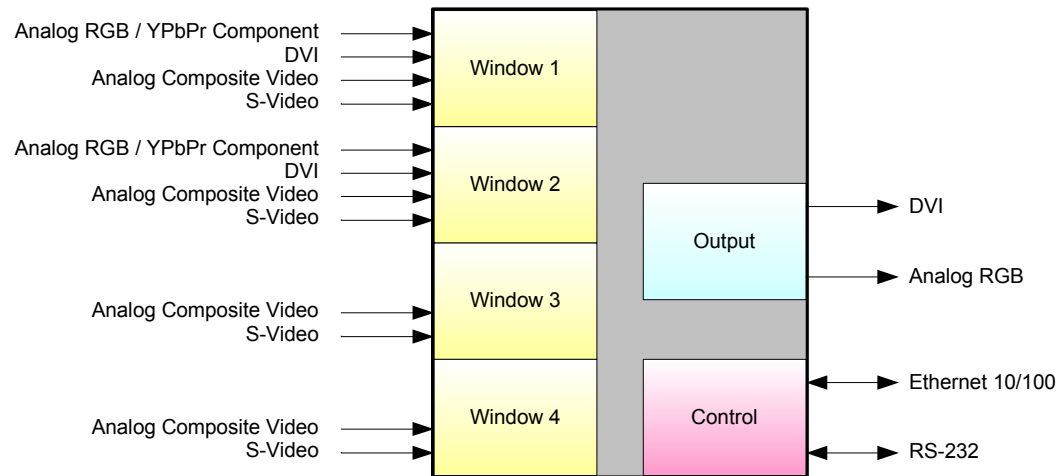


Figure 1-2. View 2+2 Block Diagram

### GRAPHICS INPUTS

Window 1 and Window 2 are configured identically and provide View 2+2 with “universal inputs”. These windows allow dynamic selection between analog or digital graphics inputs, or composite or S-Video input signals. For example, you could connect **RGB** from a PC, **S-Video** from a camera and **Composite** video from a VHS tape deck — all to the Window 1 input connectors, and then switch between them using control commands.

Please note the following important points regarding graphics inputs:

- Analog RGB inputs typically originate from a computer. These inputs can be interlaced or non-interlaced, up to 1920 x 1200 pixel resolution, and refresh rates (or frame rate) up to 100 Hz.
- The system’s computer inputs can be configured with any sync format (sync on green, composite sync, or separate H- and V-drive).
- Standard cables do not provide for simultaneous connection of analog RGB and DVI signals on the same DVI-I connector.

**VIDEO INPUTS**

Window 3 and Window 4 are configured identically and provide View 2+2 with “video inputs”. These windows allow dynamic selection between standard definition broadcast quality (NTSC or PAL) composite or S-Video input signals.

Please note the following important points regarding video inputs:

- Video inputs can originate from devices such as TV cameras, video cassette recorders, DVD players or video teleconferencing systems.
- Automatic selection of NTSC and PAL standards is supported.

**SYSTEM OUTPUTS**

As standard, the system provides both an analog RGB and a digital (DVI) output to the industry standard DVI-I connector. The output image is available simultaneously in both analog and digital form.

All input signals to the View 2+2 are converted to the selected output resolution (adjustable up to 1920 pixels by 1200 lines-165MHz pixel clock), with horizontal scan rates adjustable from 12 to 125 kHz.

**SCAN SYSTEM**

Graphics and video signals used in television and computer systems use a raster scan technique in order to create and display an image. There are two types of raster scanning systems in use, the progressive (or non-interlaced system) and the interlaced scan system. Both of these systems consists of a horizontal and vertical scanning system that are synchronously related. The rate at which the horizontal system works is known as the horizontal scan rate, and the rate at which the vertical system works is known as the vertical scan rate.

**HORIZONTAL SCAN  
RATE**

The View 2+2 supports the range of horizontal scan rates from 12.5 to 125 kHz. Note that the vertical and horizontal scan rates are related by the number of lines per frame.

**VERTICAL SCAN  
RATE**

The View 2+2 supports vertical scan rates from 25 to 100 Hz. Another aspect that needs to be considered is the sample rate. This is related to the horizontal scan rate and the number of pixels per line.

**PROGRESSIVE  
SCAN**

High resolution graphics images typically use a progressive scanning system in which a complete image is made up of a single frame. This is also referred to as non-interlaced scanning. View 2+2 supports the use progressive scan input signals and also generates progressive scan output signals.

**INTERLACED SCAN**

Broadcast video systems typically use a scanning system comprised of two interleaved fields. Two fields make up a single frame. View 2+2 supports interlaced input signals.

**PIXEL RATE**

Pixels are processed and displayed on a sequential basis by the scanning system. The rate at which pixels are scanned is related to the number of pixels per line and the horizontal scanning frequency. The horizontal scanning frequency is in turn related to the number of lines and the vertical scanning (refresh) rate. In the View 2+2 the maximum pixel rate is 165 Msamples/second

which is the highest rate that a single link DVI input can handle.

## CONTROL

The View 2+2 is provided internally with both a Telnet server (for command line control) and a web server (Graphical User Interface). Both of these interfaces are accessed through the **Ethernet** port. Additionally, command line control is supported by a serial RS-232 port. There are no controls on the chassis itself.

- The **RS-232** serial port connects to an ASCII terminal, any computer with a serial port or an external device such as a touchpad. ASCII commands are sent from the terminal or computer to the View 2+2.
- The **Ethernet** port (10/100BaseT) allows multiple View 2+2 systems to be connected to a local area network (LAN) or directly to a PC properly equipped with a network card. Note that direct connection requires the use of an Ethernet hub or Ethernet crossover cable.

A complete description of ASCII commands is provided in the View 2+2 Technical Reference manual.

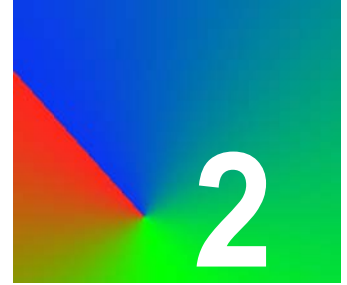
## VIEW 2+2 FEATURE SUMMARY

Following is a concise summary of View 2+2 features:

- Windows
  - ~ Display four windows simultaneously in real time
  - ~ High quality filtering for window resizing
  - ~ Pan, zoom, border, label and freeze each window
  - ~ Continuous scaling up to the full size of the display
  - ~ Windows sized and positioned anywhere on the screen
- Inputs:
  - ~ Supports a wide range of analog RGB inputs with resolutions up to 1920 x 1200 @ 60 Hz frame rate (165MHz max pixel clock).
  - ~ Supports HDTV / YP<sub>b</sub>P<sub>r</sub> input with tri-level sync
  - ~ DVI inputs up to 1920 x 1200 @ 60Hz
  - ~ Video inputs are selectable between S-Video and Composite formats, in both NTSC and PAL video standards
- Outputs:
  - ~ DVI-I output connector supports both DVI and analog signals
  - ~ Analog RGB output up to 1600 x 1200 @ 60Hz
  - ~ DVI output up to 1920 x 1200 @ 60Hz
  - ~ Adjustable output gamma to optimize performance with a variety of display technologies
- Special features:
  - ~ Autosync to input signals
  - ~ Colored backgrounds
  - ~ Export / Import system settings
  - ~ Supports both interlaced and non-interlaced signals
- System:
  - ~ Full 24-bit color processing is used throughout
  - ~ Twenty four user defined window presets
  - ~ System control via serial RS-232 or Ethernet
  - ~ Intuitive graphical user interface
  - ~ Compact 1RU package

# INSTALLATION & SETUP

---



## IN THIS CHAPTER

---

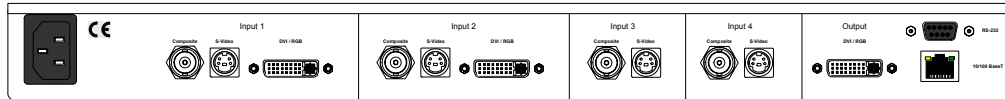
This document provides installation and set up of the View 2+2 systems. The following topics are discussed:

- [System Connections](#)
  - ~ [Video Input Connections](#)
  - ~ [Graphics Input Connections](#)
  - ~ [Output Connections](#)
  - ~ [Control Connections](#)
  - ~ [Power Connections](#)
- [Communications](#)
  - ~ [RS-232 Connection](#)
  - ~ [Ethernet Connection](#)
- [View 2+2 Setup](#)

## SYSTEM CONNECTIONS

All connections to the View 2+2 are located on the rear of the unit. A view of the rear of the unit is shown in the following figure.

NOTE: Before proceeding with this section make sure that the front panel power switch is in the OFF position.



**Figure 2-1. View 2+2 Rear View**

### VIDEO INPUT CONNECTIONS

All windows (Windows 1-4) support the connection of both a composite video signal and an S-Video signal.

- Composite signal
  - ~ BNC connector
- S-Video
  - ~ 4 pin mini-DIN

Connect your input sources as required to the video channels.

### GRAPHICS INPUT CONNECTIONS

Windows 1 and 2 each support the connection of both an analog RGB/YPbPr signal and a digital DVI signal.

- Digital DVI and Analog RGB
  - ~ DVI-I 29 pin Molex connector

Connect your input sources as required to the graphics channels. See [Appendix A](#) page 84 for detailed connector information.

### OUTPUT CONNECTIONS

View 2+2 provides both an analog RGB and a digital DVI output signal using a single connector.

- Digital DVI and Analog RGB
  - ~ DVI-I 29 pin Molex connector

Connect your output device to the output connector. If you are using a device with an analog input note that you will have to use the DVI-I / RGB adapter provided in the View 2+2 accessory kit.

**CONTROL CONNECTIONS**

The View 2+2 can be controlled from either a serial RS-232 control port or a 10/100 BASE-TX Ethernet port.

- RS-232 serial port
  - ~ Female 9 pin sub miniature D connector
- Ethernet 10/100 BASE-T
  - ~ RJ-45 modular connector

To connect View 2+2 to a network, use a standard Ethernet cable. To connect View 2+2 directly to a computer use an Ethernet crossover cable.

Connect your control device to either or both of these control ports. See [Appendix A](#) page 84 for detailed connector information.

**POWER CONNECTIONS**

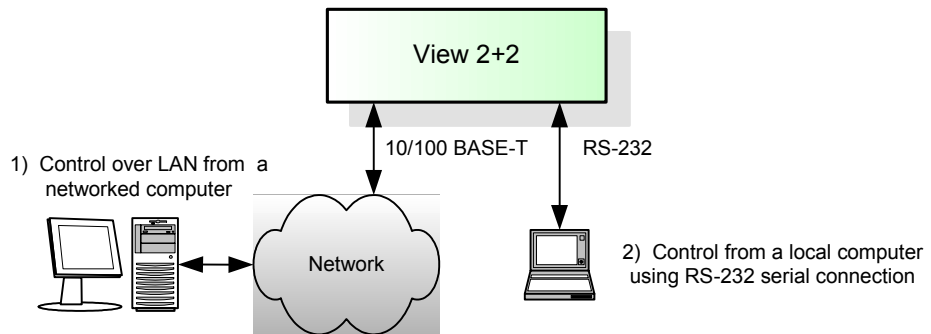
The typical power consumption of a View 2+2 is approximately 30W. Connect to a reliable power source with a voltage between 100 and 240 VAC. Automatic switching between different line voltages is provided.

When all connections have been made, turn on the front panel power switch and proceed to the next section.

**COMMUNICATIONS**

After connecting the communications cables and applying power to the View 2+2 you are ready to control the unit. To operate the View 2+2 you have the choice of using a command line interface or a graphical user interface.

The command line interface may be accessed from either the RS-232 serial port or by a Telnet session from the 10/100 BASE-T port as shown in the figure below.

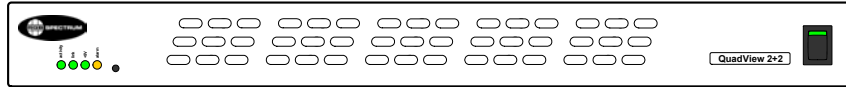


**Figure 2-2. Control system alternatives**

- The **RS-232** serial port connects to an ASCII terminal, any computer with a serial port or an external RS-232 device such as a touchpad. Commands are sent from the terminal or computer to the View 2+2.
- The **Ethernet** port (10/100BaseT) allows a View 2+2 system to be connected to a local area network (LAN) or directly to a PC properly

equipped with a network card. Note that direct connection requires the use of an Ethernet hub or Ethernet crossover cable.

Ethernet status indicators are located on the front of the control panel.



**Figure 2-3. View 2+2 Front Panel**

**RS-232  
CONNECTION**

Command line control can be accomplished using the serial RS-232 port from a PC using a serial terminal emulator, or other control device equipped with a serial RS-232 interface.

The View 2+2 supports baud rates ranging from 9600 to 115 kbaud. The factory default is set at 9600 baud.

Use the following procedure to set up communications with the View 2+2 through the serial control port.

- Connect your control device to the View 2+2 serial port using a serial cable with a 9 pin male connector at the View 2+2 end of the cable.
- Set the communications settings of your control device to the following:
  - ~ Baudrate: **9600**
  - ~ Data bits: **8**
  - ~ Parity: **None**
  - ~ Stop bits: **1**
  - ~ Flow control: **XOn / XOff**
- Press the ENTER key (or issue a CR or CRLF)
- A prompt character ">" should be returned indicating the communications is working.

Hint

If you are using a terminal, type "help" and press the ENTER key to see a list of commands.

- For details on how to change the baud rate or other serial communications settings please refer to the View 2+2 Technical Reference Guide.

**ETHERNET  
CONNECTION**

**IP ADDRESS**

The View 2+2 is configured with a fixed IP address. The default IP address is 192.168.1.200. If you wish to change the IP address see the View 2+2 Technical Reference Guide for information on the IPADDRESS command.

**DIRECT CONNECTION**

Setting up Ethernet communication to the View 2+2 directly requires a slightly different setup procedure than communicating via a network. The majority of local area networks (LANs) are configured to use dynamic IP addressing using a DHCP server to provide network devices with valid, unique IP addresses. When



you connect a computer directly to a View 2+2 via Ethernet, a DHCP server will not be available and you will have to assign the computer to have a fixed IP address.

- Manually set the IP address of the control computer

An IP address is made of two parts known as the network ID and the host ID. The default network ID for View 2+2 is 192.168.1 and the default host ID is 200. The control computer should be assigned an IP address with the same network ID as View 2+2, but a different host ID (for example 192.168.1.201)

- Connect the View 2+2 to the computer (use an Ethernet crossover cable)
- Check that the link and activity indicators on the front panel are active (check Ethernet cable if not)

**COMMAND LINE NETWORK CONNECTION**

Setting up command line communication to the View 2+2 through a network requires the use of a Telnet client. This is a standard item with computer operating systems such as Windows XP. Use the following procedure to set up a command line interface using a network connection:

- Obtain a suitable IP address for the View 2+2 from your network manager.

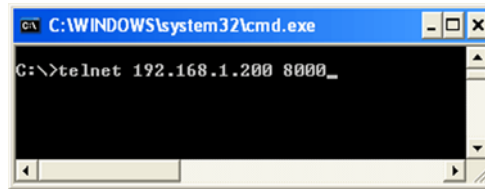
Note

By default the IP address of the View 2+2 is 192.168.1.200. If this is not compatible with your network then it should be changed prior to connecting the View 2+2 to the network. It is recommended that you change the IP address using the IPADDRESS command from the serial port. See the Technical Reference Guide for information on use of the IPADDRESS command.

- If necessary reset the View 2+2 IP address from the serial control port (see note above)
- Connect the View 2+2 to the network
- Check that the link and activity indicators on the front panel are active (check Ethernet cable if not)
- On a Windows OS PC, left click on the *Start* menu and select *Run ...*
- From the Windows command line prompt type the following:

```
telnet <ipaddress> 8000
```

See the following figure for an example using the View 2+2 default IP address.



**Figure 2-4. Opening a Telnet window with View 2+2**

- To verify the connection, type “help” at the View 2+2 prompt in the Telnet window

**LAUNCHING THE  
 GRAPHICAL USER  
 INTERFACE**

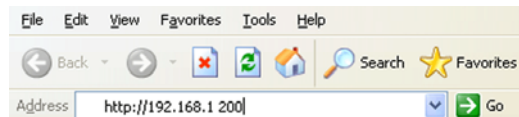
The View 2+2 Web Control Panel (WCP) is a Graphical User Interface providing set up and operational control of the View 2+2 as an alternative to command line control.

**Note**

To use the WCP you will need Java version 1.5.0 or higher. You will find a copy of Java on the CD ROM that was provided with your View 2+2 or it can be downloaded free of charge from the official Sun Microsystems web site <http://www.java.com/en/download/manual.jsp>

Use the following procedure to launch the View 2+2 WCP:

- Check with your network manager to be sure that the default IP address for the View 2+2 is suitable for use on your network. If it is determined that you need to reset the IP address, you will need to use the IPADDRESS command from the command line interface. It is recommended to use the RS-232 serial port for this operation.  
 See the Technical Reference Guide for information on use of the IPADDRESS command
  - Connect the View 2+2 to the network
  - Check that the link and activity indicators on the front panel are active (check Ethernet cable if not)
  - Open a web browser on your PC
  - Type the IP address of the View 2+2 into the web browser address line and click on GO
- ▲ Example: If the IP address of your View 2+2 is 192.168.1.200 enter the address as shown in the figure below.



- Minimize the WCP start up screen so that you can access the WCP Control Panel shown in the figure below



- Click on Set Up to open the Virtual Screen and Set Up menus

## VIEW 2+2 SETUP

Before using the View 2+2, it is necessary to select the format of the output signal to match the needs of the display device that will be connected to the View 2+2 output. Input signals are automatically detected, but in some situations you may want to set the input type manually also. This can be accomplished by the following methods:

- Setup from WCP - see Chapter 5 (page 68) for more details
- Setup from RS-232 or Telnet - see View 2+2 Technical Reference Guide

# OPERATIONS

## IN THIS CHAPTER

This chapter describes how to control the View 2+2 using the Web Control Panel (WCP) graphical user interface. The WCP works with standard web browsers such as Microsoft Internet Explorer.

## WEB CONTROL PANEL (WCP)

### CONTROL PANEL ORGANIZATION

The Web Control Panel is a graphical interface that can be used to set up and operate the View 2+2. Because the WCP interface uses a web server internal to the View 2+2 you will use a standard web browser and do not need to load any special View 2+2 software onto your PC.

The WCP consists of a number of floating GUI screens that you can position anywhere on your screen. These windows are accessed from a GUI screen which is known as the WCP control panel (see Figure 3-1 below).



**Figure 3-1. WCP Control Panel**

The buttons on the control panel open other GUI screens that are used to access View 2+2 control functions. The organization of these functions is shown in Figure 3-2. A brief description of the functions available under each menu is provided in the following section ([Starting the Web Control Panel](#)).

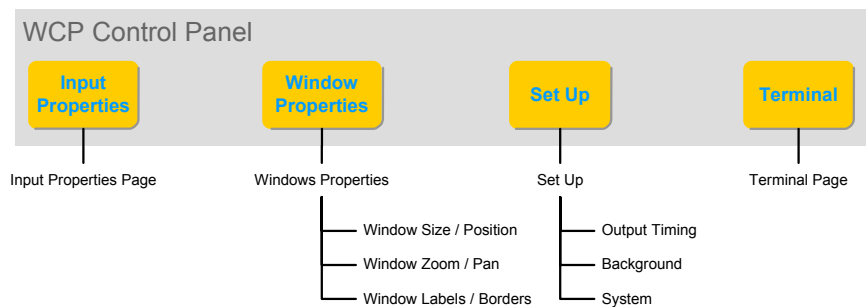
**STARTING THE WEB  
 CONTROL PANEL**

To open the WCP, launch a web browser and enter the IP address for the View 2+2 into the browser address line. The default IP address is 192.168.1.200.

When the browser has connected to the View 2+2 the WCP control panel should appear in the browser window (Figure 3-1).

Note

The control panel is a floating GUI screen and it may be obscured by the browser window. If you don't see the control panel, then minimize the browser window or click on the "RGB" symbol at the bottom of the task bar to bring it to the front of the browser.



**Figure 3-2. WCP Menu selections**

Click on the control panel button to access the following functions:

- **Input Properties**
  - ~ Input timing selection and adjustment
  - ~ Input source selection
  - ~ Image adjustment controls
- **Window Properties**
  - ~ Window size and position
  - ~ Zoom and Pan
  - ~ Window labels and borders
- **Set Up**
  - ~ Set Output Timing (format)
  - ~ Set Output Background
  - ~ Set System parameters
- **Terminal**

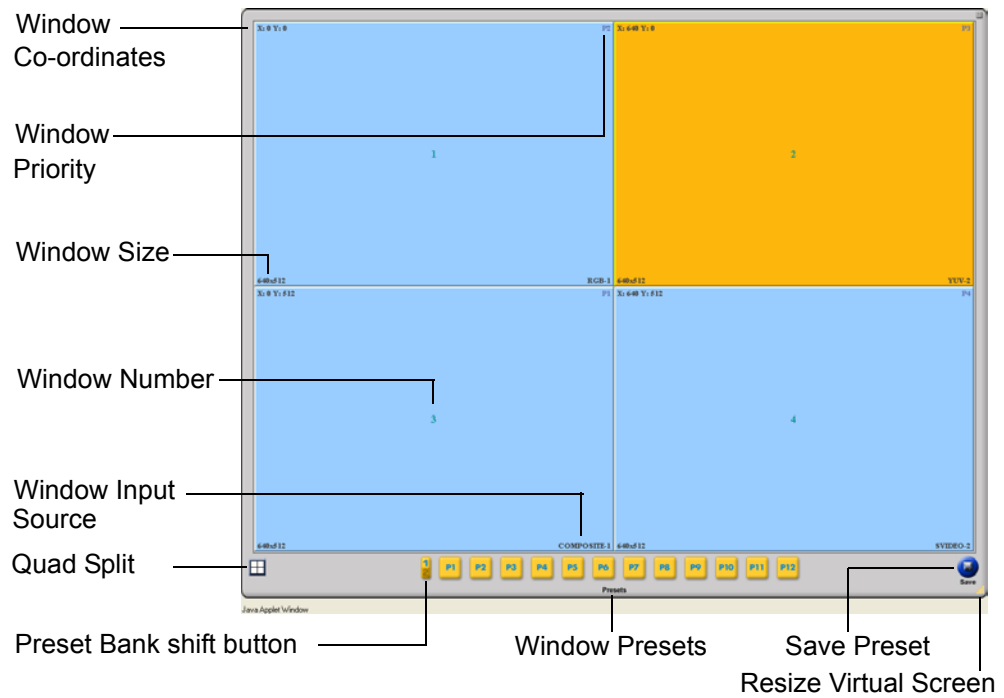
The terminal page captures the list of commands flowing from the WCP to the View 2+2. It may also be used to issue commands.

## VIRTUAL SCREEN PAGE

When you open any GUI screen from the WCP control panel, the Virtual Screen page is automatically launched. This page provides the following functions:

- View of the current window layout
- Interactively move and size individual windows
- Save and Recall window presets

The Virtual Screen Page is shown in the following figure.



**Figure 3-3. WCP Virtual Screen**

Each window is displayed in the virtual screen at the same size and location as on the View 2+2 output. The window currently under control by the WCP is highlighted in yellow/orange. To control a different window, left click in the window desired and the window will be highlighted.

Hint

If one or more windows do not appear on the output (or virtual screen) check that the window is enabled (see [“Window Enable”](#) page 22) and is not obscured by another higher priority window ([“Window Priority and Overlapped windows”](#) page 22).

SETTING WINDOW  
POSITION AND SIZE

Setting size and position of any window on the display screen using the Virtual Screen Page is a simple click and drag operation. To move a window, position the PC cursor over the window (Figure 3-3), left click and drag the window to the new position.

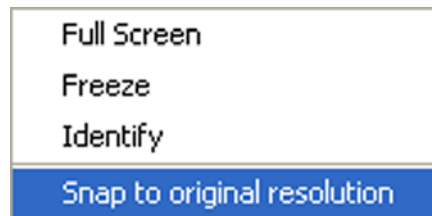
To size a window click and grab the edge of the picture and drag to stretch or shrink the picture. Grab a vertical edge to change the width of the picture, or grab the horizontal edge to change the height of the window. To change the size without changing the aspect ratio grab the corner of the image and stretch or shrink the image as needed.

To move a window that is behind another window, it is necessary to disable the window at the front. Use the Window Enable control ([page 22](#)) to turn off a window that is obscuring a lower priority window.

RESETTING  
WINDOW SIZE

WCP provides a convenient means to restore a window size to its unscaled (native) size. For example if the input signal has a resolution of 1024 x 768, you can set the window size to 1024 x 768 by selecting the “**Snap to original resolution**” option from the WCP virtual screen page.

Using the mouse, right click on the window that you wish to size to the native resolution. A pop up window should be displayed as shown in the figure below



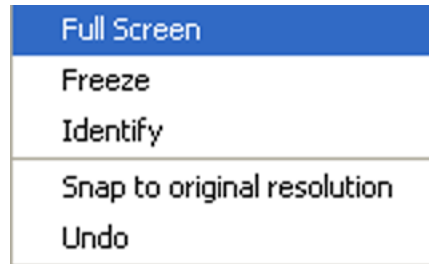
**Figure 3-4. WCP Snap to Original Size control**

Select the **Snap to original resolution** item to reset the window size to turn off scaling and display the image at its native resolution.

**MAKING A WINDOW  
FULL SIZE**

Any window can be set to completely fill the screen. There are two quick methods that can be used to automatically perform this operation.

- 1) Double click in the window that you wish to make full size
- 2) Right click in the desired window and select the **Full Screen** option



**Figure 3-5. WCP Full Screen control**

To return from a full screen display to the previous arrangement of windows, right click in the full screen window and select the **Undo** function.

**FREEZING A  
WINDOW**

WCP provides a means to freeze the contents of any window at the current frame of the input signal.

To freeze a specific window, right click inside the desired window and select the **Freeze** option (Figure 3-5). To unfreeze a window, right click in the window and click on the **Freeze** option to uncheck the **Freeze** function.



## WINDOW ADJUSTMENTS

The **Virtual Screen** drag and drop method provides a quick and easy way to size and move windows. However a more precise method is provided by using the **Window Control Panel**.

This section describes the use of the **Window Control Panel** and also the **Input Properties** page which provides adjustment of window input source and image properties in addition to timing adjustments.

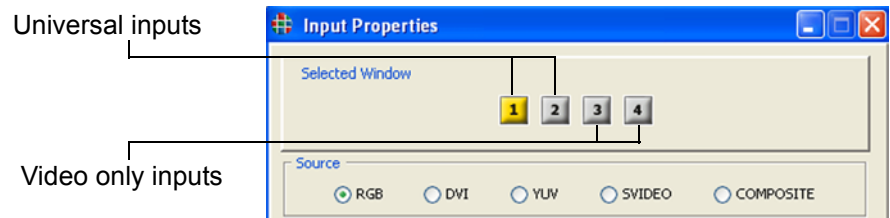
### SELECTING A WINDOW INPUT

The types of inputs signals that can be accepted is dependent upon the individual windows. Windows 1 and 2 have “universal” inputs and support both graphics and video input types. Windows 3 and 4 support video signal types.

#### GRAPHICS INPUT SELECTION

From the View 2+2 Control Panel screen click on the **Input Properties** button and the **Input Properties** page will be displayed.

The top portion of this page contains the input selection (**Source**) section of the page as shown in Figure 3-6.



**Figure 3-6. WCP Input Properties (Input Selection/Universal Section)**

The currently selected window is indicated by the highlighted (yellow) **Selected Window** button. To select a different window click on the desired **Selected Window** button.

Click the **Source** radio button for the desired input signal type.

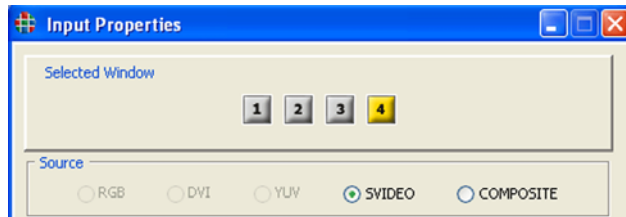
Note

Inputs 1 and 2 support all input signal types. Inputs 3 and 4 support video signal types only.

### VIDEO INPUT SELECTION

From the View 2+2 Control Panel screen click on the **Input Properties** button and the **Input Properties** page will be displayed.

The top portion of this page contains the input selection (**Source**) section of the page as shown in Figure 3-7



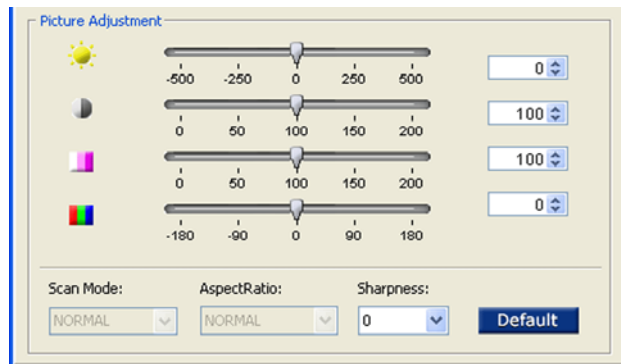
**Figure 3-7. WCP Input Properties (Input Selection/Video Section)**

The currently selected window is indicated by the highlighted **Selected Window** button. To select a different window click on the desired **Selected Window** button.

Click the **Source** radio button for the desired input type.

### IMAGE ADJUSTMENTS

View 2+2 provides image adjustments for both graphics and video windows. The image adjustment controls are located at the bottom of the **Input Properties** page.



**Figure 3-8. WCP Input Properties (Image Adjust Section)**

### ADJUSTING BRIGHTNESS, CONTRAST, HUE & SAT.

The image adjust section provides slider controls for the following image parameters:

- Brightness
- Contrast
- Hue
- Saturation

Use the following procedure to change the image settings for any window.

- Open the **Input Properties** page
- Choose the desired window by clicking on the window select button in the **Select Window** section (see [Figure 3-6](#) and [Figure 3-7](#))
- Use the appropriate slider controls to adjust Brightness, Contrast, Hue and Saturation

**OR**

- Use the spin box at the end of each slider to numerically enter the required value for the desired parameter.

#### SHARPNESS ADJUSTMENT

A sharpness adjustment is provided enabling the user to soften or sharpen the image in any window.

Use the following procedure to change the image settings for any window.

- Open the **Input Properties** page
- Choose the desired window by clicking on the window select button in the **Select Window** section (see [Figure 3-6](#) and [Figure 3-7](#))
- Use the **Sharpness** drop down box to select the desired degree of sharpness.

Note that negative values of the **Sharpness** control will soften the image and positive values will enhance the sharpness of an image.

#### RESTORING DEFAULT IMAGE SETTINGS

To restore all image settings to the default values click on the Default button at the bottom of the **Image Adjust** section of the **Input Properties** page ([Figure 3-7](#)). Note that this is not an undo function and will restore the default values for all of the Image Adjust settings.

#### SELECTING A QUAD SPLIT DISPLAY

In addition to providing the ability to set windows to an arbitrary size or position the View 2+2 provides a convenient way to set up a Quad Split display. A Quad Split display is a pre-defined arrangement of windows which places the individual windows to exactly fill the four quadrants of the output display. To select this feature click on the **Quad Split** icon at the lower left hand section of the **Virtual Screen** page (Figure 3-3).

To set any of the windows to full screen display, double click in the desired window (see [Making a Window Full Size](#) on page 17).

An alternate short cut method is also provided to select the Quad Split display mode using the right click mouse technique. To access this feature right click in any unused portion of the Virtual Screen and select the "Quad View" option.

SETTING WINDOW  
SIZE & POSITION

In addition to changing size and position using the Virtual Screen page (see [Virtual Screen Page](#) on page 15), the size and position of windows can be adjusted using the Window Control, Size and Position page as shown in the following figure.



**Figure 3-9. WCP Window Properties page - Size and Position**

To set the size and position of a window use the following procedure:

- Click on the WCP control panel (Figure 3-1) “**Window Properties**” button
- Click on the **Size and Position** Tab on the **Windows Properties** page (Figure 3-9)
- Select the desired window using the **Selected Window** buttons at the top of the **Size and Position** Page
- Use the **Width and Height** size spin boxes to set the width and height of the window as required

Note that you can directly enter the numeric values directly into the spin box. Complete the entry by pressing the keyboard **ENTER** key

- To set the position, use the **Position X and Y** spin boxes as required. Note that you can directly enter the numeric values directly into the spin box. Complete the entry by pressing the keyboard **ENTER** key

#### WINDOW ENABLE

Up to four windows can be displayed at a time.

Individual windows can be turned ON or OFF using the “**Window Enable**” buttons at the bottom of any of the **Window Properties** pages. An active (enabled) window is indicated by the green button color. Click on the desired window button to change the state from ON to OFF or OFF to ON.

#### WINDOW PRIORITY AND OVERLAPPED WINDOWS

Windows may be positioned anywhere on the screen and can be placed to overlap other windows. When windows overlap they are layered in order of a user defined priority. The window that appears on the top of all other windows has the highest priority level (priority level 1). To set the priority level of a window, use the following procedure:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Move the cursor to the “**Window Enable and Priority Control**” area at the bottom of the page
- Position the cursor over the **Priority** button that you wish to assign to the window whose priority you wish to change and click and drag the button over the top of the **Priority** button that you are prioritizing. The **Priority** buttons are the blue buttons immediately below the **Window Enable** buttons
- Release the mouse button to drop the **Priority** button on top of the **Priority** button for the appropriate window to complete the setting

Note that when you change the priority of a window, the priority of other windows may be affected. For example if Window 4 currently has the priority level 3, then promoting the window to have a priority level of 1 will demote the priority of all the windows from 2 down to 4.

ZOOMING & PAN  
WITHIN A WINDOW

The image within each window can be zoomed and panned within the window. Zoom and pan are applied to each window independently.

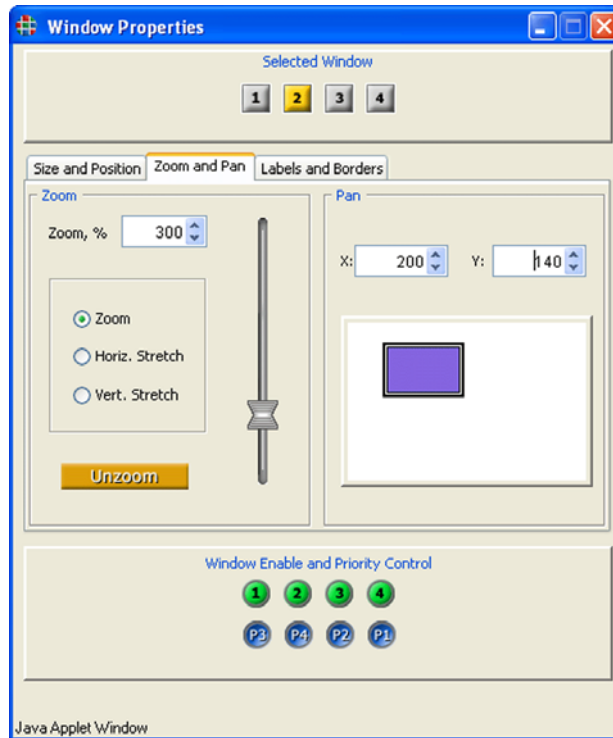


Figure 3-10. WCP Zoom and Pan page

SETTING THE ZOOM LEVEL

Zoom may be applied to the image without affecting the aspect ratio of the image, or can be applied independently to stretch the image in either the vertical or horizontal dimensions. Additionally, both interactive adjustment and numeric entry methods are supported. To zoom using the interactive method use the following procedure:

- Click on the WCP control panel (Figure 3-1) “**Window Properties**” button
- Click on the **Zoom and Pan** tab on the **Windows Properties** page (Figure 3-10)
- Use the **Selected Window** area to select the window that you wish to use by clicking on the desired **Selected Window** button.
- Position the cursor into the **Zoom** pane
- Click and drag the vertical slider to interactively control the zoom  
OR
- Enter the required zoom factor into the zoom entry window

If you wish to reset the zoom so that it is fully zoomed out click on the **Unzoom** button at the bottom of the **Zoom** pane.

The **Zoom** control may also be used to stretch the image vertically or horizontally within the window. Check the **Horiz. Stretch** or **Vert. Stretch** radio buttons as required and use the **Zoom** control in the same way as described in the previous section.

#### PANNING WITHIN A WINDOW

When an image is zoomed inside of a window, the image may be panned around inside the window. This may be accomplished interactively (click and drag) or numerically by entering X and Y position into the pan numeric entry buttons.

Note

Set the zoom factor first before panning inside the window. An image that is “unzoomed” cannot be panned inside the window.

To pan using the interactive method use the following procedure:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Click on the **Zoom and Pan** tab on the **Windows Properties** page (Figure 3-10). Use the **Selected Window** area to select the window that you wish to use by clicking on the **Selected Window** button.
- Position the cursor into the **Pan** pane
- Click and drag the colored box inside the **Pan** pane to move the image inside the window

OR

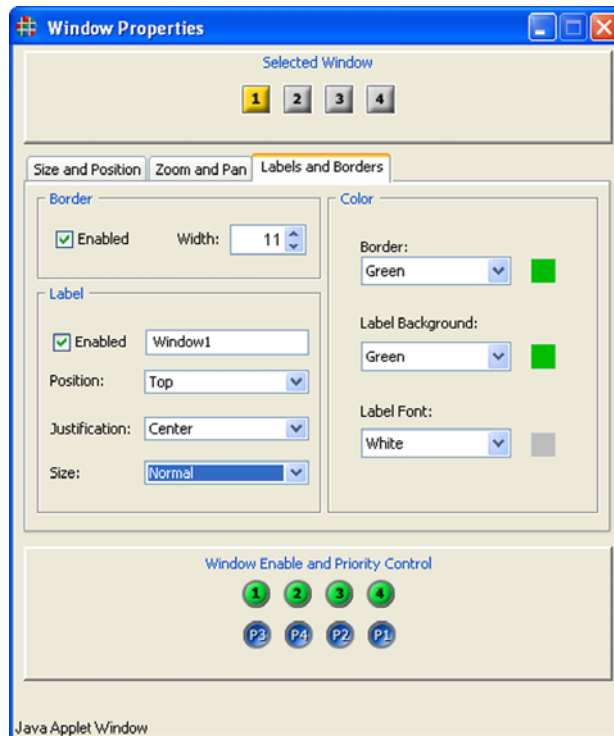
- Enter the pan X and Y co-ordinates into the **Pan X** and **Pan Y** entry windows.

WINDOW BORDERS

A colored border may be applied around each window by using the **Labels and Borders** page of the Windows Control Panel.

Important

Borders should not be used with overlapping windows.



**Figure 3-11. WCP Labels and Borders page**

To set up a border around a window use the following procedure:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Select the **Window Label and Borders** tab (Figure 3-11)
- Set the border width as desired using the **Width** spin box control or enter the value directly into the spin box
- Click the **Border Enabled** check box to turn on the border

Note

You must set a value greater than zero in the border width box before checking the **Border Enable** box.



To change the border color around a window use the following procedure:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Select the **Window Label and Borders** tab (Figure 3-11)
- Select a pre-defined color from the **Border Color** drop down selector  
OR
- Click on the colored swatch to the right of the **Border Color** drop down selector to access the color chooser window.
- Select the required color
- Click the OK button or cancel if you do not want to change the color

Note

The border color is set identically for all windows. It is not possible to set the border color differently for different windows. Labels can be assigned independently for each window.

## WINDOW LABELS

A label may be applied to each window independently by using the **Windows Labels and Borders** page of the Windows Control Panel. Use the following procedure to enter a label text:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Select the **Window Label and Borders** tab (Figure 3-11)
- Select the desired window using the associated **Selected Window** button
- Enter the label text into the **Label** entry box. The label may be up to 23 characters in length and may consist of any readable ASCII characters including the space character
- Click the **Label Enabled** check box

The label may be positioned above or below the window. You may also choose to position in the center, or justified to the left or right edge of the window. To change the position use the following procedure:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Select the **Window Label and Borders** tab (Figure 3-11)
- Select the desired window using the associated **Selected Window** button
- Use the **Position** drop down selector to choose Top or Bottom position as required
- Use the **Justification** drop down selector to choose Left, Center, or Right position as required

Use the following procedure to select the font size:

- Click on the WCP control panel (Figure 3-1) **Window Properties** button
- Select the **Window Label and Borders** tab (Figure 3-11)

- Select the desired window using the associated **Selected Window** button
- Use the **Size** drop down selector to choose between Normal or Large font size

## WINDOW PRESETS

The current setting of windows including position, size, borders and labels can be stored in any of twenty four (24) **Window Preset** registers. These are stored in non-volatile memory so that you can recall them at any time without fear of losing them due to loss of power. When the power is restored, the **Window Presets** will be available for you to recall all the favorite settings that you have stored.

Note

The twenty four presets are arranged in two banks of twelve. To access the second bank (presets 13-24) click on the **Preset Bank Shift** key (Figure 3-12).

The Windows Preset controls are located at the bottom of the Virtual Screen page (Figure 3-3)



**Figure 3-12. WCP Window Preset controls**

To save the Window settings to a **Window Preset** register, use the following procedure:

- Make all the window settings that you require using the procedures detailed in previous sections.
- Click the **Save** button at the bottom right of the Virtual Screen page
- Click the **Preset** button that you wish to use to save your current settings into
- A Preset Name dialog box will appear inviting you to name the Preset. Enter a name and click OK

Preset contents include windows size and position, input signal type, image adjustments, border width, color and label information

To recall the Window settings from a Window Preset register use the following procedure:

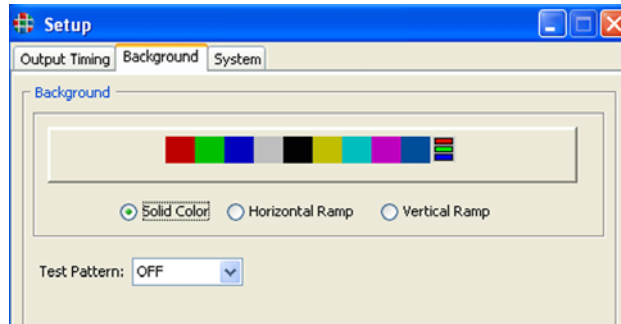
- Click the Preset button that you wish to recall your settings from. If the Preset contains window settings it will be recalled immediately. There will be no action if the Preset is empty

Hint

Position and hold (hover) the mouse cursor over a preset button to display the preset name.

## BACKGROUND SELECTION

View 2+2 provides a choice of background colors that are displayed behind the windows. Selection of background type is accomplished from the **Setup Menu**.



**Figure 3-13. WCP Background page**

Backgrounds may be either a solid color or shaded from top to bottom or left to right.

### SELECTING A SOLID COLOR BACKGROUND

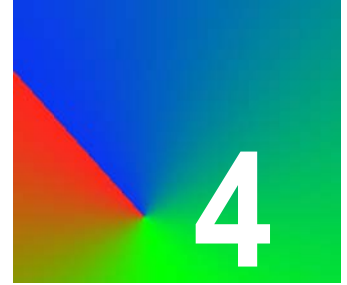
You have the choice of selecting either a pre-defined color background, or a custom color background. Use the following procedure to select a pre-defined background color:

- Click on the WCP control panel (Figure 3-1) **Set Up** button
  - Select the **Background** tab (Figure 3-13)
  - Click the **Solid Color** radio button
  - Choose a color
    - ~ To choose a standard color, click on the colored button desired to choose the background color
- OR**
- Use the following procedure to select a custom color:
- ~ Click on the "R,G,B" colored button at the right end of the row of colored buttons
  - ~ Using the pop-up color entry dialog box that appears to set the background color
  - ~ Click OK to accept the new color or **Cancel** to continue with the current setting.



# CONTROL COMMANDS

---



## IN THIS CHAPTER

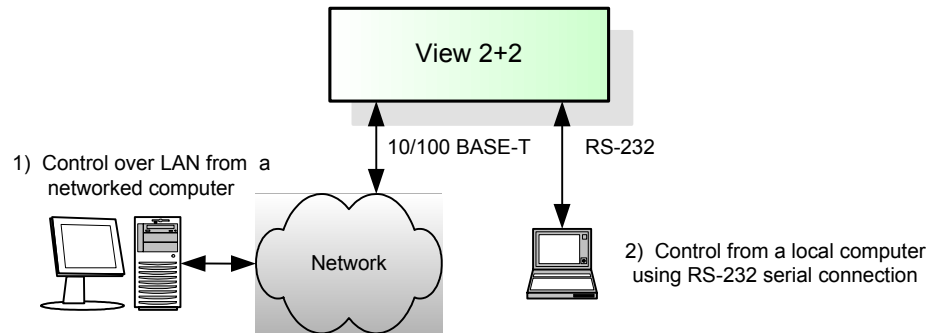
---

This chapter discusses View 2+2 control commands that provide access to all of the unit's functions. The following topics are discussed:

- [Control Overview](#)
- [Command Format](#)
- [Command Summary](#)
- [Input Command Descriptions](#)
- [Timing list Command Descriptions](#)
- [Output Command Descriptions](#)
- [Window Command Descriptions](#)
- [Image Control Command Descriptions](#)
- [Serial Port Command Descriptions](#)
- [Network Command Descriptions](#)
- [Miscellaneous Command Descriptions](#)

## CONTROL OVERVIEW

View 2+2 may be controlled externally via RS-232, or via the unit's Ethernet 10/100BASE-T port, as shown in the figure below.



**Figure 4-1. View 2+2 Control Alternatives**

## COMMAND FORMAT

All View 2+2 control functions are issued via ASCII commands that are used to set one or more system parameters (or values). Typically, View 2+2 is controlled by a PC or laptop.

### COMMAND LINE

#### USAGE

All commands take the following form:

```
COMMANDNAME <value1> <value2>...
```

... and completed by pressing **Enter**.

Parameter values are shown in angle brackets < >. In the above example, value1, value2 (etc.) are *required* parameters specific to the stated command.

▲ **Example:** Set View 2+2's baud rate to 9600 bps:

```
BAUDRATE 9600
```

The majority of commands have both long and short forms:

- The long form version is an easily understood word (or the concatenation of two or more words).
- The short form version is a brief, one to seven letter abbreviation of the command.

#### Note

With the exception of several “interactive” functions, commands are not case sensitive. In the **Command Set List**, upper case characters in the long form version indicate the letters required for the short form version.

In the example above, the command “BAUDrate” could be entered in many ways including:

```
BAUDRATE
baudrate
BAUD
baud
```



To execute commands, each command line must be followed by a carriage return (pressing **Enter**).

### COMMAND HELP

#### ▲ Commands: “[Help](#)”

There are two primary ways to use the View 2+2's help feature:

- Type `HELP` to list all View 2+2 commands.
- Type `HELP` followed by the command to get command-specific help.

▲ **Example:** Type `H BRI` to get help on the **Brightness** function.

▲ **Example:** Type `H WSR` to get help on the **Window Source Rectangle** function

### PREDEFINED PARAMETER VALUES

Some commands have predefined values, and only these may be used as parameter choices. Predefined parameter choices are indicated as

```
<value1|value2|value3>
```

▲ **Example:** The choices for `BAUDrate` are:

```
<9600 | 19200 | 38400 | 57600 | 115200>
```

### QUERY THE CURRENT SETTING

When a command is entered without any parameters, View 2+2 reports back the current settings of the selected parameter.

▲ **Example:** What is the current baud rate setting ?:

```
BAUDrate
```

would return:

```
9600
```

### PARAMETER RANGES

Parameter values may be a range of values or a defined set of choices (as described above in the “[Predefined Parameter Values](#)” section).

Ranges are indicated as:

```
<value1...value2>
```

▲ **Example:** The value of `BRIght` is a range of

```
<-500...500>
```

## ADDRESSABLE COMMANDS

Commands such as `BAUDrate` do not need an explicit address, as the View 2+2 has only a single serial port. However, other commands can be applied to several destinations. For example the “brightness” command can apply to all View 2+2 inputs or to an individual input — depending upon how the command sequence is structured.

An individual destination is indicated by the parameter such as `<input#>`, and is typically the first parameter following the command name.

▲ **Example:** Set window #1’s brightness value to 50:

```
BRight 1 50
```

Many commands allow the use of the optional modifier `ALL` which enables you to set all applicable destinations with one command. The command parameter will then be indicated in the following form:

```
<window#|ALL>
```

The `ALL` modifier is useful for setting all input channels to the same value.

▲ **Example:** Set the brightness value of all windows to 0:

```
BRight ALL 0
```

## OPTIONAL PARAMETERS

Some commands have optional parameter values that are *not required* in a command. These discretionary values are indicated by square brackets `[]`:

```
COMMAND <value> [<value2>]
```

`AspectRatio` is a command with optional parameters. In this example, `<value>` is a required parameter and `[<value2>]` is optional:

```
AR <input #> [NORMAL | WS1 | WS2 | WS3 | WS4]
```

In this case, the command may be used to query the `AspectRatio` settings by using only the window #.



## COMMAND SUMMARY

This section provides a hyperlinked index of all View 2+2 commands in alphabetical order. Click the hyperlink to go directly to a detailed description of the associated command.

### COMMAND INDEX

<a href="#">AspectRatio</a>	<a href="#">BackGroundSouRCe</a>
<a href="#">BAUDrate</a>	<a href="#">BRlght</a>
<a href="#">CONTrast</a>	<a href="#">ECHO</a>
<a href="#">FReeZe</a>	<a href="#">FullScreen</a>
<a href="#">GAMma</a>	<a href="#">HANDShaking</a>
<a href="#">Help</a>	<a href="#">HOSTNAME</a>
<a href="#">HUE</a>	<a href="#">INputAutoSync</a>
<a href="#">INputFormat</a>	<a href="#">INputINteractive</a>
<a href="#">INputLOAD</a>	<a href="#">INputNAME</a>
<a href="#">INputPHASE</a>	<a href="#">INputSAVE</a>
<a href="#">INputSouRCe</a>	<a href="#">INputTiMing</a>
<a href="#">IPADDRESS</a>	<a href="#">IPGateWay</a>
<a href="#">IPSubNET</a>	<a href="#">MACADDRESS</a>
<a href="#">OutPutENable</a>	<a href="#">OutPutREF</a>
<a href="#">OutPutTiMing</a>	<a href="#">OutPutTiMing INteractive</a>
<a href="#">OutPutTiMingLOAD</a>	<a href="#">OutPutTiMingNAME</a>
<a href="#">OutPutTiMingSAVE</a>	<a href="#">PAN</a>
<a href="#">POSition</a>	<a href="#">PRlarity</a>
<a href="#">QuadView</a>	<a href="#">RECALLCONFIGuration</a>
<a href="#">RestoreFactoryDefaults</a>	<a href="#">SATuration</a>
<a href="#">SAVECONFIGguration</a>	<a href="#">SETRATE</a>
<a href="#">SETTINGSiMPORT</a>	<a href="#">SETTINGSEXPORT</a>
<a href="#">SHARPNess</a>	<a href="#">SIZE</a>
<a href="#">SYStemINFO</a>	<a href="#">SYStemReSeT</a>
<a href="#">SYStemTIME</a>	<a href="#">TestPattern</a>
<a href="#">TiMingDElete</a>	<a href="#">TiMingLIST</a>
<a href="#">TiMingLISTCLEAR</a>	<a href="#">TiMingLISTSAVE</a>
<a href="#">UNZOOM</a>	

COMMAND INDEX (CONTINUED)

<a href="#"><u>UpdateFirmWare</u></a>	<a href="#"><u>VERsion</u></a>
<a href="#"><u>WindowBorderCOLOR</u></a>	<a href="#"><u>WindowBorderWIDTH</u></a>
<a href="#"><u>WInDowDestinationRectangle</u></a>	<a href="#"><u>WInDowDestinationRectangleRELative</u></a>
<a href="#"><u>WInDowENable</u></a>	<a href="#"><u>WInDowIdentify</u></a>
<a href="#"><u>WindowLabelBackGroundCOLOR</u></a>	<a href="#"><u>WindowLabelICOLOR</u></a>
<a href="#"><u>WindowLabelENable</u></a>	<a href="#"><u>WindowLabelJUSTification</u></a>
<a href="#"><u>WindowLabelNAME</u></a>	<a href="#"><u>WindowLabelIPOSition</u></a>
<a href="#"><u>WindowLabelSIZE</u></a>	<a href="#"><u>WindowPresetDELEte</u></a>
<a href="#"><u>WindowPresetLIST</u></a>	<a href="#"><u>WindowPresetLISTCLEAR</u></a>
<a href="#"><u>WindowPresetLOAD</u></a>	<a href="#"><u>WindowPresetNAME</u></a>
<a href="#"><u>WindowPresetNAME</u></a>	<a href="#"><u>WindowPresetSAVE</u></a>
<a href="#"><u>WInDowSourceRectangle</u></a>	<a href="#"><u>WInDowSourceRectangleRELative</u></a>
<a href="#"><u>ZooM</u></a>	

## INPUT COMMANDS

Input commands allow you to make input adjustments, and then save these settings into the unit's internal memory. A summary of input commands is listed below. Click the desired command to access detailed instructions.

**Table 4-1. Input Commands Summary**

Command	Description
<a href="#">INputAutoSync</a>	Sets the input mode for the specified input channel.
<a href="#">INputFormat</a>	Checks the video format of the current video input selection.
<a href="#">INputINTERactive</a>	Enters input interactive mode to visually adjust specified input's timing parameters.
<a href="#">INputLOAD</a>	Loads the indicated entry from the Timing List to the specified input channel.
<a href="#">INputNAME</a>	Names the specified input.
<a href="#">INputPHASE</a>	Adjusts the phase of the Analog/Digital Converter to optimize picture quality (RGB/YUV analog only).
<a href="#">INputSAVE</a>	Saves the specified input to the selected entry in the Timing List.
<a href="#">INputSouRCe</a>	Selects the analog or digital graphics source for the specified window.
<a href="#">INputTiMing</a>	Sets the selected input's timing

Refer to the "[Input Command Descriptions](#)" section for a complete description of all input commands.

## INPUT COMMAND DESCRIPTIONS

The table below lists all input commands, their arguments and detailed descriptions.

**Table 4-2. Input Commands Descriptions**

Command	Arguments	Description
<b>INputAutoSync</b>	<input # > [ON   OFF   DEBUG]	Sets the input autosync mode for the specified input. <b>Debug</b> provides information on input status and reports changes to measured parameters. Default: <b>ON</b>
<b>INputFormat</b>	<input #>	Returns the format of the specified input selection (RGB, DVI, NTSC or PAL) Default: N/A
<b>INputINteractive</b>	<input#>	Enters input interactive mode to visually adjust specified input's timing parameters. Starting with the upper-left corner of the image, use these keyboard controls to position the image within the white frame: <ul style="list-style-type: none"> <li><b>i</b> = move up</li> <li><b>m</b> = move down</li> <li><b>j</b> = move left</li> <li><b>l</b> = move right</li> </ul> With the upper-left corner properly adjusted, address the lower-right corner next by using these keyboard controls: <ul style="list-style-type: none"> <li><b>I</b> = move up</li> <li><b>M</b> = move down</li> <li><b>J</b> = move left</li> <li><b>L</b> = move right</li> </ul> With the image properly adjusted, quit the utility: <ul style="list-style-type: none"> <li><b>q</b> = quit</li> </ul> After you have adjusted the input to your satisfaction, use the <b>Input Name</b> command to name your input source, and the <b>Input Save</b> command to store the setting to the Input List.
<b>INputLOAD</b>	<input #> <1...160>	Loads the indicated entry from the Timing List to the specified input channel. Timing list entries from 1 to 99 are reserved for factory defined timing parameters. Entries from 100 to 160 are available for user defined timing entries.  The entry is loaded only if it matches the measured signal parameters — sync format and polarity, interlace state, vertical total, and horizontal frequency.

Table 4-2. Input Commands Descriptions(Continued)

Command	Arguments	Description
<b>INputNAME</b>	<input #> <name>	Names the specified input. The argument can be up to 23 alphanumeric characters with no spaces (use underscore for space). Default: <b>Auto_1</b>
<b>INputPHASE</b>	<input#>[0...63]	Adjusts the phase of the Analog/Digital Converter to optimize picture quality. Applies to Analog RGB inputs only. Default: <b>30</b>
<b>INputSAVE</b>	<input#> <100...160>	Saves the current input timing parameters for the specified input to the selected entry in the Input List. Whenever a signal is applied to the graphics input the signal parameters are measured and compared to entries in the list. When a match is found it is applied to the View 2+2.
<b>INputSouRCe</b>	<input#> [RGB   DVI   YUV COMPOSITE   SVIDeo]	Selects the analog or digital graphics source for the specified window. Default: <b>RGB</b>
<b>INputTiMing</b>	<input #> [<hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact>]   [HFP   HS   HBP   HACT   VFP   VS   VBP   VACT ] [value]	Defines the active area of the input signal and the selected input's timing (RGB and YUV formats). Using this command, the user can set all timing parameters as query or set the value of an individual parameter. For example to query the value of vertical sync width issue the command ' <b>INTM VS</b> '.  Horizontally, the active part of the signal is <b>&lt;hact&gt;</b> . The inactive part (h blanking) is <b>&lt;hfp&gt; + &lt;hs&gt; + &lt;hbp&gt;</b> . The total number of pixels horizontally is <b>htotal = (h blanking) + &lt;hact&gt;</b> . Note that the pixel clock frequency = <b>hfreq x htotal</b> so changing the total horizontal pixel count ( <b>htotal</b> ) will directly change the frequency of the sample clock.  The active part of the vertical component of the signal is <b>&lt;vact&gt;</b> . The inactive part (v blanking) is <b>&lt;vfp&gt; + &lt;vs&gt; + &lt;vbp&gt;</b> . The total number of lines is <b>vtotal = (v blanking) + &lt;vact&gt;</b> . Since View 2+2 measures the total line count of all input signals an error will result if the sum of the active and inactive parts entered in the command do not match the measured total line count.  Refer to the " <a href="#">Timing Parameters</a> " section for details on timing parameters.

**TIMING LIST  
COMMANDS**

View 2+2 uses a timing list that is applicable to both the graphics inputs and outputs. Timing commands are provided to add and delete sets of timing information to the list.

**Table 4-3. Timing List Command Summary**

Command	Description
<a href="#">TiMingDELeTe</a>	Deletes the specified entry from the Timing List.
<a href="#">TiMingLIST</a>	Displays the entire Timing List of saved input timings.
<a href="#">TiMingLISTCLEAR</a>	Deletes all user defined input timing sets.
<a href="#">TiMingLISTSAVE</a>	Saves a complete set of timing parameters to the specified timing list entry.

**TIMING LIST COMMAND DESCRIPTIONS****Table 4-4. Timing list command descriptions**

Command	Arguments	Description
<b>TiMingDELeTe</b>	<100 ... 160>	Deletes the specified timing list entry. Timing list entries 1...99 are reserved for factory specified timing and may not be deleted. Default: N/A
<b>TiMingLIST</b>	[<1 ... 160> <1 ... 160>]   [ACTIVE]	When issued without an argument this command displays the entire Timing List. Use the optional argument to specify a range of entries to be displayed. The <b>Active</b> argument displays all saved list entries. Default: N/A
<b>TiMingLISTCLEAR</b>	none	Deletes all user defined input timing sets. This does not affect the factory specified timing entries 1...99

**Table 4-4. Timing list command descriptions**

Command	Arguments	Description
<b>TiMingLISTSAVE</b>	<100...160> <name> <hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> <hfreq> <sync> <hpol> <vpol> <il>	<p>Provides the ability for a user to completely define an input signal. This does not require an input signal to be present to do so.</p> <p><b>TiMingLISTSAVE</b> can be used to enter the list entries one by one.</p> <ul style="list-style-type: none"> <li>• The first argument, &lt;100...160&gt; indicates the Timing List entry number in which the timing string is stored.</li> <li>• The second argument, &lt;name&gt;, gives a customized name to the signal.</li> <li>• The next eight arguments, &lt;hfp&gt; &lt;hs&gt; &lt;hbp&gt; &lt;hact&gt; &lt;vfp&gt; &lt;vs&gt; &lt;vbp&gt; &lt;vact&gt;, define the signal timing.</li> <li>• The next five arguments, &lt;hfreq&gt; &lt;sync&gt; &lt;hpol&gt; &lt;vpol&gt; &lt;il&gt;, define the horizontal frequency, sync format and polarity, and interlace type.</li> </ul> <p>All 15 arguments must be supplied for the command to be valid. Note that an incomplete or invalid timing entry will be rejected.</p>

**OUTPUT  
COMMANDS**

Output commands control the View 2+2's outputs. They define the output timing and sync format, and save, load, and delete timings to the Output List. A summary of output commands is listed below. Click the desired command to access detailed instructions.

**Table 4-5. Output Commands Summary**

Command	Description
<a href="#">BackGroundSouRCe</a>	Select type of background to be displayed.
<a href="#">GAMma</a>	Controls the gamma of the output signal. Simultaneously applied to both analog and digital (DVI) output signals.
<a href="#">OutPutENable</a>	Enable or disable the output.
<a href="#">OutPutREF</a>	Selects the reference timing for the output.
<a href="#">OutPutTiMing</a>	Sets the output timing by parameter or display current output settings.
<a href="#">OutPutTiMing INTeractive</a>	Enters the output interactive timing adjustment mode.
<a href="#">OutPutTiMingLOAD</a>	Sets output display parameters from values stored in Output Timing List.
<a href="#">OutPutTiMingNAME</a>	Assigns a user-defined name to the Output Timing List entry in use.
<a href="#">OutPutTiMingSAVE</a>	Saves the current output timing settings to the specified user timing slot.

Refer to the "[Output Command Descriptions](#)" section for a complete description of all output commands.



## OUTPUT COMMAND DESCRIPTIONS

The table below lists all output commands, their arguments and detailed descriptions.

**Table 4-6. Output Commands Descriptions**

Command	Arguments	Description
<b>BackGroundSouRCe</b>	[<RGBColorVal> <RGBColorVal> <RGBColorVal>]   [WHITE   BLACK   RED   GREEN   BLUE   MAGENTA   CYAN   YELLOW   RedRAMP   GreenRAMP   BlueRAMP   WhiteRAMP   RedHRAMP   GreenHRAMP   BlueHRAMP   WhiteHRAMP]	Select a background image, shaded color background or full field color background.  Solid background colors can be entered using either pre-defined 100% saturated colors (White, Black, Red, Green ...) or as 3 x 8 bit RGB color values.  Use the xxxRAMP commands to select backgrounds that are shaded from top to bottom. For example use the command "BlueRAMP to select a vertical shaded blue background.  Use the xxxRAMP commands to select backgrounds that are shaded from left to right. For example use the command "RedHRAMP to select a horizontal shaded red background.
<b>GAMma</b>	[0.5 ... 2.0]	Sets the output gamma for all output ports. Gamma is a non linear function that is applied to the output image. It is used to match the gamma of the sources to that of the display device. The default setting of 1.0 provides no gamma correction so that the gamma of the displayed image is identical to the gamma of each input image.  Default: 1.0
<b>OutPutENable</b>	[ON  OFF]	Enables or disables the output signal.  Default: ON
<b>OutPutREF</b>	[INT   EDID   DEBUG]	Selects the reference timing for the output format selection. When EDID is selected the View 2+2 determines the output format from the display device connected to the output and automatically loads the timing values to match the requirements of the display. When INT is selected, the timing values are loaded manually by the user from the internal timing list (see <a href="#">OutPutTiMingLOAD</a> ).

**Table 4-6. Output Commands Descriptions(Continued)**

Command	Arguments	Description
<b>OutPutTiMing</b>	[<hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact> [<hfreq> <sync> <hpol> <vpol> <il>]]   [HFP   HS   HBP   HACT   VFP   VS   VBP   VACT   HFREQ   SYNC   HPOL   VPOL   IL] [value]]	This advanced mode sets the output timing by parameter. The command supports the ability to set all parameters at once, or the ability to set (or query) the status of individual parameters.  Refer to the “ <a href="#">Timing Parameters</a> ” section for details on all timing parameters.
<b>OutPutTiMing INteractive</b>	none	Enters the output interactive adjustment mode, enabling you to optimize the output timing values to better suit your display. Once in the interactive mode, a white box and cross hair appear on the output display. Specific keys are assigned to control the position of the upper left, and lower right portions of the image. Note that these keys are case sensitive.  Starting with the upper-left corner of the box, use these keyboard controls:  i = move up m = move down j = move left l = move right  With the upper-left corner properly adjusted, address the lower-right corner next by using these keyboard controls:  I = move up M = move down J = move left L = move right  With the image properly adjusted, quit the utility:  q = quit
<b>OutPutTiMingLOAD</b>	<1...160>	Sets the output display parameters from values stored in the specified Timing List slot. Note that timing list entries 1..99 are reserved for factory defined timing parameters. Entries 100 ..160 are user-defined. Refer to the “ <a href="#">Factory Timing List</a> ” for details on all entries and timings.
<b>OutPutTiMingNAME</b>	[name]	Assigns a user-defined name to the Output Timing List entry currently in use. The name text string can be up to 23 alphanumeric characters with no spaces (use underscore in place of a space).
<b>OutPutTiMingSAVE</b>	<100...160>	Saves the current output timing settings to the specified user timing slot. This is equivalent to using the <a href="#">TiMingLISTSAVE</a> command.

## WINDOW COMMANDS

Window commands cover positioning and visibility functions, and enable you to control the display configuration, zoom and pan operations. A summary of commands is listed below. Click the desired command to access detailed instructions.

**Table 4-7. Window Commands Summary**

Command	Description
<a href="#">AspectRatio</a>	Identifies “letterbox” inputs to display without black borders.
<a href="#">FullScreen</a>	Sets the selected input to a full screen display.
<a href="#">PAN</a>	Pans the image inside the specified window interactively or directly.
<a href="#">POSITION</a>	Enter the interactive position mode for the specified window.
<a href="#">QuadView</a>	Fills each of the outputs from the specified list of inputs.
<a href="#">SETRATE</a>	Sets the amount that a window moves with the <code>Position</code> command.
<a href="#">SIZE</a>	Sets the size of the specified window in interactive or direct mode.
<a href="#">WindowBorderCOLOR</a>	Sets the color of the border for the specified window.
<a href="#">WindowBorderWIDTH</a>	Sets the width of the border for the specified window
<a href="#">WindowLabelBackGroundCOLOR</a>	Sets the color of the label background for the specified window
<a href="#">WindowLabelCOLOR</a>	Sets the color of the label text for the specified window
<a href="#">WindowLabelENable</a>	Enables / disables the label for the specified window
<a href="#">WindowLabelJUSTification</a>	Sets the justification of the label text for the specified window
<a href="#">WindowLabelNAME</a>	Sets the label text for the specified window
<a href="#">WindowLabelPOSITION</a>	Sets the position of the label for the specified window
<a href="#">WindowLabelSIZE</a>	Sets the size of window labels (global)
<a href="#">WindowENable</a>	Enable or disable the specified window.
<a href="#">WindowIdentify</a>	Cause the specified window to flash on/off to identify window position.
<a href="#">WindowPresetDElete</a>	Clears the specified preset register.
<a href="#">WindowPresetLIST</a>	Lists the names of the specified preset.
<a href="#">WindowPresetLOAD</a>	Loads the specified preset into the View 2+2.
<a href="#">WindowPresetNAME</a>	Assigns a name to the specified preset.
<a href="#">WindowPresetSAVE</a>	Saves the current window parameters to the specified preset.
<a href="#">WindowDestinationRectangle</a>	Sets the absolute size and position of the selected window.
<a href="#">WindowDestinationRectangle</a>	Sets the relative size and position of the selected window.

**Table 4-7. Window Commands Summary**

Command	Description
<a href="#">WINDOWSourceRectangle</a>	Sets the area of interest from the selected window.
<a href="#">WINDOWSourceRectangle</a>	Sets the area of interest from the selected window.
<a href="#">UNZOOM</a>	Cancels the current zoom on the specified window
<a href="#">Zoom</a>	Zooms the specified window in interactive or direct mode.

Refer to the “[Window Command Descriptions](#)” section for a complete description of all window positioning and visibility commands.

**WINDOW COMMAND DESCRIPTIONS**

The table below lists all window positioning and visibility commands, their arguments and detailed descriptions.

**Table 4-8. Window Commands Descriptions**

Command	Arguments	Description
AspectRatio	<window #> [NORMAL   WS1   WS2   WS3   WS4]	Identifies inputs with letterbox displays so that they may be displayed without black borders. Use this command when using a wide screen display with letterboxed video. Normal = 1.33:1 WideScreen1 = 1.66:1 WideScreen2 = 1.78:1 WideScreen3 = 1.85:1 WideScreen4 = 2.35:1 Default: <b>NORMAL</b>
FullScreen	<input#   BLACK>	Sizes the selected input to full screen With the <b>BLACK</b> argument, the screen is set to black. Fullscreen is the complementary command to the QUADVIEW command  Default: N/A
PAN	<window #>	Activates the interactive pan function for the selected window. Only a zoomed input can be panned. Controls are listed below:  i = pan up m = pan down j = pan left l = pan right q = quit Default: N/A

**Table 4-8. Window Commands Descriptions(Continued)**

Command	Arguments	Description
PAN	<window #> [<i   j   m   l> <repetition>]	Adjusts the pan applied to the selected window using the immediate mode. Only a zoomed input can be panned. Controls are listed below: <ul style="list-style-type: none"> <li><b>i</b> = pan up</li> <li><b>m</b> = pan down</li> <li><b>j</b> = pan left</li> <li><b>l</b> = pan right</li> </ul> <b>The size of increment is set by the variable repetition (1...100)</b>
POSition	<window #>	Activates the interactive window position function for the selected window. Controls are listed below: <ul style="list-style-type: none"> <li><b>i</b> = move up</li> <li><b>m</b> = move down</li> <li><b>j</b> = move left</li> <li><b>l</b> = move right</li> <li><b>q</b> = quit</li> </ul>
POSition	<window #> [<i   j   m   l> <repetition>]	Adjusts the position of the specified window using the immediate mode. Controls are listed below: <ul style="list-style-type: none"> <li><b>i</b> = move up</li> <li><b>m</b> = move down</li> <li><b>j</b> = move left</li> <li><b>l</b> = move right</li> </ul> <b>The size of increment is set by the variable repetition (1...100)</b>

**Table 4-8. Window Commands Descriptions(Continued)**

Command	Arguments	Description
<b>PRI</b> riority	<window #   ALL> [<1...4>]	<p>Sets the priority of each of the four windows. Priority one is the highest priority level, meaning that a window with priority one appears “in front of” all other windows. No two windows can have the same priority level.</p> <p>If a window’s priority is increased, the window previously at that level moves down one, and if necessary, lower priority windows also move down.</p> <p>The <b>ALL</b> argument allows you to query or change the priority level for all inputs at once. To change the priority of all windows use the optional <b>ALL</b> argument. You need to follow the argument <b>ALL</b> with a list of the window assignment priorities. The list is ordered and the first item in the list has highest priority.</p> <p><b>Example:</b> Set the priority of the windows with the following priorities:          Window 1 = Priority level 2          Window 2 = Priority level 3          Window 3 = Priority level 1          Window 4 = Priority level 4</p> <p>PRI ALL 2 3 1 4</p> <p>Default: PRI ALL 1 2 3 4</p>
<b>Quad</b> View	<1...4> <1...4> <1...4> <1...4>	<p>Scales the four specified inputs (1 ...4) to fill the output with four quadrants. The list is ordered in terms of the output number from 1 to 4.</p> <p><b>Example:</b> Display a quadsplit with the following mappings:          Input 3 to Quadrant 1          Input 4 to Quadrant 2          Input 1 to Quadrant 3          Input 2 to Quadrant 4</p> <p><b>QV</b> 3 4 1 2</p> <p>NOTE: The command will not be executed if the same input number is specified for more than one quadrant number.</p> <p>See also <a href="#">FullScreen</a></p>
<b>SETRATE</b>	<x-rate> <y-rate>	<p>Determines the number of pixels (x-rate) or lines (y-rate) a window will move when using the <b>Size</b> and <b>Pos</b> commands.</p> <p>Default: x = 2, y = 2</p>

**Table 4-8. Window Commands Descriptions(Continued)**

Command	Arguments	Description
SIZE	<window #>	Enters an interactive control of window size for the specified window. <b>s</b> = smaller <b>l</b> = larger <b>q</b> = quit (exit interactive size adjust mode)
SIZE	<window #> [<s   l> <repetition>]	Adjusts the size of the specified window using immediate (direct) mode. <b>s</b> = decrement the window size by the amount defined by repetition variable. <b>l</b> = increment the window size The size of the increment or decrement step is set by by the variable <b>repetition</b> (1...100). For example to reduce the size by 5 increments use the command SIZE s 5
UNZOOM	<window #>	Resets the zoom to normal (100%) for the specified window.
<b>WindowBorderCOLOR</b>	[<red> <green> <blue>]   [WHITE   YELLOW   CYAN   GREEN   MAGENTA   RED   BLUE   BLACK]	Sets the color of the border around all windows. The user can set the color by setting the red, green, blue values (0...255) or using the pre-defined color values White, Yellow, Cyan, Green, Magenta, Red, Blue or Black. Default:
<b>WindowBorderWIDTH</b>	<window #   ALL> [0...100]	Sets the border width around the specified window. The size is set in terms of pixels. To turn the border off set the size to zero. Default: <b>0</b>

Table 4-8. Window Commands Descriptions(Continued)

Command	Arguments	Description
<b>W</b> IN <b>D</b> ow <b>D</b> estination <b>R</b> e <b>ct</b> angle	<window #> <x> <y> <width> <height>[duration: 0.1...128]	<p>Sets both the absolute position and size of a window on the output.</p> <ul style="list-style-type: none"> <li>The &lt;x&gt; and &lt;y&gt; arguments represent the monitor coordinates of the rectangle's top left corner, but hardware limitations may cause the actual placement to differ slightly from that specified. (When you read <b>WDR</b> for any window, the numbers given accurately reflect the hardware state.)</li> <li>The &lt;width&gt; and &lt;height&gt; arguments represent the pixel width and line height of the destination rectangle. <b>width</b> range is 1.. 3840, <b>height</b> range is 1.. 2880.</li> </ul> <p>The rectangle can be positioned and sized so that part of it is positioned off screen. <b>WDR</b> is limited to the output resolution of the View 2+2 (full screen display).</p> <p><b>Example:</b> With an output host resolution of 1024 x 768, set window 4 to full screen:</p> <pre>&gt;WDR 4 0 0 1024 768</pre> <p><b>Example:</b> Place a 100 pixel by 100 line video window at column 300, line 400 on the monitor for input window 12:</p> <pre>&gt;WDR 12 300 400 100 100</pre>
<b>W</b> IN <b>D</b> ow <b>D</b> estination <b>R</b> e <b>ct</b> angle <b>R</b> ELative	<window #> <x: -1.0...4.0> <y: -1.0...4.0> <width:0.0...2.0> <height: 0.0...2.0> [duration:0.1...128]	<p>Sets both the position and size of a window on the output relative to the current size and position.</p> <ul style="list-style-type: none"> <li>The &lt;x&gt; and &lt;y&gt; arguments represent the relative change from the current position.</li> <li>The &lt;width&gt; and &lt;height&gt; arguments represent the pixel width and line height of the destination rectangle. <b>width</b> range is 1.. 3840, <b>height</b> range is 1.. 2880.</li> </ul> <p>The rectangle can be positioned and sized so that part of it is positioned off screen. <b>WDR</b> is limited to the output resolution of the View 2+2 (full screen display).</p> <p><b>Example:</b> With an output host resolution of 1024 x 768, set window 4 to full screen:</p> <pre>&gt;WDR 4 0 0 1024 768</pre> <p><b>Example:</b> Place a 100 pixel by 100 line video window at column 300, line 400 on the monitor for input window 12:</p> <pre>&gt;WDR 12 300 400 100 100</pre>



**Table 4-8. Window Commands Descriptions(Continued)**

Command	Arguments	Description
<b>W</b> indow <b>E</b> nable	<window #   ALL> [<ON  OFF>	Turns the specified window on or off. Note that disabled windows can be moved and sized even though they are not visible.  The <b>WINEN ALL</b> command is used to turn all windows on or off simultaneously. Default: <b>ALL ON</b>
<b>W</b> indow <b>I</b> dentify	<window#>	Identifies the specified window on the output. The output returns to the previous state after a period of approximately 2 seconds.
<b>W</b> indow <b>L</b> abel <b>B</b> ack <b>G</b> round <b>C</b> OLOR	<window #   ALL> [<red> <green> <blue>]   [WHITE   YELLOW   CYAN   GREEN   MAGENTA   RED   BLUE   BLACK]	Sets the color of the background behind the label text for the specified window label. The user can set the color by setting the red, green, blue values (0..255) or using the pre-defined color values White, Yellow, Cyan, Green, Magenta, Red, Blue or Black.
<b>W</b> indow <b>L</b> abel <b>C</b> OLOR	<window #   ALL> [<red> <green> <blue>]   [WHITE   YELLOW   CYAN   GREEN   MAGENTA   RED   BLUE   BLACK]	Sets the color of the text for the specified window label. The user can set the color by setting the red, green, blue values (0..255) or using the pre-defined color values White, Yellow, Cyan, Green, Magenta, Red, Blue or Black.
<b>W</b> indow <b>L</b> abel <b>E</b> nable	<window#   ALL [ON   OFF]	Enables the label for the specified windows. The ALL option provides the ability to enable or disable all labels simultaneously.
<b>W</b> indow <b>L</b> abel <b>J</b> USTification	<window #  ALL>[ LEFT   CENTER   RIGHT]	Positions the label for the specified window to the center or left, and right edges of the window. See also <a href="#">WindowLabelPOSITION</a> for details on positioning vertically.
<b>W</b> indow <b>L</b> abel <b>I</b> NAME	<window #> ["label"]	Defines the label to be applied to the specified window. The label may be up to 23 characters in length.
<b>W</b> indow <b>L</b> abel <b>P</b> OSition	<window #   ALL> [TOP   BOTTOM]	Positions the label for the specified window at the top or bottom of the window. See also <a href="#">WindowLabelJUSTification</a> for details on positioning horizontally.
<b>W</b> indow <b>L</b> abel <b>S</b> IZE	[NORMAL   LARGE]	Selects the font size to be used to be applied to the labels. This is a global command that is applied to all windows.
<b>W</b> indow <b>P</b> reset <b>D</b> ELeTe	<1...24>	Clears the specified preset register.
<b>W</b> indow <b>P</b> reset <b>L</b> IST	<1...24   ALL>	This command preset lists details about the source and destination rectangles saved for each window as well as border size and labels. Empty presets entries are not shown.  Use the argument <b>ALL</b> to list of all preset names.

Table 4-8. Window Commands Descriptions(Continued)

Command	Arguments	Description
<b>WindowPresetLISTCLEAR</b>	(none)	Deletes all the window presets. This command responds with a prompt asking for confirmation to proceed the delete function. Note that there is no undo function for this command.
<b>WindowPresetLOAD</b>	<1...24 >	Loads the specified preset into the View 2+2.
<b>WindowPresetNAME</b>	<1...24> [name]	Assigns a name to the specified preset. The name is a string of up to 23 characters in length and may consist of any readable ASCII character except for spaces. See also: <a href="#">WindowPresetLIST</a> .
<b>WindowPresetSAVE</b>	<1...24 >	Saves the current window source and destination parameters to the specified preset.
<b>WINDOWSourceRectangle</b>	<window #> [<x> <y> <width> <height>] [duration: 0.1...128]	<p>Sets the source rectangle for the input displayed in the selected window. The source rectangle is the portion of the input signal that is displayed on screen.</p> <ul style="list-style-type: none"> <li>By default, <b>WSR</b> is set to show the entire image. That is, the default value for RGB inputs is equal to the HACT and VACT measurements of the specified input signal.</li> <li>For video, <b>WSR</b> defaults to 720x480 for NTSC and 720x574 for PAL.</li> </ul> <p>The source rectangle is used to select the specified portion of an image. The <b>&lt;x&gt;</b> and <b>&lt;y&gt;</b> coordinates represent the coordinate screen starting point from which to draw the supplied values of <b>&lt;width&gt;</b> and <b>&lt;height&gt;</b>.</p> <p>The optional duration parameter sets the time taken to transition from the initial setting to the new coordinates specified by the command.</p> <p><b>Example:</b> To zoom in on the upper left quadrant of an 800x600 input, <b>WSR</b> values are:</p> <pre>wsr &lt;window#&gt; 0 0 400 300</pre> <p><b>Example:</b> To display only the bottom right quadrant, <b>WSR</b> values are:</p> <pre>wsr &lt;window#&gt; 400 300 400 300</pre> <p><b>Example:</b> The full, default source rectangle for this 800x600 input is:</p> <pre>wsr &lt;window#&gt; 0 0 800 600</pre> <p>Note that since the horizontal and vertical size can be adjusted independently, this command can be used to stretch or squeeze an image.</p> <p><b>WSR</b> resets to the default value whenever the signal is acquired or reacquired. That is, if you remove or replace the input signal — or if you change the input type on a single channel (using <b>INputTYPE</b>), then <b>WSR</b> resets to the default values for the newly acquired signal.</p>

Table 4-8. Window Commands Descriptions(Continued)

Command	Arguments	Description
<b>W</b> INdow <b>S</b> ource <b>R</b> ectan <b>g</b> le <b>R</b> ELative	<window #> <x: 0.0...1.0> <y: 0.0...1.0> <width: 0.0...1.0> <height:0.0...1.0> [duration: 0.1...128]	<p>Sets the source rectangle for the selected input relative to the full input window size. Coordinates are expressed in fractions relative to the full input window size. For example use x=1.0, y=1.0 to return set the WSR to the native size of the input window.</p> <p>The optional duration parameter sets the time taken to transition from the initial setting to the new coordinates specified by the command.</p> <p><b>Example:</b> To set the <b>WSR</b> to size of the input window:</p> <pre>wsrrel &lt;window#&gt; 1.0 1.0 1.0 1.0</pre> <p><b>WSR</b> resets to the default value whenever the signal is acquired or reacquired. That is, if you remove or replace the input signal — or if you change the input type on a single channel (using <b>INputTYPE</b>), then <b>WSR</b> resets to the default values for the newly acquired signal.</p>
<b>Z</b> oo <b>M</b>	<window #>	<p>Adjusts the zoom level of the specified window using the interactive Zoom mode.</p> <p><b>Zoom</b> affects the <b>WSR</b> value for the input. Controls are:</p> <ul style="list-style-type: none"> <li><b>i</b> = zoom in</li> <li><b>o</b> = zoom out</li> <li><b>q</b> = quit</li> </ul> <p>Zoom range is to a single pixel.</p> <p><b>Zoom</b> resets to an unzoomed state whenever the signal is acquired or reacquired. For example if you remove or replace the input signal or if you change the input type setting on a single channel (using <b>INputType</b>), then <b>Zoom</b> resets to the default values for the new signal.</p>

**Table 4-8. Window Commands Descriptions(Continued)**

Command	Arguments	Description
<b>ZooM</b>	<window #> [<i   o> <repetition>]	<p>Adjusts the zoom level of the specified window using the immediate (direct) mode. <b>Zoom</b> affects the <b>WSR</b> value for the input.</p> <p><b>i</b> = zoom in by the amount defined by repetition variable.</p> <p><b>o</b> = increment the window size</p> <p>The size of the increment or decrement step is set by by the variable <b>repetition</b> (1...100).</p> <p>For example to reduce the size by 5 increments use the command SIZE s 5</p> <p><b>Zoom</b> resets to an unzoomed state whenever the signal is acquired or reacquired. That is, if you remove or replace the input signal or if you change the input type setting on a single channel (using <b>InputType</b>), then <b>Zoom</b> resets to the default values for the new signal.</p>

**IMAGE CONTROL  
COMMANDS**

Image Control commands adjust parameters such as, brightness, contrast and color. A summary of commands is listed below. Click the desired command to access detailed instructions.

**Table 4-9. Image Control Commands Summary**

Command	Description
<a href="#">BRight</a>	Sets the brightness value of the selected input.
<a href="#">CONTrast</a>	Sets the contrast value of the selected input.
<a href="#">FReeZe</a>	Freeze frame the specified input
<a href="#">HUE</a>	Sets the hue value of the selected input.
<a href="#">SATuration</a>	Sets the saturation value of the selected input.
<a href="#">SHARPNess</a>	Enables or disables the filter for the selected input.

Refer to the "[Image Control Command Descriptions](#)" section for a complete description of all image control commands.

## IMAGE CONTROL COMMAND DESCRIPTIONS

The table below lists all image control commands, their arguments and detailed descriptions.

**Table 4-10. Image Control Commands Descriptions**

Command	Arguments	Description
<b>BR</b> ight	<input#   ALL> <-500...500>	Sets the brightness value of the selected input. The <b>ALL</b> argument sets brightness for all four inputs. Default: 0
<b>CON</b> Trast	<input#   ALL> <0...200>	Sets the contrast value of the selected input. The <b>ALL</b> argument sets contrast for all four inputs. Default: 100
<b>FR</b> eeZe	<input#   ALL> [ON   OFF]	Turns freeze status of the selected window <b>on</b> or <b>off</b> . Changes to the Brightness, Contrast, Saturation, Hue and Filter parameters made during a freeze, will not be applied until after the Freeze is turned off. <b>Note:</b> Any change to the input source, input timing or output timing resets the freeze status to off. Default: <b>OFF</b>
<b>HUE</b>	<input#   ALL> <-180...180>	Sets the hue value of the selected input. Use the <b>ALL</b> argument to set the hue for all inputs simultaneously. Default: 0
<b>SAT</b> uration	<input#   ALL> <0...200>	Sets the saturation value of the selected input. Use the <b>ALL</b> argument to set the hue for all inputs simultaneously. Default: 100
<b>SHAR</b> Pness	<input#> [-5...5]	Sets the sharpness setting for the selected input. Positive values sharpen the image and negative values soften the image. A value of zero sets the sharpness OFF. Default: <b>0</b>

**SERIAL PORT  
COMMANDS**

Serial Port Commands are used to control the baud and echo settings. A summary of commands is listed below. Click the desired command to access detailed instructions.

**Table 4-11. Serial Port Commands Summary**

Command	Description
<a href="#">BAUDrate</a>	Sets the serial port <i>baud</i> rate.
<a href="#">ECHO</a>	Turns the serial echo On/Off.
<a href="#">HANDShaking</a>	Selects hardware or software flow control for the serial port.

Refer to the “[Serial Port Command Descriptions](#)” section for a complete description of all serial port commands.

**SERIAL PORT COMMAND DESCRIPTIONS**

The table below lists all serial port commands, their arguments and detailed descriptions.

**Table 4-12. Serial Port Commands Descriptions**

Command	Arguments	Description
<b>BAUDrate</b>	< 9600   19200   38400   57600   115200 >	Sets the serial port <i>baud</i> rate. The value is automatically saved in NVRAM. Default: <b>9600</b>
<b>ECHO</b>	<ON   OFF>	Turns the serial echo On/Off. The value is saved in the NVRAM. The <b>echo</b> is only present on commands typed and sent to the unit from the serial port. <b>Note:</b> The <b>echo</b> setting has no effect on responses issued by the View 2+2; responses are always visible, regardless of the <b>echo</b> status. Default: <b>ON</b>
<b>HANDShaking</b>	[HW  SW}	Set the serial port flow control mode. Use XON/XOFF flow control in the software flow control mode. Default: <b>SW</b>

## NETWORK COMMANDS

Network Commands control the settings for the View 2+2's Ethernet port. The values used in this section are typically provided by your facility's IT specialist. A summary of commands is listed below. Click the desired command to access detailed instructions.

**Table 4-13. Network Commands Summary**

Command	Description
<a href="#">HOSTNAME</a>	Sets the Hostname for the View 2+2
<a href="#">IPADDRess</a>	Sets the IP address for the View 2+2
<a href="#">IPSubNET</a>	Sets the IP subnet mask for the View 2+2
<a href="#">IPGateWay</a>	Sets the View 2+2's IP default gateway
<a href="#">MACADDRess</a>	Displays the View 2+2 Ethernet MAC address

### NETWORK COMMAND DESCRIPTIONS

The table below lists all network commands, their arguments and detailed descriptions.

**Table 4-14. Network Commands Descriptions**

Command	Arguments	Description
HOSTNAME	[name]	Sets the system host name. The name can be up to 23 characters in length. Use the underscore character in the place of a space.
IPADDRess	[ddd.ddd.ddd.ddd]	Sets the IP address for the View 2+2. To determine the current IP address, enter the command without an IP address. <b>Note:</b> New IP address settings will not be applied until after a system reset. See also <a href="#">IPGateWay</a> and <a href="#">IPSubNET</a> . Default: 192.168.1.200
IPSubNET	[ddd.ddd.ddd.ddd]	Sets the IP subnet mask. This setting may need to be changed to suit the configuration of your network. To determine the current IP subnet setting, enter the command without the subnet mask. Default: 255.255.255.0
IPGateWay	[ddd.ddd.ddd.ddd]	Sets the IP default gateway. This setting may need to be changed to suit your network's configuration. To determine the current IP gateway, enter the command without an address. Default: 192.168.1.1



**Table 4-14. Network Commands Descriptions**

Command	Arguments	Description
MACADDRESS	(none)	Display the current Ethernet MAC address. NOTE: This is a read only command.

MISCELLANEOUS  
 COMMANDS

The Miscellaneous commands category control includes a variety of general View 2+2 functions. A summary of commands is listed below. Click the desired command to access detailed instructions.

**Table 4-15. Miscellaneous Commands Summary**

Command	Description
<a href="#">Help</a>	Displays the entire serial command set or provides help on specific command.
<a href="#">RestoreFactoryDefaults</a>	Restores all user settings to their factory default values.
<a href="#">RECALLCONFIGuration</a>	Recalls configuration parameters that were manually saved.
<a href="#">SAVECONFIGguration</a>	Forces an update and explicit save of the system's NVRAM.
<a href="#">SETTINGSEXPORT</a>	Exports an ASCII file of system settings to the terminal or controller.
<a href="#">SETTINGSIMPORT</a>	Accepts ASCII data relating to system settings.
<a href="#">SYStemINfO</a>	Displays the following information: <ul style="list-style-type: none"> <li>• Product Type</li> <li>• Date of manufacture</li> <li>• Serial number</li> <li>• Firmware revision number</li> <li>• IP settings</li> </ul> Configurations (options)
<a href="#">SYStemReSeT</a>	Performs a system reboot
<a href="#">TestPattern</a>	Turns on the designated TestPattern.
<a href="#">UpdateFirmWare</a>	Updates the firmware for the View 2+2.
<a href="#">VERsion</a>	Returns firmware, hardware revision information.

Refer to the "[Miscellaneous Command Descriptions](#)" section for a complete description of all miscellaneous View 2+2 commands.

## MISCELLANEOUS COMMAND DESCRIPTIONS

The table below lists all miscellaneous commands, their arguments and detailed descriptions.

**Table 4-16. Miscellaneous Commands Descriptions**

Command	Arguments	Description
Help	[<command>]	<b>Help</b> , without an argument, displays the entire serial command set. <b>Help</b> , with a command as an argument, displays detailed information about that command.
RestoreFactoryDefaults	(none)	Restores all user settings to their factory default values and restarts the system.
RECALLCONFIGuration	(none)	Manually recalls (restores) customer configuration parameters that were manually saved by the <b>SaveConfiguration</b> command. <b>Note:</b> The configuration is automatically saved after every change. The system configuration is automatically restored following a power cycle. This command could be used as the user specified alternative to <b>Restore Factory Defaults</b> . See also: <a href="#">SAVECONFIGuration</a> .
SAVECONFIGuration	(none)	Forces an update and explicit save of the system's NVRAM. This is used to provide user defined default settings. <b>Note:</b> These settings are loaded only when the <b>RECALLCONFIGURATION</b> command is used. The configuration that is loaded following a power cycle or <b>SYSRST</b> command represents the state of the machine prior to loss of power, not those saved by the <b>SaveConfiguration</b> command. See also: <a href="#">RECALLCONFIGuration</a> .

**Table 4-16. Miscellaneous Commands Descriptions(Continued)**

Command	Arguments	Description
<b>SETTINGSEXPORT</b>	[TIMING   WINDOW   SYSTEM   ALL] [filename]	<p>This command provides the ability to store View 2+2 settings on to an external computer. This is useful in backing up settings, or providing the ability to “clone” the settings on multiple View 2+2 devices.</p> <p>Storing this data is a two step process.</p> <ul style="list-style-type: none"> <li>• Create a text file named “export.txt” that is stored in View 2+2 memory.</li> <li>• Upload this file to your PC.</li> </ul> <p>NOTE: You can specify your own file name using the optional filename argument.</p> <p>To save timing, window and system parameters together use the ALL option (Issuing the command without an argument will also accomplish this).</p> <p>Alternatively you can save just the TIMING, WINDOW or SYSTEM parameters.</p> <p>If you wish to save only the user defined timing values, use the TIMING argument.</p> <p>If you wish to save only the WINDOW PRESET parameters for each active WINDOW PRESET, use the WINDOW argument.</p> <p>If you wish to save only the SYSTEM parameters for the current SYSTEM settings use the SYSTEM argument (note that this does not include the settings saved in the SAVECONFIG register).</p> <p>To save your settings use the following procedure:</p> <ul style="list-style-type: none"> <li>• Create the file using the SETTINGSEXPORT command from the telnet or serial port.</li> <li>• Log in to the ftp server in View 2+2.</li> <li>• Use the ftp command “get export.txt” to move the file from the View 2+2 to your PC.</li> <li>• Type “close” to log out of the ftp server</li> </ul> <p>See also: <a href="#">SETTINGSIMPORT</a>.</p>

**Table 4-16. Miscellaneous Commands Descriptions(Continued)**

Command	Arguments	Description
<b>SETTINGSIMPORT</b>	[filename]	<p>This command provides the ability to restore or set system settings (or cloning a new system) to match the configuration of a different View 2+2 unit. Accepts the text file created using the <b>SETTINGSEXPORT</b> command. If the filename is not specified, the default filename “export.txt” is assumed.</p> <p>Use the following procedure to import settings from your PC.</p> <ul style="list-style-type: none"> <li>• Log in to the View 2+2 using ftp from your PC</li> <li>• Type the command “put &lt;filename&gt;” to place the file into the View 2+2 memory. (&lt;filename&gt; is the name of the file created using the <b>SETTINGSEXPORT</b> command).</li> <li>• Type “quit” to log out of the View 2+2 ftp server.</li> <li>• From the telnet or serial port issue the command <b>SETTINGSIMPORT &lt;filename&gt;</b>. Note that if you use the default filename “export.txt you do not need to specify the filename.</li> </ul> <p>See also: <a href="#">SETTINGSEXPORT</a>.</p>
<b>SYStemINFO</b>	(none)	<p>Displays the following information:</p> <ul style="list-style-type: none"> <li>• Product name</li> <li>• Product identification</li> <li>• Firmware version number</li> <li>• FPGA version numbers</li> <li>• Manufacturing date</li> <li>• IP address parameters</li> <li>• Serial number</li> </ul>
<b>SYStemReSeT</b>	(none)	<p>Restarts the View 2+2 control system. This will have the same effect as rebooting from power off.</p>
<b>SYStemTIME</b>	[YYYY MM DD HH MM SS]	<p>When time parameters are provided this command sets the internal View 2+2 real time clock. When time parameters are not included will report the current time.</p>
<b>TestPattern</b>	[<OFF   BARS   HBARS   GRID   RAMPS >]	<p>Turns on the designated TestPattern ( ramp, or color bars for example). Use the <b>OFF</b> argument to turn the current TestPattern off.</p> <p>Default: <b>OFF</b></p>

**Table 4-16. Miscellaneous Commands Descriptions(Continued)**

Command	Arguments	Description
UpdateFirmWare	(none)	Loads new firmware into the View 2+2. This is a two step process. <ul style="list-style-type: none"> <li>• The new firmware must be first be downloaded to the View 2+2.</li> <li>• Load the new firmware use the <b>UFW</b> command.</li> </ul>
<b>VER</b> sion	(none)	Returns firmware, hardware revision information.

## TIMING PARAMETERS

The table below lists timing parameters, values and ranges used for both the input and output timing functions. Advanced users can also use the table to assist with values listed in the [“Factory Timing List.”](#)

For example, if you type `INTM <input #>` to query the system’s **Input Timing** values, you will get a string of values (`<hfp> <hs> <hbp> <hact> <vfp> <vs> <vbp> <vact>`) that represent View 2+2’s settings for that input. The table below will greatly assist in clarifying each value’s meaning.

**Table 4-17. Definitions and Ranges for Timing Parameters**

Parameter	Definitions	Ranges	Comments
HFP	Horizontal front porch	0 to 640 pixels	The beginning of the horizontal blanking interval.
HS	Horizontal sync	16 to 640 pixels	The width of the horizontal synchronizing pulse
HBP	Horizontal back porch	0 to 640 pixels	The end of the horizontal blanking interval. The total horizontal blanking = HFP + HS + HBP.
HACT	Horizontal active	16 to 1920 pixels	The active picture interval (non-blanked portion of the image). The total pixel count per line = HACT + HFP + HS + HBP.
VFP	Vertical front porch	0 to 512 lines	The part of vertical blanking prior to the vertical sync.
VS	Vertical sync	2 to 32 lines	The width of the vertical sync period.
VBP	Vertical back porch	0 to 512 lines	The part of the vertical blanking signal following the vertical sync interval.
VACT	Vertical active	12 to 1440 lines	The number of active lines of picture.
VTOT	Total Vertical line count	NA	This parameter is measured by View 2+2. Users may not define this value, but the sum of VFP + VS + VBP + VACT must equal VTOT.
HFREQ	Horizontal frequency in Hz	12.5 to 125 kHz	This parameter is measured by View 2+2. This is a read only parameter for inputs. For outputs HFREQ can be set using this command.

**Table 4-17. Definitions and Ranges for Timing Parameters(Continued)**

Parameter	Definitions	Ranges	Comments
SYNC	Sync format	3, 4 or 5 or "T"	<p>This command applies to analog RGB inputs only.</p> <p>In 3 wire sync systems the H &amp; V sync signals are combined with the Green signal.</p> <p>In 4 wire sync systems the H&amp;V sync signals are combined and transmitted on a dedicated wire.</p> <p>5 wire systems the H &amp; V signals are transmitted on separate dedicated wires.</p> <p>3,4 and 5 wire sync signals are bi-level sync signals. Some HDTV formats use tri-level sync signals (3 wire only). These are indicated using the letter "T".</p>
HPOL	Horizontal sync polarity	1 or 0	<p>The value "1" represents positive sync polarity and the value "0" represents negative sync polarity. Typically the horizontal and vertical sync have the same polarity. Note that three wire sync is always negative polarity.</p>
VPOL	Vertical sync polarity	1 or 0	<p>The value "1" represents positive sync polarity and the value "0" represents negative sync polarity. Note that three wire sync is always negative polarity.</p>
IL	Interlaced/ Noninterlaced	1 or 0	<p>The value "1" represents interlaced scan and "0" represents non-interlaced (progressive) scan. Note that video signals are typically interlaced, and graphics signals are typically non-interlaced.</p>



## FACTORY TIMING LIST

The table below lists all of View 2+2's preset timing format settings. User defined settings can also be added to this list. These settings are used both to match the system's output to that of your display device and also match input timing.

Columns are provided for the timing ID, plus all of the individual parameters such as frequency, sync, polarity, interlace and many more. Refer to the "[Timing Parameters](#)" section for a detailed explanation of each parameter.

Please note:

- Because all parameters can be modified with the "[OutPutTiMing](#)" function, advanced users can "tweak" output settings and then store them in the first ten registers, using the "[OutPutTiMingSAVE](#)" function.
- Custom settings can also be named using the "[OutPutTiMingNAME](#)" function.
- If desired, print this list and keep a record of any user-defined settings that you configure.

**Table 4-18. Factory Timing List**

ID	TYPE	HFP	HS	HBP	HACT	HFRQ	VFP	VS	VBP	VACT	SYNC	HPOL	VPOL	IL
1	VESA 640 x 350 @ 85Hz	32	64	96	640	37.861	32	3	60	350	5	1	0	0
2	VESA 640 x 400 @ 85Hz	32	64	96	640	37.861	1	3	41	400	5	0	1	0
3	VESA 720 x 400 @ 85Hz	36	72	108	720	37.927	1	3	42	400	5	0	1	0
4	VESA 640 x 480 @ 60Hz	16	96	48	640	31.473	10	2	33	480	5	0	0	0
5	VESA 640 x 480 @ 72Hz	24	40	128	640	37.861	9	3	28	480	5	0	0	0
6	VESA 640 x 480 @ 75Hz	16	64	120	640	37.500	1	3	16	480	5	0	0	0
7	VESA 640 x 480 @ 85Hz	56	56	80	640	43.269	1	3	25	480	5	0	0	0
8	VESA 800 x 600 @ 56Hz	24	72	128	800	35.156	1	2	22	600	5	1	1	0
9	VESA 800 x 600 @ 60Hz	40	128	88	800	37.879	1	4	23	600	5	1	1	0
10	VESA 800 x 600 @ 72Hz	56	120	64	800	48.077	37	6	23	600	5	1	1	0
11	VESA 800 x 600 @ 75Hz	16	80	160	800	46.875	1	3	21	600	5	1	1	0
12	VESA 800 x 600 @ 85Hz	32	64	152	800	53.674	1	3	27	600	5	1	1	0
13	VESA 1024 x 768 @ 43 Hz	8	176	56	1024	35.522	0	4	20.5	384	5	1	1	1
14	VESA 1024 x 768 @ 60Hz	24	136	160	1024	48.363	3	6	29	768	5	0	0	0
15	VESA 1024 x 768 @ 70Hz	24	136	144	1024	56.476	3	6	29	768	5	0	0	0
16	VESA 1024 x 768 @ 75Hz	16	96	176	1024	60.023	1	3	28	768	5	1	1	0
17	VESA 1024 x 768 @ 85Hz	48	96	208	1024	68.677	1	3	36	768	5	1	1	0
18	VESA 1152 x 864 @ 75Hz	64	128	256	1152	67.500	1	3	32	864	5	1	1	0
19	VESA 1280 x 768 @ 60Hz	48	32	80	1280	47.396	3	7	12	768	5	1	0	0
20	VESA 1280 x 768 @ 60Hz	64	128	192	1280	47.776	3	7	20	768	5	0	1	0
21	VESA 1280 x 768 @ 75Hz	80	128	208	1280	60.289	3	7	27	768	5	0	1	0
22	VESA 1280 x 768 @ 85Hz	80	136	216	1280	68.633	3	7	31	768	5	0	1	0
23	VESA 1280 x 960 @ 60Hz	96	112	312	1280	60.000	1	3	36	960	5	1	1	0
24	VESA 1280 x 960 @ 85Hz	64	160	224	1280	85.938	1	3	47	960	5	1	1	0
25	VESA 1280 x 1024 @ 60Hz	48	112	248	1280	63.981	1	3	38	1024	5	1	1	0
26	VESA 1280 x 1024 @ 75Hz	16	144	248	1280	79.976	1	3	38	1024	5	1	1	0
27	VESA_1280 x 1024 @ 85Hz	64	160	224	1280	91.146	1	3	44	1024	5	1	1	0

ID	TYPE	HFP	HS	HBP	HACT	HFRQ	VFP	VS	VBP	VACT	SYNC	HPOL	VPOL	IL
28	VESA_1360 x 768 @ 60Hz	64	112	256	1360	47.712	3	6	18	768	5	1	1	0
29	VESA_1400 x 1050 @ 60Hz	48	32	80	1400	64.744	3	4	23	1050	5	1	0	0
30	VESA_1400 x 1050 @ 60Hz	88	144	232	1400	65.317	3	4	32	1050	5	0	1	0
31	VESA_1400 x 1050 @ 75Hz	104	144	248	1400	82.278	3	4	42	1050	5	0	1	0
32	VESA 1600 x 1200 @ 60Hz	64	192	304	1600	75.000	1	3	46	1200	5	1	1	0
33	VESA 1920 x 1200 @ 60Hz	48	32	80	1920	74.038	3	6	26	1200	5	1	0	0
34	EIA-343-A 675 lines	16	56	64	832	20.253	2.5	2.5	20	312	4	1	1	1
35	EIA-343-A 729 lines	20	64	80	900	21.870	2.5	2.5	22	337	4	1	1	1
36	EIA-343-A 875 lines	26	96	118	1080	26.245	3	3	27	404	4	1	1	1
37	EIA-343-A 945 lines	36	112	140	1164	28.343	3	3	29	437	4	1	1	1
38	EIA-343-A 1023 lines	44	136	164	1260	30.692	4	4	30	473	4	1	1	1
39	720 x 480 @ 29.97Hz	16	61	61	720	15.734	3	3	14	242	3	0	0	1
40	720 x 576 @ 25Hz	12	66	66	720	15.625	2.5	2.5	20	287	3	0	0	1
41	960 x 480 @ 29.97Hz	23	69	92	960	15.734	3	3	14	242	3	0	0	1
42	960 x 576 @ 25Hz	23	69	100	960	15.625	2.5	2.5	20	287	3	0	0	1
43	1280 x 720 @ 24Hz	70	40	260	1280	18.000	5	5	20	720	T	0	0	0
44	1280 x 720 @ 30Hz	70	40	260	1280	22.500	5	5	20	720	T	0	0	0
45	1280 x 720 @ 60Hz	70	40	260	1280	45.000	5	5	20	720	T	0	0	0
46	1920 x 1080 @ 24Hz	594	44	192	1920	27.000	2	5	15.5	540	T	0	0	1
47	1920 x 1080 @ 24Hz	594	44	192	1920	27.000	4	5	36	1080	T	0	0	0
48	1920 x 1080 @ 30Hz	44	44	192	1920	33.750	2	5	15.5	540	T	0	0	1
49	1920 x 1080 @ 30Hz	44	44	192	1920	33.750	4	5	36	1080	T	0	0	0
50	1920 x 1080 @ 60Hz	44	44	192	1920	67.500	4	5	36	1080	T	0	0	0
51	1920 x 1035 @ 30Hz	44	44	192	1920	33.750	5	5	35.5	517	3	0	0	1
52	1365 x 768 @ 60Hz	51	50	60	1365	47.280	4	4	12	768	5	1	1	0
53	1360 x 768 @ 60Hz	64	176	192	1360	47.712	3	6	18	768	5	1	1	0

NOTE:

Timing list entries 1 - 53 are factory defined timing parameters.

Timing list entries 54 - 99 are reserved for future pre-defined parameters.

Timing list entries 100-160 are for user defined timing list entries.

Sync type: 3 = 3 wire, 4 = 4 wire, 5 = 5 wire, T = Tri-level (3 wire)

Sync Polarity: 1 = Positive, 0= Negative

Interlace: 1 = Interlaced, 0 = Progressive

# ADVANCED SETUP

## IN THIS CHAPTER

This chapter provides describes how to perform the advanced setup features of the View 2+2 using the Web Control Panel (WCP) graphical user interface. For details about using the WCP to perform operations see Chapter 3.

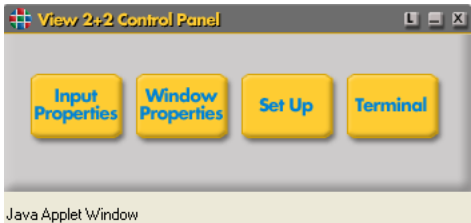
## WEB CONTROL PANEL

The Web Control Panel (WCP) is a graphical interface that can be used to set up and operate the View 2+2. You will use a standard web browser and do not need to load any special View 2+2 software onto your PC.

### STARTING THE WEB CONTROL PANEL

If the WCP is not already open, launch a web browser and enter the IP address for the View 2+2 into the browser address line. The default IP address is 192.168.1.200.

When the browser has connected to the View 2+2 the WCP control panel should appear in the browser window (Figure 5-1).



**Figure 5-1. WCP Control Panel**

Note

The WCP control panel is a floating page so it may be obscured by the browser window. If you don't see the WCP control panel, then minimize the browser window or check the task bar at the bottom of the window and click on the "RGB" symbol to bring it to the front of the browser.

## SETUP CONTROLS

Setup controls are accessible directly from the Web Control Panel providing the following features:

- Input Properties
  - ~ Input timing selection and adjustment
- Set Up
  - ~ System Settings
  - ~ Output Timing (format)
  - ~ Output Background selection (see [page 28](#))

## SYSTEM SETTINGS

To open the system page, open the WCP control panel and click on the **Set Up** button (Figure 5-1). Click on the **System** tab to open the **System** page and a page similar to Figure 5-2 will be shown.

The screenshot shows a web browser window titled "Setup" with three tabs: "Output Timing", "Background", and "System". The "System" tab is active. The page is divided into three main sections:

- Network Settings:** Contains input fields for Host Name (qv\_Eng002), IP Address (192.168.1.133), Subnet Mask (255.255.255.0), and Default Gateway (192.168.1.1). There are "Cancel" and "Apply" buttons at the bottom.
- Serial Port:** Contains a Baud Rate dropdown menu set to 9600 and a checked checkbox for "Echo On".
- Info:** A table displaying system information:

Product ID:	View 2+2
Firmware Version:	x.12test4
Serial Number:	Eng002
MAC Address:	00:50:C2:24:30:34
WCP Version:	0.3
Board Temperature:	0.00

**Figure 5-2. WCP System page**

The System page provides the ability to change the serial and network communications parameters. It also provides information about the system including Serial number, MAC address and firmware versions.

SERIAL PORT  
SETTINGS

View 2+2 provides a choice of baud rates ranging from 9600 baud to 115200 baud.

The default baud rate is 9600 baud. To change the baud rate use the following procedure:

- Click on the WCP control panel (Figure 5-1) **Set Up** button
- Select the **System** page (Figure 5-2)
- Click on the radio button corresponding to the desired baud rate

If you are using View 2+2 with a terminal emulator you will probably want to have the serial port echo turned on. In some control applications you may want to disable echo. To turn the serial port echo OFF, use the following procedure:

- Click on the WCP control panel (Figure 5-1) "Set Up" button
- Select the System Page (Figure 5-2)
- Click on the Echo On check box to deselect (or select) serial port Echo.

NETWORK  
SETTINGS

There are a number of network settings that are used to set up the IP parameters for the View 2+2. These include the following:

- Host Name
- IP Address
- Subnet Mask
- Default Gateway

Hint

The network settings are not applied until **Apply** button has been clicked. It is recommended that you make all of the network changes and then click the **Apply** button to accept them all as a group.

To set the host name, enter the new host name directly into the **Host Name** entry box in the Network section of the System page.

The View 2+2 uses static IP addressing. Before changing the address check with your network manager or system administrator to be sure that the new IP address is compatible with the network.

To set the new IP address, enter the address directly into the **IP Address** entry box.

To set a subnetmask, enter the address directly into the **Subnet Mask** entry box.

To set a new default gateway, enter the address directly into the **Default Gateway** entry box.

After making all the changes click on the Apply button to accept the new entries.

Note

After making changes to the IP address from a web browser the browser will be disconnected from the View 2+2. To reconnect you will have to enter the new IP address into the browser address line and click GO (or ENTER).

## OUTPUT SETTINGS

### OUTPUT TIMING

View 2+2 supports a wide range of pre-defined output formats including the majority of standard VESA formats. This page provides the ability to select from pre-defined (standard) output formats as well as entering custom timing definitions.

To open the Output Timing page use the following procedure:

- From the Web Control Panel (Figure 5-1) click on the **Set Up** button
- On the **Set Up** page click on the **Output Timing** tab

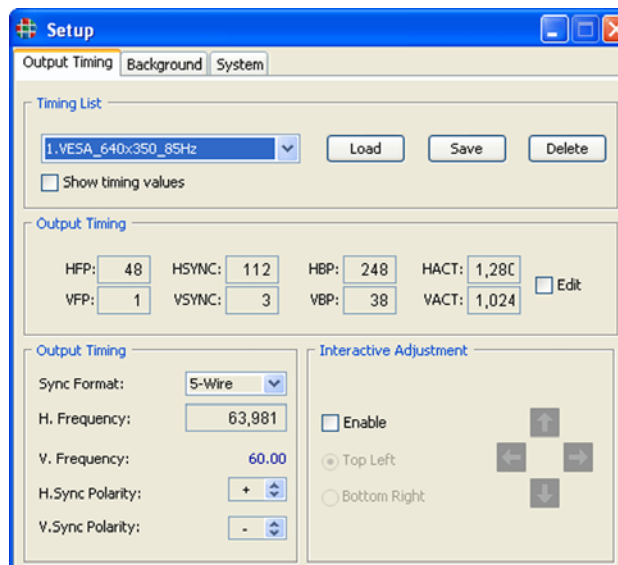


Figure 5-3. WCP Output Timing page

### SELECTING NEW TIMING SETTINGS

To select a new timing format use the following procedure:

- Use the drop down **Output Timing List** menu to select the timing format that you require.

Note

Timing list entries 1-53 are factory defined. Timing list entries 100-160 are available for user defined custom entries. These are accessible for use on the input and output of the View 2+2. Timing that you save from the output can also be used for the input and vice versa.

- Click the **Load** button adjacent to the Timing List box.

After loading the new timing values, the output timing will be updated and the new values will be displayed in the Output Timing section of the **Output Timing** page.

### VIEWING CURRENT OUTPUT TIMING SETTINGS

The timing parameters displayed in the lower section of the page relate to the currently loaded output. If you use the drop down box to select a new timing entry, the timing values associated with that entry will not be displayed unless you load them. To view the timings settings without loading them check the box **Show Timing Values**. To indicate that the values displayed in the Output Timing section differ from those currently being used, the values in the associated parameter boxes will be displayed in red.

### MANUALLY SETTING OUTPUT TIMING

In most cases you will find the desired output format in the pre-defined factory list of timing values (the Output Timing List). If you have special format that you wish to generate however, this can be accomplished by entering the timing parameters into the View 2+2 and saving them into the Output Timing List

Note

After you have saved the timing parameters to the list they are also available for use as Input Timing parameters and vice versa.

If you know all the parameters for the output format then enter them directly into the Output Timing entry boxes. You will need to provide the following parameters:

- HFP - Horizontal Front Porch width
- HSYNC- Horizontal Sync pulse width
- HBP - Horizontal Back Porch width
- HACT - Horizontal Active width (visible pixels per line)
- VFP - Vertical Front Porch width
- VSYNC - Vertical Sync width
- VBP - Vertical Back Porch width

- VACT - Vertical Active area (number of visible lines per frame)
- Sync Format (3,4 or 5 wire)
- Horizontal Frequency
- Horizontal Sync Polarity (Positive/Negative)
- Vertical Sync Polarity (Positive/Negative)

Use the following procedure to enter the timing parameters:

- Click the Enable button in the **Interactive Adjustment** section of the **Output Timing page** ([Figure 5-3](#))
- Click the **Top Left** radio button
- Use the cursor keys in the Interactive Adjustment section to position the upper left corner of the output image into the top left of the display device
- Click the **Bottom Right** radio button
- Use the cursor keys in the Interactive Adjustment section to position the lower right corner of the output image into the bottom right
- Click the **Save** button to save the new timing settings to the Output Timing List

After you have entered all the parameters click the **Load** button to load them into the output timing generator. Click the **Save** button to save them as custom values to the Output Timing List.

#### INTERACTIVE OUTPUT TIMING ADJUSTMENT

If Output Timing list does not include timing for the display device that you are going to use, and you do not know the details of the device you can interactively set the output timing parameters to match the requirements of your display.

Use the following procedure to set the output timing interactively:

- Click the Enable button in the **Interactive Adjustment** section of the **Output Timing page** ([Figure 5-3](#))
- Click the **Top Left** radio button
- Use the cursor keys in the Interactive Adjustment section to position the upper left corner of the output image into the top left of the display device
- Click the **Bottom Right** radio button
- Use the cursor keys in the Interactive Adjustment section to position the lower right corner of the output image into the bottom right
- Click the **Save** button to save the new timing settings to the Output Timing List



## INPUT SETTINGS

### INPUT TIMING

There are a wide variety of graphics signals that can be used with View 2+2, many of which are supported directly by a pre-defined timing list. When a signal is connected to a graphics input, View 2+2 automatically searches the list for a match, and will load the timing values to exactly match the input signal. If a match is not found, then it is possible to define the parameters of the signal (interactively or parametrically) and to add them to the timing list.

To open the Input Timing page use the following procedure:

- From the Web Control Panel (Figure 5-1) click on the **Input Properties** button
- Select the Window corresponding to the Input that you wish to adjust by clicking on the **Selected Window** radio button.

Note

Timing adjustments only apply to the RGB graphics windows. The Timing list cannot be applied to Composite or S-Video sources.

The upper part of the Input Properties page is used to control the View 2+2 input timing.

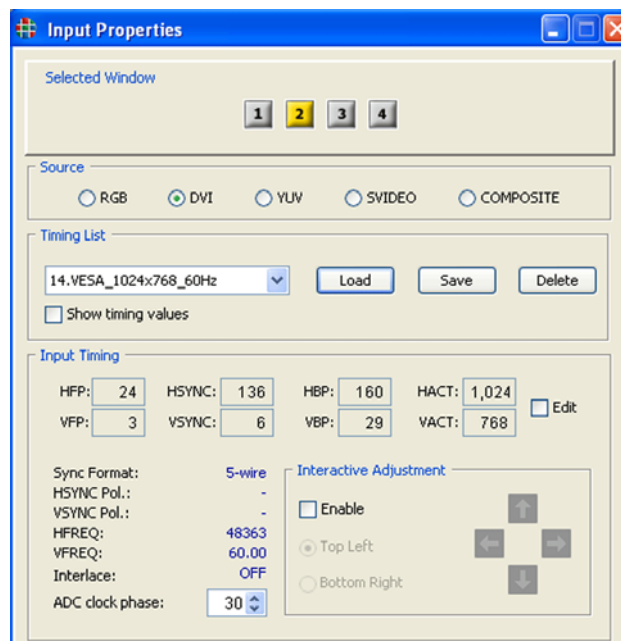


Figure 5-4. WCP Input Properties page - Input Timing

### LOADING FROM THE TIMING LIST

If you know the timing parameters of the signal you can manually load the timing from the either the factory timing list or the user defined timing list.

Use the following procedure to load a new input timing set.

- Click on the **Timing** scroll button and scroll through the list to the required timing entry
- For a list of pre-defined timing parameters please consult the View 2+2 Technical Reference Manual
- Click the **LOAD** button to accept the selected entry in the list

### CREATING A NEW TIMING ENTRY

If there is no entry in the timing list that matches your specific signal you can create a new entry in the list containing the exact parameters of your input signal. You may find an entry in the list that is very close to your parameters, and in this case you can load the entry, modify it, and then save the new entry to the user defined timing list. Use the following procedure to create a new (user defined) entry in the timing list:

- Click the **EDIT** button in the **Input Timing** section of the Input Properties page
- Enter new timing parameters into each of the timing parameter boxes
- Scroll to an empty timing list slot in the **Timing List** entry box
- Click the **SAVE** button in the **Timing List** section of the Input Properties page

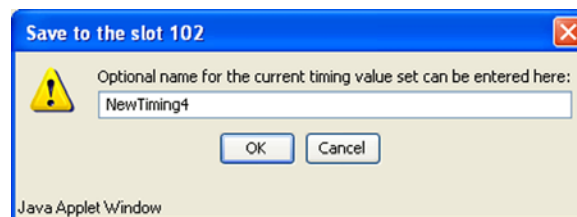
### INTERACTIVE TIMING

If you do not know the exact timing parameters for an input signal, you can adjust the timing parameters interactively so that you can exactly adjust the parameters visually. This allows you to adjust the displayed area to exactly fill the display screen. To set the timing parameters interactively use the following procedure:

- Allow View 2+2 to automatically lock to the input signal
- Disconnect and then reconnect the input signal if you want to trigger View 2+2 to begin the search again
- Click the **Enable** button in the **Interactive Adjustment** section of the Input Properties page
- Click the radio button labeled **Top Left**
- Use the Up/Down, Left/Right adjustment buttons in the **Interactive Adjustment** section to position the top left corner of the input image in the desired location at the top left of the display
- Click the radio button labeled **Bottom Right**
- Use the **Up/Down, Left/Right** adjustment buttons in the **Interactive Adjustment** section to position the lower right corner of the input image in the desired location at the lower right corner of the display
- Recheck the top left corner of the image and readjust as needed to position the image in the top left corner of the display

- Recheck the bottom right corner of the image and readjust as needed to position the image in the bottom right corner of the display
- Repeat the previous two steps if necessary until you are satisfied that both corners of the image are correctly positioned
- From the timing scroll list select a new entry to save your new timing parameters to
- Click the **SAVE** button

A dialog box requesting a name by which the new entry will known in the timing list.



**Figure 5-5. WCP Timing Name dialog box**

- Enter a name for the new timing entry and click **OK**.  
The name can be up to 23 characters in length and can contain upper and lower and numeric characters. Avoid the use of a space or the “/” or “\” characters.

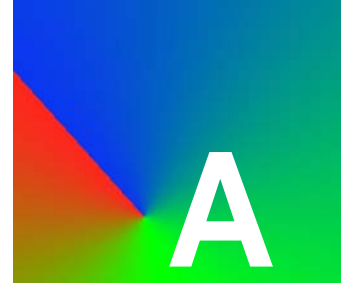
#### **INPUT CONVERTER CLOCK PHASE**

For optimum image quality of analog RGB (or YUV) inputs, it is important that sample clock in the Analog / Digital Converter (ADC) has the same phase as the original sample phase of the input signal. If the phase is not correctly set, the image may appear to have noisy or indistinct edges. Use the following procedure to set the ADC phase:

- Be sure that the input signal has a lot of high frequency detail
- Click on the **UP** button next to the ADC clock phase spin box and view the output image. If the image quality deteriorates, click on the **DOWN** button and continue clicking on the button until the image quality stops improving.
- The optimum point has been reached when you can click on either the **UP** or the **DOWN** button and the image quality can be seen to deteriorate

# TECHNICAL SPECIFICATIONS

---



## IN THIS APPENDIX

---

This appendix details system specifications and information about the connector / pin outs for the View 2+2

## SYSTEM SPECIFICATIONS

---

This section contains details about the following View 2+2 technical specifications:

- [General Specifications](#)
- [Digital Input Specifications](#)
- [Analog Input Specifications](#)
- [Composite Video Input Specifications](#)
- [S-Video Input Specifications](#)
- [Graphic Output Specifications](#)
- [Window Control Specifications](#)
- [Control Specifications](#)
- [Power and Physical Specifications](#)

GENERAL  
SPECIFICATIONS

The table below lists View 2+2 system characteristics:

**Table A-1. General Specifications**

Parameter	Specification
Number of windows	Four windows total Two universal graphics windows each with two user selectable types of inputs Two video windows each with two user selectable types of inputs.
Input types	The user may select between the following types for each graphics window: <ul style="list-style-type: none"> <li>• RGB / YP<sub>b</sub>P<sub>r</sub> component (HDTV)</li> <li>• DVI</li> </ul> The user may select between the following types for each video window <ul style="list-style-type: none"> <li>• Composite video (NTSC or PAL)</li> <li>• S-Video</li> </ul>
# of output channels	Single dual output channel <ul style="list-style-type: none"> <li>• 1x DVI</li> <li>• 1 x Analog RGB</li> </ul>
Horizontal scan rate	12 kHz to 125 kHz (non interlaced)
Frame rate (Refresh rate)	Up to 100 Hz
Maximum Resolution	1920 x 1200 pixels (not to exceed max pixel clock of 165MHz)

DIGITAL INPUT  
SPECIFICATIONS

The table below lists high resolution graphics digital input specifications:

**Table A-2. Digital Input Specifications (Graphics)**

Parameter	Specification
Type	DVI - Single link
Number	Two
Maximum bandwidth	1.65 Gbps
Connector type	DVI-I Integrated digital / analog connector, MicroCross (Molex #74320)

**ANALOG INPUT  
SPECIFICATIONS**

The table below lists high resolution graphics analog input specifications:

**Table A-3. Analog Input Specifications (Graphics)**

Parameter	Specification
Type	Analog RGB/YP <sub>b</sub> P <sub>r</sub>
Format	RGB/YP <sub>b</sub> P <sub>r</sub> , interlaced or non-interlaced
Number	Two
Video level	Nominal 0.7V p-p (1.0V p-p)
Input impedance	75 ohms nominal
Sample rate	Up to 165 Msamples / sec
Max Resolution	1920 x 1200 (maximum pixel clock of 165MHz)
Sync type	Available sync types <ul style="list-style-type: none"> <li>• 3 wire (Sync On Green)</li> <li>• 4 wire (Separate Composite Sync)</li> <li>• 5 wire (Separate H and V Sync)</li> </ul>
Sync level	0.3V p-p (3 wire), 5V p-p (4 and 5 wire sync)
Analog HD video	720p / 1080i / 1080p
Video level	1V p-p (sync and video)
Sync	Tri-level
Sync level	0.6V p-p
Connector type	Sub miniature D connector type HD-15

**COMPOSITE VIDEO  
INPUT  
SPECIFICATIONS**

The table below lists composite video input specifications:

**Table A-4. Composite Video Input Specifications (Video)**

Parameter	Specification
Format	Composite, NTSC RS-170A or PAL CCIR 624
Number	Four composite channels (see also S-Video specification).
Input sampling	All inputs sampled as 3:2 pixels (CCIR 601 sampling)
Video levels	0.5 to 2.0V peak-to-peak; 1.0V peak-to-peak nominal
Sync levels	0.3 to 0.6V peak-to-peak
Connector type	BNC female

**S-VIDEO INPUT  
SPECIFICATIONS**

The table below lists S-Video input specifications:

**Table A-5. S-Video Input Specifications (Video)**

Parameter	Specification
Format	S-Video (NTSC RS-170A or PAL CCIR 624)
Number	Four S-Video channels.
Input sampling	All inputs sampled as 3:2 pixels (CCIR 601 sampling)
Video levels	0.5 to 2.0V peak-to-peak; 1.0V peak-to-peak nominal
Sync levels	0.3 to 0.6V peak-to-peak
Connector type	Four pin mini-DIN

**GRAPHIC OUTPUT  
SPECIFICATIONS**

The table below lists high resolution graphic output specifications:

**Table A-6. Graphic Output Specifications**

Parameter	Specification
Analog	
Number	One (1)
Analog output level	Nominal 0.7V. pk to pk (excluding sync)
Output impedance	75 ohms
Sample rate	Up to 165 Msample/sec
Sync type	Available sync types: <ul style="list-style-type: none"> <li>• 3 wire (sync on green),</li> <li>• 4 wire (separate composite sync)</li> <li>• 5 wire (separate H and V sync)</li> </ul>
Sync level	0.3V p-p (3 wire), 5V p-p max (4 and 5 wire)
DVI	
Number	One (1)
Max bandwidth	DVI single link (1.65Gbps)
Connector type	DVI-I MicroCross Integrated Digital / Analog Connector

**WINDOW CONTROL  
SPECIFICATIONS**

The table below lists window control specifications:

**Table A-7. Window Control Specifications**

Parameter	Specification
Size	The size of each window can be scaled from thumbnail up to two times the horizontal output resolution.
Position	Windows may be positioned to an accuracy of one pixel horizontally and one line vertically. A window can be moved to any region of the display space, portions that are positioned off the screen will be automatically clipped.
Priority	Each window is assigned a priority by the user. When windows overlap, the window with the higher priority assignment appears in front of windows having a lower priority.
Zoom, Pan	Maximum Zoom range 32:1. Fully Pan within a zoomed window.



**Table A-7. Window Control Specifications**

Parameter	Specification
Window Borders and labels	Border color is set globally and applied to all windows. Border widths may be set independently for each window. Label text and color may be applied independently for each window.
Other Functions	Video source select, freeze frame, brightness and contrast, hue and saturation.

**CONTROL SPECIFICATIONS** The table below lists View 2+2 control specifications:

**Table A-8. Control Specifications**

Parameter	Specification
Control Protocol	View 2+2 Control is accomplished by use of the View 2+2 ASCII based command set (see <a href="#">Chapter 4</a> ). This command set may be used with any of the control ports listed below.
Ethernet	10/100 BASE-T ethernet port. <ul style="list-style-type: none"> <li>• Supports control of the full set of View 2+2 commands over a network connection using a Telnet server/client architecture.</li> <li>• Internal View 2+2 web server provides graphical user interface when used with a standard web browser.</li> </ul>
RS-232 Port	View 2+2 commands can be sent through the RS-232 port to control the system. <ul style="list-style-type: none"> <li>• The RS-232 port transfers commands using the asynchronous serial protocol at 115200, 57600, 38400, 19200 or 9600 baud.</li> <li>• The port is configured as DCE and can handle full duplex transfer.</li> <li>• Support for hardware and software handshaking is provided.</li> <li>• The View 2+2 RS-232 port connector type is a 9-pin sub miniature D connector.</li> </ul>

POWER AND  
PHYSICAL  
SPECIFICATIONS

The table below lists View 2+2 power and physical specifications:

**Table A-9. Power and Physical Specifications**

Parameter	Specification
Input Voltage	90-264 VAC (Autoranging)
Frequency	50 - 60 Hz
Power Consumption	30 W
Size	19" W x 12" x D x 1.75"H
Weight	10.75 pounds (4.9 kg)

## CONNECTORS AND PINOUTS

This section provides information about the signal and control connectors used in View 2+2.

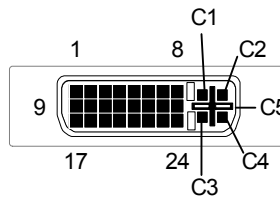
- [DVI-I Connector](#)
- [Composite Video Connector](#)
- [Ethernet Connector](#)
- [RS-232 Connector](#)

### DVI-I CONNECTOR

The DVI connector is used to interconnect graphics devices. This is a standard connector based on the work of the Digital Display Working Group (DDWG).

#### CONNECTOR TYPE AND PINOUTS

The connector used in the View 2+2 is a 29-pin DVI-I connector, supporting both analog and digital signals. The DVI-I connector (as shown below) is used for the standard View 2+2 DVI input and output signals.



**Figure A-1.** DVI-I Digital/Analog Connector (viewed from rear of chassis)

The 29 pin DVI-I connector (Molex #74320) has the following pin assignments:

**Table A-10.** DVI-I Connector Pinout

Pin	Signal	Description
1	TMDS Data 2-	
2	TMDS Data 2+	
3	TMDS Data 2/4 shield	
4	NC	Defined for Dual Link only
5	NC	Defined for Dual Link only
6	DDC Clock	
7	DDC Data	
8	Analog Vertical Sync	Horizontal sync is on pin C4
9	TMDS Data 1-	
10	TMDS Data 1+	
11	TMDS Data 1/3 shield	

**Table A-10. DVI-I Connector Pinout (Continued)**

Pin	Signal	Description
12	NC	Defined for Dual Link only
13	NC	Defined for Dual Link only
14	+5V Power	5 V fused @ 300mA.
15	Ground	
16	Hot Plug detect	
17	TMDS Data 0-	
18	TMDS Data 0+	
19	TMDS Data 0/5 shield	
20	NC	Defined for Dual Link only
21	NC	Defined for Dual Link only
22	TMDS Clock shield	
23	TMDS Clock+	
24	TMDS Clock-	
C1	Analog Red	Red signal
C2	Analog Green	Green signal
C3	Analog Blue	Blue signal
C4	Analog H sync	Analog Horizontal Sync signal
C5	Analog Ground	Common analog ground (R,G,B, sync)

#### INPUT CABLES

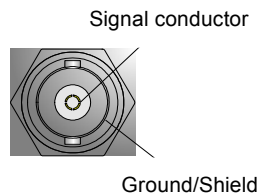
Digital inputs can be connected to the View 2+2 directly using DVI cables. Analog RGB signals can be connected to the device using DVI to 15-pin sub miniature D adapters that are provided as a standard accessory with View 2+2 units.

#### OUTPUT CABLES

Both the digital and analog outputs of the View 2+2 are provided on the DVI output connector. Purpose built cables are available commercially to provide connections for digital interfaces or analog interfaces. The View 2+2 is provided with DVI-15 pin adapters for use with analog devices, or alternatively an analog only output cable can be purchased that provides a “break out” capability to separate RGB connectors or sub miniature 15-pin D connector.

COMPOSITE VIDEO  
CONNECTOR

The composite video signal inputs use the industry standard 75  $\Omega$  BNC connector.



**Figure A-2. BNC connector (viewed from rear of chassis)**

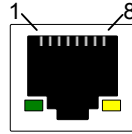
The BNC connector is designed for use with coaxial cables. Coaxial cables are well suited for the transmission of high frequency signals over moderate distances. Coaxial cable is commonly available with a characteristic impedance of either 50 or 75  $\Omega$ . Video signals exclusively use 75  $\Omega$  cable and connectors. For best signal quality it is important to use a high quality 75  $\Omega$  coaxial cable. The use of 50  $\Omega$  cable will cause a signal mismatch which may result in visible artifacts on video images.

Ready made cables are available commercially or can be easily customized on site to suit your particular requirements.

ETHERNET  
CONNECTOR

CONNECTOR TYPE AND PINOUTS

The Ethernet connector is a standard RJ-45 type connector.



**Figure A-3.** Ethernet connector (viewed from rear of chassis)

The 8 pin RJ-45 Ethernet connector has the following signals:

**Table A-11.** Ethernet Connector Pinouts (EIA/TIA 568B)

Pin	Signal	Wire Color
1	TX Data +	White/Orange
2	TX Data -	Orange
3	RX Data+	White/Green
4		Blue
5		White/Blue
6	RX Data-	Green
7		White/Brown
8		Brown

**STANDARD CABLES**

Standard Ethernet cables are available commercially in many different lengths. The standard cable is wired pin for pin (straight through) which means that pin 1 of the connector at one end of the cable is wired to pin 1 of the connector at the opposite end of the cable. This type of cable is used to connect the View 2+2 directly to the network — typically using an Ethernet hub or switch. To connect directly from a PC to the View 2+2, a crossover cable must be used (see the following section for details).

**CROSSOVER CABLES**

To connect directly from a PC to the View 2+2 without connecting to the network, an Ethernet “crossover” cable must be used. Crossover cables are available commercially.

In a crossover cable, one end of the cable is wired as a straight through cable, using the pin assignments shown in [Table A-11](#). At the other end of the cable, the TX and RX interconnections are exchanged (crossed over).

Ethernet uses balanced differential signals on twisted pairs of conductors. It is important to use wires from the same pair for each pair of signals. The standard pairs are shown in [Table A-11](#). Note that one wire of the pair has a solid color. The other wire (of the pair) is white with a stripe of the same color as the other

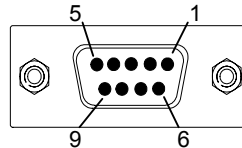
wire (e.g., Orange and White/Orange).

**RS-232 CONNECTOR**

The RS-232 port is configured according to the Electronic Industries Association Standard RS-232-C published in August 1969. The View 2+2 can be explicitly controlled with ASCII Command Set instructions sent via the RS-232 serial port from either a computer or an ASCII terminal. Refer to the View 2+2 Technical Reference Guide, for details on all commands.

**CONNECTOR TYPE AND PINOUTS**

Physically, the RS-232 port is a 9-pin D-Sub female connector. The pins for the RS-232 connector are numbered from top to bottom, right to left. Looking at the connector, pin #1 is located in the upper right corner, and pin #9 is in the lower left corner.



**Figure A-4. 9-pin D-Sub RS-232 Female Connector**

The 9-pin D-Sub connector has the following signals:

**Table A-12. RS-232 Serial Connector Pinouts**

Pin	Circuit	Description
1	CD	Carrier Detect
2	TD	Transmit Data
3	RD	Received Data
4		(not connected)
5	AB	Signal Ground (common return)
6	DSR	Data Set Ready
7	CTS	Clear to Send
8	RTS	Request to Send
9		(not connected)

#### **NULL MODEM**

You may need to connect the View 2+2's serial port to a computer configured as Data Communications Equipment (DCE). This is done using a null modem. The net effect of a null modem is to reverse the Transmitted Data and Received Data connections within the cable. Also, the Request to Send (RTS) and Clear to Send (CTS) connections are reversed. This may be done by using a special "null modem" cable, or by inserting a small "null modem" box or cable in series with a regular "straight through" cable.