TRUEVISION®

NuVista®+ Installation & Reference Guide

NuVista+

Installation & Reference

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What the Warranty Covers and How Long

If this product is defective in material or workmanship, return the NuVista+ card **within one year** of the original date of purchase and we will repair or replace it (with the same or an equivalent model), at our option, with no charge to you.

How to Exercise Your Warranty or Obtain Service

If you encounter problems with your NuVista+ card, contact your dealer or VAR first. They will provide you with assistance, or obtain an RMA Number from Truevision for your product. Then you may arrange for service or for warranty repair by shipping your NuVista+ to:

Truevision, Inc.
7340 Shadeland Station
Indianapolis, IN 46256

There will be no charge for warranty service except for your prepaid shipping cost to our site. We suggest that you retain the original packing material in case you need to ship your NuVista+ to us. When returning it to our site, please be sure to include:

Name
Address
Phone Number
Dated Proof of Purchase
RMA Number
Description of the Problem

We cannot assume responsibility for loss or damage during shipping. After we repair or replace (at our option) your NuVista+ card under warranty, it will be shipped back to you at no cost.

What This Warranty Does Not Cover:

This warranty does not cover damage resulting from accidents, alteration, failure to follow instructions, misuse, unauthorized service, fire, flood, acts of God, or other causes not arising out of defects in material or workmanship.

What We Will Not Do

We will not pay for loss of time, inconvenience, loss of use of the product or property damage caused by this product or its failure to work, or any other incidental or consequential damages.

This warranty sets forth all our responsibilities regarding this product. Repair or replacement at an authorized service location is your exclusive remedy.

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WARRANTY

CHAPTER 1 - INTRODUCTION

1.1 Truevision's NuVista+

The NuVista+ is versatile. With the NuVista+ you can capture an image in real time from camera, VCR, or laser disc, and display that image in 8-, 16-, or 32-bit color. You can overlay a captured image or Director animation on live or taped video, or do the inverse, overlay video on graphics. The graphics can be translucent, blending with the live video underneath to varying degrees. Best of all, you can output any of your creations to tape.

The NuVista+ is compatible. The NuVista+ lets you zoom in and out in any Macintosh application, even the Finder. You can export captured images as PICT files to other Macintosh applications, as well as import PICT and TGA files created in paint packages. To obtain your live video input you can connect S-Video composite video cameras or VCRs to the NuVista+, and output in composite video, S-Video, or RGB. All you have to do is connect the video equipment to the NuVista+ and the rest is software selectable.

Some Features

There are two versions of the NuVista+ card: an NTSC version and a PAL version. Regardless, the NuVista+ is a single-slot card that functions with any Macintosh II series or Quadra series computer, and features 3 fully upgradable memory configurations to suit your needs and budget.

The NuVista+ allows software selectable input and output video configurations, including composite video, S-Video, and RGB. The NuVista+ provides robust genlocking circuitry for automatic synchronization with your video input and output equipment. NuVista+ software utilities make it easy to define custom keys for overlaying and switching between interlaced mode for video output or genlocking and non-interlaced modes.

NuVista+: Access To The World Of Color Videographics

Truevision's NuVista+ transforms your computer into a powerful visual media system. The Software Utilities that come with the NuVista+ make it easy to capture images in real time and overlay graphics with the touch of a key.

Truevision VideoScript and VideoMaker+ are software packages that can be purchased for the NuVista+. VideoScript allows you to quickly create a sequence of video, pictures, and QuickTime™ movies in a video production. VideoMAker+, a video switcher, allows you to combine video and Macintosh graphics that can be recorded to videotape.

By giving you access to the world of color videographics, the NuVista+ lets you capture the reality inside your imagination.

CHAPTER 1

1.1 Truevision's NuVista+

1. 2 Overview: NuVista+ User's Guide

For your convenience, a quick outline of the User's Guide is provided here.

Chapter 1 introduces you to the the world of videographics and the NuVista+, discusses the organization of this Guide, installation, and gets you up and running in a short time.

Chapter 2 provides two Tutorials that explore the capabilities of the NuVista+ card. You will be probing NuVista+'s real-time Capture utility, overlaying graphics on live video, and saving animation with video overlay out to tape. In addition, suggestions for achieving professional Chroma Keying results are included.

Chapter 3 describes in detail the five NuVista+ Control Panel Devices.

Chapter 4 describes NuVista+ Capture. Some information about HyperCard XCMDs and Director XOBJs is given.

Appendix A contains common questions and their answers regarding video in general, monitors, and software. If you are a first time NuVista+ user, you may find this Appendix helpful.

Appendix B describes the procedure to configure your NuVista+ to accomodate other monitor screen resolutions and scanning modes. It is intended for the advanced user going beyond the default driver implementation.

Appendix C furnishes various possible video configurations.

Appendix D lists the hardware specifications for the NuVista+.

A Glossary and Index round out this Guide.

1.3 Conventions Used In This Guide

Two special icons are used in this Guide to draw your attention.

? A question mark indicates a section where you may have had trouble obtaining the desired results. Several items are listed to help you locate and correct the problem.

A pair of glasses indicates an important point that you should be sure to read.

1.4 Installation

Before installing your NuVista+ (NTSC or PAL version) Videographics card, make sure you have the following equipment available:

- Apple Macintosh II series or Quadra series computer, with a minimum of 2Mb RAM.
- 40Mb or greater hard drive (recommended).
- System software version 6.0.5 or greater (recommended). Note: The NuVista+ will boot up and function with any system version. However, to use the accompanying software, it is recommended that you have version 6.0.5 or later.
- Source of video input (recommended). Typically a video camera, VCR, or laser disc player, the source of video input can be NTSC or PAL composite video (depending on card type), S-Video, or RGB.

- 1 or more video output devices. Typically a monitor or VCR, the video output device can be composite video, S-Video, or RGB. It is recommended that you have an analog RGB multi-scan rate monitor with horizontal scan rates between 15 and 35 KHz, and vertical scan rates between 25 and 100 Hz. Although an Apple RGB Color monitor can be used with the NuVista+, it is a fixed-rate monitor and thus will not allow you to use the NuVista+ to its full capacity (e.g., live video is not accessible).
- Appropriate input and output cables.
- Phillips screwdriver.

Note: Due to the limited power supply of the single-slot Macintosh, we cannot recommend the single-slot Macintosh for the NuVista+.

Important Parts On The NuVista+ Card

PIN INSERT

VIDEO IN

S-VIDEO/ HV SYNC SWITCH

VIDEO OUT

METAL CONNECTOR BRACKET

SLOT

NUBUS CONNECTOR
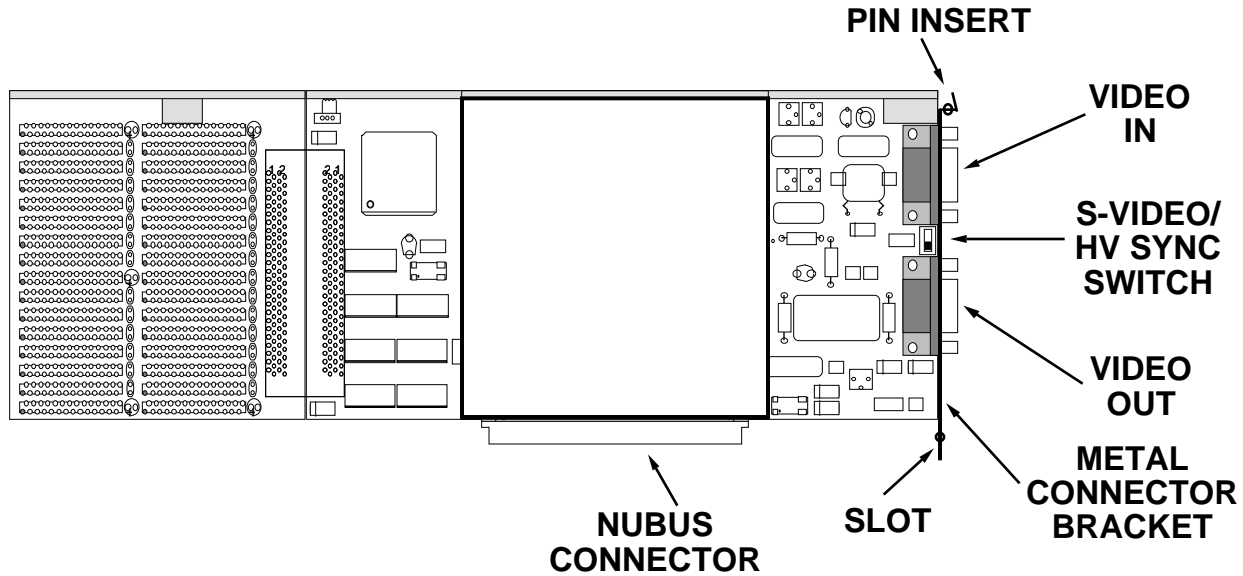
1.4 Installation

Turn Off Computer & Remove Cover

1. Turn off your computer.

2. Remove the computer cover. If necessary, follow the directions that came with your computer in order to remove the cover.
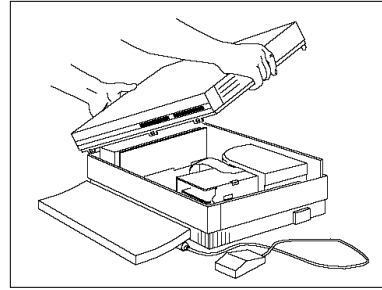
1.4 Installation

Step 1

Set S-Video/HV Sync Switch

1. Touch the power supply to discharge any static electricity.

2. Look for the switch (SW2) mounted on the circuit board between the two connectors. The default setting of the switch is UP, for S-Video.

   Leave the switch UP unless your RGB monitor specifically requires separate horizontal and vertical sync signals.

   Note: The Apple RGB Color monitor, when used with Truevision's cable CA-5, requires HVSync. (Set the switch DOWN.)
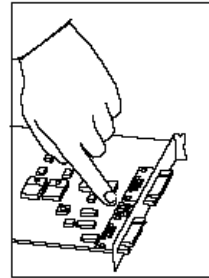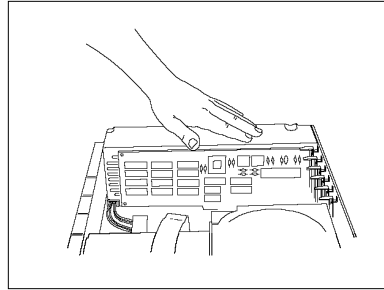
Step 2

Prepare Expansion Slot

1. Choose any available expansion slot for the NuVista+. If necessary, remove the slot cover.

<div style="border:1px solid black; padding:10px;">

CAUTION

Do not use Slot "A" (farthest from power supply) in a 900 or 950 series Quadra computer. These computers have a metal protrusion that can damage your NuVista+, and may damage your computer, if the NuVista+ is forced into this slot.

</div>
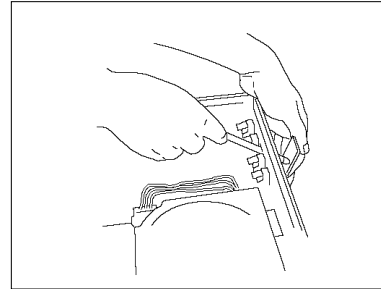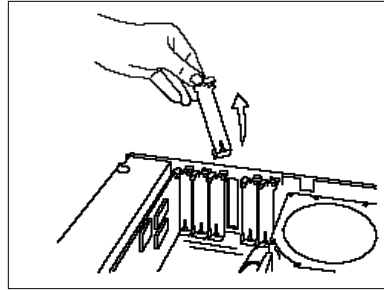
Step 3

Insert The card

1. Touch the power supply again to discharge any static electricity.

2. Carefully holding the card by the edges, lower the card into the slot.

3. Using both thumbs, press down firmly until the card fully seats into the expansion slot. If excessive resistance is present, do not force the card into the slot. Simply start over and try again.
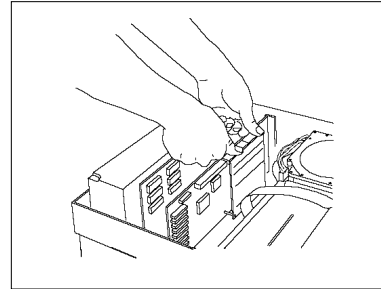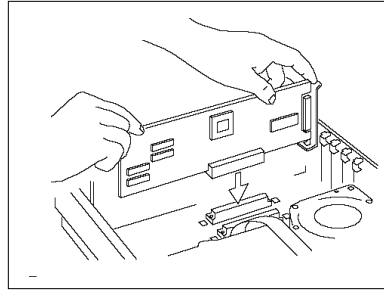
CHAPTER 1

1.4 Installation

Step 4

Replace The Cover

1. Replace the cover on your Macintosh. If necessary, follow the directions that came with your computer in order to remove the cover.
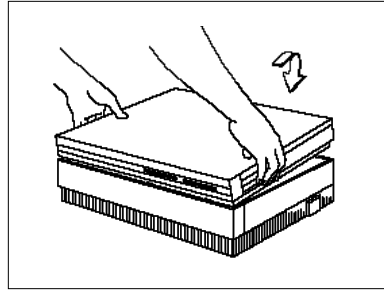
Step 4

About Connector Types

The drawing to the right illustrates the types of connectors you are likely to encounter when connecting video input and output equipment to the NuVista+.

A 9-pin D-type male connector will be on one end of both the Video In and Video Out cables, but the other end of each cable may be any connector or combination of connectors pictured here.

BNC

RCA / Phono

4-pin DIN (S-Video)
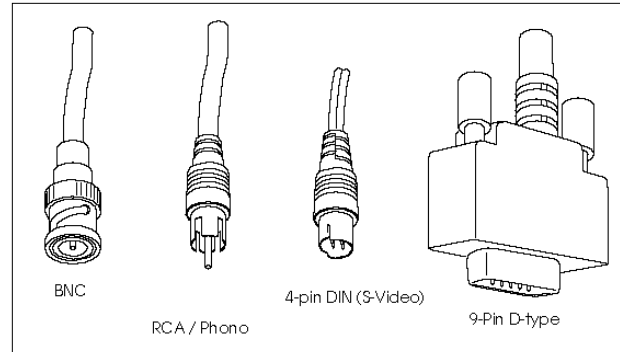
9-Pin D-type

1.4 Installation

Determining The Correct Output Cable

NuVista+ Video Out requires one end of the cable to be a 9-pin D-type male, while the connector on the other end is determined by the type of connector required for your output device.

— If you have an **RGB** device such as a multi-scan rate monitor, you will need either another 9-pin D-type connector or 4 BNC connectors (1 each for Red, Green, Blue, and composite sync) on the other end of your output cable.

— If you have an **S-Video** device such as an S-Video VCR, you will need a 4-pin DIN connector on the other end of your output cable. (The S-Video/HV Sync switch set in Step 2 must be UP. Note: it is not possible to obtain both S-Video output and HV Sync simultaneously.)

— If you have a **Composite Video** device such as a VCR, you will need an RCA/Phono connector or a BNC connector with an RCA adaptor on the other end of your output cable.

See Appendix E of this Guide for a list of cables available from your Truevision Reseller.

CHAPTER 1

1.4 Installation

Connecting NuVista+ video Out

1. Using the cable appropriate for your configuration, connect the NuVista+ Video Out to the Video In on the device that is to receive NuVista+ output. This device is typically a monitor or VCR, and can be Composite Video, S-Video, or RGB.

   It is also possible to simultaneously connect one device of each type (RGB, S-Video, Composite Video) to the NuVista+ Video Out, provided you have a branching cable with the appropriate connectors.

See Appendix C of this Guide if circumstances require more than one device of the same type be connected to the NuVista+.

Video IN

Video OUT
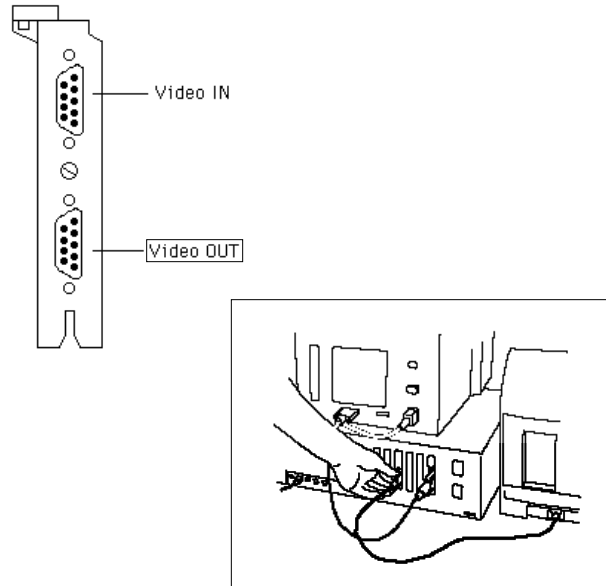
CHAPTER 1

1.4 Installation

Determining The Correct Input Cable

If you are not connecting a source of video input at this time, you may skip this step.

While NuVista+ Video In requires a 9-pin D-type male connector at one end of the cable, the connector at the other end of the cable is determined by the type of connector for Video Out on your input device.

— If you have an **RGB** device such as an RGB camera, you will need either another 9-pin D-type connector or 4 BNC connectors (1 each for Red, Green, Blue, and composite sync) on the other end of your input cable.

Note: If you are using an RGB camera and wish to obtain Composite or S-Video output from the NuVista+, then both the camera's RGB as well as its Composite or S-Video outputs should be connected to NuVista+Video In. The Composite or S-Video signal will provide the NuVista+ with a subcarrier source needed to output Composite or S-Video with an RGB input. Many cameras already output both RGB and Composite Video on the same connector. (Check your camera's owner's manual to be sure.) However, if your camera outputs RGB separately from Composite or S-Video, then you will need a branching cable (CA-6) in order to connect both to the NuVista+.

— If you have an **S-Video** device such as an S-Video VCR or camera, you will need a 4-pin DIN connector on the other end of your input cable.

— If you have a **Composite Video** device such as a VCR or laser disc player, you will need an RCA/Phono connector or a BNC connector with an RCA adaptor on the other end of your input cable.

Connecting NuVista+ Video In

1. Using the cable appropriate for your
    configuration, connect the Video Out of your
    source device to the NuVista+ Video In.
    This device is typically a camera, VCR, or
    laser disc player, and can be either
    Composite Video, S-Video, or RGB.

    Although three input devices of different
    types may be connected to NuVista+ Video
    In with a branching cable, only one is used at
    a time for video input.

See Appendix C of this Guide for examples
of typical video configurations.
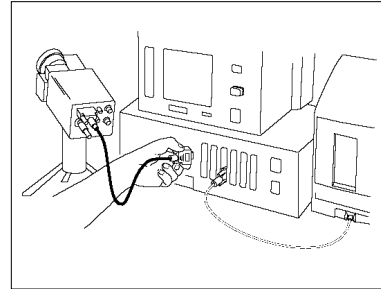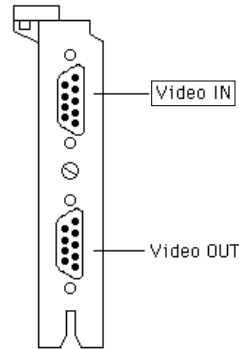
1.4 Installation

Up And Running

1. Turn on your computer.

2. Install the NuVista+ software. Refer to "1.5 Getting Started" in this chapter.
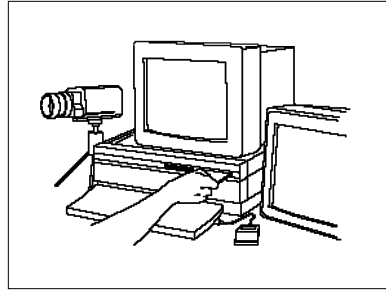
CHAPTER 1

1.4 Installation

1.5 Getting Started

In this section you will install the five NuVista+ Control Panel Devices, and three NuVista+ Software Utilities. The Monitors Control Panel Device is used to determine which monitor is associated with the NuVista+.

Installing the NuVista+ Control Panel Devices

1. Start up your Macintosh.

2. Insert the disk labeled "NuVista+ Software."

3. Double click (open) the icon titled "NuVista+ Software." You will be prompted for a location where the software is to create a new folder for the NuVist+ files. Specify the location.

4. Open the newly created folder. Then open the "CDEV" folder that is within the newly created folder. Drag the icons for NuVista+ CloseUp, MasterKeys, Chroma Keyer, Blender, and the VIDI/O Control Panel onto your System Folder. <u>Make sure you close the System Folder</u>.

5. Eject the disk "NuVista+ Software."

6. Insert the disk titled "Video Production Examples," and then double click on the icon "Video Production Examples."

7. You will be prompted for a location where the software is to create a new folder for the video production example (MacroMedia Director) files. Specify the location.

8. Eject the disk "Video Production Examples."

9. Verify that you have either System software version 6.0.5 (or higher) and 32-bit QuickDraw version 1.2 (or higher), or System 7.0 in the System Folder on your startup disk. To check the system's version number, select About the Finder... from the Apple menu. If you do not have the correct version, contact your local Apple dealer for information.

10. Restart your Macintosh.

Using Apple's Monitors Control Panel Device

For the remainder of this Guide, it will be assumed that you have your system configured with one multi-scan rate monitor associated with your NuVista+ card as well as another monitor to be used as the main screen. The NuVista+ is often used with a one-monitor configuration, however. If any differences are apparent when using NuVista+ software, these will be noted in this Guide.

Consult the section on Monitors in your Macintosh owner's manual. Apple's Monitors Control Panel Device enables you to determine which monitor is associated with which card, indicate the relative positions of the monitors, and set the color resolution for all monitors.

CHAPTER 1

1.5 Getting Started

CHAPTER 2 - TUTORIALS

2.1 Introduction

The Tutorials in this chapter introduce you to the basic functions of the NuVista+ and take you step by step through some tasks commonly performed with the NuVista+. You will learn how to capture a live image in real time. Titles and animated graphics can be easily overlayed on live video, and the live video will be blended with the graphics to various degrees. Lastly, instructions for obtaining professional results in Chroma Keying are included.

Equipment

You will need the following equipment to complete the first two tutorials:

1. A NuVista+ card installed in a Macintosh II series computer. Consult Chapter 1.4 in this guide for instructions.

2. A multi-scan rate monitor. Because the Apple RGB Color Monitor was not designed for interlaced displays, it will not be compatible with live video images from a camera, VCR, or laser disc player.

3. A source of video input, such as a video camera, VCR, or laser disc player.

4. A VCR to save your creations to video tape. The output VCR cannot also function as an input VCR; they must be two separate machines.

5. A means of displaying the VCR output.

6. A video tape to save your output.

7. Branching cable CA-6 or CA-7 to connect NuVista+ Video Out to both the monitor and the VCR.

Software:

1. NuVista+ Utilities. Consult Chapter 1.5 of this Guide for installation procedures.

2. Adobe PhotoShop version 1.0.7 or higher.

3. MacroMedia Director version 2.0 or higher.

CHAPTER 2

2.1 Introduction

2.2 The Beginning User

This Tutorial will introduce you to the basic functionality of the NuVista+, particularly NuVista+ CloseUp, and NuVista+ Capture, including Capture's Overlay capabilities.

If you haven't done so already, start up your Macintosh and install the NuVista+ Software. Consult Chapter 1.5 of this Guide for software installation procedures.

Set Your Monitor's Color Resolution

Select Control Panel from the Apple menu and click on the Monitors icon. Set the color resolution for the NuVista+ screen to Millions of colors. If you have a 1Mb NuVista+, set the color resolution to Thousands of colors. Although you won't be able to do 32-bit Overlay in Capture, you will be able to do Overlay and Blending in the Blender. Don't close the Control Panel yet.
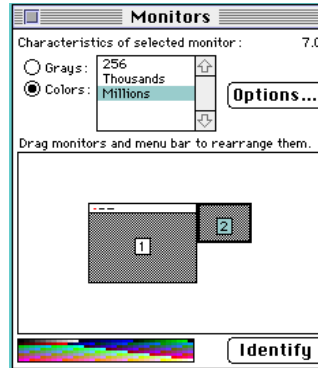
Use VIDI/O to Select the Type of Video

Verify that your source of video input is connected and the power turned ON. You will not see live video right away. That will be accomplished later in the Tutorial. For purposes of this Tutorial, it would be best if your source of live video produced images of an object in the foreground with a background of a solid or nearly solid color.

Click on the VIDI/O icon in the left-hand column of the Control Panel window. You will see three buttons used to choose the type of video input, and four sliders for making adjustments to the output of the NuVista+. Don't bother adjusting the sliders right now.

Select the button that matches the type of video input to the NuVista+. If your source of video input is a VCR or video camera, you should probably select the button labelled "VIDEO," for Composite Video. If your input source is an RGB camera, select the button labelled "RGB." Similarly, if your input source is an S-Video camera or VCR, select the button labelled "S-Video." Close the Control Panel.

If you are using a VCR or laser disc player as your source of video input, go ahead and start it playing now.

CHAPTER 2

2.2 The Beginning User

NuVista+ Capture

With Capture you can "grab" a frame of video in real time from your source of live video, whether it be a camera, VCR, or laser disc player.

Launch Capture by opening your NuVista+ folder and double-clicking on the Capture icon. An empty window called the Capture Window appears, which will later contain the captured image. Drag the Capture Window to your NuVista+ screen.

This tutorial assumes that you are using two monitors, and that the monitor connected to the NuVista+ is a multi-scan monitor.
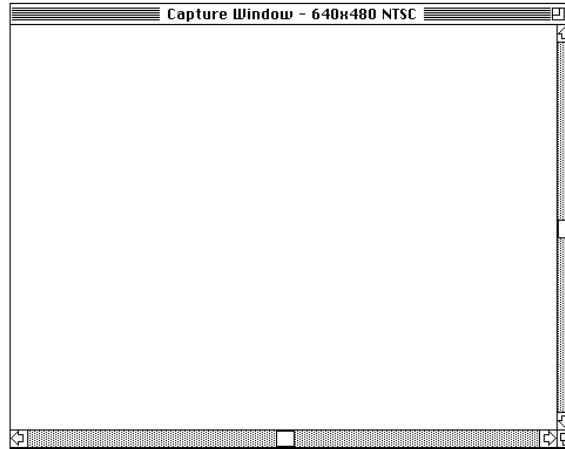
CHAPTER 2

2.2 The Beginning User

Select Preferences... from the Special menu. Click the radio button next to "millions" (32-bit) if you have a 4Mb NuVista+, or the radio button next to "thousands" (16-bit) if you have a 1Mb or 2Mb NuVista+.

If you are using a multi-scan monitor, disable the "Use Live Time-out during Capture" selection.

Click OK.

Select Capture Image from the File menu. The NuVista+ will automatically switch into Interlaced mode and you should see live video occupying the entire NuVista+ screen. If you are using a camera for your video input, point it at the object in the foreground and focus. If you are using a VCR or laser disc player, locate a minute or two of video containing an object in the foreground and a solid color (or nearly so) background.

| **File** | Edit | **Special** | Alpha |

Use Dithering	⌘D
Fit Image to Window	⌘F
Fit Window to Screen	
Preferences...	
Convert to 32-bit Image	
Convert to 16-bit Image	
Convert to 8-bit Image	

| **File** | Edit | Special | Alpha |

Open...	⌘O
Capture Image	⌘G
Save...	⌘S
Page Setup...	
Print...	
Quit	⌘Q
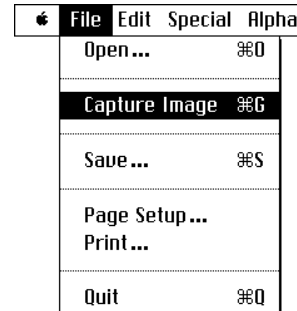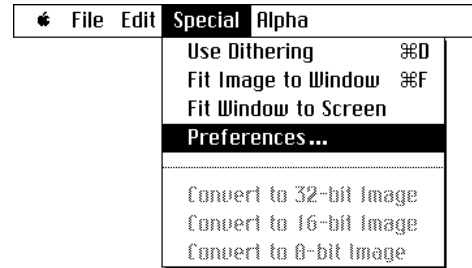
CHAPTER 2

2.2 The Beginning User

> ? Trouble? If the NuVista+ screen is black, click the mouse once (to finish the Capture command) and then make sure:
>
> • your source of video input is correctly connected to the NuVista+ Video In connector (the upper 9-pin connector).
>
> • you have a multi-scan rate monitor correctly connected to the NuVista+ Video Out connector (the lower 9-pin connector).
>
> • the type of video selected in the VIDI/O Control Panel matches the type of video output coming from your video source.
>
> Now select Capture Image from the File menu again.

You will not be able to see a cursor on the NuVista+ screen. Click the mouse at the moment you want to grab a frame of video. After a moment the image will be displayed in the Capture Window.
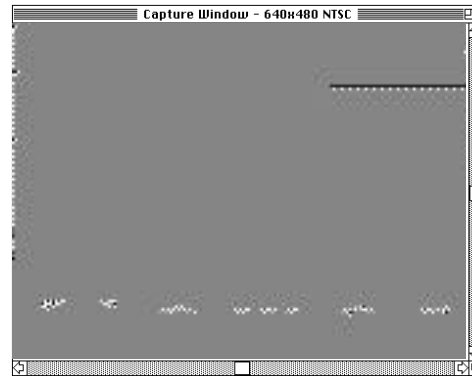
CHAPTER 2

2.2 The Beginning User

If you have a 1Mb or 2Mb NuVista+, select Convert to 32-bit Image from the Special menu. Click NO in the dialog box that asks if you want to save the Capture Window before converting.

Later we will save this image and use it in Adobe's PhotoShop.

```
 🍎  File  Edit  Special  Alpha
                Use Dithering        ⌘D
                Fit Image to Window  ⌘F
                Fit Window to Screen
                Preferences...
                ...............................
                Convert to 32-bit Image
                Convert to 16-bit Image
                Convert to 8-bit Image
```
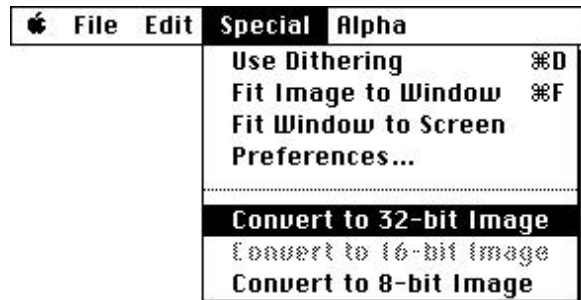
CHAPTER 2

2.2 The Beginning User

Zooming

NuVista+'s Zoom In and Zoom Out keys allow you to magnify and de-magnify any image on the NuVista+ screen, such as a captured image, a PICT in PhotoShop, even the desktop. Place the cursor someplace on the image in the Capture Window. Now press the Command and Keypad + keys together. The Zoom In key (default is Command-Keypad +) magnifies the image by two times the current size each time it is pressed. An image can be magnified up to 16x its original size.

Command ⌘ + Keypad +

Zoom In

Capture Window – 640x480 NTSC
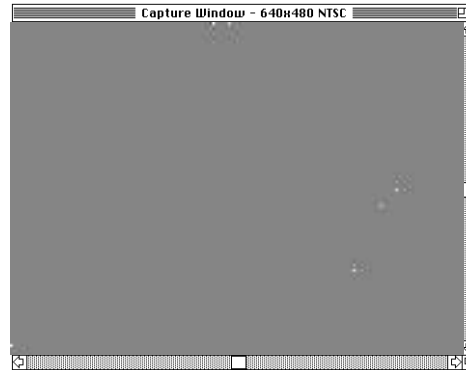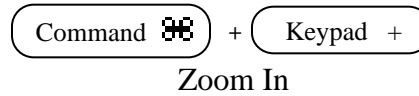
CHAPTER 2

2.2 The Beginning User

The Zoom Out key (default is Command-Keypad -) does just the opposite. It de-magnifies the image by one step on the scale of 16x, 8x, 4x, 2x, 1x each time it is pressed.

Practice using the Zoom In and Out keys on your captured image. Note that the current location of the cursor is the central point of magnification.

Suppose you want to quickly toggle between a level of magnification and the original size of the image. The Zoom Toggle key allows you to do just that. Magnify the image using the Zoom In key. Now press the Zoom Toggle key (default Command-Keypad *) several times. The size of the image will alternate between 1x and the last level of magnification.

Command ⌘ + Keypad -
Zoom Out

Command ⌘ + Keypad *
Zoom Toggle
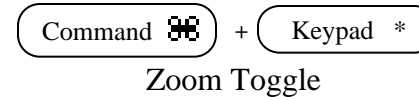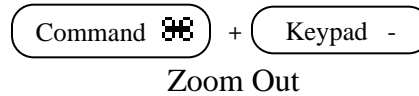
CHAPTER 2

2.2 The Beginning User

Panning

To pan, or see another portion of a magnified image, simply move the cursor in the direction of the desired portion, and the image will be scrolled in that direction.

Zoom in on the image using the Zoom In key. Move your cursor off one of the edges of the NuVista+ screen. The image will pan in the direction of your cursor. When you are done, de-magnify the image to its actual size.

Selecting the Key Color

The Key Color is the color of the pixels where you wish video to show through the image in the Capture Window. This color is selected in anticipation of overlaying video on the image.

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2.2 The Beginning User

Select Choose Key Color... from the Alpha menu. A window titled Key Color will appear, with a black color circle on the left that will soon indicate the color(s) that you have chosen. On the right is a column showing the levels of red, green, blue, hue, saturation, and brightness for the pixel currently under the cursor. Below the color circle is a brightness indicator bar.

> ? Trouble? If the Choose Key Color menu item is dimmed, make sure:
>
> • that neither Fit Image to Window nor Fit Window to Screen in the Special menu is selected.
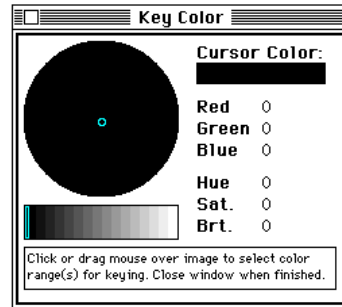
Move the cursor about the image in the Capture Window. The color in the color circle will match the color of the pixel currently under the cursor (if the Key Color window is on a color monitor). Bring the cursor to rest on a pixel in the background of your captured image and click mouse, or click and drag a rectangle with the mouse over a range of colors. Now click the mouse once.

If you'd like, choose a second key color or range of key colors and then click the mouse once.

When you are done, close the Key Color window by clicking in its close box.
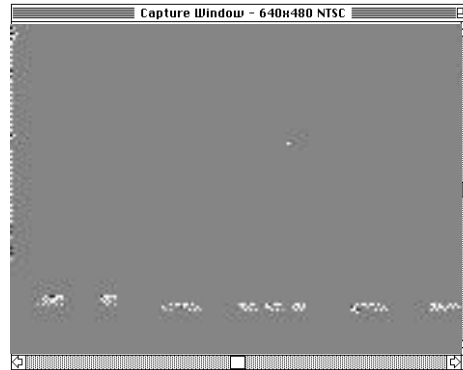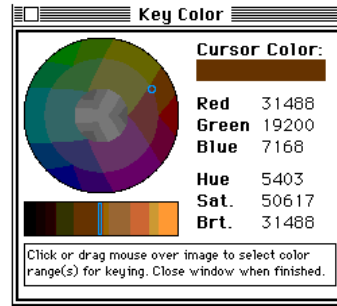
CHAPTER 2

2.2 The Beginning User

Save Your Image

Select Save... from the File menu to save the image. You'll be asked to provide a filename, so type "Tutorial 1 PICT" in the text box. Click SAVE.

The pixels in the image that match the key color have a special "tag" on them, indicating that they are able to show live video. This tag is called the Alpha channel, and is now saved with the image. We will be utilizing the Alpha channel when we import the image to PhotoShop.

| ☰ | **File** | Edit | Special | Alpha |

```
Open...              ⌘O

Capture Image   ⌘G

Save...              ⌘S

Page Setup...
Print...

Quit                 ⌘Q
```

```
🖰 NuVista+
🗋 Disk
◇ MacroMind Directo...        [ Eject ]
                              [ Drive ]

Save PICT as...               [ Save ]
Tutorial 1 PICT               [ Cancel ]

◉ PICT          ○ 32-bit TGA
```
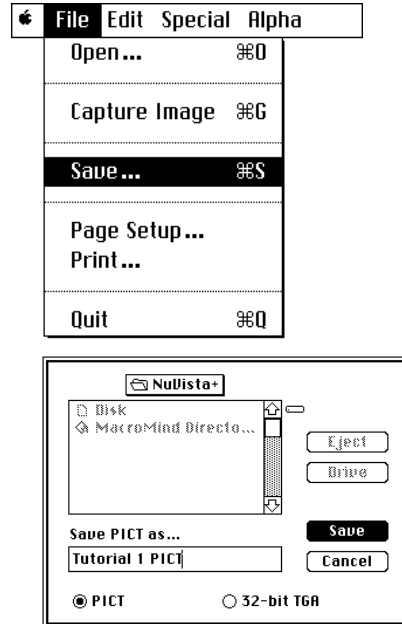
CHAPTER 2

2.2 The Beginning User

The Alpha Channel

The Alpha channel can be used to specify any aspect of a pixel other than its color. For example, some Macintosh applications may make use of an image's Alpha channel to specify which pixels are used as a mask or a filter.

In a 32-bit color image, the color of each pixel is specified by some mixture of red, green, and blue. In each pixel, eight bits are used to specify the amount of red, eight for the amount of green, and eight for blue, using a total of 24 bits. The remaining eight bits are called the Alpha channel.

In Capture, the Alpha channel serves two purposes. First, the Alpha channel specifies whether or not a pixel displays live video or whether it displays the desktop image. Displaying video in certain pixels of an image is called **Overlay**.

Second, once the Alpha channel is set, the image may be saved with the Alpha channel information and exported to other Macintosh applications, including those that use the Alpha channel.

CHAPTER 2

2.2 The Beginning User

Overlaying Video

Now that the Key Color(s) has been selected, it's time to actually overlay the video. Your source of video should still be connected and turned ON.

If you have a 1Mb NuVista+, you won't be able to do overlay in Capture or PhotoShop, but it may be helpful to read through the rest of this Tutorial. It would be best to quit Capture at this time. Don't worry though, you'll have plenty of opportunity to do both overlay and blending in the next Tutorial.

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2.2 The Beginning User

If you have a 2Mb or 4Mb NuVista+, select Interlace from the Alpha menu. The NuVista+ screen will switch into Interlaced mode, evident by the slight "flicker" of the image in the Capture Window.

Select 32-Bit Alpha Blend from the Alpha menu. You should see live video showing through the pixels that match the key color(s).

> **?** Trouble? If the 32-Bit Alpha Blend menu item is dimmed, make sure:
>
> • that the monitor associated with the NuVista+ is set to Millions of colors.
>
> • that the Convert To 32-Bit Image menu item in the Special menu is dimmed, indicating that the image is a 32-bit image. If it is not dimmed, select the menu item.

File   Edit   Special   Alpha
32-Bit Alpha Blend	⌘L
Interlace	**⌘I**
✓Save Alpha Channel	
Clear Alpha Channel	⌘N
Filter Alpha Channel	
Show Alpha Channel	⌘A
Choose Key Color...	⌘K

File   Edit   Special   Alpha
32-Bit Alpha Blend	⌘L
✓Interlace	⌘I
✓Save Alpha Channel	
Clear Alpha Channel	⌘N
Filter Alpha Channel	
Show Alpha Channel	⌘A
Choose Key Color...	⌘K
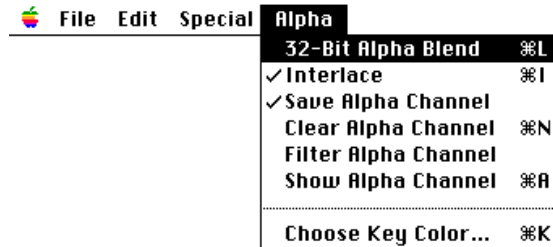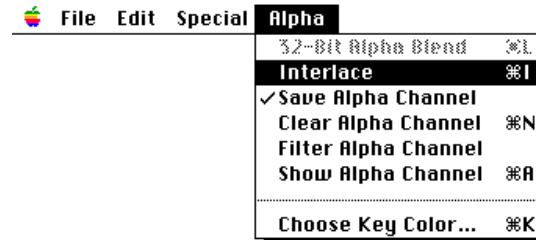
CHAPTER 2

2.2 The Beginning User

Select 32-Bit Alpha Blend and Interlaced from
the Alpha menu once more to restore the
NuVista+ screen to its non-interlaced state.
Quit Capture.

Video Overlay in PhotoShop

Launch Adobe PhotoShop (version 1.0.7 or
higher) by double-clicking on its icon. Select
Open... from the File menu. Open the file
"Tutorial 1 PICT" and drag the window to the
NuVista+ screen.
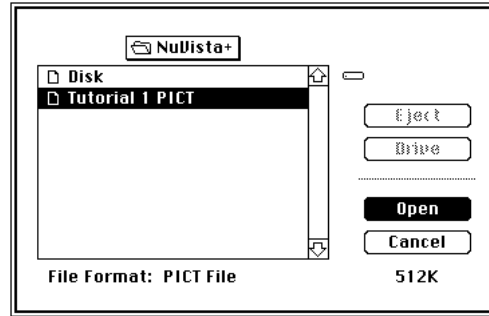
CHAPTER 2

2.2 The Beginning User

Make sure that there is a checkmark next to RGB Color in the Mode menu. If not, select RGB Color from the Mode menu.

Select Channel and its sub-menu item RGB in the Mode menu.

Select Video Alpha and its sub-menu item "#4" from the Mode menu. #4 refers to the fourth channel or the Alpha channel. The others are being used for color: one for red, one for green, and one for blue.

Check your source of video input and make sure it is ON and running at this time.

Press the Interlace MasterKey (default
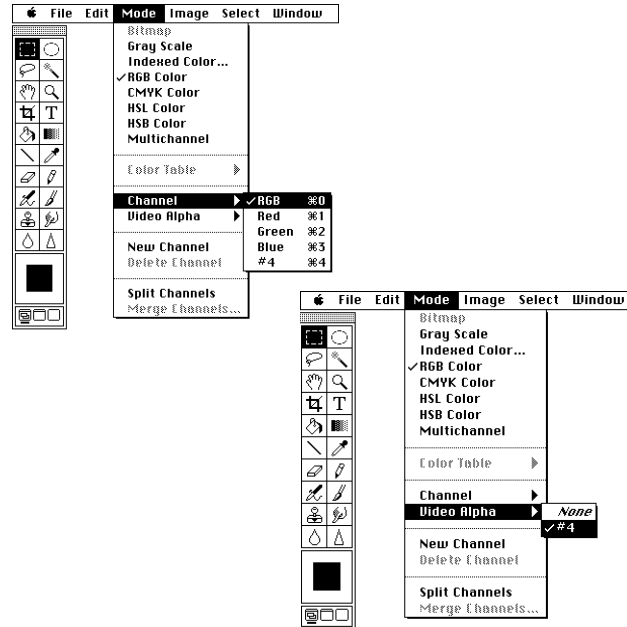
CHAPTER 2

2.2 The Beginning User

Command-Keypad =) to place the NuVista+ screen in Interlaced mode.

Now press the AlphaBlend MasterKey (default Command-Keypad 9). You should see video overlay in the Key Color pixels of the image.

Trouble? If you did not see live video showing in the image, make sure:

? • the type of video selected in the VIDI/O Control Panel matches your video source.

• the NuVista+ screen is set to Millions of colors.

• all cables are secure.

Press the Interlace or AlphaBlend MasterKey again to bring the NuVista+ screen back to its non-interlaced state.

Command ⌘ + Keypad =

Interlace MasterKey

Command ⌘ + Keypad 9
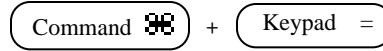
AlphaBlend MasterKey

CHAPTER 2

2.2 The Beginning User

f th pixels that are tagg

lect hannel is sub-

e M de me

ale attern white

dots that are present in pixels that are tagged

show video. Because are ple y

(i.e. not gray), they sh 00% ideo e.

blend of video and im . Th ack dots

pixels tagged to 100% w im . T gr

dots will show a mixt f im and ve

video. The ratio of im o v depends

how white the pixels r i ch nel
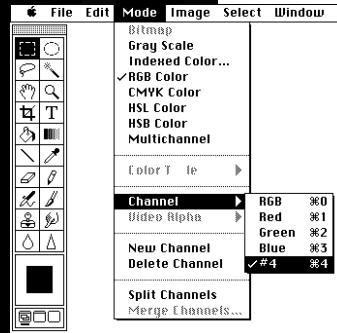
CHAPTER 2

2.2 The Beginning User

If you would like to experiment with live video in the Alpha channel, use PhotoShop tools to add white pixels (or anything else you want to try) in the Channel #4 window. Then select the Channel menu item and its sub-menu item RGB from the Mode menu. Press the Interlace and AlphaBlend MasterKeys again to see your results.

Quit PhotoShop for now and take a break. In the next Tutorial we will use MacroMedia Director to do title overlay and fades.
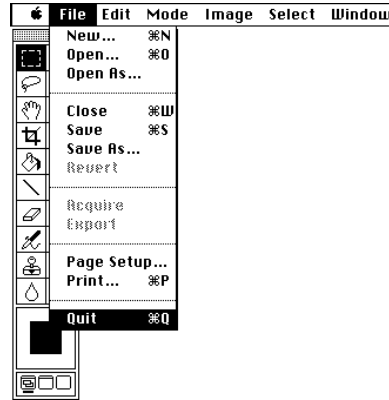
CHAPTER 2

2.2 The Beginning User

2.3 Using MacroMedia Director with the NuVista+

Getting Started

This Tutorial assumes you already have your source of video input connected and turned ON. If you are using a VCR for video input, it must be a separate machine than the one being used for output. Use the VIDI/O Control Panel as described above to select the type of video coming into the NuVista+. If you are using a VCR or laser disc player, insert a tape or disc and start it playing.

Connect NuVista+ Video Out to a VCR and the current NuVista+ monitor using a branching cable. Insert and rewind a tape to which you will record your video productions.

Open your NuVista+ folder and double-click on the folder "Video Production." Then double-click on the file "Video Production" to launch MacroMedia Director.

If you have a multiple-monitor configuration, select Preferences... from the Control menu.

Hold the mouse down on the name of the current screen. When the submenu pops up, select Screen2, or whichever screen is associated with your NuVista+.
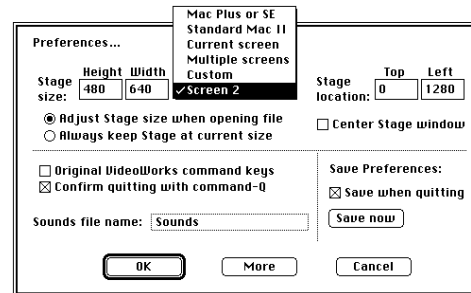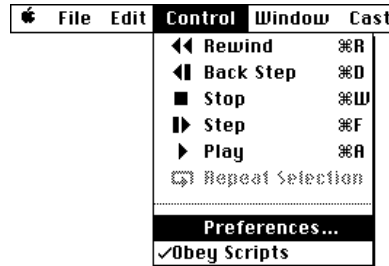
CHAPTER 2

2.3 Director & NuVista+

Click the button labelled MORE, near the lower edge of the dialog. Verify that there is an X in the box next to "Animate in Background under MultiFinder." If there isn't, place one there and click OK. In the main Preferences dialog, click OK.

Select the Control Panel from the Apple menu and choose the Monitors Control Panel. Set the NuVista+ screen to have Thousands of colors. Don't close the Control Panel yet.
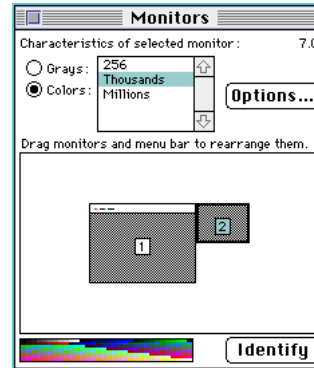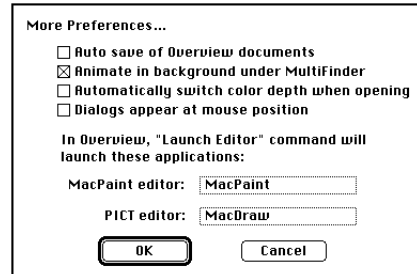
CHAPTER 2

2.3 Director & NuVista+

Fade in Text From Video

In this section we will fade in an animated title over live video.

Select the Blender icon. Click on the button labelled "Select Color" and move the cursor to the NuVista+ screen. Notice how the color currently under the cursor is visible in the Blender Color Square. Click the mouse when the cursor is over a pixel in the background of the green Director Stage. You have just chosen the **Key Color**. All the other colors on the screen are called **Not Key Colors**.

CHAPTER 2

2.3 Director & NuVista+

Notice that the background color of the Stage is no longer black, as it originally was in MacroMedia's example. Because black is a component of the foreground flags and words, and later of the twirling camera, using black as a Key Color would cause video to show through the foreground objects as well as around them. Because we only want video <u>around</u> the animated graphics, the Key Color must not be present in the graphics themselves.

Click on the button along the bottom edge of the Blender and drag it all the way to the right. If you have your video source properly connected and running, you should now see live video in the areas previously occupied by the background.

CHAPTER 2

2.3 Director & NuVista+

Click the button labelled "Blend Interval" in the Blender. You will see a dialog box with four slider controls; the upper two for the Key Color, and the lower two for the Not Key Colors. Since the background is the Key Color and we want the words "Special Report" and the two flags in the foreground to fade in, we will only set the controls for Not Key Colors.
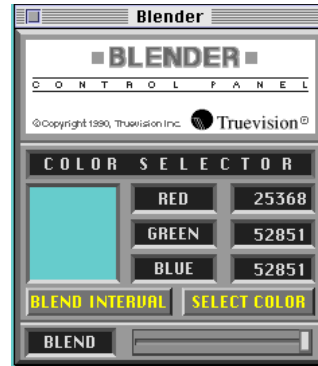
Drag the triangle beneath the third slider control
all the way to the right, leaving the other three
untouched. Type the number 240 in the Interval
Timer Box below the fourth control.

These settings indicate that the fade-in of the
text will start as full video and go to full
graphics over a period of four seconds (240
fields equals 120 frames equals 4 seconds in
NTSC, approx. 5 seconds with PAL equipment).
Click OK to close the dialog box.

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2.3 Director & NuVista+

Make sure the button on the Slider at the bottom of the Blender is all the way to the right. (It should already be in this position.)

Hold down the Option Key and move the Slider button that appears in place of the other one also all the way to the right.

Moving both Blend Sliders to the right ensures that the NuVista+ screen starts off with full live video in both the Key Color pixels and the Not Key Color pixels. Close the Control Panel by clicking in the Close Box.

Option +
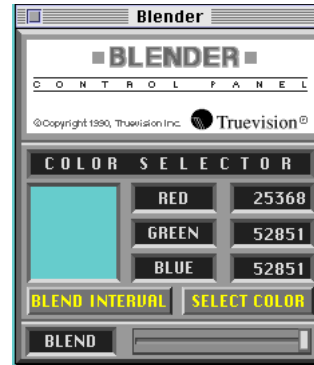
Start your output VCR recording.

Press the Play button on the Director Panel to start the animated graphics.

Now press the Not Color Interval MasterKey (default Command-Keypad 8). The text and flags of the Director animation gradually fade in.

This method of fading in text or animated graphics over video has innumerable applications, ranging from home movie titles to professional television productions. The NuVista+ makes it easy to accomplish while maintaining high video quality.

Start VCR

REW BACK STOP STEP PLAY LOOP 1 2 3 4 5 6

10   22

Command ⌘ + Keypad 8

Not Color Interval MasterKey

Press the Stop and Rewind buttons on the
Director Panel. Press the Interlace MasterKey
(default Command-Keypad =) to bring the
NuVista+ screen back to its non-interlaced state.

Stop the VCR recording, rewind your VCR tape
and view the results.
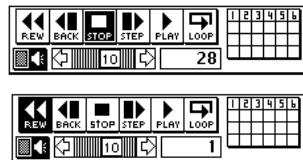
Stop VCR

Fade Both From Image to Live

In this section we will create a fade-out from a full screen of Director animation to a full screen of live video.

Select Control Panel from the Apple menu again, and choose Blender. If the Color Square shows a color different than the background of the Director Stage, click the button labelled "Select Color" and click the mouse on the background color of the Stage on the NuVista+ screen.

Click the button labelled "Blend Interval."

2.3 Director & NuVista+

Drag the triangle beneath the first and third slider controls all the way to the left. Drag the triangle beneath the second and fourth slider controls all the way to the right. Type the number 240 in both Interval Timer Boxes.

These settings indicate that the fade-out of the text and background will start as full graphics and go to full live video over a period of four seconds (approx. 5 seconds with PAL equipment).   Click OK to close the dialog box.
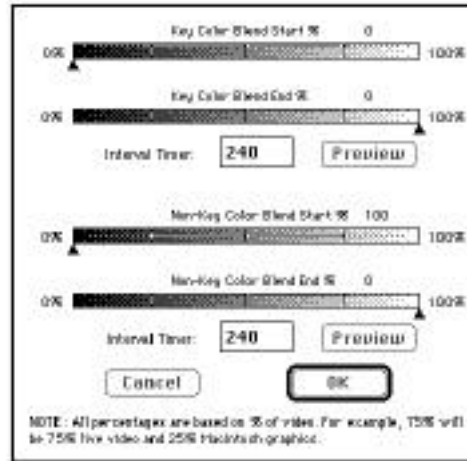
CHAPTER 2

2.3 Director & NuVista+

Drag the Blend Slider along the bottom edge of
the Blender Control Panel all the way to the left.

Hold down the Option Key and drag the slider
that appears in place of the other one all the way
to the left also.

Moving both Blend Sliders to the left ensures
that the NuVista+ screen starts off with full
Director graphics in both the Key Color pixels
and the Not Key Color pixels.

Option + Blend Slider to left

While you are still in the Control Panel, click the MasterKeys icon in the left-hand column. Each name in the MasterKeys scroll window is associated with a particular keystroke. These keys are called MasterKeys because they can be used in any application, even the Finder.

Scroll down until the name "Color Interval" is visible in the scroll window. Click the mouse on the name once to see what keystroke is associated with it. By default it will be Command-Keypad 7.

CHAPTER 2

2.3 Director & NuVista+

Now click once on the name "Not Color Interval." To change the definition of the Not Color Interval MasterKey, hold down the Command key and press the Keypad 7 key. Now both the Color Interval and Not Color Interval MasterKeys are defined as the same keystroke. When this is the case, one keystroke will cause both the Blend Intervals we defined in the Blender to be executed at the same time. Close the Control Panel by clicking in the Close Box.

Start your output VCR recording.
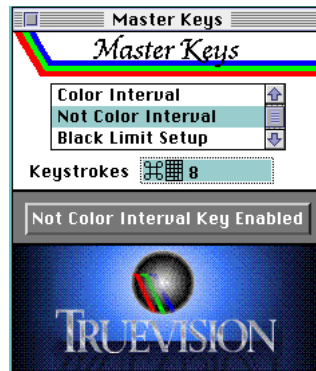
CHAPTER 2

2.3 Director & NuVista+

Press the Play button on the Director Panel to start the animated graphics.

Now press the Color Interval MasterKey (which is the same as the Not Color Interval MasterKey now, Command-Keypad 7). The text and flags of the Director animation gradually fade away to a full screen of live video.

Press the Stop and Rewind buttons on the Director Panel. Press the Interlace MasterKey (default Command-Keypad =) to bring the NuVista+ screen back to its non-interlaced state.

Stop the VCR recording, rewind your VCR tape and view the results.

Command ⌘ + Keypad 7
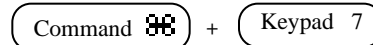
Color Interval MasterKey =
Not Color Interval MasterKey

2.3 Director & NuVista+

Experiment Yourself

Now it's your turn. Experiment with Blend Intervals to create interesting special effects. The sliders in the Blend Interval dialog need not always be set to 100% or 0% live. They can be set to some position in between, resulting in a mixture of image and live video. While you experiment, follow these steps:

Determine which pixels you want to designate as Key Color pixels, and use the Select Color button to designate them.

Plan the starting condition (how much video) for both Key Color and Not Key Color pixels. Indicate that condition in the Blend Interval dialog by setting the first and third sliders.

Plan the ending condition of the special effect, and indicate it in the Blend Interval dialog as well. Use the second and fourth slider controls.

Plan how long the transition is to last for both Key Color and Not Key Color pixels. Indicate the time span in the Blend Interval dialog by typing the number of video fields each transition should last in the Interval Timer Boxes. The two values need not be the same.

(NTSC: The number in the box = 60 * the duration of the transition in seconds.

PAL: The number in the box = 50 * the duration of the transition in seconds.)

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2.3 Director & NuVista+

Use the Blend Sliders in the main Blender Control Panel to achieve the desired amount of blend in the Key Color and Not Key Color pixels on the NuVista+ screen. These Sliders immediately affect the amount of blend on the NuVista+ screen.

Determine if both transitions need to be invoked by one keystroke or separate keystrokes. Define the Color Interval and Not Color Interval MasterKeys appropriately.

Wrapping Up

When you are done with this Tutorial, be sure to set the two Interval MasterKeys back to their original settings (Command-Keypad 7 for Color Interval MasterKey and Command-Keypad 8 for Not Color Interval MasterKey). Quit Director and take a break.

Congratulations! You have accomplished a great deal. You've explored Capture's basic functionality, used the CloseUp Keys and MasterKeys, and investigated the Blender. The graphic fades we did in Director can be accomplished in any Macintosh application. In the short time it took to accomplish these Tutorials, you have already experienced the versatility of the NuVista+ and what it can do for you.

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2.3 Director & NuVista+

2.4 The Advanced User: Chroma Keying

Conventional chroma keying is the process used to impose live video over computer generated graphics. The video is prepared with a particular hue as the Key Color. When the NuVista+ detects the presence of the Key Color in the video, it inserts the frame buffer contents in place of the Key Color. The NuVista+ uses pure blue as the Key Color because pure blue is not often found in naturally occurring objects and tends to work well over a wide range of production situations.

Chroma keying is typically seen in television weather reports, where computer-animated weather maps are projected behind staff meteorologists. The foreground subject of the process (in this case the meteorologist) is videotaped in front of a pure blue background. The NuVista+ receives this video input and determines which pixels are blue in each frame of the video. When a blue pixel is detected, that live pixel is replaced with a pixel from the image currently in the frame buffer (in this case the weather map).

Obtaining Professional Results

Background

It is important that the background used be a flat surface with a matte finish, with a color as close as possible to pure blue. We recommend Ultimatte™ Blue paint applied to canvas or plywood. Do not attempt to use blue paint from a department store.

Camera

An RGB video camera should be used, preferably with a manual iris mode. A Composite Video camera will work, but the quality may not be sufficient for some applications.

Lighting

Proper lighting of the foreground object and particularly the blue background is also important in getting professional chroma keying results. Even lighting of the blue background will enable the NuVista+ to correctly identify all blue areas as blue, thereby eliminating objectionable "crawling" around the edges of the foreground subject.

The following diagrams illustrate general lighting designs for a typical chroma keying news set.

CHAPTER 2

2.4 The Advanced User

Back

Chroma key background

Scoops to evenly illuminate background

foreground subject

Key

Fill

Camera

Chroma key background

foreground subject

Key

Fill

Spot

Camera
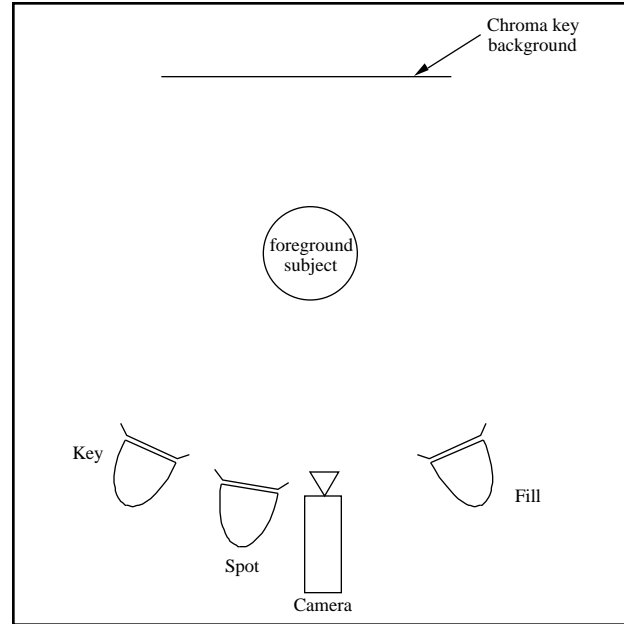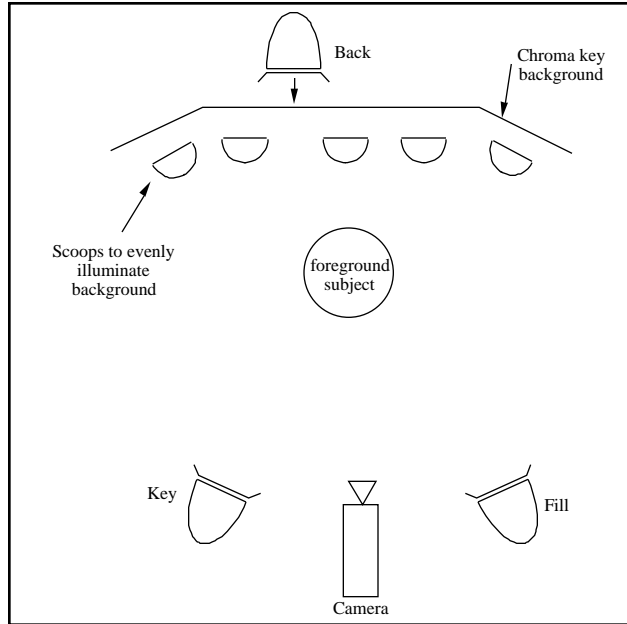
CHAPTER 2

2.4 The Advanced User

Steps Involved in Chroma Keying

Prepare your graphics, still image, or animation in an appropriate Macintosh application.

Prepare set lighting to provide even illumination of the background. Place the foreground subject in front of the background and adjust the manual iris of the camera so that the background is intense and subject is well exposed. Avoid very dark shadows.

Connect the video source (in most cases an RGB camera) to the NuVista+ card. Use the VIDI/O Control Panel to specify whether the incoming color signal is encoded as Composite Video, S-Video, or RGB. (See section 3.4, VIDI/O Control Panel.)

Verify that the NuVista+ screen is already in Interlaced mode. If it is not, use the Interlace MasterKey.

Select Control Panel from the Apple menu and choose ChromaKey from the left-hand column. Click the radio button next to "Chroma Key." The prepared graphics should appear in the blue areas in the live video. Use the Show Alpha radio button to assist in adjusting the gain and external lighting to achieve the best possible Chroma Keying. (See also section 3.5 for more information on the ChromaKey Control Panel Device.)

CHAPTER 2

2.4 The Advanced User

CHAPTER 3 - NuVista+ CONTROL PANEL DEVICES

This chapter describes in detail the five NuVista+ Control Panel Devices accompanying your NuVista+.

3.1 NuVista+ CloseUp

Introduction

NuVista+ CloseUp is a Control Panel Device/ INIT that allows you to take advantage of NuVista+'s powerful hardware zoom and pan capabilities. It offers instantaneous "fat bits" in virtually any Macintosh II application by magnifying the area around the cursor by 2x, 4x, 8x, or 16x.

CloseUp functions in any application running with the NuVista+, including paint packages, word processing programs, even the Finder. In general, it is an excellent means of easing eye strain with just a keystroke.

Zooming and Toggling - Default Settings

NuVista+'s Zoom In and Zoom Out keys allow you to magnify and de-magnify any image on the NuVista+ screen, including the desktop.

To zoom in on a specific portion of an image, move the cursor to the area of interest and press the Zoom In key (default Command-Keypad +). The area around the cursor will be magnified by one step on the scale of 2x, 4x, 8x, 16x each time the Zoom In key is pressed.

To zoom away from a magnified portion of an image, press the Zoom Out key (default Command-Keypad -). The image will be de-magnified by one step on the scale of 2x, 4x, 8x, 16x each time the Zoom Out key is pressed.

$$\boxed{\text{Command} \ \mathⱭ} \ + \ \boxed{\text{Keypad} \ +}$$
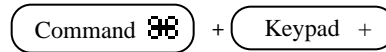
Zoom In key
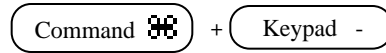
$$\boxed{\text{Command} \ \mathⱭ} \ + \ \boxed{\text{Keypad} \ -}$$

Zoom Out key

CHAPTER 3

3.1 NuVista+ CloseUp

To toggle between the last level of magnification and 1x or the actual size of the image, press the Zoom Toggle key (default Command-Keypad *). Toggling allows you to quickly zoom between 1x and another level of magnification while skipping the levels in between.

Panning

CloseUp also offers fast panning of images when the image is magnified. To pan, or see another portion of an image, simply move the cursor in the direction of the desired portion, and the image will scroll in that direction. As with Zoom In and Zoom Out, Panning functions

(Command ⌘) + (Keypad *)

Zoom Toggle key

in any application running with the NuVista+, even the Finder, provided the image is magnified.

Removing Cursor from View

To remove the cursor from view over a magnified image without causing the image to pan, simply hold down the ESC key while moving the cursor. When the ESC key is released, the image will pan to the current location of the cursor.

Changing Default Settings

The keystrokes for Zoom In, Zoom Out, and Zoom Toggle can be customized. Select Control Panel from the Apple menu. Double-click the NuVista+ CloseUp icon. An edit box will appear next to each of the three keys, as well as a gray button to disable CloseUp.
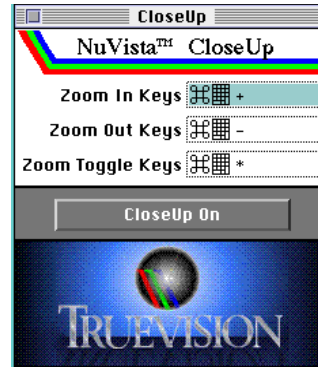
CHAPTER 3

3.1 NuVista+ CloseUp

To edit a keystroke, click on the edit box next to the name of the key to select it, making sure the gray button shows that CloseUp is enabled. Type a new keystroke in to the edit box, and close the Control Panel window.

Your custom keystrokes for Zoom In, Zoom Out, and Zoom Toggle can be a single key or a key with a modifier. Any key of the keyboard including the numeric keypad and function keys may be used except TAB and CAPS LOCK. Characters on the numeric keypad are indicated by a small rectangle containing six dots. Valid modifiers include Command, Shift, Command-Shift, Command-Option, and Command-Shift-Option. Note that the Option key alone may not be used as a modifier.

(Any Key)

(Command ⌘) + (Any Key)

(Shift ⇧) + (Any Key)

(Command ⌘) + (Shift ⇧) + (Any Key)

(Command ⌘) + (Option ⌥) + (Any Key)

(Command ⌘) + (Shift ⇧) + (Option ⌥) + (Any Key)
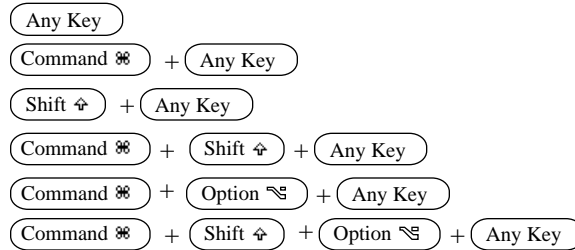
CHAPTER 3

3.1 NuVista+ CloseUp

Keep in mind that Command-Keypad /, Command-Keypad =, Command-Keypad Clear, Command-ESC, Command-. , Command-Keypad 4, Command-Keypad 5, Command-Keypad 6, Command-Keypad 7, Command-Keypad 8, and Command-Keypad 9 are default settings for other NuVista+ functions.

Disabling CloseUp

To temporarily disable NuVista+ CloseUp, select Control Panel from the Apple menu. Click the NuVista+ CloseUp icon in the left-hand column. Click the gray button labelled "CloseUp Enabled." After clicking it once it will read "CloseUp Disabled." Close the Control Panel window. To re-enable CloseUp, click the gray button once so that it reads "CloseUp Enabled."

Removing CloseUp

To remove the CloseUp Control Panel Device permanently until it is reinstalled, open your System Folder and drag the CloseUp icon anywhere outside the folder or into another folder.

Using Two or More NuVista+ Cards

When two or more NuVista+ cards are installed in your Macintosh, the CloseUp Keys will only function on the left-most NuVista+ card.

CHAPTER 3

3.1 NuVista+ CloseUp

3.2 NuVista+ MasterKeys

Introduction

NuVista+ MasterKeys is a Control Panel Device/Startup document that offers the ability to invoke special effects, Overlay, or Interlaced mode at the touch of a key. These operations are each associated with a particular keystroke, and MasterKeys is the place where these keystrokes are defined. <u>Please note that the MasterKeys window must be closed before actually using MasterKeys</u>.

(Command ⌘) + (Keypad /) Overlay

(Command ⌘) + (Keypad =) Interlace

(Command ⌘) + (Keypad CLEAR) Restore Display

(Command ⌘) + (ESC) Home Cursor

(Command ⌘) + (Keypad 7) Color Interval

(Command ⌘) + (Keypad 8) Not Color Interval

(Command ⌘) + (Keypad .) Black Limit Setup

(Command ⌘) + (Keypad 4) Live/Display

(Command ⌘) + (Keypad 5) Input Source

(Command ⌘) + (Keypad 6) Genlock

(Command ⌘) + (Keypad 9) AlphaBlend

Overlay MasterKey

The Overlay MasterKey (default Command-Keypad /) toggles video ON in the Key Color pixels only. In the extreme case where the Key Color Blend Slider is at 100% video (all the way to the right), then the Overlay MasterKey toggles between full video and the display of the image. However, when the Key Color Blend Slider is at say, 60% video, the Overlay MasterKey toggles between the 60%/40% blend of video to image and the display of the image.

The Overlay MasterKey is not needed when using the Blender to select a Key Color or define Blend Intervals. It is used primarily within other applications to activate previously defined settings.

Interlace MasterKey

The Interlace MasterKey (default Command-Keypad =) toggles between the non-interlaced display mode of the computer monitor and either the NTSC or PAL interlaced mode compatible with your video equipment. If you have an NTSC version of the NuVista+, then the Interlace MasterKey will toggle between non-interlaced mode and NTSC Interlaced mode. Similarly, if you have a PAL version of the NuVista+, the Interlace MasterKey will toggle between non-interlaced mode and PAL Interlaced mode. Because it is the MasterKey that fosters compatibility with video equipment, it is typically the most-used of all the MasterKeys.

CHAPTER 3

3.2 NuVista+ MasterKeys

Restore Display MasterKey

The Restore Display MasterKey (default Command-Keypad Clear) brings the NuVista+ screen to its default state. All NuVista+ Control Panel settings will also be restored to their default settings, eliminating your current settings in the various Control Panels. The restore Display MasterKey is used when you have misconfigured your NuVista+ and need to Restore the default, manufacturer's settings for the various Control Panel Devices.

The Restore Display MasterKey is often useful when using a one-monitor configuration.

If you prefer a quick way to restore the NuVista+ screen to its non-interlaced state, set the definitions for both the Interlace and Overlay MasterKeys to be the same keystroke and use that key instead of the Restore Display MasterKey. Using this method, you will be able to retain your current settings of the various Control Panels, even when the Macintosh is restarted.

👓 If the video out from the NuVista+ appears to be washed out or monochrome, press the following key sequence:
    Command-Keypad Clear (twice).

Home Cursor MasterKey

The Home Cursor MasterKey (default Command-ESC) simply places your cursor in the upper left corner of the menubar on the main screen. This MasterKey is a convenience when working with multiple monitors.

Color Interval MasterKey

The Color Interval MasterKey (default Command-Keypad 7) is used to invoke the Color Interval special effect in any application. Both the Key Color and the Color Interval must already be specified in the Blender. Only the pixels matching the Key Color are affected by the transition.

The Color Interval MasterKey is particularly useful for creating fades and other special effects used in video production.

Not Color Interval MasterKey

The Not Color Interval MasterKey (default Command-Keypad 8) is used to invoke the Not Color Interval special effect in any application. Both the Key Color and the Not Color Interval must already be specified in the Blender. Only the pixels not matching the Key Color are affected by the transition.

By default, the Color and Not Color Interval MasterKeys are associated with different keystrokes. This need not always be the case. If both Intervals are assigned to the same MasterKey, then both the pixels matching the Key Color and those not matching the Key Color will be affected in the transition.

CHAPTER 3

3.2 NuVista+ MasterKeys

Black Limit Setup MasterKey

The Black Limit Setup MasterKey (default Command-Keypad period) toggles the black level between 7.5 IRE and 0 (zero) IRE.

Live/Display MasterKey

The Live/Display MasterKey (default Command-Keypad 4) toggles between live video and capture mode.

Input Source MasterKey

The Input Source MasterKey (default Command-Keypad 5) toggles the RGB, Composite, and S-Video inputs.

Genlock MasterKey

The Genlock MasterKey (default Command-Keypad 6) toggles Genlock On/Off.

AlphaBlend MasterKey

The AlphaBlend MasterKey (default Command-Keypad 9) is used to implement a blend of image to live video on a pixel-by-pixel basis. This MasterKey can be used with any application that allows you to assign values to the Alpha channel of pixels in an image. The Alpha channel is a name for the 8 bits not used in defining the color of a 32-bit pixel. In 32-bit color, 8 bits of each pixel are used for red, 8 for green, and 8 for blue, leaving 8 for what is

called the Alpha channel. The Alpha channel can be used to describe any aspect of a pixel other than its color. Some applications use them for masking or blending, but others do not make use of the Alpha channel.

Typically, the application will require you to specify gray-scale values for pixels in an Alpha channel. These values are then treated not as gray-scale, but as levels of video/image blend, akin to the levels of opacity that can be achieved using the Blend Slider in the Blender, but on a single-pixel basis. When the AlphaBlend MasterKey is invoked, the white pixels in the Alpha channel contain 100% live video, while the black pixels contain 0% live video or 100% image. The gray pixels in between contain a

blend of live video and image that corresponds to the gray-scale value in its Alpha channel.

Consult the documentation of the application you are using to find out how the Alpha channel is used. When you have specified gray-scale values on the Alpha channel and set the NuVista+ screen to Interlaced mode, press the AlphaBlend MasterKey to see live video in the whiter pixels.

CHAPTER 3

3.2 NuVista+ MasterKeys

Changing Default Settings

The keystrokes associated with each MasterKey can be customized. Select Control Panel from the Apple menu. Click the NuVista+ MasterKeys icon in the left-hand column. Click on the name of the MasterKey you wish to edit. You may have to scroll the window a bit to see all of them. An edit box will appear below the list of MasterKeys, as well as a gray button to disable each. Type a new keystroke in the edit box, making sure the gray button indicates the MasterKey is enabled. Close the Control Panel window.

Your custom keystroke for each MasterKey can be a single key or a key with a modifier. Any key of the keyboard including the numeric keypad may be used except TAB and CAPS LOCK. Characters on the numeric keypad are indicated by a small rectangle containing six dots. Valid modifiers include Command, Shift, Command-Shift, Command-Option, and Command-Shift-Option. Note that the Option key alone may not be used as a modifier.

Keep in mind that Command-Keypad +, Command-Keypad -, and Command-Keypad * are default settings for other NuVista+ functions.

CHAPTER 3

3.2 NuVista+ MasterKeys

Disabling Masterkeys

Each one of the MasterKeys can be disabled
separately. To temporarily disable one or all of
the MasterKeys, select Control Panel from the
Apple menu. Click the NuVista+ Masterkeys
icon in the left-hand column. Select one of the
MasterKeys in the scroll window, and then click
the gray button below it. After clicking it once
it will read "[MasterKey] Disabled." Close the
Control Panel window. To re-enable the
MasterKey, select the MasterKey to be enabled
in the scroll window, and then click the gray
button below it once so that it reads
"[MasterKey] Enabled."
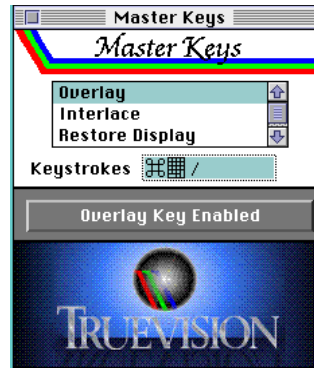
CHAPTER 3

3.2 NuVista+ MasterKeys

Removing Masterkeys

To remove the MasterKeys Control Panel
Device permanently until it is reinstalled, open
your System Folder and drag the MasterKeys
icon anywhere outside the folder or into another
folder.

CHAPTER 3

3.2 NuVista+ MasterKeys

Using Two or More NuVista+ Cards

When two or more NuVista+ cards are installed in your Macintosh, MasterKeys will access the left-most NuVista+ card by default. Therefore, whenever you press one of the MasterKeys, its effect will be seen on the screen associated with the left-most NuVista+ card.

To change the default and indicate which screen you want the MasterKeys to affect, choose Control Panel from the Apple menu and select MasterKeys from the left-hand column. Click once on the Truevision logo. The cursor will turn into a square "monitor" icon. Click the cursor on the screen that you want the MasterKeys to affect.

Monitor Icon

CHAPTER 3

3.2 NuVista+ MasterKeys

Overlaying Graphics on Live Video

Suppose you wanted to briefly overlay the name of a person being interviewed over the live video of the interview itself. The NuVista+ was designed with applications like this in mind.

Prepare the graphics of the person's name (or any text, graphics, or animation) using an appropriate Macintosh application. (Even the desktop may be used as a graphic overlay.) As you do so, keep in mind where you would like the live video to show through. Make those areas a specific color. This color will later be selected as the Key Color.

Connect the video source such as a VCR or video camera to the NuVista+ Video In and turn the power ON. Use the VIDI/O Control Panel to specify whether the incoming video is composite video, S-video, or RGB. (See section 3.4, NuVista+ VIDI/O Control Panel.)

To select the Key Color, choose the Control Panel from the Apple menu and select the Blender. The NuVista+ screen will automatically switch into Interlaced mode. Click the button labelled "Select Color." Move your cursor about the NuVista+ screen and click the mouse on the color of your choice. Now adjust the Blend Slider to achieve the desired blend of video and image. You should see video in the Key Color pixels on the NuVista+ screen. (For more information, see section 3.3, NuVista+ Blender.)

CHAPTER 3

3.2 NuVista+ MasterKeys

? Trouble? If the portions of the image where live video should have been visible only show black, verify:

• that you have the correct cable for the type of input source you have, and that all cables are secure.

• that the type of video selected in the VIDI/O Control Panel (Composite, S-Video, or RGB) matches the type of input source you have.

• If you are obtaining video input from an RGB camera, it is possible that you need to specify a subcarrier source. See section 3.4, VIDI/O Control Panel for more information.

CHAPTER 3

3.2 NuVista+ MasterKeys

3.3 NuVista+ Blender

Introduction

The NuVista+ Blender is a Control Panel Device that allows you to incorporate special effects into your video productions. A Key Color is chosen to indicate in which pixels of the image to show live video. Video can be shown in all the pixels <u>matching</u> the Key Color, and/or in all the pixels <u>not matching</u> the Key Color. The pixels showing video can be blended with graphics at any one of 256 levels of opacity.

With the Blender you can define a "blend interval" for fades and dissolves, and these special effects can be invoked at the touch of a MasterKey in any application.

Selecting a Color

To select the Key Color, choose the Control
Panel from the Apple menu and select the
Blender. The NuVista+ screen will
automatically go into Interlaced mode. Click
the button labelled "Select Color." The button
will look like it has been pushed down. Now
move your cursor about the NuVista+ screen.
As you do so, the color of the pixel currently
under the mouse will show in the top half of the
colored square. The bottom half shows the
previous Key Color. When you click the mouse
on the color of your choice, the entire square
becomes the Key Color and the pixels matching
the Key Color show video. For your
information, the levels of Red, Green, and Blue
(from 0 to 65535) are indicated to the right.

CHAPTER 3

3.3 NuVista+ Blender

The Blend Slider for Key Color

Along the bottom edge of the Blender Control
Panel is the Blend Slider. This slider affects the
degree to which live video is mixed with the
Key Color pixels in the image when the
monitor is set to Thousands or Millions of
Colors or Grays. To see the result, the
NuVista+ screen should be in Interlaced mode
and Overlay toggled ON. Use this Blend Slider
whenever you want to change the current
amount of video in Key Color pixels of an
image.

When the Slider is all the way to the right, all
pixels matching the Key Color will show 100%

CHAPTER 3

3.3 NuVista+ Blender

live video. The other pixels in the image will not be affected.

When the Slider is all the way to the left (the default position), all pixels matching the Key Color will show 0% live video. In this case the Key Color pixels will look normal, as they do when they are part of the image.

When the Slider is somewhere in between, the Key Color pixels will show a <u>blend</u> of video and image when the NuVista+ screen is in Interlaced mode and Overlay is toggled ON. The image will appear "transparent" by allowing some live video to show through. The ratio of live video to image depends on the position of the Slider. There are 256 possible levels of transparency available.

Toggling Overlay

Once the Blend Slider for Key Color has been set, pressing the Overlay MasterKey will toggle video ON and OFF in the Key Color pixels of the image.

CHAPTER 3

3.3 NuVista+ Blender

The Blend Slider for Not Key Color

When the Option Key is pressed, another Blend Slider appears in place of the first Blend Slider. This slider affects the degree to which live video is mixed with the **Not Key Color pixels** in the image when the monitor is set to Thousands or Millions of Colors or Grays. To see the result, the NuVista+ screen should be in Interlaced mode and Overlay toggled ON. Use this Slider whenever you want to change the current amount of video in Not Key Color pixels of an image.

When the Slider is all the way to the left (the default position), the pixels <u>not</u> matching the

Option +

Key Color will remain unaffected (showing 0% live video). Because the pixels do not match the Key Color, it is appropriate that they do not show live video until the Slider is moved.

When the Slider is all the way to the right, all pixels <u>not</u> matching the Key Color will show 100% live video. The other pixels in the image will not be affected.

When the Slider is somewhere in between, the Not Key Color pixels will show a <u>blend</u> of live video and frame buffer image when the NuVista+ screen is in Interlaced mode and Overlay is toggled ON. The image will appear "transparent" by allowing some video to show through. The ratio of video to image depends on the position of the Slider. There are 256 possible levels of transparency available.

When both sliders are all the way to the right, the entire NuVista+ screen will show video. Similarly, when both sliders are all the way to the left, the entire screen will show the image.

CHAPTER 3

3.3 NuVista+ Blender

The Blend Interval

The Blend Interval will allow you to create special effects and transitions with the NuVista+. Conceptually, a Blend Interval is a blend of video and image <u>over a time period</u>. During this time period the ratio of video to image gradually changes. For example, if you want a fade-out from live video to the Key Color, first set the Blend Interval and then invoke the Color Interval MasterKey when you want to see the special effect. Alternatively, all the pixels <u>except</u> the Key Color pixels can be used in the special effect. In this case the Not Color Interval MasterKey is invoked after the Blend Interval is set. A fade-in or fade-out at the touch of a key is a handy feature in video production.

Setting the Blend Interval

To set the Blend Interval, click the button labelled "Blend Interval" in the Blender Control Panel. A dialog box with four slider controls will appear, two above and two below. The upper two controls are used to set the Blend Interval for all pixels matching the Key Color. In this case the Blend Interval is called the **Color Interval** and is invoked by the Color Interval MasterKey.

The lower two sliders are used to set the Blend Interval for all the pixels that do <u>not</u> match the Key Color. In this case the Blend Interval is called the **Not Color Interval** and is invoked by the Not Color Interval MasterKey.

CHAPTER 3

3.3 NuVista+ Blender

Color Interval

The Color Interval is the Blend Interval associated with the pixels that match the Key Color. The pixels not matching the Key Color are not affected during the transition.

To set the amount of blend for the start of the transition, drag the triangle beneath the top-most slider control to the percentage of live video desired. If the triangle is at 0% on the first control, the pixels matching the Key Color will begin the transition as full image pixels. If the triangle is at 100%, the Key Color pixels will begin the transition as full live video pixels.
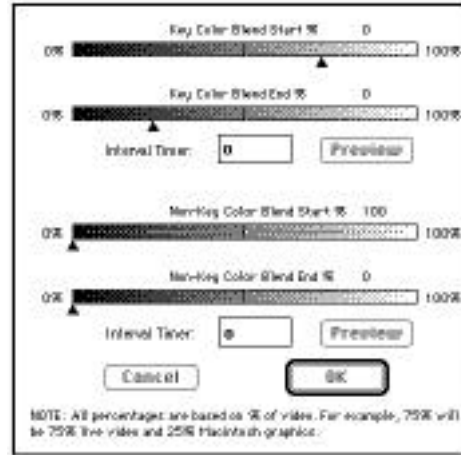
CHAPTER 3

3.3 NuVista+ Blender

To set the amount of blend for the end of the transition, drag the triangle beneath the second slider control to the percentage of live video desired. As before, if the triangle is at 0% on the second control, the Key Color pixels will end the transition as full image pixels. If the triangle is at 100%, the Key Color pixels will end the transition as full live video pixels.

Of course, the triangles for either the beginning or end of the transition may be set somewhere in the middle.

Although you will see little change, it is not necessary for the two triangles to be set to different numbers.

The Interval Timer

Once the the amount of blend for both the beginning and end of the transition have been set, the amount of time taken for the transition (in video fields) must be specified.

To do this, type a number greater than 0 in the text box labelled "Interval Timer." For those with NTSC video equipment, which runs at 60 fields/second (30 frames/second), typing the number 180 in the text box will cause the transition to last 3 seconds. PAL equipment runs at 50 fields/second (25 frames/second), so typing the number 200 in the text box will specify a transition lasting 4 seconds.

CHAPTER 3

3.3 NuVista+ Blender

If there is a 0 in the Interval Timer Box, the Color Interval transition will not be executed, even though its beginning and end blend amounts may be specified.

CHAPTER 3

3.3 NuVista+ Blender

Previewing the Results

Now you are ready to preview the transition. Click the button labelled "Preview" to the right of the upper Interval Timer Box. The transition will take place immediately on the NuVista+ screen.

When the Color Interval is specified to your satisfaction, click OK. When it comes time to invoke the transition, press the Interlace MasterKey and then the Color Interval MasterKey. The special effect will immediately begin.

CHAPTER 3

3.3 NuVista+ Blender

? Trouble? If you do not see the special effect specified in the Blend Interval dialog box, make sure:

• that your source of video input is connected and turned on, and that its type is correctly identified in the VIDI/O Control Panel.

• that the NuVista+ screen is set to Thousands or Millions of colors.

• that you have selected a Key Color in the Blender.

• that the NuVista+ screen is in Interlaced mode and that the Overlay MasterKey has toggled video ON in the Key Color pixels (the Blender will have done this automatically).

• that you have set the amounts of blend for the beginning and end of the transition.

• that you have specified a value greater than 0 in the Key Color Interval Timer Box.

Not Color Interval

The Not Color Interval is the Blend Interval associated with all the pixels that do <u>not</u> match the Key Color. The pixels matching the Key Color are not affected during the transition. The amounts of blend for the beginning and end of the transition are set the same way as for the Color Interval (see above).

The Interval Timer

The Interval Timer is set the same way as for the Color Interval.

👓 If there is a 0 in the Interval Timer Box, the Not Color Interval transition will not be executed, even though its beginning and end blend amounts may be specified.

Previewing the Results

The Not Color Interval can be previewed by pressing the button labelled "Preview" next to the lower Interval Timer Box, as you do for Color Interval.

When the Not Color Interval is specified to your satisfaction, click OK. When it comes time to invoke the transition, press the Interlace MasterKey and then the Not Color Interval MasterKey. The special effect will immediately begin.

Causing both Intervals to Take Place Simultaneously

By default, the Color and Not Color Intervals are associated with different MasterKeys. If this is not the case, both Intervals can be invoked with one keystroke. Instructions for changing the settings of MasterKeys can be found earlier in this chapter.

Removing Blender

To remove the Blender Control Panel Device permanently until it is reinstalled, open your System Folder and drag the Blender icon

CHAPTER 3

3.3 NuVista+ Blender

anywhere outside the folder or into another folder.

Using Two or More NuVista+ Cards

When two or more NuVista+ cards are installed in your Macintosh, the Blender will access the left-most NuVista+ card by default. Therefore, whenever you use the Blender, its effect will be seen on the screen associated with the left-most NuVista+ card.

To change the default and indicate which screen you want the Blender to affect, choose Control Panel from the Apple menu and select Blender from the left-hand column. Click once on the Truevision logo. The cursor will turn into a square "monitor" icon. Click the cursor on the screen that you want the Blender to affect.

CHAPTER 3

3.3 NuVista+ Blender

3.4 NuVista+ VIDI/O Control Panel

Introduction

The NuVista+ VIDI/O Control Panel is a Control Panel Device that allows you to specify the type of video input coming to the NuVista+, and various options and adjustments for both video input and NuVista+ output.

The Input Selector

The Input Selector allows you to indicate the type of video input that is being received by the NuVista+. The default setting for the Input Selector is RGB, indicated by the light-colored label on the RGB button (green if your monitor is color).

Select the button that matches the type of video input to the NuVista+. If your source of video input is a VCR or video camera, you should probably select the button labelled "VIDEO," for Composite Video. If your input source is an RGB camera, select the button labelled "RGB." Similarly, if your input source is an S-Video camera or VCR, select the button labelled "S-Video."

Some video equipment outputs more than one type of video signal at the same time, such as RGB as well as Composite Video, or S-Video and Composite Video. If this is the case, you may select either of the two appropriate buttons in the VIDI/O Control Panel.

A Note About Subcarrier Source

Most RGB cameras output an RGB as well as a Composite Video signal on the same connector. The NuVista+ uses the Composite Video signal (as do many other video products) as source of subcarrier information.

However, certain RGB cameras output an RGB and Composite Video signal on separate connectors, and/or possibly output an S-Video signal to be used as a subcarrier source. Certain adjustments must be made if this is the case and you wish to get Composite or S-Video output from your NuVista+.

If your camera outputs an S-Video signal (either separately or on the same connector as RGB),

hold down the Option key while you click the button labelled "RGB" in the VIDI/O Control Panel. The button now reads "RGB-SV," indicating that an S-Video signal (instead of the default Composite Video signal) is being used as a subcarrier source. When the button is clicked again, it will read "RGB" again, indicating that a Composite Video signal is being used as a subcarrier source.

If your camera outputs a Composite or S-Video signal on a separate connector than the RGB signal, you will need a branching cable (CA-6), having S-Video and Composite Video connectors as well as RGB connectors. Connect the camera to the NuVista+ with both the RGB connectors and either the Composite or S-Video connector.

Decoder Options

The Decoder options allow adjustments to the video input to the NuVista+. These controls affect the live video in the same way as they do on your television set.

To use the decoder options most effectively, choose Control Panel from the Apple menu and select General from the left-hand column. Set your desktop pattern to be a solid color. Use the Blender to select this color as the Key Color. When video appears on your desktop, select VIDI/O from the left-hand column and adjust the decoder options to your liking.

Tint

The Tint Slider changes the hue of the image, only when the source of video input is Composite Video.

Color

The Color Slider changes the color intensity of the image, only when the source of video input is Composite Video.

Brightness

The Brightness Slider affects the amount of white in the entire image.

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3.4 NuVista+ VIDI/O

Contrast

The Contrast Slider affects the amount of difference between the light and dark areas in the image.

Encoder Options

The Encoder options allow adjustments to the output of the NuVista+, particularly horizontal phase and subcarrier phase adjustments. Most users will not need to use these adjustments; they are mainly intended for broadcast engineers in studio situations.

Click once on the button labelled Decoder Options. It should now read Encoder Options.
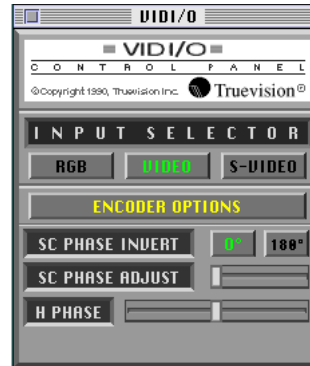
Subcarrier Phase Invert

The Subcarrier Phase Invert is the coarse Subcarrier Phase adjustment. Clicking on the button labelled "180°" causes the subcarrier phase to be shifted 180°.

Subcarrier Phase Adjust

The Subcarrier Phase Adjustment Slider adjusts the subcarrier phase in increments of 3°.

Horizontal Phase Adjustment

The Horizontal Phase Adjustment Slider allows you to adjust the horizontal phase in studio situations where cable compensation is needed.

Removing VIDI/O Control Panel

To remove the VIDI/O Control Panel Device permanently until it is reinstalled, open your System Folder and drag the VIDI/O icon anywhere outside the folder or into another folder.

Using Two or More NuVista+ Cards

When two or more NuVista+ cards are installed in your Macintosh, the VIDI/O Control Panel will access the left-most NuVista+ card by default. Therefore, whenever you use the VIDI/O Control Panel, its effects will be seen on the screen associated with the left-most NuVista+ card.

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3.4 NuVista+ VIDI/O

To change the default and indicate which screen you want the VIDI/O Control Panel to affect, choose Control Panel from the Apple menu and select VIDI/O from the left-hand column. Click once on the Truevision logo. The cursor will turn into a square "monitor" icon. Click the cursor on the screen that you want the VIDI/O Control Panel to affect.

3.5 NuVista+ Chroma Key

Introduction

The NuVista+ Chroma Keyer is a Control Panel Device that allows you to achieve professional Chroma Keying results. Television news stations perform Chroma Keying every time they superimpose the live video image of a weatherperson over a still or animated weather map. The video is prepared with a pure blue color in places where the map is intended to be visible. The NuVista+ performs Chroma Keying by "keying" on the blue pixels it can find in the incoming live video. When the Chroma Keyer is invoked, those pixels will show frame buffer image.

To access the Chroma Keyer, select Control Panel from the Apple menu and click on the Chroma Keyer's icon in the left-hand column. The Chroma Key window has three display radio buttons on the right, three gain settings on the left, and a slider below for setting the zero level.

The Display Radio Buttons

The three display radio buttons on the right of the Chroma Key window allow you to switch between normal display, Chroma Key or a display of live plus the image, and Alpha display. Each setting is described below.
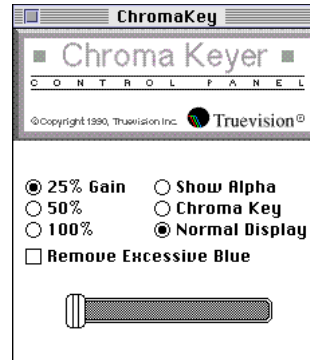
CHAPTER 3

3.5 NuVista+ Chroma Key

Normal Display

The default display setting is Normal Display, as would be expected. Whether the NuVista+ screen is in Interlaced mode or not, Normal Display shows the graphic or image on the screen at the time. No video is present.

Chroma Key

Clicking the Chroma Key radio button will set the NuVista+ screen in Interlaced mode and invoke the Chroma Keyer. Assuming the incoming video signal includes some portions that are pure blue (or as close as possible), the screen will show the graphics on the NuVista+ screen in all areas that were blue in the video signal.

Show Alpha

Clicking the Show Alpha radio button shows the incoming video signal as a black and white picture. This picture is not merely a negative, but indicates which pixels the NuVista+ has determined to be blue by showing them as black. By providing a sharp contrast between blue pixels and non-blue pixels, this representation aids you in adjusting the external lighting, the Gain radio buttons, and the slider control to get the best Chroma Keying results.

Remove Excess Blue

Remove Excess Blue should be checked if the video appears to have blue borders.

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3.5 NuVista+ Chroma Key

Gain

The Gain radio buttons and the slider control below allow you to adjust the Chroma Key signal to obtain the best possible Chroma Keying results. These adjustments are often made with the Show Alpha radio button clicked. Experiment with these settings to achieve the sharpest contrast between black and white in the Show Alpha window.

Overlaying Live Video on Graphics

Suppose you wanted to impose a live video of a weatherperson over a picture of a weather map. Because it will be impossible to predict where the weatherperson will be standing, a Key Color as described above cannot be incorporated into the prepared graphic. Instead, the live video is prepared with the graphic "underlay" in mind. Because pure blue appears rarely in naturally occurring objects, the live video is prepared with areas where the graphics should appear as close as possible to pure blue. The blue color, known as the Chroma Key Color, will be replaced by the graphics when the two are combined.

Prepare set lighting to provide even illumination of background and foreground. The following diagrams illustrate general lighting designs for a typical chroma keying news set.

CHAPTER 3

3.5 NuVista+ Chroma Key
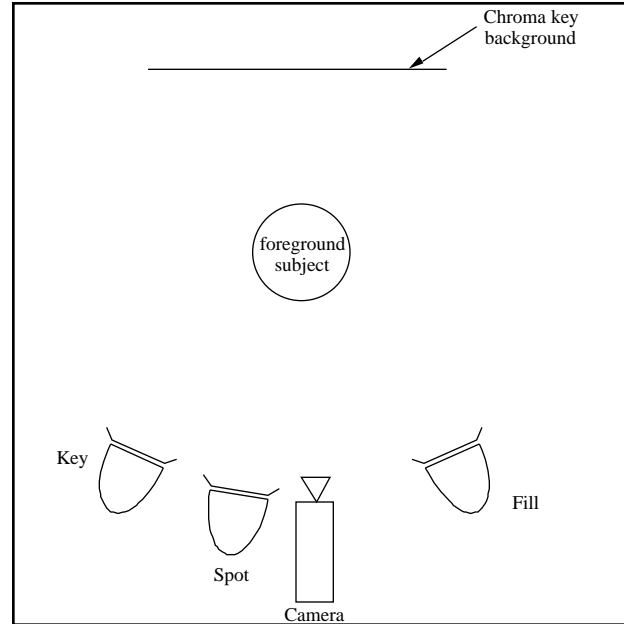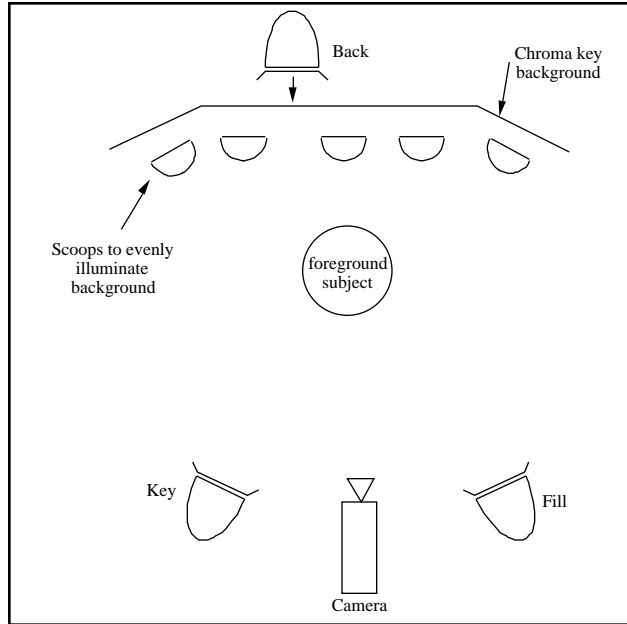
CHAPTER 3

3.5 NuVista+ Chroma Key

Prepare your graphics, still image, or animation in an appropriate Macintosh application. Prepare the video to have a rich blue color (with as little red and green as possible) where you want the graphics to show through.

Connect the video source such as a VCR or video camera to the NuVista+ card. Use the VIDI/O Control Panel to specify whether the incoming color signal is encoded as composite video, S-video, or RGB. (See section 3.4, VIDI/O Control Panel.)

Verify that the NuVista+ screen is already in Interlaced mode. If it is not, use the Interlace MasterKey.

Select Control Panel from the Apple menu and choose Chroma Key from the left-hand column. Click the radio button next to "Chroma Key." The prepared graphics should appear in the blue areas in the live video. Use the Show Alpha radio button to assist in adjusting the gain and external lighting to achieve the best possible Chroma Keying.

Removing Chroma Key

To remove the Chroma Key Control Panel Device permanently until it is reinstalled, open your System Folder and drag the Chroma Key icon anywhere outside the folder or into another folder.

CHAPTER 3

3.5 NuVista+ Chroma Key

Using Two or More NuVista+ Cards

When two or more NuVista+ cards are installed in your Macintosh, The Chroma Keyer will access the left-most NuVista+ card by default. Therefore, whenever you use the Chroma Keyer, its effect will be seen on the screen associated with the left-most NuVista+ card.

To change the default and indicate which screen you want the Chroma Keyer to affect, choose Control Panel from the Apple menu and select Chroma Key from the left-hand column. Click once on the Truevision logo. The cursor will turn into a square "monitor" icon. Click the cursor on the screen that you want the Chroma Keyer to affect.

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3.5 NuVista+ Chroma Key

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4.1 NuVista+ Capture

Introduction

NuVista+ Capture is an application that allows you to "take a snapshot" or capture a frame of a live video in <u>real time</u>. You can choose one or more Key Colors for live video overlay and save the Alpha channels (video overlay information) of these pixels. This image, including the Alpha channel information, can then be saved whole or in part and exported to other Macintosh applications.

With Capture you can import any PICT or 32-bit TGA file, convert a PICT file to a 32-bit TGA file and vice versa, and convert any image to 32, 16, or 8 bits per pixel.

The memory requirements of Capture can be reduced to 512K, provided that sufficient memory is available on the NuVista+ card. (Note: At the 512K level, some Capture features may take longer to perform.)

To use Capture you will need to connect a source of video input such as a camera, VCR, or laser disc player to NuVista+ Video In. Use the VIDI/O Control Panel to specify whether the video input is Composite Video, S-Video, or RGB. (See also section 3.4, VIDI/O Control Panel.)

Capturing an Image

To capture an image in real time, launch Capture by double-clicking on its icon. An empty window titled the Capture Window will appear, with the current image size (in pixels) and video input source mode (NTSC or PAL) in the title bar. If necessary, move the Capture window to the NuVista+ monitor.

Select Capture Image from the File menu. The NuVista+ screen will automatically switch into Interlaced mode and a live picture coming from the input source will fill the entire screen. Click the mouse when you are ready to capture a frame. It is not necessary for live video to be stationary.

```
  File  Edit  Special  Alpha
    Open...            ⌘O
    Capture Image   ⌘G
    Save...            ⌘S
    Page Setup...
    Print...
    Quit               ⌘Q
```
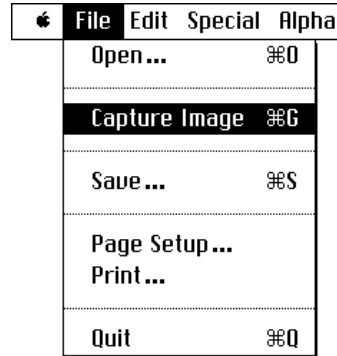
CHAPTER 4

4.1 NuVista+ Capture

Although the captured image will have 16-bit color resolution by default, it may appear in the Capture Window with a different color resolution, depending on the current setting of the screen in the Monitors Control Panel Device. Although the <u>display</u> resolution of the captured image is affected by the Monitors settings, the color resolution at which the image is <u>saved</u> is not.

Dithering

Selecting Use Dithering from the Special menu may improve the 8-bit display quality of a 32- or 16-bit image by providing error diffusion.

```
 ⌘  File  Edit  Special  Alpha
             ✓ Use Dithering      ⌘D
               Fit Image to Window   ⌘F
               Fit Window to Screen
               Preferences...
               ┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄
               Convert to 32-bit Image
               Convert to 16-bit Image
               Convert to 8-bit Image
```
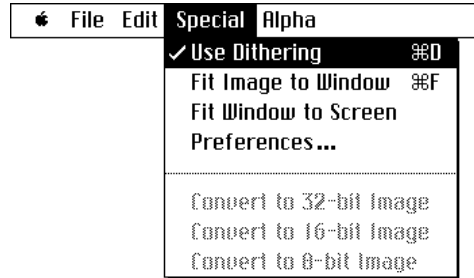
CHAPTER 4

4.1 NuVista+ Capture

Resizing an Image

Fit Image to Window

Selecting Fit Image to Window in the Special menu will cause the image to be resized to fit exactly in the Capture Window. Neither the gray scroll bars nor a white border around the image will be present. The proportions of the image may be distorted. As long as this toggle menu item is selected (there is a check mark next to it in the Special menu), the image will be resized to fit the window every time the size of the window is changed.

To maintain the proper proportions of the image while Fit Image to Window is checked, hold down the Option key while you are resizing the window.

In order to select Choose Key Color... from the Alpha menu, this menu item must not be checked.

File	Edit	**Special**	Alpha
Use Dithering	⌘D
Fit Image to Window	⌘F
Fit Window to Screen
Preferences...
Convert to 32-bit Image
Convert to 16-bit Image
Convert to 8-bit Image
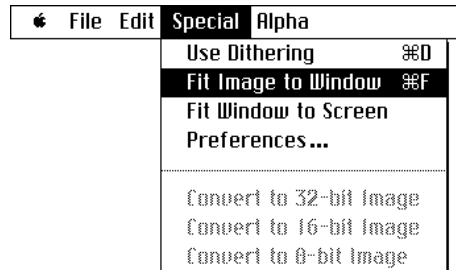
CHAPTER 4

4.1 NuVista+ Capture

Fit Window to Screen

Selecting Fit Window to Screen in the Special menu will cause the borders of the Capture Window to disappear. This menu item is particularly useful when overlaying your image on live video. If the NuVista+ screen is the main screen, the menubar can be removed by pressing Command-Space if the NuVista+ screen is the main screen.

If both Fit Image to Window and Fit Window to Screen are selected, the image will be expanded (possibly disproportionately) to fill the entire screen.

In order to select Choose Key Color... from the Alpha menu, this menu item must not be checked.

	File	Edit	Special	Alpha

Use Dithering   ⌘D
Fit Image to Window ⌘F
Fit Window to Screen
Preferences...

Convert to 32-bit Image
Convert to 16-bit Image
Convert to 8-bit Image

(Command ⌘)   +   (Space Bar)
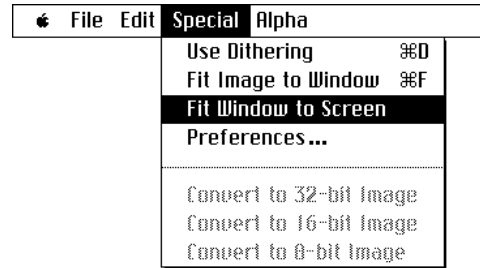
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4.1 NuVista+ Capture

A Note About Color Resolution

Because the NuVista+ is a videographics card, color resolution is an important topic to users of all types. In Capture, there are several color resolutions associated with each image. The simultaneous color representations of an image in Capture are:

Monitor Color Resolution

The Monitors resolution is the setting in Monitors Control Panel, indicating whether it is 256, Thousands, or Millions of colors or grays. The Monitors resolution affects the Display resolution, because a 32-bit color image displayed on a Monitor set to 8-bit color will look like an 8-bit color image.

Display Color Resolution

The Display color resolution of an image in Capture is the quality of the image on the NuVista+ screen. One can tell visually if an image is displayed in 8-bit or 16-bit or 32-bit color resolution. However, this representation is a bit complicated by Capture's Conversion menu items in the Special menu. Converting an 8-bit image to 32-bit color will not visually change the display quality of the image on the screen, because there is no way to fill in the additional color information. After the

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4.1 NuVista+ Capture

conversion, the Special menu will indicate that the image is in 32-bit color resolution, even though it does not <u>appear</u> to be so. However, converting an image to a <u>lower</u> color resolution will indeed cause a change in display quality.

<u>Saved Color Resolution</u>

The Saved color resolution of an image in Capture is the most important factor in image quality. Even if an image is converted to a lower color resolution (e.g., from 32-bit to 16- or 8-bit), if the image is saved as a 32-bit image before being converted, it can always be reloaded into Capture, bringing back all of its 32-bit color splendor.

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4.1 NuVista+ Capture

Converting an Image

Converting to a Higher Resolution

Images currently in 8- or 16-bit resolutions may be converted to 32-bit by selecting **Convert To 32-Bit Image** from the Special menu. A dialog box will ask you if you want to save the image in the current resolution before converting. If you click NO, the conversion will take place but will not affect the actual file until the image is saved. If you click YES, the image will be saved at the current resolution and then displayed at the new resolution. If you click CANCEL, the image will be neither saved nor converted.
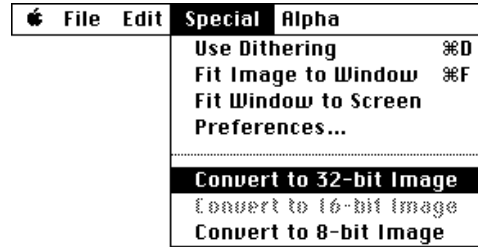
CHAPTER 4

4.1 NuVista+ Capture

When converting an image to a higher resolution, the display quality may not improve, as there is no way to fill in the additional color information. However, conversion is necessary in order to achieve 32-bit Overlay.

Converting to a Lower Resolution

An image in 32-bit resolution may be converted to 16-bit resolution by selecting **Convert To 16-Bit Image** from the Special menu. Use this menu item to obtain smaller files or to sharpen contrasts in the image. A dialog box will ask you if you want to save the image in the current resolution before converting the display resolution.

If you click NO, <u>some color information will be lost if the file is not saved at the higher resolution before it is converted</u>. If you click YES, the image will be saved at the current resolution and then the image will be displayed at the new resolution. If you click CANCEL, the image will be neither saved nor converted.

```
 🍎  File  Edit  Special  Alpha
         Use Dithering          ⌘D
         Fit Image to Window    ⌘F
         Fit Window to Screen
         Preferences...
         ----------------------------
         Convert to 32-bit Image
         Convert to 16-bit Image
         Convert to 8-bit Image
```

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4.1 NuVista+ Capture

A 32-bit or 16-bit image may be converted to 8-bit resolution by selecting **Convert To 8-Bit Image** from the Special menu. Use this menu item when storage limitations exist or when dealing with an older application that accepts only 8-bit images.   A dialog box will ask you if you want to save the image in the current resolution before converting the display resolution.

As before, if you click NO, <u>some color information will be lost if the file is not saved at the higher resolution before it is converted</u>. If you click YES, the image will be saved at the current resolution and then the image will be displayed at the new resolution.

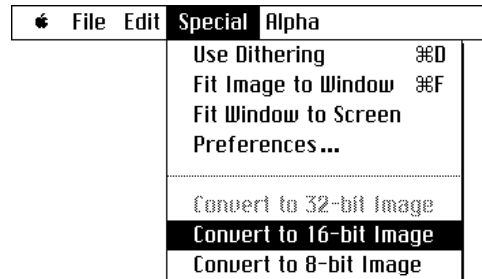If you click CANCEL, the image will be neither saved nor converted.

```
 🍎   File  Edit  Special  Alpha
              Use Dithering        ⌘D
              Fit Image to Window   ⌘F
              Fit Window to Screen
              Preferences...

              Convert to 32-bit Image
              Convert to 16-bit Image
              Convert to 8-bit Image
```
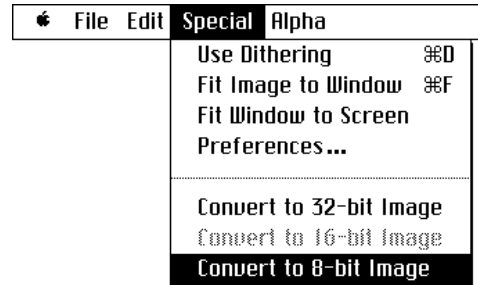
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4.1 NuVista+ Capture

Determining the Display Resolution of an Image

The color resolution at which an image is currently displayed can be determined by noting which one of the three conversion menu items is dimmed in the Special menu. In the case when there are two items dimmed, the image is currently displayed at 8-bit color resolution.

👓 In some cases, especially after one or more conversions, the actual appearance of the image may not seem to match the color resolution indicated by the dimmed menu item.

Using the Clipboard

Copying a Portion of an Image to Clipboard

To copy a portion of an image to the Clipboard, move the cursor over the Capture Window. (The Fit Window to Screen option must be off to make a selection.) Make the selection by dragging the mouse. A dotted box will appear outlining the selected portion. Select Copy from the Edit menu. The selected portion of the image is now in the Clipboard.

👓 The dimensions (in pixels) of the selection will appear in the horizontal scrollbar if you hold down the Option key while selecting.

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4.1 NuVista+ Capture

Showing Clipboard

Selecting Show Clipboard from the Edit menu
will cause the Clipboard Window to appear,
with the selected portion of the image in it.

Saving

Saving an Entire Captured Image

To save an image, simply select Save... from the
File menu. In the Save dialog box, use the Eject
and Drive buttons to locate the desired
destination disk. Type the name of a file in the
edit box, and click SAVE. The image can now
be reopened in Capture, or imported to other
Macintosh applications, such as PageMaker and
PhotoShop.
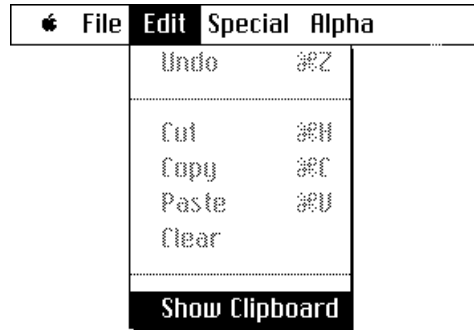
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4.1 NuVista+ Capture

If the image is an 8-bit or 16-bit image, it will be saved as a PICT file. If the image is a 32-bit image, the image will be saved as a PICT file by default, but you have the option of saving it as a 32-bit TGA file.

Saving a Portion of a Captured Image

Select a portion of the image to be saved by dragging the mouse over the Capture Window. (The Fit Window to Screen option must be off to select.) While the dotted lines are still visible, select Save... from the File menu. In the Save dialog box, use the Eject and Drive buttons to locate the desired destination disk. Type the name of a file in the edit box, and click SAVE.

The portion of the image can now be reopened in Capture, or imported to other Macintosh applications, such as PageMaker and PhotoShop.

If the image is an 8-bit or 16-bit image, it will be saved as a PICT file. If the image is a 32-bit image, the image will be saved as a PICT file by default, but you have the option of saving it as a 32-bit TGA file.

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4.1 NuVista+ Capture

Formats

The two file formats available for saving
captured images are PICT and 32-bit TGA. If
the image is an 8-bit or 16-bit image, it will be
saved as a PICT file. If the image is a 32-bit
image, the image will be saved as a PICT file by
default, but you have the option of saving it as a
32-bit TGA file.

The icons for PICT and TGA files created by
Capture are the same in all respects except one.
The word "PICT" or "TGA" appears at the
bottom of the icon, just above the name of the
file.

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4.1 NuVista+ Capture

Opening a PICT or TGA File

To open any PICT or 32-bit TGA file in Capture, select Open... from the File menu. In the Open dialog box, use the Eject and Drive buttons to locate the desired file, either a PICT or TGA file. Double click on the filename or click on it once and click the OPEN button. The image will appear in the Capture Window.

The image currently in the Capture Window will be replaced by the image being opened. If the current image has not been saved, you will be asked if you want to save the image before opening the new image. Click YES to save and open the image, NO to open without saving the current image, or CANCEL to neither save nor open.

✎	**File**	Edit	Special	Alpha

```
Open...              ⌘O

Capture Image   ⌘G

Save...              ⌘S

Page Setup...
Print...

Quit                 ⌘Q
```
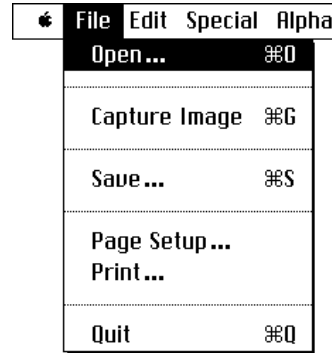
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4.1 NuVista+ Capture

Printing

Page Setup

Selecting Page Setup... from the File menu will give you access to the print options dialog associated with the printer specified in the Chooser. See your Macintosh owner's manual for more information.

Print

Selecting Print... from the File menu will cause the image to be printed on the printer currently specified in the Chooser.
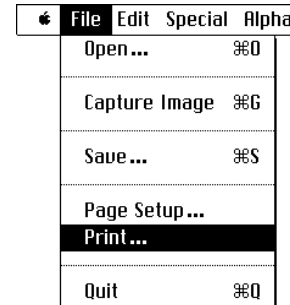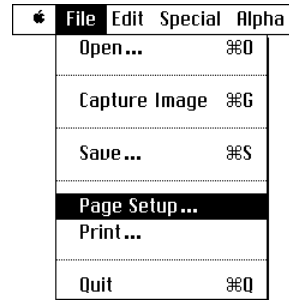
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4.1 NuVista+ Capture

Quitting Capture

To quit Capture, select Quit from the File menu. If the current image has not been saved, you will be asked if you want to save it. Click YES to save and quit, NO to quit without saving, or CANCEL to remain in Capture.

File	Edit	Special	Alpha
Open...	⌘O
Capture Image	⌘G
Save...	⌘S
Page Setup...
Print...
Quit	⌘Q
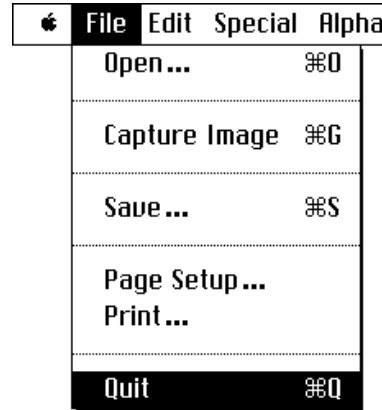
CHAPTER 4

4.1 NuVista+ Capture

Overlaying Live Video

Suppose you would like to lay a PICT file of a ship over a live video sequence of moving waves, and save the whole combination out to video tape. The NuVista+ was designed with tasks like this in mind. To do this, you would either import a PICT (or TGA) file of the ship, or capture a frame of video having a ship in it. Then all the pixels not part of the ship would be tagged, based on their color, as pixels that will soon show video. The colors used to indicate which pixels will show video are called **Key Colors**. One or more Key Colors may be chosen in Capture.

Selecting a Key Color

To select a Key Color in Capture, make sure the image in the Capture Window is in 32-bit color. To verify the resolution of an image, note which of the three conversion menu items is dimmed in the Special menu. If Convert To 32-bit Image is dimmed, the image is currently in 32-bit color.

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4.1 NuVista+ Capture

Select Choose Key Color... from the Alpha menu. (If the menu item is dimmed, make sure that neither Fit Image to Window nor Fit Window to Screen is checked in the Special menu.) A window titled Key Color will appear, with a black color circle on the left that will later indicate the color(s) that you have chosen. On the right is a column showing the levels of red, green, blue, hue, saturation, and brightness for the pixel currently under the cursor. Below the cursor is a brightness indicator bar.
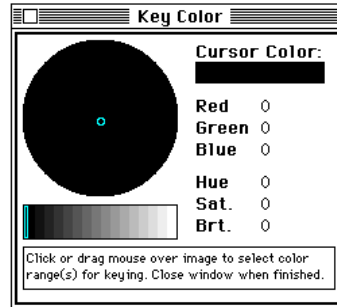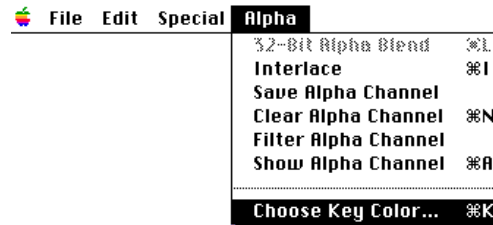
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4.1 NuVista+ Capture

Move the cursor about the image in the Capture Window. The color in the color circlewill match the color (or range of colors) of the pixel(s) to which the cursor is currently pointing. When you have found either a pixel (or range of pixels via dragging) of the color(s) where you intend to see video, click the mouse once. The chosen color(s) is now a key color.

In Capture, more than one key color may be chosen. Having several key colors allow you to specify a number of colors without broadening the tolerance for each color. Simply continue clicking colors on the NuVista+ screen as described above, or drag over another range of colors and then click the mouse.
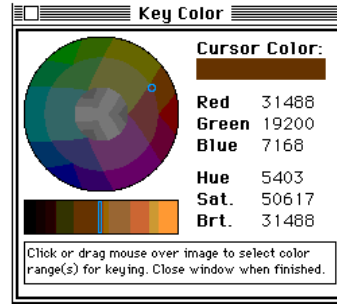
When you are done, close the Key Color window.

👓 To cancel the last key color chosen, select Undo from the Edit menu.

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4.1 NuVista+ Capture

Capture Preferences

To set one or more of the Capture preferences, select Preferences... from the Special menu. Each option is described below.

Screen Capture Resolution

The screen resolution refers to the dimensions (W x H) of the Capture Window in pixels.

Color Resolution

The three radio buttons on the right side of the Preferences dialog indicate which color resolution is currently set.

An image may be captured at: "256" (8-bit Color Look-Up Table), "thousands" (16-bit Direct), and "millions" (32-bit Direct). By default, an image is captured in "thousands."
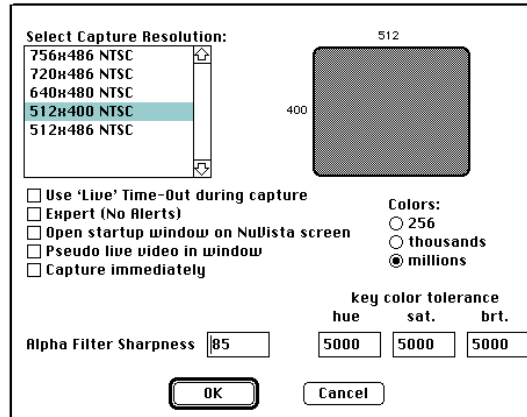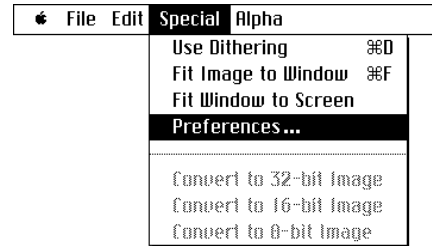
Clicking the radio button next to "256" will cause the image to be captured in 16-bit color and then mapped to 8-bit color using the best 256 colors available.

Use Live Time-Out During Capture

When Capture Image is selected from the File menu, having this option checked causes the NuVista+ to automatically capture after a two-second delay. There is no need to click the mouse while the live video is displaying to initiate the capture. Place an X in the box next to this option if you need to be away from the mouse while capturing or if your monitor is not compatible with Interlaced mode.

When disabling this option (unchecking the box next to it), you will be warned that you need a multi-scan rate monitor (i.e., one that is compatible with Interlaced mode.) If you have the Expert (No Alerts) option checked, you will not receive this warning.

Expert (No Alerts)

Placing an X in the box next to Expert (No Alerts) option will cause all the warning and prompting dialog boxes that usually come up to be suppressed. For example, when this option is checked, you will not be prompted to save the image in the Capture Window before closing it or opening a new image.

CHAPTER 4

4.1 NuVista+ Capture

Open Startup Window on NuVista+ Screen

Placing an X in the box next to the "Open Startup Window On NuVista+ Screen" option will cause the Capture Window to appear on the NuVista+ screen when Capture is first launched. This option is available as a convenience.

Pseudo Live Video In Window

Placing an X in the box next to the Pseudo Live option will cause a slowed version of the live video to appear on the screen when the Capture Window is not on a multi-scan rate monitor. The speed is approximately one frame per second. This option is used primarily to see the video input the NuVista+ is receiving when a multi-scan rate monitor is not available.

Capture Immediately

Placing an X in the box next to Capture Immediately option will initiate a capture immediately after the Capture Image menu item is selected from the File menu. Recall that when this option is not checked, the NuVista+ waits for you to click the mouse when you are ready to initiate the capture.

CHAPTER 4

4.1 NuVista+ Capture

Key Color Tolerance

Key Color Tolerance is a method of defining a color range for hue, saturation, and brightness of the color key selected. Type a number between 0 and 32767 in each edit box for hue, saturation, and brightness. Click OK.

The number in each Key Color Tolerance box represents how much leeway will be given when a key color is chosen in the Key Color window. For example, if the tolerance is set to 0 for all three boxes, only those pixels exactly matching the Key Color pixels will have live video when the NuVista+ is set to Interlaced mode and Overlay is toggled ON. This case imitates how the Select Color button in the Blender operates. On the other hand, when the tolerances for all three boxes is set to 32767 (the highest possible
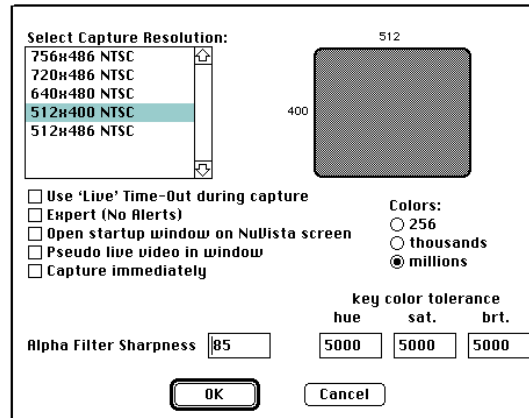
setting), all colors in the image will qualify as key colors when one pixel's color (or a range of pixel colors) is chosen as the key color.

The default Key Color Tolerance setting is 5000 for hue, saturation, and brightness. This number specifies a relatively small range of pixel colors qualifying as a key color.

Alpha Filter Sharpness

Determines how much filtering will be done when the Filter Alpha Channel (Alpha Menu) is envoked. This is useful if you want to smooth out the jagged look that occurs between live video and graphics when using video overlay. The range for Alpha Filter Sharpness is 25 to 255. The lower the value, the smoother the graphic image appears (i.e., more filtering occurs.)

Select Capture Resolution:
756x486 NTSC
720x486 NTSC
640x480 NTSC
512x400 NTSC
512x486 NTSC

512
400

☐ Use 'Live' Time-Out during capture
☐ Expert (No Alerts)
☐ Open startup window on NuVista screen
☐ Pseudo live video in window
☐ Capture immediately

Colors:
○ 256
○ thousands
◉ millions

key color tolerance
hue   sat.   brt.

Alpha Filter Sharpness 85   5000   5000   5000

OK   Cancel
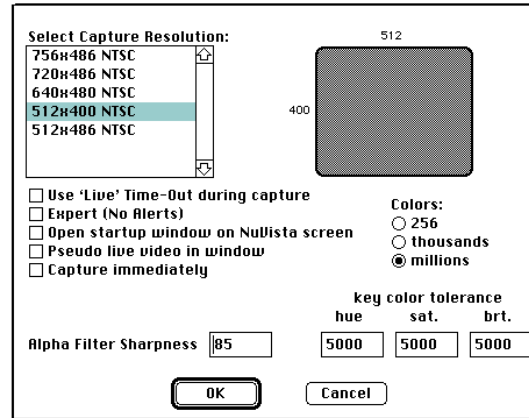
CHAPTER 4

4.1 NuVista+ Capture

The Alpha Channel

The Alpha channel can be used to specify any non-color aspects of a pixel. For example, some Macintosh applications may make use of an image's Alpha channel to specify which pixels are used as a mask or a filter.

In a 32-bit color image, the color of each pixel is specified by some mixture of red, green, and blue. In each pixel, eight bits are used to specify the amount of red, eight for the amount of green, and eight for blue, using a total of 24 bits. The remaining eight bits are called the Alpha channel.

In Capture, the Alpha channel serves two purposes. First, the Alpha channel specifies whether or not a pixel displays video or whether it displays the image. Displaying video in certain pixels of an image is called **Overlay**.

Second, once the Alpha channel is set, the image may be saved with the Alpha channel information and exported to other Macintosh applications, including those that use the Alpha channel.

CHAPTER 4

4.1 NuVista+ Capture

Saving the Alpha Channel

If there is a checkmark next to the Save Alpha Channel menu item in the Alpha menu, then the Alpha channel information will be saved with the image. A checkmark is automatically placed next to the menu item when a Key Color is chosen. If you do not want the Alpha channel information to be saved with the image when Save... is selected from the File menu, select this menu item again so that there is no checkmark next to it.

Show Alpha Channel

Selecting (i.e., placing a checkmark next to) the Show Alpha Channel displays the contents of the Alpha Channel. That is, when an image has color(s) "tagged" with the Choose Key Color feature (so that video can be seen through those colors), those tagged colors are stored in the
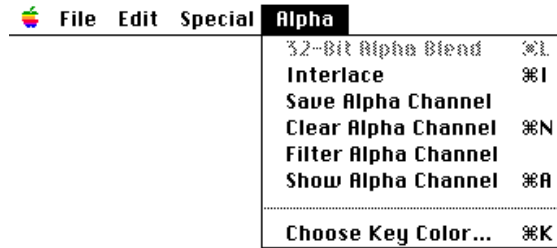
Alpha Channel. Show Alpha Channel is a way to distinguish which colors in an image have been tagged.

Filter Alpha Channel

This feature works in conjunction with the value placed in the Alpha Filter Sharpness box found in "Preferences" (Special Menu). Selecting Filter Alpha Channel will smooth out the jagged look that occurs between live video and graphics when using video overlay.

CHAPTER 4

4.1 NuVista+ Capture

Clearing the Alpha Channel

When you have selected one or more Key
Colors, the Alpha channels of the selected pixels
carry information about Overlay. Selecting
Clear Alpha Channel from the Alpha menu will
erase all overlay information for the entire
image.

Interlace

To be able to view video on the NuVista+
screen, it must be in Interlaced mode. To set the
NuVista+ screen into Interlaced mode before
Overlaying, select Interlace from the Alpha
menu. Alternatively, use the Interlace
MasterKey.
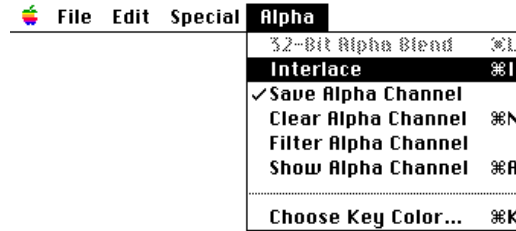
CHAPTER 4

4.1 NuVista+ Capture

32-Bit Alpha Blend

To cause video to show through the pixels matching the chosen Key Color(s), first make sure the image has been converted to 32-bit color resolution. To verify this, note which of the three conversion menu items is dimmed in the Special menu. If Convert To 32-Bit Image is dimmed, the image is in 32-bit color. (The display quality may not actually improve after the conversion. See also "Converting an Image," earlier in this Chapter.) In addition, verify that your monitor is set to display in Millions of colors, using the Monitors Control Panel. Now place the NuVista+ screen in Interlaced mode and select 32-Bit Alpha Blend from the Alpha menu.
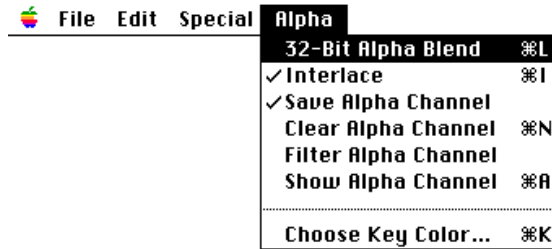
Unlike the Interlace or Alphablend MasterKey, the Overlay MasterKey should not be used in Capture.

When the NuVista+ screen is Interlaced and Alpha Blend is toggled ON, selecting this menu item will toggle Alpha Blend OFF, while leaving the NuVista+ screen in Interlaced mode.

CHAPTER 4

4.1 NuVista+ Capture

Choosing among two or more NuVista+ cards

When two or more NuVista+ cards are installed in the Macintosh, a new menu titled "NuVista+" will appear. Each menu item in this menu refers to one NuVista+ card, identifying the amount of memory on the card and the slot it is in. (Slots are labelled with hexadecimal numbers. The left-most slot has the lowest number.)

By default, Capture will use the left-most NuVista+ in the Macintosh. The Capture Window should be on the screen associated with this card, and the video input to be used for the Capture should be connected to this card. When

```
 ⌘  File  Edit  Special  Alpha  NuVista+
                               ✓NuVista 4M - Slot A
                                NuVista 1M - Slot C
```
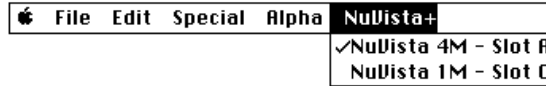
an image is captured, the video will fill the screen associated with this card.

If you select a NuVista+ card other than the default, be sure you drag the Capture Window to the screen associated with this card. Although an image can be captured when the Capture Window is on another screen, you will not be able to see video overlay.

CHAPTER 4

4.1 NuVista+ Capture

4.2 HyperCard XCMDs

For those wanting to incorporate features of the NuVista+ into HyperCard 2.0 HyperTalk scripts, Truevision provides several HyperCard External Commands (XCMDs). For more information, consult the *Apple HyperCard Script Language Guide*, published by Addison Wesley, and the XCMD stacks on your "NuVista+ Software" diskette.

4.3 Director XOBJs

For those wanting to incorporate features of the NuVista+ into MacroMedia Director Lingo scripts, Truevision provides a Director External Object (XOBJ). For more information, consult the XOBJ Read Me file on your NuVista+ "NuVista+ Software" diskette and your "Video Production Examples" diskette.

4.4 NuVista Video Digitizer (VDIG) For QuickTime™

The NuVista VDIG provides the necessary connection between the Truevision NuVista+ and a QuickTime-compatible movie recording application. This enables any movie recording application to access the frame capture capabilities of the NuVista+ card.

4.5 Gamma Correction Desk Accessory

Gamma DA is a useful tool for adjusting the gamma values associated with a particular monitor/video card combination. Gamma values change the color temperature of the monitor. Apple makes certain assumptions about how color should be corrected. The Gamma DA allows you to change those assumptions and assign your own gamma values.

CHAPTER 4

4.4 VDIG; 4.5 Gamma DA

APPENDIX A - QUESTIONS AND ANSWERS

Monitor Questions

Q) Can a NuVista+ card be used with an Apple RGB Color Monitor?

A) Yes, but it won't give you access to the full power and flexibility of the NuVista+. NuVista+ is a "multi-scan rate" graphics card, meaning that it can drive display screens operating at different video scan frequencies, all under software control. The Apple RGB Color Monitor, on the other hand, is a "fixed-scan rate" monitor, meaning that it can operate only at one scan rate. With the appropriate cable (CA-5), and as long as the default driver in the NuVista+ is not replaced with another driver, the NuVista+ will work with the Apple Color Monitor with no hardware or software changes. However, you will not be able to see live video on the Apple monitor, thus making capture and overlay difficult.

Q) Which monitors will work with the NuVista+ card?

A) Since NuVista+ is a multi-scan rate graphics card, it is best suited for use with a multi-scan rate monitor. The multi-scan rate monitor should have analog RGB inputs and

be able to scan horizontally from 15 KHz to 35 KHz. Note that you should also consider the monitor requirements specified by the application software which you are considering for use with your NuVista+.

Video Questions

Q) Can the NuVista+ card be used to videotape the Macintosh II screen?

A) If the Macintosh II monitor is an Apple RGB Color monitor, the answer is no. The Apple RGB monitor is non-interlaced, whereas all videotape recorders are NTSC or PAL interlaced devices. To videotape a computer screen, the monitor must be switched into interlaced mode. The Apple RGB monitor is not capable of doing this. To videotape a multi-scan rate computer monitor, use the Interlace MasterKey to put the computer screen into Interlaced mode. Run a branching cable from the camera's Video Out to the NuVista+ Video In, and from the camera's Video Out to the VCR's S-video or Composite Video In. An interlaced monitor connected to the recording VCR will show the results, with no scan lines present.

Q) Will the Macintosh II screen "flicker" if the NuVista+ card is operating in NTSC or PAL mode?

A) Yes. The Macintosh II user interface display was designed for non-interlaced displays, not with NTSC or PAL videotaping in mind. Certain aspects of the interface, like the thin horizontal lines in the title bar of every window, will seem to flicker any time the screen is put into an NTSC or PAL interlaced mode. This is because the single pixel width horizontal lines are being shown only half as often as they normally would in the non-interlaced mode of operation.

Q) Can a consumer grade video camera be used to capture pictures with the NuVista+ card?

A) Yes. Most consumer grade video cameras use a standard type of video signal called "composite video" which, in effect, combines the four signals used by the NuVista+ card—red, green, blue, and sync into one signal. Use the VIDI/O Control Panel to indicate that you are receiving input as a Composite Video signal.

Q) Can animations be made with a NuVista+ card?

A) Naturally, you need to have animation application software which can take

APPENDIX A

Video Questions

advantage of the hardware features of NuVista+. The NuVista+ card provides the ideal hardware environment for making real-time animations and frame-by-frame or cel animations. For more information, contact MacroMedia, 600 Townsend St., San Francisco CA 94107 (415) 442-0200 concerning real-time animations; and DiaQuest, Inc. 1440 San Pablo Ave., Berkeley CA 94702 (415) 526-7167 concerning frame-by-frame animations.

Q) How can I calibrate the video levels of my NuVista+ card?

A) Truevision sells a NuVista+ Calibration Kit designed for qualified technicians to perform oscillator and video input/output adjustments. The kit includes user documentation, an application "NuVista+ TuneUp™" and a set of connector wings. Contact your Authorized Truevision Reseller to obtain the kit.

Software Questions

Q) What software is provided with a NuVista+ card?

A) A NuVista+ card is shipped with the following software: NuVista+ CloseUp, MasterKeys, Blender, VIDI/O Control Panel, Chroma Keyer, Capture, SetUp, NuVista+ Drivers, NuVista+ Photo Stack, Video Digitizer, Gamma Correction DA, Director XOBJs, and HyperCard XCMDs.

Q) What software is available for the NuVista+ card?

A) All software written for the Macintosh that adheres to Apple's standard QuickDraw graphics routines can be run on the NuVista+ card. This list includes paint programs, drawing programs, word processors, spreadsheets, etc. Magazines such as *MacWeek, MacWorld,* or *MacUser* are also excellent sources for software guidance.

Q) How can a user keep current with the latest on software for the NuVista+ card?

A) A good source of information on the latest in NuVista+ software is the *Software Catalog*, published by Truevision. This publication, along with the regular graphics and Macintosh magazines and trade shows, are invaluable sources for identifying software for the NuVista+ card. In addition, AppleLink and CompuServe can be used to find the latest software for the NuVista+. Truevision's address on AppleLink is TRUE1. Use the following path:

software sampler: 3rd party demos/updates: software updates: truevision software updates:

For CompuServe, look in the Multi-media Vendors Forum (Go MULTIVEN).

APPENDIX A

Software Questions

Q) Why is 24-bit color called "true color?"

A) By mixing red, green, and blue hues, the eye can determine about 7 million different colors. However, we see certain colors, mostly oranges and reds, better than others. Because of this the computer must compensate in these areas to accomplish what the human eye recognizes as "true color" and thus most experts agree that 16.7 million colors are necessary to obtain photo-quality images. Twenty-four bits per pixel are needed to achieve 16.7 million colors on the computer.

Q) If 24-bit color is true color, why 32-bit QuickDraw?

A) Although 32-bit QuickDraw assigns 32 bits to every pixel on the display, only 24 bits are needed to represent colors. The remaining 8 bits are reserved for use in video overlay and special video effects applications. This extra information is referred to as the "Alpha channel."

APPENDIX A

Software Questions

Q) What is a "NuVista+ driver"?

A) A NuVista+ driver is a set of instructions that defines the spatial resolution at which the NuVista+ card will operate. The user may wish to change the screen resolution from the default 640 x 480, 35KHz horizontal scan rate and 67Hz vertical scan rate to the standard TV studio size, for example. Using the NuVista+ SetUp program, the user may customize the NuVista+ to his/her application and monitor configuration.

Q) What software tools are available for programming the NuVista+ card?

A) HyperCard XCMDs are provided with the NuVista+ card to allow you to use all the features of the NuVista+ from within HyperTalk scripts.

A NuVista+ XOBJ is provided to allow you to use all the features of the NuVista+ from within MacroMedia Director 2.0 or above Interactive scripts.

Q) How can I develop software for the NuVista+ products?

A) If you are interested in developing software for the NuVista+, please contact our Developer Services department at 317-841-0332 or AppleLink "TRUE.DEVSUPP" for more information.

APPENDIX A

Software Questions

Support Questions

Q) How can I get a technical reference manual for NuVista+?

A) A technical reference manual is available for a nominal fee from your Authorized Truevision Reseller.

Q) When I have technical questions regarding the NuVista+, whom should I contact?

A) First consult your NuVista+ User's Guide. Then, contact your Authorized Truevision Reseller. Last, call Truevision Technical Support. Refer to "Using Technical Support" on the next page.

Using Technical Support

The number is (317) 577-8788. Before calling Technical Support, perform these tasks:

— If there is an error code, be sure to write down the message.

— Be able to provide your system configuration. This should include:
  • Truevision Product Type (NuVista+ 1, 2, or 4 Mb)
  • Type of Machine
  • Other Expansion Cards in Machine (e.g., network card, fax card, etc.)
  • Software Applications (and version numbers) that are being used
  • Version and Date of NuVista+ Setup Software

Please be at your computer and ready to replicate the problem or perform the suggestions of the technican.

Support is also provided from the following:

CompuServe (Go Truevision): Library No. 6
Technical Support Fax: (317) 576-7770
Marketing Developers: (317) 576-7776
Sales Administration: (317) 841-0332

APPENDIX A

Using Technical Support

APPENDIX B - SETUP

The NuVista+ SetUp Utility provides the opportunity to accomodate other monitor screen resolutions and scanning modes. It is intended for the advanced user going beyond the default driver implementation.

A driver is a set of instructions loaded into NuVista+ non-volatile RAM that operates the NuVista+ card. The default driver specifies a screen resolution of 640 x 480 pixels, a horizontal scan rate of 35KHz, a vertical scan rate of 67 Hz, non-interlaced mode. This is the only setting available for the fixed-scan rate Apple RGB Color monitor.

If you have a multi-scan rate monitor, you may choose to load in another driver. The one you choose must be compatible with the scanning mode of your monitor (NTSC or PAL), the horizontal and vertical scanning rates, and the general size in pixels of the screen. Consult the owner's manual of your monitor for this information. If you choose a driver that is incompatible with your monitor, you may get a funny looking screen or worse yet, a totally incoherent screen.

Users who are concerned with professional video tape productions may want to load in a different driver. The most common drivers are:

Screen Size	H scan rate	V scan rate
a. 756 x 486 (NTSC)	15.734 KHz	59.940 Hz
b. 512 x 486 (NTSC)	15.734 KHz	59.940 Hz
c. 720 x 486 (NTSC)	15.734 KHz	59.940 Hz
d. 512 x 400 (NTSC)	15.734 KHz	59.940 Hz
e. 768 x 576 (PAL)	15.625 KHz	50.000 Hz

Which of the four NTSC drivers is chosen depends on the type of application you are engaging in, the resolution of any previously captured images that will be displayed, and of course, the requirements of the display monitor.

The first screen resolution might be used in broadcasting situations, while the second might be used in underscanned mode. The third resolution is used when connecting to the D1 digital video standard.

Users with a 1Mb NuVista+ card may wish to load in the 512 x 486 driver in order to achieve 32-bit overlay capabilities. Other drivers will only yield a 16-bit display.

APPENDIX B

SETUP

Loading a Driver

1. Launch the NuVista+ SetUp Utility by
clicking on its icon.

2. Select Open... in the File menu. In the Open
Dialog Box, use the Eject and Drive buttons to
locate the file "NuVista+ Drivers." Double-
click on the name or click on it once and click
OPEN. The following dialog box appears.
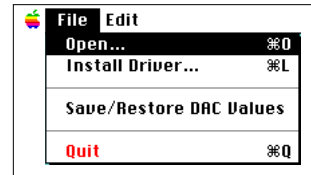
The dialog box shows the default driver 640 x 480, with the non-interlaced mode (scan rate) implemented at startup. This driver is compatible with Apple RGB Color Monitors, but provides the lowest quality video signal. Note the information about vertical and horizontal scan rates for non-interlaced, NTSC, and PAL modes in the box at the lower right. Because there are three modes in this box, three choices are available under "Select Startup Scan Rate."

3. The slot in which your NuVista+ card(s) was placed will be indicated in the diagram in the upper right corner. If you have more that one NuVista+ card installed, choose the one which will have the driver loaded into it by clicking on the slot in the diagram.
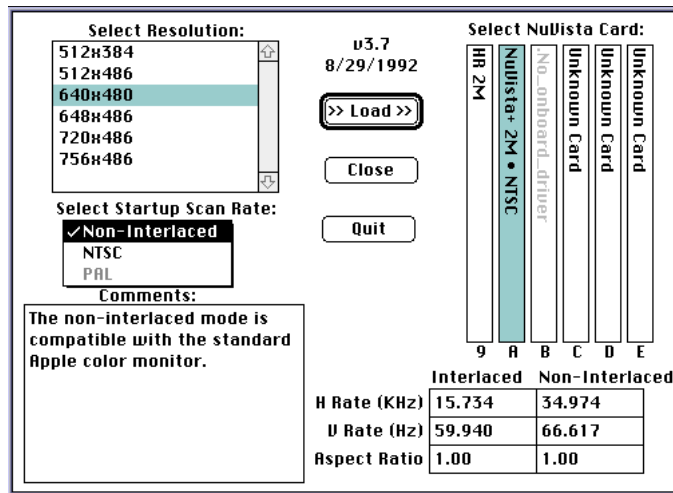
APPENDIX B

Loading a Driver

4. Select a resolution appropriate for your application and monitor. You may need to scroll the window to see all the choices.

5. Select a mode (scan rate) in which the monitor will operate at startup. Your choices will usually include Non-Interlaced ("MAIN"), NTSC, or PAL. Hold the mouse button down on the pulldown menu below the words "Select Startup Scan Rate." Your other choices now appear as in a menu.

6. Click LOAD to begin loading the driver.

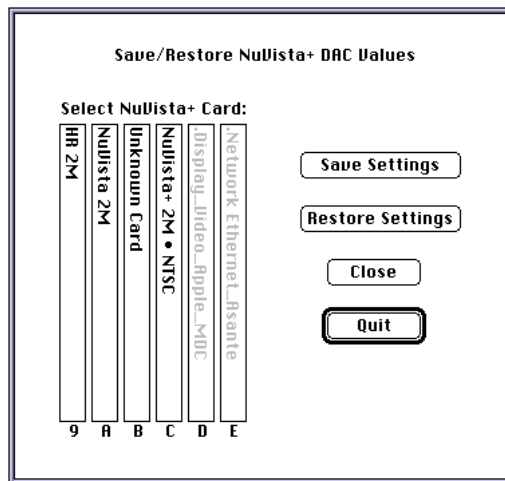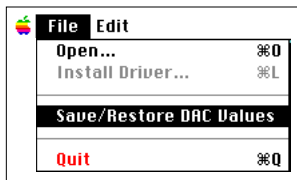7. When the driver is finished loading, click QUIT.

8. Restart the Macintosh to activate the NuVista+ driver. If you have an incoherent display it is likely you have loaded an incompatible driver. If this is the case, contact your Truevision Reseller or call Truevision Technical Support at (317) 577-8788.

APPENDIX B

Loading a Driver

Save/Restore DAC Values

The calibration values of the NuVista+ are
stored in non-volatile memory on the board.
Saving these values through this dialog will
allow them to be restored if they should become
corrupted. Select the NuVista+ by clicking on
its representation in the dialog, and click on
Save Settings or Restore Settings as appropriate.
Close will close the dialog, and Quit will quit
the SetUp application.

File Edit
Open...   ⌘O
Install Driver...   ⌘L

Save/Restore DAC Values

Quit   ⌘Q

Save/Restore NuVista+ DAC Values

Select NuVista+ Card:

HR 2M | NuVista 2M | Unknown Card | NuVista+ 2M • NTSC | Display_Video_Apple_MDC | Network Ethernet_Asante

[Save Settings]

[Restore Settings]

[Close]

[Quit]

9   A   B   C   D   E

APPENDIX C- VIDEO CONFIGURATIONS

The following pages illustrate some typical video configurations using the NuVista+. Each icon represents a piece of equipment, such as a camera, VCR, or monitor.

The lines with arrow-heads represent cables going from one piece of equipment to another, and the direction of the arrow signifies the direction of data flow.
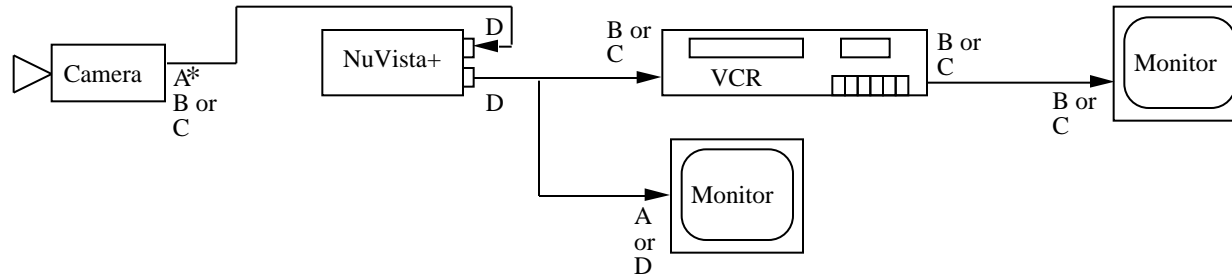
The letters indicate the type of video connector at each location, using the cable codes listed below each diagram.

Keep in mind that these configurations are just examples; you are encouraged to configure your own system to suit your needs.

Configuration #1

A=4 BNC for RGB
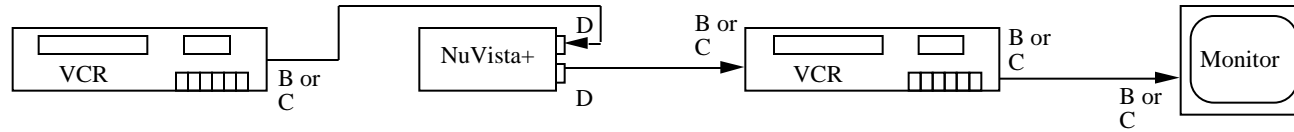B=1 BNC for Composite Video
C=4-pin DIN for S-Video
D=9-pin D-type
A*=4 BNC for RGB + 1 BNC for Composite Video or S-Video subcarrier source, since NuVista+ Video Out is Composite or
S-Video
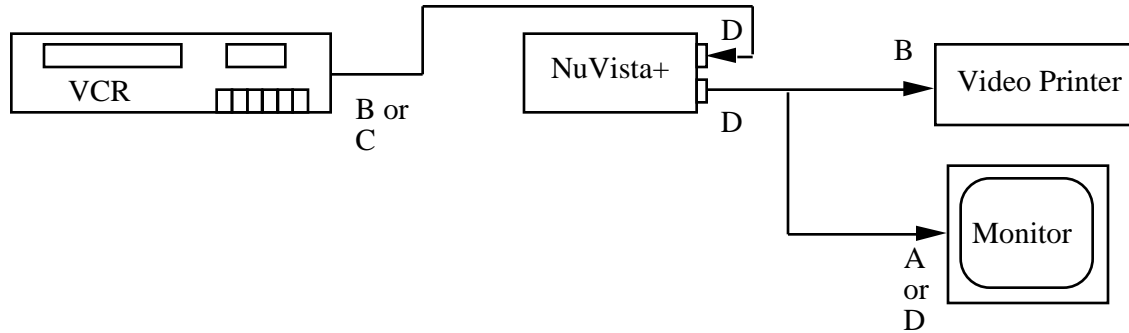
APPENDIX C

Configuration #1

Configuration #2

```
                                          D              B or                     B or
  ┌──────────────┐        ┌──────────┐    │              C   ┌──────────────┐    C    ┌────────┐
  │  ▭▭▭▭   ▭    │        │ NuVista+ │ ◄──┘              ──► │  ▭▭▭▭   ▭    │ ──►     │ Monitor│
  │   VCR   ▭▭▭▭ │ B or   │          │    │                  │   VCR   ▭▭▭▭ │         │        │
  └──────────────┘ C      └──────────┘    D                  └──────────────┘  B or   └────────┘
                                                                                C
```

A=4 BNC for RGB
B=1 BNC for Composite Video
C=4-pin DIN for S-Video
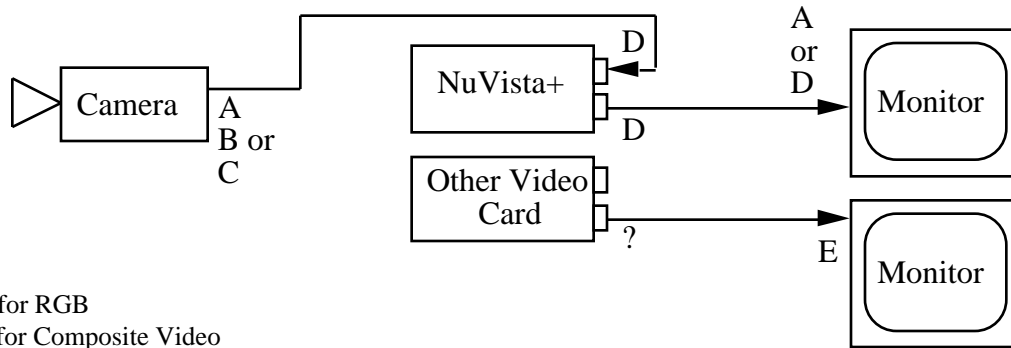D=9-pin D-type

APPENDIX C

Configuration #2

Configuration #3

VCR

B or
C

NuVista+

D

D

B

Video Printer

Monitor

A
or
D

A=4 BNC for RGB
B=1 BNC for Composite Video
C=4-pin DIN for S-Video
D=9-pin D-type

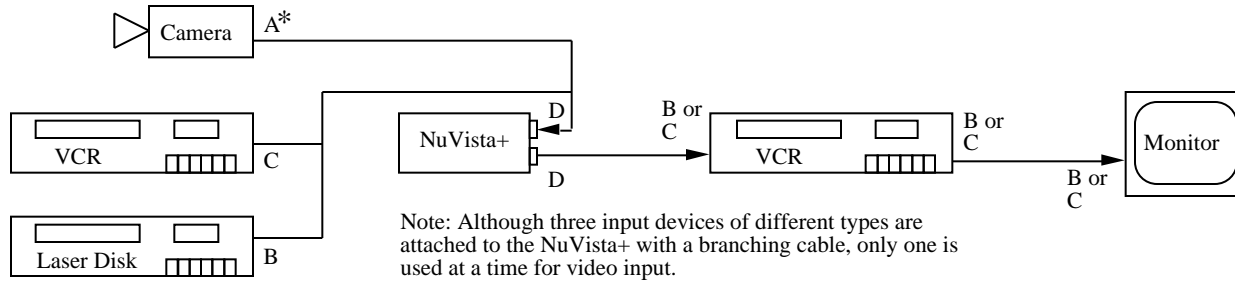**APPENDIX C**

Configuration #3

Configuration #4

A=4 BNC for RGB
B=1 BNC for Composite Video
C=4-pin DIN for S-Video
D=9-pin D-type
E=15-pin D-type for Apple monitor
?=Unspecified

APPENDIX C

Configuration #4

Configuration #5

Note: Although three input devices of different types are
attached to the NuVista+ with a branching cable, only one is
used at a time for video input.

A=4 BNC for RGB
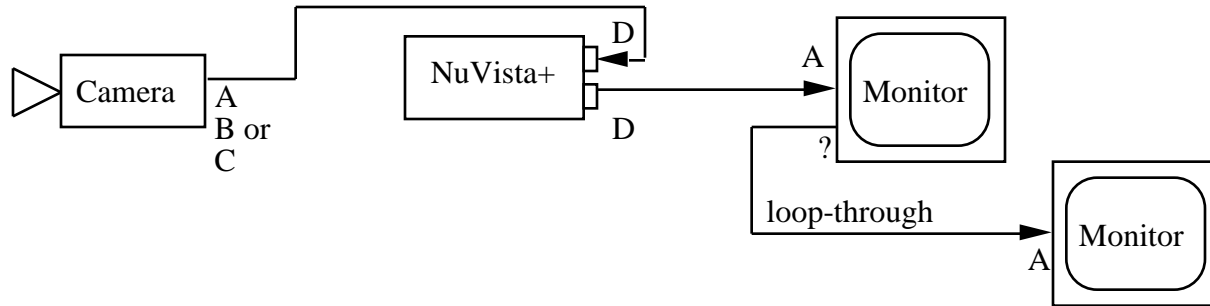B=1 BNC for Composite Video
C=4-pin DIN for S-Video
D=9-pin D-type
A*=4 BNC for RGB + 1 BNC for Composite Video or S-Video subcarrier source, since NuVista+ Video Out is Composite or
S-Video
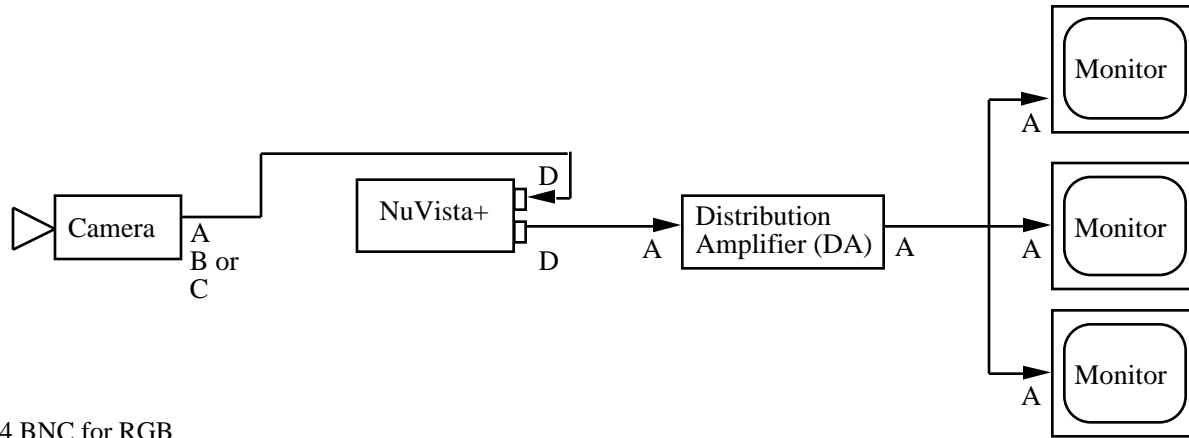
APPENDIX C

Configuration #5

Configuration #6

Camera
A
B or
C

NuVista+
D
D

A
Monitor
?

loop-through

Monitor
A

A=4 BNC for RGB
B=1 BNC for Composite Video
C=4-pin DIN for S-Video
D=9-pin D-type
?=Unspecified

APPENDIX C

Configuration #6

Configuration #7

Camera A
B or
C

NuVista+ D
D

Distribution
Amplifier (DA) A

A

A Monitor

A Monitor

A Monitor

A=4 BNC for RGB
B=1 BNC for Composite Video
C=4-pin DIN for S-Video
D=9-pin D-type

APPENDIX C

Configuration #7

APPENDIX D - NuVista+ SPECS

Host Type:	Apple Macintosh II series computers
Card Size:	12.875" x 4.0" x .75" Occupies a single slot
Data Bus Width:	32-bit, 16-bit, or 8-bit transfers supported
Bus Clock:	10 MHz
Data Transfer Rate:	3.6 MB/sec
Power Consumption:	14 Watts
Processor Type:	Texas Instruments TMS34010 50 MHz Graphics System Processor (GSP)
Video Memory:	1MB/2MB/4MB
Output Color Lookup Tables:	Three 256 x 8 tables used for the Red, Green, and Blue outputs
Analog to Digital Converters:	Three 8-bit ADCs (red channel, green channel, blue channel) Software adjustable RGB level and offset
Digital to Analog Converters:	Three 8-bit DACs (red channel, green channel, blue channel) Adjustable RGB balance

Video Cross Point:	32-bit bi-directional custom video cross point (for video overlay and programmable pixel size)
Row Tables:	2K x 16-bit lookup table for frame buffer row access
Genlock/Sync Generator:	Fully integrated, broadcast quality genlock and sync generator
Swixel Logic Array:	32/16/8-bit pixel alignment
Non-Volatile RAM:	8K x 8-bit electrically alterable declaration ROM
32-bit QuickDraw Compatibility:	Supports 32, 16, and 8 bits per pixel
Composite/S-Video Decoder: (NTSC or PAL version)	Software selectable composite, S-video, or RGB input source
	Software adjustable hue (NTSC only), saturation, contrast, and brightness
	Robust genlock (lock to video disks, still video cameras)
Composite/S-Video Encoder: (NTSC or PAL version)	Simultaneous composite, S-video, and RGB outputs
	Accurate burst gate blanking (meander burst gate)
	Software adjustable subcarrier phase (when locked to input video)
	75 output impedance on all outputs

APPENDIX D

NuVista+ SPECS

Digital Linear Keyer (Mixer):   256 levels of digital linear keying based on alpha channel
                                 Control registers allow fades to any color
                                 Overlay bit can select between any two mix ratios
                                 Programmable video overlay index
Digital Chroma Keyer: High quality chroma key over blue background
                                 Shadow preservation
                                 Requires professional backdrop and lighting

APPENDIX D

NuVista+ SPECS

Programmable Screen Attributes
• Horizontal/Vertical Addressable Resolution
• Horizontal/Vertical Capture Resolution
• Horizontal/Vertical Display Resolution
• Horizontal/Vertical Zoom, Magnifications 2x, 4x, 8x, 16x
• Horizontal/Vertical Panning

Programmable Pixel Attributes
• Number of bits/pixel (32/16/8)
• Pixel Clock (display)/ Sample Clock (capture)
• Pixel Specification (color mapped or true color)
• Video and/or Graphic Overlay
• Capture Mask/Write Mask

Programmable Video Attributes
• Interlaced/Non-Interlaced Display
• Horizontal/Vertical Scan Rate
• Horizontal/Vertical Blanking Interval
• Horizontal/Vertical Sync Width
• Horizontal Front/Back porch
• Vertical Equalization and Serration Pulses
• NTSC/PAL/Non-Standard Modes
• Master/Slave (genlock) Modes
• Live/Capture/Display/Overlay Modes

Analog Video Adjustments
• R/G/B Input Gain
• R/G/B Input Offset
• R/G/B Ouput Level
• NTSC/PAL Center Frequency
• Horizontal Fine Phase

APPENDIX D

NuVista+ SPECS

Pixel Specifications
• Mono, 8-bit Pixels:
One 8-bit channel, 256 grey levels
• Mono, 16-bit Pixels: Three 5-bit channels, 32 grey levels
• Mono, 32-bit Pixels: Four 8-bit channels, 256 grey levels
• Index, 8-bit Pixels: 8-Index, 256/16M colors
• Color, 8-bit Pixels: 3-R, 3-G, 2-B: 256 colors
• Color, 16-bit Pixels: 1-A, 5-R, 5-G, 5-B: 32K colors
• Color, 32-bit Pixels: 8-A, 8-R, 8-G, 8-B: 16M colors
• Overlay, 8-bit Pixels: Video
• Overlay, 16-bit Pixels: Video
• Overlay, 32-bit Pixels: Video

APPENDIX D

NuVista+ SPECS

Maximum Capture Resolution
- NTSC (RS-170A):   756 x 486 @ 30 Hz
- PAL (CCIR-624):   768 x 575 @ 25 Hz

Maximum Interlaced Display
- NTSC (RS-170A):   1536 x 486 @ 30 Hz
- PAL (CCIR-624):   1536 x 575 @ 25 Hz
- High Resolution: 1024 x 768 @ 30 Hz

Maximum Non-Interlaced Display
- NTSC (RS-170A):   756 x 486 @ 60 Hz
- PAL (CCIR-624):   768 x 576 @ 50 Hz
- High Resolution: 640 x 480 @ 67 Hz

Maximum Sample Clock (capture)
- NTSC (RS-170A):   29.076923 MHz
- PAL (CCIR-624):   29.500000 MHz
- High Resolution: 30.24 MHz

Maximum Pixel Clock (display)
- NTSC (RS-170A):   29.076923 MHz
- PAL (CCIR-624):   29.500000 MHz
- High Resolution: 30.24 MHz

APPENDIX D

NuVista+ SPECS

Input and Output Connectors

• Composite sync signal with equalization and serration pulses
• 9-pin D-type female input and output connectors
• Branching-type input and output cables available

Pin Number	Input Connector	Output Connector
1	Ground	Ground
2	Ground	Ground
3	Red Input	Red Output
4	Green Input	Green Output
5	Blue Input	Blue Output
6	Composite Video Input	Composite Video Output
7	Composite Sync Input	Composite Sync Output
8	Luma Input (S-video)	Luma/H sync Output
9	Chroma Input (S-video)	Chroma/V sync Output
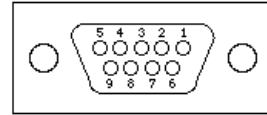
APPENDIX D

NuVista+ SPECS

APPENDIX E - CABLES

The following cables are available from your Truevision Reseller. A cable having more than one type of connector on an end is a branching-type cable, and can be used to connect more than one output device to NuVista+ Video In* or Out.

Cable #	NuVista+ In or Out	Other end
CA-2	9-pin D-type male	A
CA-3	9-pin D-type male	A, B
CA-4	9-pin D-type male	D
CA-5	9-pin D-type male	E
CA-6	9-pin D-type male	A, B, C
CA-7**	9-pin D-type male	B, C, D

*See Configuration #5 in Appendix B of this Guide.

**CA-7 can only be used as an output cable.

Codes:

A = 4 male BNC (for R, G, B, sync)

B = 1 male BNC

C = 4-pin male DIN (for S-Video)

D = 9-pin male D-type (for Sony 1302 RGB Multi-Scan Monitor, or GVM1310 or GVM2020 Multi-Scan Monitors))

E = 15-pin male D-type (for Apple RGB Color monitor)

If your configuration requires a different cable, we suggest obtaining a cable from Cables-to-Go (1-800-826-7904). Consult Appendix D of the NuVista+ User's Guide for pin assignments before calling them. For other Truevision product accessories, call 1-800-933-8865.

GLOSSARY

bandwidth
The rate at which a monitor's display is redrawn or "refreshed," measured in millions of cycles per second, or megahertz (MHz).

blanking
The time during which the electron beam of a monitor is turned off and reset to its starting position for either the next scanline or the next field.

brightness
Similar to luminance.

chroma key
Superimposing a live video source onto a computer generated background for special effects. The opposite of video overlay.

chrominance
The color component of the television signal. Chrominance has two components: hue and saturation.

composite
A method of encoding a color image using one composite signal for all three colors. The signal is composed of three components: sync to provide picture stability, luminance (Y) to provide picture brightness, and chrominance (C) to provide color. This is the basic manner employed by conventional color TV sets.

convergence
The measure of the accuracy with which a monitor's electron gun(s) strikes the individual phosphors on the picture tube.

CRT

Cathode Ray Tube. Refers to a type of monitor that employs an electron beam emitter and a phosphor-coated screen which glows for an instant when struck by the electron beam.

field

One of two portions of the screen in an interlaced scanning display system. A field consists of 262.5 lines (NTSC) or 312.5 lines (PAL).

flicker

Movement of thin horizontal lines resulting from the alternation of the two fields in an interlaced display and short persistence phosphors.

frame

Two fields of an interlaced display. A frame consists of 525 lines (NTSC) or 625 lines (PAL).

frame buffer

Area of video memory on NuVista+ card that holds the digitized color image.

gamma correction

A mapping employed to correct color variance across monitors.

genlock

A technique used to synchronize the scanning and color circuits of the various pieces of equipment that form a video system.

horizontal retrace

The period of time during which the electron gun moves back to the left after finishing a scan line.

hue

Tint, color. The main attribute of a color that distinguishes it from other colors.

interlaced scanning

Raster scanning method used in television broadcast signals that divides the screen into two fields, the first containing the odd numbered lines of the frame and the second containing the even numbered lines of the frame. This is done by scanning the screen from left to right, top to bottom on alternate lines 60 times a second (50

in European systems). Each time the screen is scanned, a single field is displayed. The two fields are interwoven to create a single image.

luminance

Similar to brightness. Used to describe differences in the intensity of light reflected from or through an image independent of its hue or saturation.

non-interlaced

Raster scanning method that draws all lines on a display in sequential order in one pass.

NTSC Composite

A video signal standard adopted by the National

NuVista+

GLOSSARY

Television Standards Committee. A color encoding scheme used in the United States, Canada, Japan, and South America. Characterized by 525 interlaced lines per frame at 30 frames per second.

overlay
Superimposing a computer generated background onto a live video source for special effects. The opposite of chroma key. An example would be combining a live video signal with a still video image stored in a frame buffer.

PAL
Phase Alternation (or Alternating) Line. A color encoding scheme used in Europe. Characterized by 625 interlaced lines per frame at 25 frames per second.

persistence
The duration of the period of illumination of the pixel after it is struck by the electron beam. Long persistence phosphors reduce "flicker" on interlaced displays, but cause "trails."

phosphor
A substance that glows when hit with an energy source. The coating on the inside surface of a CRT screen is made up of phosphor dots that emit light when hit by electrons from an electron gun.

pixel
Abbreviation for picture element; the smallest unit of the raster that can be stored, addressed, or displayed.

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GLOSSARY

QuickDraw
A set of built-in drawing routines that performs all graphic operations on the Macintosh computer.

raster
Pattern of horizontal lines scanned by electron beams in the CRT as it draws the image on a display.

raster scan
System that scans or draws an image onto the screen in a succession of scan lines.

refresh
Rewriting of an image on the screen. The refresh rate refers to the number of frames drawn on the screen per second.

RGB
Abbreviation for red-green-blue; a method of encoding a color image using a separate signal for each color. RGB produces images with higher color fidelity when compared to composite video and S-video.

S-video
A method of encoding a color image using two signals, one for color (C) and one for luminance (Y). Also known as YC.

saturation
When referring to colors, the extent to which a color is made purely of a selected hue rather than being diluted with white. It is the property that makes pink different from a pure red of the same hue, for example.

scan line
The path of the electron beam as it sweeps from left to right.

screen resolution
Specified as three components: dot pitch (size in mm of the smallest dot the screen can display), the number of dots on a line, and the number of lines in a frame.

sync generator
A device that generates the horizontal and vertical sync signals.

sync
Synchronization. Refers to signals used to synchronize the horizontal and vertical scans of a video signal.

tint
Hue, color. The main attribute of a color that distinguishes it from other colors.

vertical retrace
The period of time during which the electron gun moves back to the upper left corner after finishing a field.

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