AST-VisionPlus™

AST's full-featured video digitizer for the Apple IIGS

User's Manual

AST
RESEARCH INC.

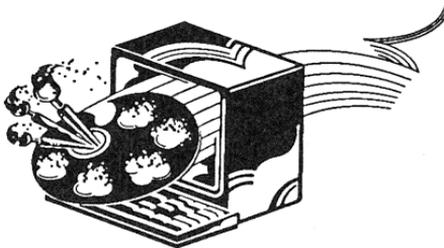We Make Apples Grow!

AST–VisionPlus™

**Video Digitizer
for the Apple® IIGS™**

User's Manual
AST Part # 000414-001A

January 1987

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Preface

AST–VisionPlus from AST Research, Inc. is a high-performance
video digitizer that captures images from a video camera, camcorder
or VCR in color or black and white. AST–VisionEffects software
lets you alter video images and store them in standard Apple IIGS
format for use with graphics and paint applications.

This manual is organized into the following chapters:

Chapter 1: **Introduction** describes the basic features of
AST–VisionPlus and AST–VisionEffects.

Chapter 2: **Installation** contains step-by-step instructions for
installing AST–VisionPlus and AST–VisionEffects on your IIGS.

Chapter 3: **Using AST–VisionEffects** describes the various tasks
that can be performed with AST–VisionPlus and
AST–VisionEffects.

Chapter 4: **AST–VisionEffects Reference** describes each command
on the AST–VisionEffects menu.

Appendices describe compatible software, specifications,
technical information for software developers and troubleshooting
procedures.

A **Glossary** defines terms used in this manual.

The **Index** provides your quickest route to information in the
manual.

The **Warranty Card** lets you register your purchase with AST.

Packing List

Please verify that your AST–VisionPlus package contains all of the items listed below **before** you install the unit.

❑ AST–VisionPlus card.

❑ Back panel cable adapter.

❑ Video connector cable.

❑ AST–VisionEffects utility disk.

❑ AST–VisionPlus User's Manual which includes a warranty card.

If any of these items are missing, contact your AST dealer.

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Introduction

Chapter 1:

Introduction

AST–VisionPlus is a video digitizer card that plugs into the Apple IIGS and allows you to transfer images into your computer in color or black and white. Images can be transferred from a video camera, camcorder or VCR. Powerful AST–VisionEffects software lets you control brightness and contrast, grey levels, color, resolution, zoom and aspect ratio.

AST–VisionPlus and AST–VisionEffects offer unlimited possibilities for home and school publishing, education, graphic design, science and engineering applications.

1.1   AST–VisionPlus Features

AST–VisionPlus and AST–VisionEffects put professional video imaging features into your hands.

❑   Digitizes images in color or black and white.

❑   Accepts input from a video camera, camcorder or VCR.

❑   Provides direct IIGS memory access so images can be displayed "live" on the screen.

❑   Stores images in standard IIGS format so they can be used with popular graphics and paint applications.

❑   Displays images in either 320 x 200 or 640 x 200 (black and white only) resolution.

❑   Displays up to 16 grey levels.

❑   Lets you add color to black and white images.

❑   Lets you change colors in a color image.

❑   Displays up to 16 colors out of 4096 possible colors.

❑   Lets you zoom in or zoom out on graphic images.

❑   Lets you control the aspect ratio (the relationship of width and height) of your images to create stretching effects.

1.2   System Requirements

You need the following hardware and software to run
AST–VisionPlus and AST–VisionEffects.

HARDWARE

❑ AST–VisionPlus card (included).

❑ An Apple IIGS with a minimum of 512K of memory.
    The RamStakPlus™ memory expansion card can be
    used to add up to 1 megabyte of memory to your IIGS.

❑ A black and white monitor is the minimum
    requirement. A color monitor is required to display
    images in color. The Apple RGB color monitor is
    recommended.

❑ A video camera, camcorder or VCR is required for use
    as a source of video input. A color video camera is
    required to digitize in color from a camera.

❑ A second disk drive or hard disk such as the
    AST–2000™ is recommended, but
    AST–VisionEffects software can be run on a
    single 3.5 inch drive.

❑ An ImageWriter™ II or LaserWriter™ printer is
    required to print digitized images using a paint
    application, but is otherwise optional.

SOFTWARE

❏ AST–VisionEffects (included).

❏ ProDOS™ 16 version 1.0 (included).

❏ A paint program such as PaintworksPlus™ is required for printing and provides additional editing features, but is otherwise optional.

1.3   Hardware   Overview

AST–VisionPlus consists of two hardware components.
These are the AST–VisionPlus card and a cable adapter
that fits into the back panel of your IIGS.

The AST–VisionPlus card shown in Figure 1–1 contains
the circuitry required to convert an NTSC composite
video signal into a format that can be used by your IIGS.

Fits into the motherboard slot.

AST–VisionPlus Card

The back panel cable adapter connects here.
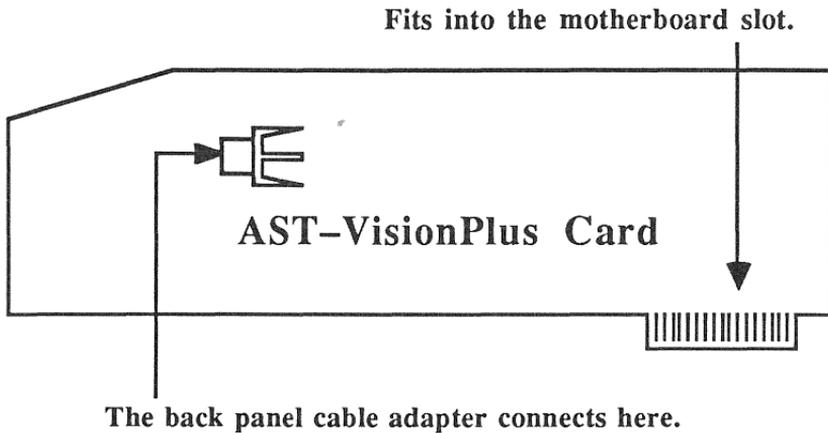
Figure 1–1

The AST–VisionPlus card connects to the Apple IIGS
motherboard via the motherboard slot. The back panel
cable adapter connects to the RCA jack shown in
Figure 1–1.

The back panel cable adapter shown in Figure 1–2
screws into the back panel of your IIGS behind the slot
used for your AST–VisionPlus card. The cable connects
to the RCA jack on the AST–VisionPlus card.

Screws into the back panel of your IIGS.

Back Panel Cable Adapter

Connects to the AST–VisionPlus card.

VCR, camcorder or camera power supply connects here.
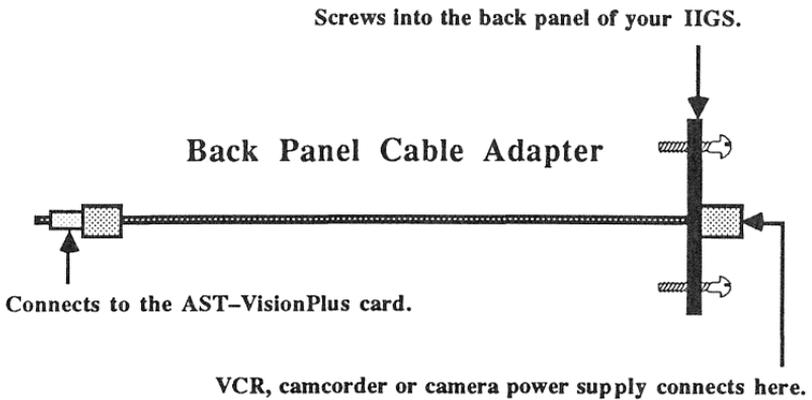
Figure 1–2

The back panel cable adapter makes it easy to connect
video sources to your AST–VisionPlus card.

1.4   Software Overview

The AST–VisionEffects software lets you:

❏ Set the digitizing mode to Black/White, Red Only, Green Only, Blue Only or Color.

❏ Initiate "live" digitizing.

❏ Freeze an image.

❏ Edit an image by changing colors, zoom, aspect ratio or grey levels (black and white only).

❏ Save images onto a disk.

❏ Load images from a disk.

1.5 How to Use this Manual

This manual assumes that you know how to use your
Apple IIGS, and can perform operations such as:

❑ Pointing and clicking.

❑ Opening applications and files.

❑ Saving files.

❑ Choosing menu commands.

❑ Using scroll bars.

If these operations are new to you, read your Apple IIGS
Owner's Guide before using AST–VisionPlus and
AST–VisionEffects.

To get started with AST–VisionPlus and
AST–VisionEffects, follow the steps in Chapter 2:
Installation. Chapter 3: Using AST–VisionEffects
provides the information you need to perform specific
tasks.

1.6 Terms Used in this Manual

To help you understand the descriptions in this manual, you should be familiar with a few terms.

Current Image   The image that is currently in memory. When you digitize or load an image, it becomes the current image.

Digitize   To begin processing "live" images from a video camera, camcorder or VCR.

Get File   A standard type of dialog box that enables you to load an image from a disk into memory.

Grey Level   A single shade of grey. The number of grey levels in an image can be changed to produce special effects.

Memory   Your computer's internal memory (RAM). The amount of available memory is important because images are digitized into memory before they can be saved onto a disk.

Paint application   Graphics software that lets you create drawings on your computer.

Palette   A set of colors that can be displayed on the screen.

Pixel

One dot on a computer or television screen. Images are formed by manipulating the shade or color of each pixel on the screen.

Resolution

The number of pixels per line used to display an image. Higher resolution generally increases the sharpness of an image.

Save File

A standard type of dialog box that enables you to save an image from memory onto a disk.

VCR

A video cassette recorder.

Chapter 2:

Installation

CHAPTER 2

Chapter 2:

Installation

When you unpack your AST–VisionPlus package, make sure that every item listed on the Packing List at the front of this manual is included. If anything is missing, contact your AST dealer. It's a good idea to save the AST–VisionPlus box, just in case you ever need to ship it.

Fill out the System Information portion of the Technical Support Checklist in Appendix C: Troubleshooting. The system information may be required if you contact AST Technical Support. You should also complete your warranty card and send it to AST.

2.1 Installing the AST–VisionPlus Card

The AST–VisionPlus card can be installed in seven easy steps:

Step 1: Turn off the power of the IIGS.

You do not have to remove the power cord.

Step 2: Remove the top cover of the IIGS.

Removal of the top cover of the IIGS is described in your Apple IIGS owner's guide.

Step 3: Choose a slot and install the back panel cable adapter

The AST–VisionPlus works in any slot. Slots 1, 2, 6 or 7 are recommended. The back panel cable adapter in Figure 2–1 fits into any of the long back panel openings on your IIGS.

Figure 2–1

Fit the back panel cable adapter into the space behind the card slot and attach it using the provided screws.

Step 4: Discharge any static electricity on your clothes or in your body by touching the power supply inside your IIGS.

This is important because static electricity is harmful to electronic circuitry.

Step 5: Insert the AST–VisionPlus card into the slot you have chosen.

Step 6: Gently connect the back panel cable adapter to the AST–VisionPlus card as shown in Figure 2–2.
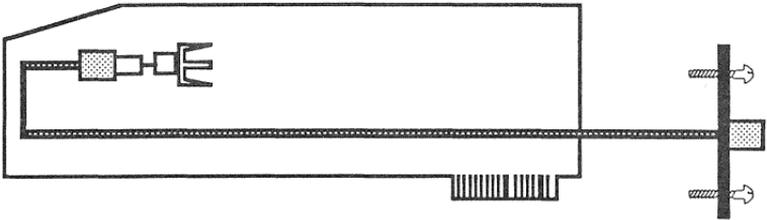
Figure 2–2

Step 7: Replace the cover of your IIGS.

2.2   Connecting a Video Source

You can use a video camera, camcorder or VCR as the
source of video input. The AST–VisionPlus back panel
cable adapter accepts an **NTSC video signal** from an
RCA plug as shown in Figure 2–3.
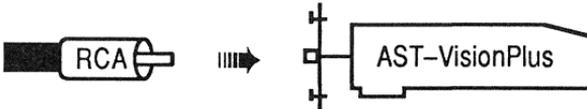
Figure 2–3

If your video source outputs a video signal to an RCA
plug, you may be able to connect it directly to
AST–VisionPlus. Most video cameras must be
connected via a VCR or a camera power supply/cable
breakout box.

If your video source outputs to another type of connector,
you must convert the output cable to an RCA plug. You
may also need to connect the video source to a VCR so
that the signal is converted to an NTSC video signal.

➨ **NOTE:** It makes no difference whether your video
equipment uses the Beta or VHS format.

The paragraphs that follow describe the most common
connections. If your connections do not match any of
those described, use a cable adapter so that you can
connect a male RCA plug to AST–VisionPlus. Contact
your AST dealer if you have any questions.

Connecting a Video Camera

If your video camera outputs to an RCA plug, you should be able to connect it directly to the AST–VisionPlus back panel cable adapter as shown in Figure 2–4.

Figure 2–4

Most video cameras must be connected to a VCR or a camera power supply/cable breakout box before being connected to the AST–VisionPlus back panel cable adapter as shown in Figure 2–5.
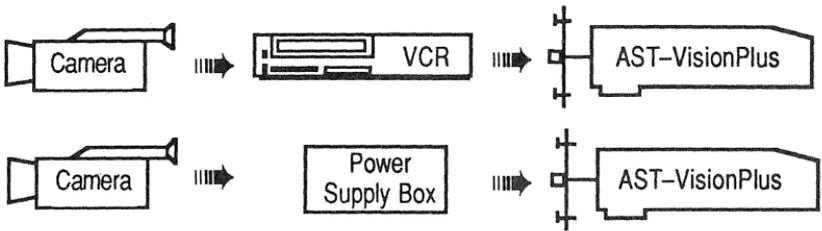
Figure 2–5

A camera power supply/cable breakout box provides power to your video camera so you can use it without a VCR. These devices are available at electronics retailers.

If your video camera does not output to an RCA plug or BNC connector, connect the camera to the camera input on your VCR or camera power supply/cable breakout box. Connect the video output on the VCR or camera power supply/cable breakout box to the AST–VisionPlus back panel cable adapter as shown in Figure 2–6.
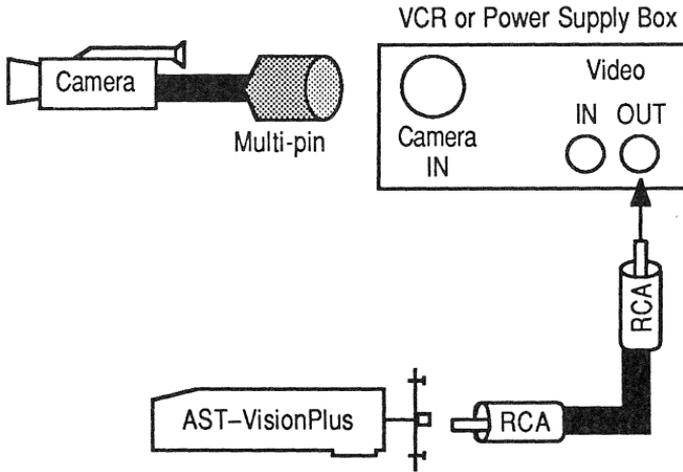
Figure 2–6

If your video camera outputs to a BNC connector, you must use a cable adapter to connect the video camera to the AST–VisionPlus back panel cable adapter as shown in Figure 2–7.
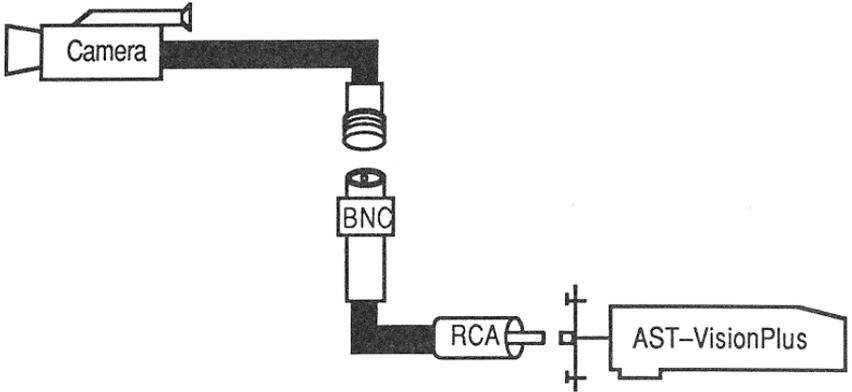
Figure 2–7

If the cable adapter was not provided with your video camera, you can get one from a video retailer.

Connecting a VCR

Most VCRs can be connected directly to the AST–VisionPlus back panel cable adapter.

Connect the VCR's video output to the AST–VisionPlus back panel cable adapter as shown in Figure 2–8.

VCR or
Power Supply Box

Video

IN OUT

RCA   RCA   AST–VisionPlus
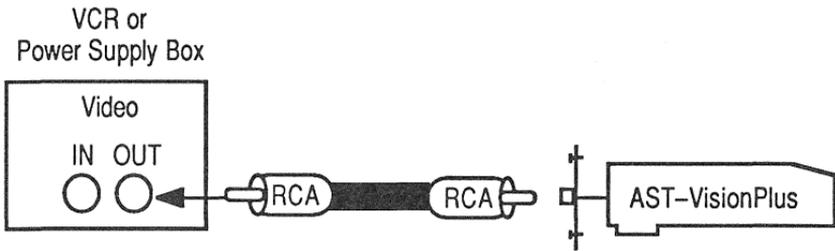
Figure 2–8

You can use the provided cable to make this connection.

Connecting a Camcorder

There are several ways to connect a camcorder to
AST–VisionPlus.

If your camcorder outputs to an RCA plug, it can
be connected directly to the AST–VisionPlus back panel
cable adapter as shown in Figure 2–9.

Figure 2–9

If your camcorder outputs to a BNC jack, you
must use a cable adapter as shown in Figure 2–10.
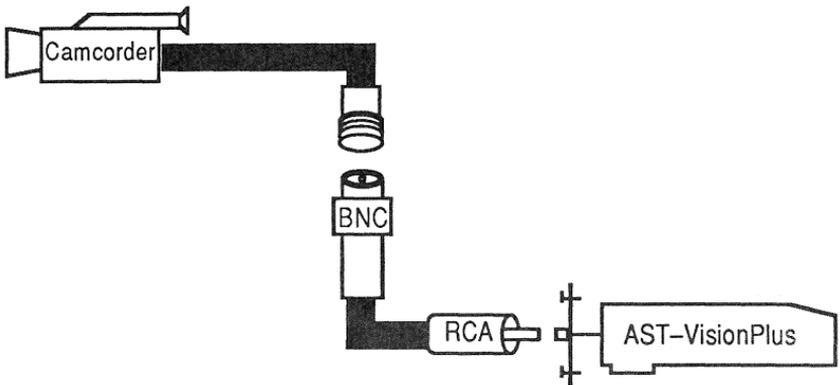
Figure 2–10

If a cable adapter was not provided with your camcorder,
you can get one from a video retailer.

If your camcorder outputs to an F-type (coaxial) connector, connect the camcorder to an F-type input on a VCR and connect the VCR's video output to the AST–VisionPlus back panel cable adapter as shown in Figure 2–11.
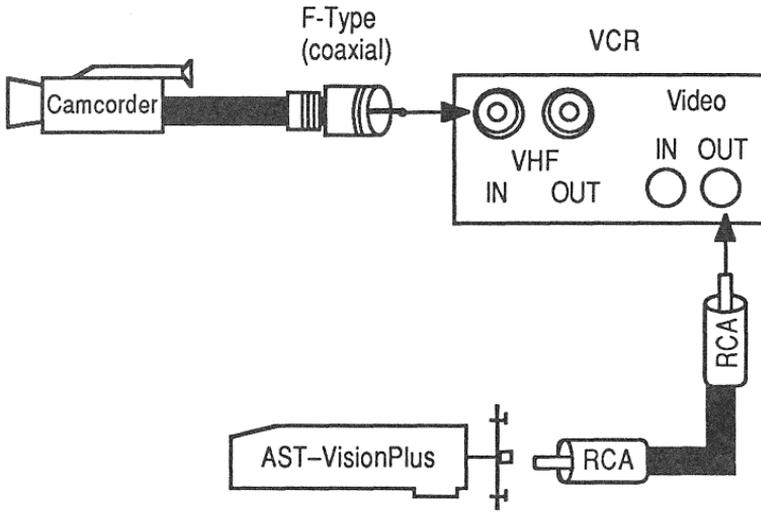
Figure 2–11

If your camcorder outputs to antenna wire,
connect the camcorder to an antenna input on a VCR and
connect the VCR's video output to the AST–VisionPlus
back panel cable adapter as shown in Figure 2–12.
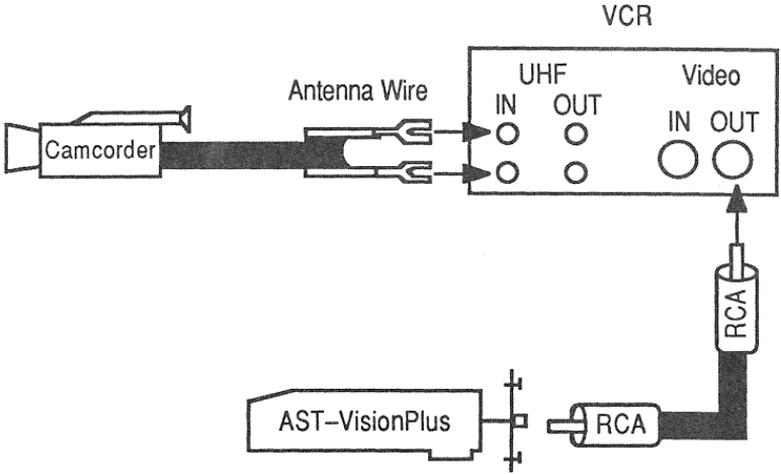
Figure 2–12

If you have any questions, contact your AST dealer.

2.3 Installing the AST–VisionEffects Software

The AST–VisionEffects disk comes ready to use. You should, however, make a backup copy of the original disk. Store the original in a safe place and use the copy. AST–VisionEffects is not copy-protected. You can make a copy using the standard IIGS copy procedures.

If you are using a hard disk, you may want to use the AST–VisionEffects software with your existing setup. For best results, put the AST–VisionEffects application and AST–VisionEffects files you create in one folder.

Before your IIGS will recognize the AST–VisionPlus card, you must use the Apple IIGS Control Panel Program to indicate that the slot contains a card. You must also set your RAM disk so that at least 512K bytes of memory are available for the Apple IIGS system and AST–VisionEffects.

Follow these steps to set the Control Panel Program for
the AST–VisionPlus card:

1. Put the AST–VisionEffects utility disk into a disk
   drive. Turn on the IIGS and your monitor.

   The ProDOS startup screen appears followed by a
   "One Moment Please..." message. Then the
   Apple IIGS Program Launcher screen is displayed.
   Before continuing, you must let the IIGS know that a
   new card has been installed.

2. Press Control–Open Apple–Esc.

   The Desk Accessories screen appears.

3. Press Up Arrow to highlight Control Panel. Then
   press Return.

   The Control Panel menu appears.

4. Press Up Arrow to highlight Slots. Then press
   Return.

   The Control Panel Slots screen appears.

5. Press Up Arrow or Down Arrow to highlight the slot
   that contains your AST–VisionPlus card. Then press
   Right Arrow or Left Arrow to toggle the slot setting
   to Your Card.

6. Press Return to display the Control Panel screen.

7. Press Up Arrow or Down Arrow to highlight RAM Disk. Then press Return to display the Control Panel RAM Disk screen. Use the arrow keys to set a Maximum RAM Disk Size that leaves at least 512K bytes of memory for the Apple IIGS system and AST–VisionEffects. Then press Return to return to the Control Panel screen.

    For example, if you are using a 1 megabyte memory expansion card such as RamStakPlus, you can use a 768K byte RAM disk. The required 512K bytes of free memory consists of the 256K bytes built into the IIGS and 256K bytes from the RamStakPlus.

8. Press Up Arrow or Down Arrow to highlight Quit. Then press Return to display the Desk Accessories screen. Press Up Arrow or Down Arrow to highlight Quit. Then press Return.

    The Apple IIGS Program Launcher appears.

9. Press Open Apple-Ctrl-Reset to reboot the computer.

    ➡ **NOTE:** You must reboot your IIGS before it will recognize the changes you made to the Control Panel Program settings. For further details on using the Control Panel Program, refer to your Apple IIGS owner's guide.

You are now ready to begin using AST–VisionEffects. Chapter 3: Learning AST–VisionEffects guides you step-by-step through your first digitizing session.

Chapter 3:

Using AST–VisionEffects

Chapter 3:

Using AST–VisionEffects

This chapter describes some basic concepts and each of the tasks you can perform using AST–VisionPlus and the AST–VisionEffects software.

3.1 Basic Concepts

AST–VisionPlus converts standard NTSC composite video signals into a digital image that can be manipulated using the AST–VisionEffects software.

NTSC stands for North American Television Standard Committee. The NTSC standard is used by most video cameras and VCRs sold in the United States, Canada and Mexico.

The image you see on the screen is the image in computer memory. It is called the "**current image**."

Black and white images use "**grey levels**" to create an image. A grey level is a shade of grey. You can create special effects by changing the number of grey levels used to display an image.

Most color images are displayed using a "**color palette**." The color palette is a set of 16 colors out of 4096 possible colors that the IIGS can display.

Before digitizing an image, you must set the **"digitizing mode"** and **"resolution."** The digitizing mode indicates whether the image is to be digitized in black and white, in a single color or in full color. Resolution is the number of dots used to create an image.

Your monitor uses combinations of red, green and blue light to create one of 16 colors for each pixel on the screen. Figure 3–1 shows the effect of combining red, green and blue pixels.
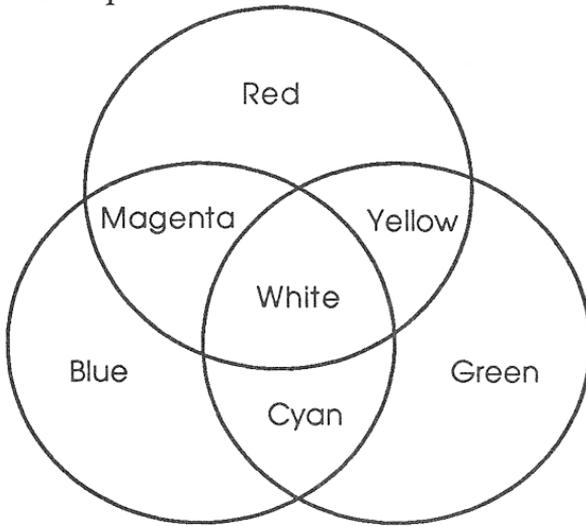
Figure 3-1

Combining equal amounts of red, green and blue light produces white. Removing all color produces black.

3.2 Choosing Images to Digitize

You will find a whole world of images to capture with AST–VisionPlus and AST–VisionEffects. If you don't want to carry your computer around with you, leave it at home and take along a portable video camera. Visiting the zoo, a baseball stadium, your school or a friend's house will provide you with hours of digitizing fun.

At home and at school, you can digitize images from school plays, lectures, books and magazines. Through a VCR you can digitize images from your favorite films or television shows.

However, please remember that most images available through the popular media are copywritten.

Getting Images from a VCR

Higher quality equipment produces cleaner video signals which produce better digitized images. Slow-motion and freeze frame VCR effects don't generally produce good digitized images.

3.3   Starting AST–VisionEffects

Follow these steps to start AST–VisionEffects.

1. Put the AST–VisionEffects utility disk into a disk
    drive and boot your IIGS to the Apple IIGS
    Program Launcher.

2. Select VISIONEFFECTS from the scroll box and
    click the Open button.

    In a few moments the AST–VisionEffects startup
    dialog box in Figure 3–2 appears.

```
VisionEffects H.H

(c) AST Research 1986

[     OK     ]
```
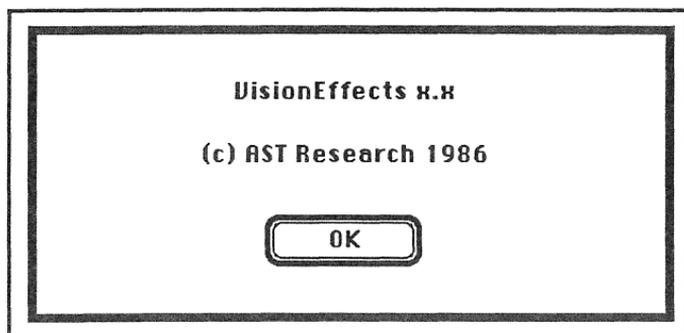
Figure 3–2

If the screen doesn't display anything at all, displays
a "No VisionPlus card" dialog box or displays a
"No video signal detected" dialog box, refer to
Appendix C: Troubleshooting.

3. Click the OK button.

You are now ready to start digitizing.

You can quit AST–VisionEffects by pulling down the File menu and choosing Quit.

3.4   Using Black/White Mode

This section describes how you can digitize and edit images in black and white.

Red Only, Green Only and Blue Only

The Red Only, Green Only and Blue Only digitizing modes operate exactly like the Black/White digitizing mode. Black/White mode records the presence or absence of white light. Red Only mode records the presence or absence of red light and so on.

➡ **NOTE:** References to Black/White mode should be interpreted to mean Black/White, Red Only, Green Only and Blue Only modes. However, for programming purposes, Red Only, Green Only and Blue Only are considered to be Color modes.

Grey Levels

Instead of using color, the black/white modes define images using shades of grey (or red only, or green only, or blue only). Each shade is called a grey level. Using more grey levels increases the quality of shading in an image. Fewer grey levels gives an image a higher contrast look.

Figure 3-3 shows an image displayed using 16 grey levels and 8 grey levels.

16 Grey Levels

8 Grey Levels

Figure 3-3

Figure 3-4 shows an image displayed using 4 grey levels and 2 grey levels.

4 Grey Levels

2 Grey Levels

Figure 3-4

Resolution

320 x 200 pixels is the standard resolution. 640 x 200 is high resolution that can be used only for images digitized in the black/white modes. 640 resolution is best used for digitizing high contrast images such as line art or text.

Figure 3–5 shows an image digitized at 320 resolution.

Figure 3–5

Images digitized with 640 resolution can be displayed with 2 or 4 gray levels only. Menus and dialog boxes look a bit compressed at 640 resolution.

Figure 3–6 shows an image digitized at 640 resolution.

Figure 3–6

Black/White Digitizing

Follow these steps to digitize in the Black/White digitizing modes:

1. Focus the camera on your subject and adjust the camera's light setting (e.g., sunshine, clouds, light bulbs, flourescent light).

   If you are using a VCR or camcorder tape as the video source, play the tape instead of focusing the camera.

2. (Optional.) Before digitizing in the Black/White modes, you can set the resolution by pulling down the Mode menu and choosing either 320 or 640 resolution.

3. (Optional.) Before digitizing in the Black/White modes, you can specify the number of grey levels to be used by pulling down the Special menu and choosing the appropriate grey level command. If you are using 640 resolution, only 4 or 2 grey levels are available.

   The number of grey levels can also be changed after you digitize the image.

4. Choose Digitize.

The dialog box in Figure 3–7 appears.
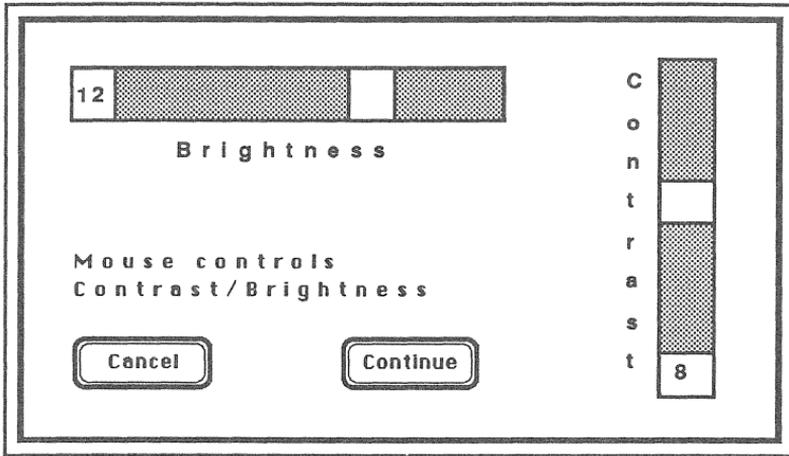
Figure 3–7

This dialog box shows the current brightness and contrast settings and lets you change them before you begin digitizing.

The number at one end of each scroll bar shows the current setting. Brightness and contrast settings can be adjusted in increments from 0 to 15 by dragging the scroll box, clicking the scroll bar or pressing the scroll bar to make it auto-repeat.

Clicking the Continue button initiates live digitizing.

Clicking the Cancel button returns you to the current image or the desktop.

5. Adjust the brightness and contrast settings. Then click the Continue button.

AST–VisionPlus begins "live" digitizing. Brightness and contrast can be adjusted by moving the mouse as follows:

❏ Move the mouse up to increase contrast.

❏ Move the mouse down to decrease contrast.

❏ Move the mouse left to decrease brightness.

❏ Move the mouse right to increase brightness.

If your subject moves, you will see the movement on the screen. Fast movements generate some distortion. You may want to use the distortion to create special effects. Now you are ready to freeze a frame for editing.

Freezing a Frame

Pressing the Space Bar once enables you to freeze the image on the screen. Pressing the Space Bar again releases the image and continues live digitizing.

Once you have frozen an image you like, click the mouse or press any key (except the Space Bar) to freeze the image for editing. The menu bar returns to the top of the screen. The image is now the current image in memory and is ready for editing.

3.5   Editing a Black and White Image

AST–VisionEffects provides many ways to edit black and white images including:

❏ Changing the number of grey levels.

❏ Adding a color tint to the entire image using the Colorate command.

❏ Adding color to individual grey levels using the Change Color command.

❏ Inverting the image.

❏ Zooming in.

❏ Zooming out.

❏ Changing the aspect ratio for stretch effects.

Changing Grey Levels

To change the number of grey levels in an image:

1. Pull down the Special menu and choose the number of grey levels.

With 640 resolution, only 2 or 4 grey levels are available.

Coloring a Black and White Image

There are two ways to color a black and white image. You can tint the entire image with the Colorate command or you can apply color to individual grey levels with the Change Color command.

Figure 3–8 shows the different effects achieved by the Colorate and Change Color commands.

Colorate

Change Color

Figure 3-8

Tinting a Black and White Image

Follow these steps to tint a black and white image using the Colorate command.

1. Pull down the Special menu and choose Colorate.

2. Then click the mouse once.

   Red, green and blue color bars appear at the top of the screen as shown in Figure 3–9.

Figure 3–9

The color bars have 16 tick marks that represent adjustable increments from 0 to 15. A small indicator box shows the current setting for each color bar.

3. Adjust the color as follows:

❏ Drag the mouse up to increase red.

❏ Drag the mouse down to decrease red.

❏ Move the mouse up to increase green.

❏ Move the mouse down to decrease green.

❏ Move the mouse left to decrease blue.

❏ Move the mouse right to increase blue.

4. When you have a color you like, double-click or press any key.

The menu bar returns to the screen.

You can undo the Colorate effect by choosing a grey level command from the Special menu.

Coloring Individual Grey Levels

Follow these steps to apply color to a specific grey level using the Change Color command.

1. Pull down the Special menu and choose Change Color.

2. Click on a pixel that displays the shade of grey you want to color.

   Color bars appear at the top of the screen. They work as described for the Colorate command in the section titled, "Tinting a Black and White Image." However, the coloration affects only those pixels displaying the grey level you selected with the mouse.

   ➠ NOTE: Zooming in before using the Change Color command makes it easier to select a specific pixel. After changing the color, you can return the image to its regular zoom by choosing a command from the Zoom menu and clicking.

3. When you are happy with the color, double-click or press any key to return to the menu bar.

You can choose the Change Color command again and set a color for another grey level. Every grey level in an image can be set to a color.

You can undo the Change Color effect by choosing a grey level command from the Special menu.

3.6 Using Color Mode

AST–VisionEffects offers two color digitizing options:

Palette Adjust

Color Dither

The two options use different methods to process and display the digitized image.

The **Palette Adjust** option performs a statistical analysis of the digitized information (up to 4096 colors) and uses the 16 most common colors to create a palette for the IIGS display.

For the widest range of colors, place your subject in front of a black or dark background. Since black is the absence of color, all 16 colors in the palette can be used for the subject instead of to fill in the background.

Palette colors can be changed using the Change Color or Change Palette commands.

The **Color Dither** option blends colors using one red pixel, one green pixel and one blue pixel. The red pixel can be any of five shades of red, the green pixel can be any of five shades of green and so on. When you stand back from the screen, your eye doesn't see the color of individual pixels. You see the color blend of adjacent pixels. Your eye can interpret up to 125 colors on the screen using this technique. However, dithering lowers the resolution of the image.

You cannot change colors or change the palette of Color Dither images.

Color Dither images must be saved as Picture Data files using the Save Picture Data command if you want to be able to reload the image into AST–VisionEffects.

Figure 3–10 shows an image digitized using the Palette Adjust option and again using the Color Dither option.

Palette Adjust
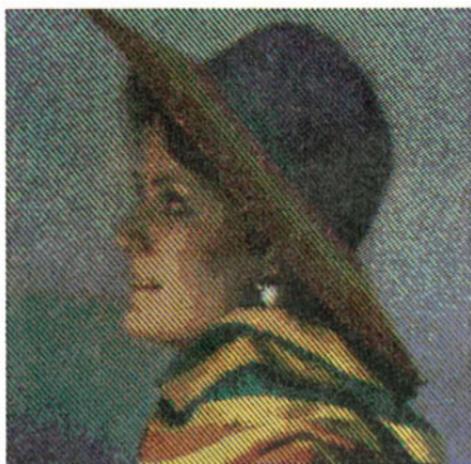
Color Dither

Figure 3–10

Follow these steps to digitize an image in color:

1. Focus a color camera on your subject and adjust the camera's light setting.

   If you are using a VCR or camcorder tape as the video source, play the tape instead of focusing the camera.

2. Pull down the Mode menu and choose Color.

   This sets the resolution to 320 x 200 automatically.

3. Pull down the Mode menu again and choose Digitize. The dialog box in Figure 3-11 appears.
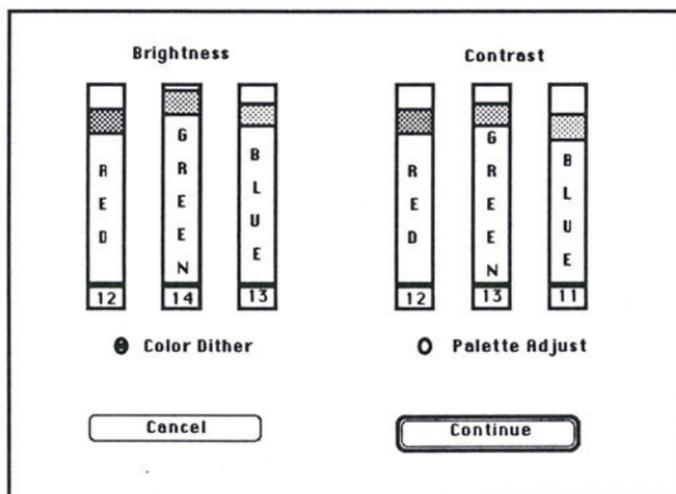
Figure 3–11

Current brightness and contrast settings are shown by the numbers at the bottom of the scroll bars. You can adjust the settings in increments of 0 to 15 by dragging a scroll box, clicking a scroll bar or pressing a scroll bar to make it auto-repeat.

To optimize brightness and contrast: Digitize the image first in Red Only mode and use the mouse to get the best brightness and contrast settings. Repeat this process in Green Only mode and again in Blue Only mode. When you digitize in color, the brightness and contrast scroll bars will be adjusted to the settings you used in the Red Only, Green Only and Blue Only digitizing passes.

Clicking the Continue button initiates live digitizing.

Clicking the Cancel button returns you to the current image or the desktop.

4. Adjust the brightness and contrast settings and select the Palette Adjust or Color Dither option.

5. Click the Continue button.

AST–VisionPlus begins "live" digitizing. The scan rate is slower than during black/white digitizing so your subject needs to be more still in order to get a good image.

Brightness and contrast cannot be adjusted during live color digitizing. If the screen is too dark, you must digitize the image again with new brightness and contrast settings.

Freezing a Color Frame

Freezing a color frame is done just like in the Black/White modes. You can grab an image by pressing the Space Bar once. Pressing the Space Bar again releases the image and returns the screen to live digitizing.

Once you have an image you want to edit or save, click the mouse or press any key (except the Space Bar). The menu bar returns to the top of the screen.

3.7 Editing a Color Image

AST–VisionEffects provides many ways to edit Palette Adjust images including:

❏ Changing colors using either the Change Color or Change Palette command.

❏ Inverting the image.

❏ Zooming in.

❏ Zooming out.

❏ Changing the aspect ratio for a stretch effect.

AST–VisionEffects provides several ways to edit Color Dither images including:

❏ Inverting the image.

❏ Zooming in.

❏ Zooming out.

❏ Changing the aspect ratio for a stretch effect.

3.8   Adjusting Colors

You can change the colors in a Palette Adjust image by using the Change Color or Change Palette commands.

The **Change Color** command lets you change colors directly on the image.

The **Change Palette** command displays the image's color palette and lets you change the colors in the palette. (Remember that the color palette is based on the 16 most common colors in the image as calculated by AST–VisionEffects.) The image is then redisplayed using the new colors specified in the palette as if they are the 16 most common colors in the image.

If you set a palette color to one that does not appear in the image at all, the color will not be used in the display. This reduces the number of colors in your image.

Change Color

Follow these steps to change a color in a Palette Adjust image:

1. Pull down the Special menu and choose Change Color.

2. Click on a pixel that displays the color you want to change.

   Color bars appear at the top of the screen. They operate as described in the section titled, "Tinting a Black and White Image."

   ➡ NOTE: Zooming in before using the Change Color command makes it easier to select a specific pixel. After changing the color, you can return the image to its regular zoom by choosing a command from the Zoom menu and clicking.

3. Adjust the color as follows:

   ❏ Drag the mouse up to increase red.

   ❏ Drag the mouse down to decrease red.

   ❏ Move the mouse up to increase green.

   ❏ Move the mouse down to decrease green.

   ❏ Move the mouse right to increase blue.

   ❏ Move the mouse left to decrease blue.

4. When you have a color you like, double-click or press any key to return the menu bars to the screen.

Change Palette

Follow these steps to change the palette of a Palette Adjust image:

1. Pull down the Special menu and choose Change Palette.

   The dialog box in Figure 3–12 appears.
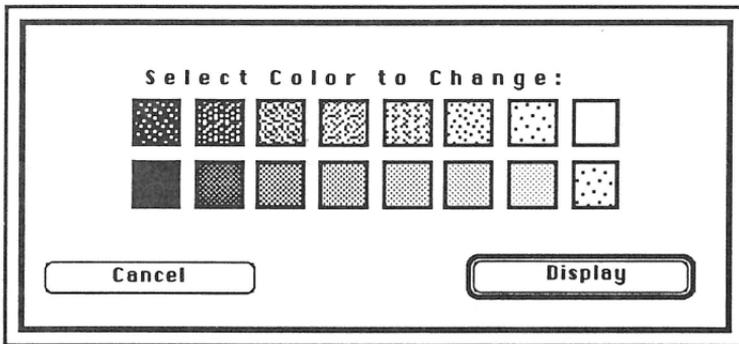
Figure 3–12

The dialog box displays the image's color palette. You can select a color to change by clicking it.

Clicking the Display button redisplays the image using the new palette.

Clicking the Cancel button aborts any changes you made and returns you to the current image.

2. Click on a color you want to change.

   Color bars appear at the top of the screen. They operate as described in the section titled, "Tinting a Black and White Image."

3. Adjust the color as follows:

   ❏ Drag the mouse up to increase red.

   ❏ Drag the mouse down to decrease red.

   ❏ Move the mouse up to increase green.

   ❏ Move the mouse down to decrease green.

   ❏ Move the mouse right to increase blue.

   ❏ Move the mouse left to decrease blue.

4. When you have a color you like, double-click or press any key.

   You can select another color to change from the dialog box and repeat steps 2, 3 and 4.

5. When you are satisified with the colors in the palette, click the Display button to display the image using the new palette you defined.

   The menu bar returns to the screen.

3.9   Inverting an Image

Inverting an image creates a negative image like the one in Figure 3–13.

Figure 3–13

To invert an image, pull down the Special menu and choose Invert. The image is inverted and the Invert command toggles to Normal. Choose the Normal command to return the screen to a positive image.

3.10   Zooming In

The Zoom In command lets you enlarge a portion of the image as shown in Figure 3-14.

Figure 3–14

Enlarging an image with the Zoom In command enables you to emphasize the computer-generated look of your image.

Follow these steps to enlarge part of the current image:

1. Pull down the Zoom menu and choose Zoom In.

2. Click at the center of the area you want to enlarge.

3. Drag around the area you want to enlarge.

   The smaller the area you select, the greater the enlargement. The outline box is centered around the point where you first clicked. If the outline box touches the edge of the screen, you can still increase the size of the box, but it will no longer be centered around the click point.

4. When you release the mouse, the image area you selected enlarges to fill the screen.

If nothing happens, the area you selected was too small. Try again and select a larger portion of the image. You must select an area no smaller than about a quarter inch square.

You can undo the effects of a zoom by choosing a command from the Zoom menu and clicking instead of dragging to define a zoom area.

➠ NOTE: You cannot zoom in or out on an image that has already been zoomed once.

3.11   Zooming Out

The Zoom Out command lets you reduce the entire image as shown in Figure 3–15.
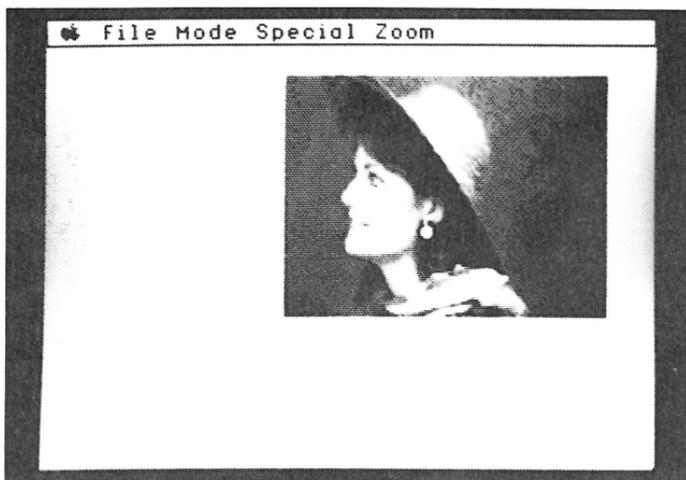
Figure 3–15

Follow these steps to reduce an image:

1. Pull down the Zoom menu and choose Zoom Out.

2. Click at the center of the area where you want to put the reduced image.

3. Drag to define the new size of the image.

   The smaller the area you select, the greater the reduction. The outline box is centered around the point where you first clicked. If the outline box touches the edge of the screen, you can still increase the size of the box, but it will no longer be centered around the click point.

4. When you release the mouse, the image is reduced. If nothing happens, the area you selected was too small. Try again and select a larger portion of the image. You must select an area no smaller than about a quarter inch square.

You can undo the effects of a zoom by choosing a command from the Zoom menu and clicking instead of dragging to define a zoom area.

➠ **NOTE:** You cannot zoom in or out on an image that has already been zoomed once.

3.12 Stretching an Image

Aspect ratio describes the relationship of height and width in an image. By changing the aspect ratio, you can stretch an image vertically or horizontally as shown in Figure 3–16.
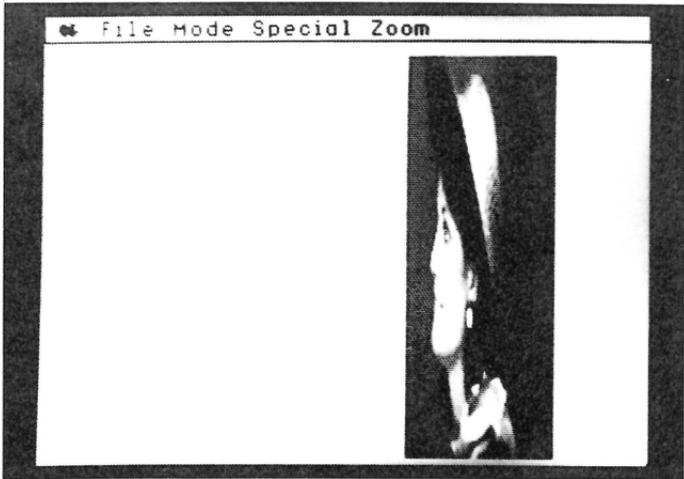
Figure 3–16

Follow these steps to change the aspect ratio of the current image:

1. Pull down the Zoom menu and choose Aspect Ratio.

2. Click at the center of the area where you want to put the new image.

3. Drag the mouse to outline the new size of the image.

4. When you release the mouse, the image is fit into the area you defined.

If nothing happens, the area you selected was too small. Try again and select a larger portion of the image. You must select an area no smaller than about a quarter inch square.

You can return an image to its original state by choosing a command from the Zoom menu and clicking instead of dragging to define an area.

3.13 Saving an Image

Both the Save Picture and Save Picture Data commands let you save images on a disk.

Save Picture creates files with a **.PIC** filename extension. PIC files record the image just as it appears on the screen. PIC files use 32K bytes of disk space.

Use **Save Picture** to save all of your AST–VisionEffects images, except Color Dither images that you want to reload into AST–VisionEffects.

➠ **NOTE:** The Change Palette command cannot be used to edit color images digitized using the Palette Adjust option and saved as PIC files. Color images digitized using the Color Dither option and saved as PIC files cannot be reloaded into memory by AST–VisionEffects.

Save Picture Data creates files with a **.DAT** filename extension. DAT files contain all of the digitized information used by AST–VisionEffects. DAT files use 32K bytes of disk space for a black and white image at 320 resolution, 64K bytes of disk space for a black and white image at 640 resolution, and 96K bytes for a color image.

Use **Save Picture Data** for color images digitized using the Color Dither option that you would like to reload into AST–VisionEffects.

Follow these steps to save an image:

1. Pull down the File menu and choose Save Picture or Save Picture Data as appropriate.

   A "Save File" dialog box like the one in Figure 3–17 appears.

```
 ▣ /UP/
 Free: 352k out of 800k.

   ◈   VisionEffects                  ⇧
   ▢   Office.pic
   ▢   House.pic

                                      ⇩

 Save Picture as:

 Your Picture
```

                    ┌─────────────────┐
                    │   Disk   │
                    └─────────────────┘
                    ┌─────────────────┐
                    │   New Folder   │
                    └─────────────────┘
                    ┌─────────────────┐
                    │   Open   │
                    └─────────────────┘
                    ┌─────────────────┐
                    │   Close   │
                    └─────────────────┘
                    ┌─────────────────┐
                    │   Save   │
                    └─────────────────┘
                    ┌─────────────────┐
                    │   Cancel   │
                    └─────────────────┘
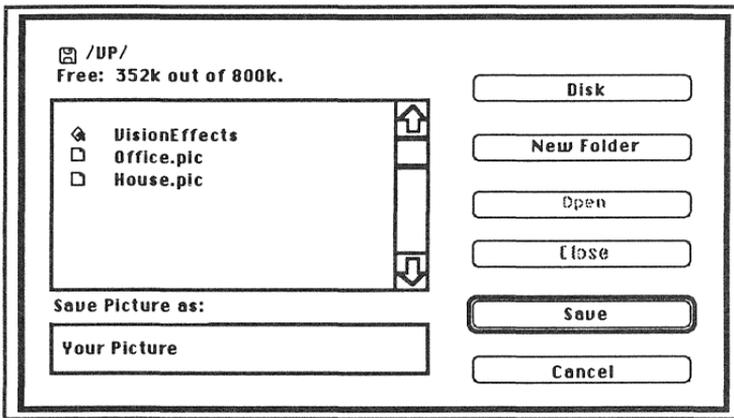
Figure 3–17

The Disk button enables you to change the current disk drive.

The New Folder button enables you to create and name a new folder on the disk.

The Save button saves the image with the name you specify and the appropriate filename extension.

The Cancel button returns you to the current image.

2. Type a name for the image and click the Save button.

The image is saved on the disk. If you used the Save
Picture command, a .PIC extension is added to the
filename automatically. If you used the Save Picture
Data command, a .DAT extension is added to the
filename automatically.

3.14   Loading an Image into Memory

Saved images can be loaded from a disk into memory
with the Load Picture command. Color Dither images can
only be loaded into memory if they were saved as Picture
Data files using the Save Picture Data command.

Follow these steps to load an image into memory:

1.   Pull down the File menu and choose Load Picture. A
     "Get File" dialog box like the one in Figure 3–18
     appears.
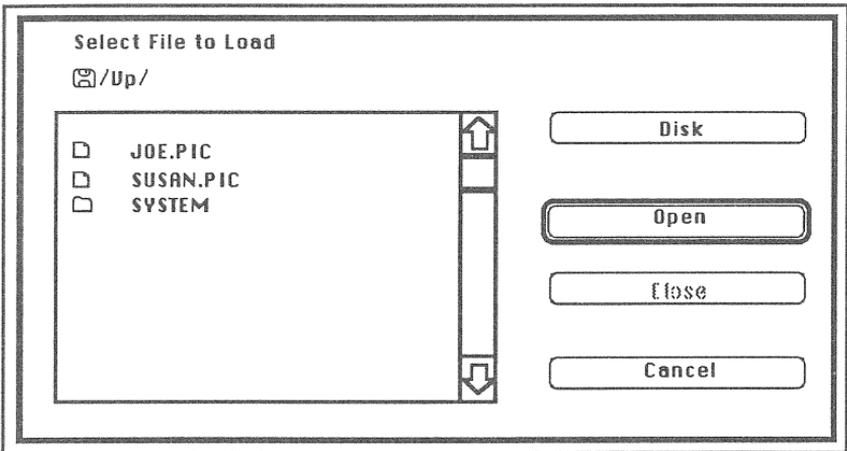
Figure 3–18

The Disk button enables you to change the current
disk drive.

The Open button opens the highlighted file.

The Cancel button returns you to the current image or
to the desktop.

2. Select the file you want to load and click the Open button.

The image is loaded into memory and displayed as the current image.

3.15   Printing an Image

At the present time, all printing must be done from within a paint application such as PaintworksPlus.

Follow these steps to print a digitized image:

1. Save your image as a Picture file using the Save Picture command.

2. Quit AST–VisionEffects.

3. Open the paint application and open the file that you want to print.

4. Use the printing abilities of the paint application to print the image.

3.16   Video Publishing

There are many exciting ways to use your AST–VisionPlus images.

You can use a paint or page layout application to produce your own clip art for newsletters, flyers, personalized stationary and holiday greeting cards.

Using Underware® ribbons and color pens, you can create iron-on transfers for your family or club.

Animation has never been simpler. You can capture individual frames with AST–VisionPlus and then use an animation program to bring them to life.

With a data base application that can record graphics, you can create computer images of your personal effects for insurance purposes, make pictures of houses and office buildings for a real estate data base, document a research project or even make photo IDs for personnel or student records.

AST–VisionPlus is an excellent tool for educators. You can digitize a dental X-ray and change the color of one grey level to make a tooth filling easy for your students to see. You could also digitize a map and add text with a paint application to bring a historical event alive for your students.

The possibilities for AST–VisionPlus are as limitless as your imagination.

Making Your Own Stationary

Here's an example of how you might use AST–VisionEffects with PaintworksPlus to create your own stationary.

A paint application like PaintworksPlus enables you to touch up an image using FatBits and other drawing tools. You can also cut and paste to make your own clip art or add graphic elements to an image. Paint applications also enable you to integrate text with your AST–VisionEffects images.

The following steps describe how you might make your own stationary.

1. Digitize your portrait using AST–VisionPlus and AST–VisionEffects. Figure 3–19 shows a raw image digitized in color with the Palette Adjust option.

Figure 3–19

2. Pull down the Zoom menu and use the Zoom Out command to reduce the image to a good size for your stationary.

3. Pull down the File menu and choose the Save Picture command to save the image in the Picture format that can be used by other applications.

4. Quit AST–VisionEffects.

5. Open PaintworksPlus and use the Open command to open the AST–VisionEffects file.

6. Use the drawing tools to arrange your portrait on the page. Then add some lines and a brief greeting.

   Figure 3–20 shows an image being edited with PaintworksPlus.

Figure 3–20

7. Once you are happy with your layout, pull down the File menu and use the Save command to save your work on disk.

8. Pull down the File menu and use the Print command to print your stationary.

   You may want to manual feed nice paper stock into your printer.

You can see how easy it is to print your own stationary. Figure 3–21 shows several examples of publications made using AST–VisionPlus with other applications.

Figure 3–21

Printing a Custom T-Shirt

Here's an example of how you might use
AST–VisionEffects with PaintworksPlus and Underware
Ribbons to make a custom T-Shirt. T-Shirts make
excellent gifts and can be used for fund-raising or social
activities.

The following steps describe how you might make a
custom T-shirt with an old-fashioned self-portrait.

1. Digitize your portrait using AST–VisionPlus and
    AST–VisionEffects. Figure 3–22 shows a raw image
    digitized in black and white.

Figure 3–22

2. Use the Colorate command to give the picture a slight yellow tint like an old, faded photograph as shown in Figure 3–23.

Figure 3–23

3. Pull down the File menu and choose the Save Picture command to save the image in the Picture format that can be used by other applications.

4. Quit AST–VisionEffects.

5. Open PaintworksPlus and use the Open command to open the AST–VisionEffects file.

6. Put an Underware Ribbon in your printer.

7. Pull down the File menu and choose Print to print the image on paper.

All that's left for you to do is iron the transfer onto a T-shirt and show it to your friends. Figure 3–24 shows a completed T-Shirt made using AST–VisionEffects, PaintworksPlus and Underware Ribbons.

Figure 3–24

The most important thing to remember is that the video imaging ability of AST–VisionPlus combined with the color graphics ability of the Apple IIGS provides unlimited possibilities for fun, work and education.

3.17   Lighting Tips

Proper lighting has a lot to do with the quality of your digitized images.

The most common problem is not using enough light. Insufficient lighting causes your subject to look flat and indistinct from the background. Most indoor settings require extra lighting to produce good digitized images.

On the other hand, too much lighting causes your subject to appear washed out with poor grey level separation.

Proper lighting produces images with balanced light and dark areas and a wide range of intermediate tones. Whenever possible, use two or more lights to avoid excessive shadowing. The lights should be placed at opposite angles from the subject.

Try placing the lights closer or farther away and above or below the subject to produce the desired effect. For example, lighting the background behind the subject produces a silhouette.

Two-dimensional art is best captured by putting the art on a table or easel and using as much light as possible. Two-dimensional art should be lit from the sides to avoid glare.

As you gain experience using AST–VisionPlus and AST–VisionEffects, you may want to get a book on lighting from your library or book store.

Chapter 4:

AST–VisionEffects Reference

CHAPTER 4

Chapter 4:

AST–VisionEffects Reference

This chapter describes each command on the
AST–VisionEffects menus. Sections in this chapter
follow the order of the menus as they appear in the
menu bar.

4.1   Apple Menu

The Apple menu contains the About VisionEffects...
command shown in Figure 4–1 and any desk accessories
you have installed in your System File.
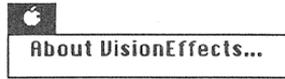
Figure 4–1

About VisionEffects...

This command displays the information window shown in
Figure 4–2.
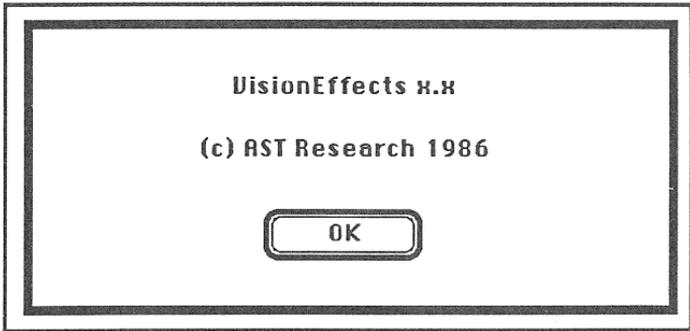
Figure 4–2

The information window shows which version of
AST–VisionEffects you are using. Click the OK button
to continue.

4.2   File Menu

The File Menu in Figure 4–3 lets you save the current image onto a disk, load an image from disk into memory or end your AST–VisionEffects session.

```
┌─────────────────────────┐
│ File                    │
├─────────────────────────┤
│ Save Picture            │
│ Save Picture Data       │
│ Load Picture            │
├─────────────────────────┤
│ Quit              ⌘Q    │
└─────────────────────────┘
```
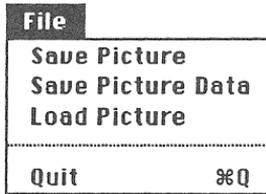
Figure 4-3

Save Picture

This command displays a "Save File" dialog box that lets you save the current image in **Picture** file format for use with other applications. A .PIC filename extension is added to the filename automatically.

Save Picture Data

This command displays a "Save File" dialog box that lets you save the current image in the **Picture Data** file format. Use this command to save Color Dither images that you want to be able to reload into memory with AST–VisionEffects. A .DAT filename extension is added to the filename automatically.

Load Picture

This command lets you load a previously-saved image from a disk into memory.

Quit

This command ends your AST–VisionEffects session and returns you to the Apple IIGS Program Launcher.

4.3   Mode Menu

The Mode menu shown in Figure 4-4 lets you specify the
digitizing mode and digitizing resolution.

```
┌─────────────────────┐
│ Mode                │
├─────────────────────┤
│   Digitize          │
├·····················┤
│ ✔ Black/White       │
│   Red Only          │
│   Green Only        │
│   Blue Only         │
│   Color             │
├·····················┤
│ ✔ 320 Resolution    │
│   640 Resolution    │
└─────────────────────┘
```

Figure 4-4

☞ **CAUTION:** Choosing a command on the Mode
menu other than Digitize clears the current image from
the screen and from memory.

Digitize

This command displays a dialog box that lets you adjust
brightness and contrast, then initiates digitizing in real
time.

Black/White

This command sets the digitizing mode to
black and white.

Red Only

This command sets the digitizing mode to Red Only. Blue and green light are filtered out when you digitize.

Green Only

This command sets the digitizing mode to Green Only. Red and blue light are filtered out when you digitize.

Blue Only

This command sets the digitizing mode to Blue Only. Red and green light are filtered out when you digitize.

Color

This command sets the digitizing mode to full color.

320 Resolution

This command sets the digitizing resolution to 320 x 200.

640 Resolution

This command sets the digitizing resolution to 640 x 200. Color images cannot be digitized at this resolution. 640 resolution is also limited to 2 or 4 grey levels. This resolution is useful for digitizing line art such as text or ink drawings.

4.4   Special Menu

The Special menu contains commands that let you edit
the colors or shades in the current image.

```
┌─────────────────────────┐
│ Special                 │
├─────────────────────────┤
│   Show Palette          │
│ ......................  │
│   Colorate              │
│   Change Color          │
│   Change Palette        │
│   Invert                │
│ ......................  │
│ ✓ 16 Grey Levels        │
│   8 Grey Levels         │
│   4 Grey Levels         │
│   2 Grey Levels         │
└─────────────────────────┘
```
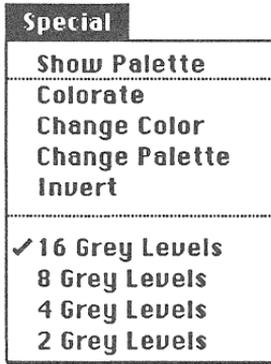
Figure 4-5

Show Palette

This command displays a dialog box that shows the 16
colors or grey levels used in the current image. This
command is not available in 640 resolution.

Colorate

This command lets you apply a color tint to an entire
black and white image.

Change Color

For black and white images, this command lets you apply color to specific grey levels. For color images digitized using the Palette Adjust option, this command lets you change colors in the current image.

Change Palette

This command enables you to change any color in the current palette of 16 colors for color images digitized with the Palette Adjust option only.

Invert

This command toggles between Invert and Normal. Choosing Invert reverses the colors or shading of the entire current image. The effect is similar to that of a film negative used to print photographs. Choosing Normal returns the screen to a positive image.

16 Grey Levels

This command uses 16 shades of grey to digitize and display images in Black/White, Red Only, Green Only or Blue Only modes. This command is available only in 320 resolution.

8 Grey Levels

This command uses 8 shades of grey to digitize and display images in Black/White, Red Only, Green Only or Blue Only modes. This command is available only in 320 resolution.

4 Grey Levels

This command uses 4 shades of grey to digitize and display images in Black/White, Red Only, Green Only or Blue Only modes.

2 Grey Levels

This command uses 2 shades of grey to digitize and display images in Black/White, Red Only, Green Only or Blue Only modes.

4.5   Zoom Menu

The Zoom menu shown in Figure 4–6 lets you reduce the current image or enlarge a portion of the current image. You can also produce stretch effects by changing the aspect ratio (the relation of height and width) of the current image.

```
 Zoom
  Zoom In
  Zoom Out
  Aspect Ratio
```
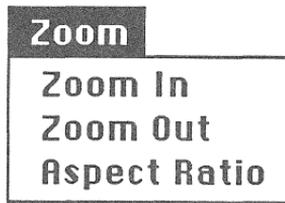
Figure 4-6

Zoom In

This command lets you enlarge a portion of the current image.

Zoom Out

This command lets you reduce the current image.

Aspect Ratio

This command lets you reduce and stretch the current image.

Appendices

Appendix A:

Compatible Software

AST Research continually evaluates software products
for compatibility. The following list is provided solely for
your convenience. AST Research, Inc. in no way
guarantees the compatibility of any software package, nor
does AST Research, Inc. endorse any product.

Inclusion in the list that follows does not constitute an
endorsement. Absence from the list does not necessarily
indicate incompatibility.

Company	Product
Activision, Inc.	PaintworksPlus
Baudville	816Paint
Electronic Arts	DeluxePaint

APPENDIX A

Appendix B:

Specifications

All specifications are subject to change without notice.

B/W resolution	320 x 200	640 x 200
Grey levels	16	4
B/W Frames/sec.	15	7.5
Color resolution	320 x 200	
Color Frames/sec.	5	
Parameter selection	B/W, RGB color, resolution.	
Image control	Contrast, brightness, grey level and color.	
General control	Zoom and aspect ratio.	
Video interface	NTSC, RCA phono jack.	
Software media	3.5" diskette.	

Installation	Any Apple IIGS slot. Slots 1, 2, 6 or 7 are recommended.
Board size	10.0" L x 2.75" W.
Power usage	0.65 amp typical at 5 V DC.
FCC Certification	FCC Class B.
Warranty	Two-year limited warranty on the AST–VisionPlus card.

Appendix C:

Developer's Guide

The following information is provided for programmers who would like to use AST–VisionEffects files with their applications.

File Formats

The Save Picture command saves files in **Picture** format. The Save Picture Data command saves files in **Picture Data** format.

The following table shows the length of images digitized in the various digitizing modes and saved in the two file formats.

| | Black and White | | |
	320	640	Color
Picture Files	32K	32K	32K
Picture Data Files	32K	64K	96K

Picture Files

Images saved with the Save Picture command (Picture files) comply with Apple's standard for uncompressed graphics files. The image is saved as it appears on the screen, including any changes made using the AST–VisionEffects software. A .PIC filename extension is added to the filename automatically. The file type for Picture files is **$C1**.

Picture files contain:

❑ 32K bytes of picture data (pixels).

❑ 200 bytes of scan line control data.

❑ 56 bytes of filler data.

❑ 512 bytes of palette data.

Color images created using the Color Dither option and saved as Picture files cannot be loaded by AST–VisionEffects software because not all of the picture data required to generate a Color Dither image is saved in a Picture file.

Picture Data Files

Picture Data files are binary files that contain the unprocessed image exactly as digitized. Picture Data files can be created only when you are using 640 resolution or Color digitizing mode. A .DAT filename extension is added to the filename automatically. The file type for Picture Data files is **$06**.

A 640 Mode Picture Data file contains:

❑ 32K bytes of even pixels with 4 bits per pixel.

❑ 32K bytes of odd pixels with 4 bits per pixel.

A Color Picture Data file contains:

❑ 32K bytes of red pixels with 4 bits per pixel.

❑ 32K bytes of green pixels with 4 bits per pixel.

❑ 32K bytes of blue pixels with 4 bits per pixel.

The Change Palette command on the Special menu is available only when a Palette Adjust color image is loaded or digitized.

Auxiliary File Type

The auxiliary file type contains additional information about AST–VisionEffects files so that the AST–VisionEffects software can automatically switch to the proper mode when a file is loaded from a disk.

The auxiliary file type contains 16 bits of data. The upper eight bits always contain **$41** to indicate that the file is an AST–VisionEffects file.

The lower eight bits are used as follows:

Bits 0 and 1 for Black/White indicates the number of grey levels in the image. Bits 0 and 1 are not used in Color mode.

```
+-Bit-+
```
0	1	Description
0	0	16 Grey levels
0	1	8 Grey levels
1	0	4 Grey levels
1	1	2 Grey levels

Bit 2 is set to 1 if the file is saved inverted.

Bit 3 is not currently used.

Bits 4, 5, 6 and 7 indicate the mode in which the file was saved.

```
+-----Bit-----+
```
7	6	5	4	Description
0	0	0	0	320 Res., Black and White
0	0	0	1	320 Res., Red only
0	0	1	0	320 Res., Green only
0	0	1	1	320 Res., Blue only
0	1	0	0	640 Res., Black and White
0	1	0	1	640 Res., Red only
0	1	1	0	640 Res., Green only
0	1	1	1	640 Res., Blue only
1	0	0	0	Color Dither Option
1	0	0	1	Color Palette Adjust Option

Firmware Protocol

This section describes the firmware protocol.

The AST–VisionPlus card uses an NTSC color demodulator to create red, green and blue signals from the NTSC composite video signal. AST–VisionPlus can also be switched to black and white so that all outputs of the color demodulator chip carry a black and white signal.

AST–VisionPlus always digitizes using four bits per pixel, 320 pixels per line and 200 lines per frame which requires a total of 32K bytes per frame.

Four passes are required to digitize an image at 320 resolution. The first pass digitizes pixels 0 and 1, 8 and 9, 16 and 17, etc. of each line. The second pass digitizes pixels 4 and 5, 12 and 13, 20 and 21, etc. of each line. The third pass digitizes pixels 2 and 3, 10 and 11, 18 and 19, etc. of each line. The fourth and final pass digitizes pixels 6 and 7, 14 and 15, 22 and 23, etc. of each line.

For color digitizing, a complete frame of the red output signal is digitized, then the same for green and blue signals. Computer memory stores the image in color with 12 bits per pixel for a total of 96K bytes of image data.

To digitize at 640 resolution, the image is first digitized as described above. The pixels then represent all even pixels for 640 resolution with four bits per pixel. The

image is then digitized again, but with a delay of one 640 resolution pixel length at the beginning of the line. This causes the frame in memory to contain all odd pixels in 640 resolution with four bits per pixel. The AST–VisionEffects software then combines these two frames to create a 640 resolution picture with two bits per pixel.

When digitizing in Black/White mode, the demodulator is switched to Black/White mode, then the output signal is digitized. When digitizing in Red Only, Green Only or Blue Only modes, the chip is switched to color mode then the red, green or blue portion of the output signal is digitized.

➠ **NOTE:** Black/White, Red Only, Green Only and Blue Only modes are functionally equivalent to the user. However, Red Only, Green Only and Blue Only modes are equivalent to Color mode where the software is concerned.

A video signal consists of two "half-frames." The first half-frame contains all even numbered lines, the second half-frame contains all odd numbered lines for a total of 525 lines.

One half-frame is received every 1/60th of a second. The AST–VisionPlus card does not look at the half-frame information. The first pass digitizes pixels of the first half-frame, the second pass digitizes pixels of the second half-frame etc. This reduces moving distortion, but makes horizontal lines look jagged. The protocol allows the firmware to skip every other frame so that only all even or odd numbered lines are digitized. This produces clean horizontal lines at the cost of higher moving distortion.

Interfacing with the AST–VisionPlus Card

AST provides all the necessary functions of the AST–VisionPlus in firmware on the card. The firmware is called with the firmware entry tool in the Miscellaneous Tools Manager. The entry address is $CX00, where X is the slot number of the card. Interrupts have to be switched OFF when the firmware is called.

The firmware runs in 8 Bit Mode. If an error such as no video signal detected or incorrect protocol occurs, the carry bit is set after leaving the firmware. On entry, the X-Register contains the low byte and the Y-Register contains the high byte of a parameter block address.

You can use the first seven bytes of the firmware in $CX00 to identify the card. AST will not change these bytes in the future.

The parameter block must reside in Bank 0. It consists of a two byte header and one or more descriptor blocks of six bytes each.

The header format is:

Byte 1   Always $00.

Byte 2   Contains the number of descriptor blocks ($01...$7F).

The descriptor block format is:

Byte 1   Mode Byte.

        Bit 0, 1: $0 = Digitize Black and White
                      $1 = Digitize Red only
                      $2 = Digitize Green only
                      $3 = Digitize Blue only
        Bit 2:   Set to 1 to use one 640 resolution pixel time delay for digitizing odd pixels at 640 resolution.
        Bit 3:   Set to 1 to skip every other frame to get clean horizontal lines.

Byte 2   Contrast/Brightness.

        Bits 0-3: Brightness setting (0...15)
        Bits 4-7: Contrast setting (0...15)

Byte 3   Always $00.

Byte 4   Bank number of Image Buffer (Image Buffer is $8000 bytes long and cannot cross the Bank Boundary).

Byte 5   High byte of the Image Buffer address.

Byte 6   Low byte of the Image Buffer address.

When digitizing, the firmware performs Pass 1 on all descriptor blocks, then Pass 2 on all blocks, etc.

Programmer's Notes

Do not mix black/white and color modes in one protocol call. The color demodulator needs about 500 ms to switch between color and black/white digitizing.

Before digitizing the first black/white image after startup or after digitizing in Color mode, write **$18** into address **$00C0X4** to switch the board to black/white mode (where X is the slot number of the AST–VisionPlus board plus 8). Then wait at least 500 ms before you call the firmware.

Before digitizing the first color image after startup or after digitizing in Black/White mode, write **$10** into address **$00C0X4** to switch the board to Color mode (where X is the slot number of the AST–VisionPlus board plus 8). Then wait at least 500 ms before you call the firmware.

Appendix D:

Troubleshooting

AST–VisionPlus and AST–VisionEffects are designed
to be easy to install and reliable to operate. However,
should a problem occur, this appendix may help you find
the solution. If you can't fix the problem using the
suggestions in this appendix, complete the
troubleshooting checklist and contact your dealer
or AST for assistance.

When a problem occurs, try the operation again. If the
problem repeats, shut down the Apple IIGS and
restart it.

Symptoms and Solutions

**If an image doesn't appear after you choose the
Digitize command, set brightness and contrast,
and click the Continue button:**

Make sure that all devices connected to AST–VisionPlus
are turned on.

Make sure there is enough light on your subject. Images
digitized at night without the use of photo lamps may turn
out dark.

Try increasing the brightness setting. For color images,
digitize the image again with higher brightness settings.

Check your Control Panel Program settings to make sure that at least 512K bytes of free memory are available to the IIGS. If a RAM disk is in use, try removing it.

Check the cables connecting the video devices to AST–VisionPlus.
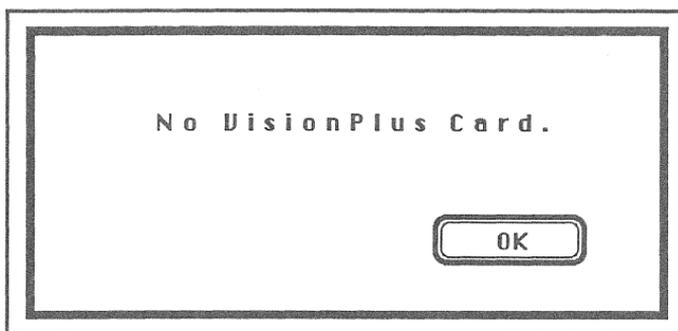
If the dialog box in Figure D–1 appears:

```
No  VisionPlus  Card.

                              [  OK  ]
```

Figure D–1

Click the OK button to return to the Apple IIGS Program Launcher.

Then check the Control Panel Program settings. Make sure that the slot which contains the AST–VisionPlus card is set to Your Card.

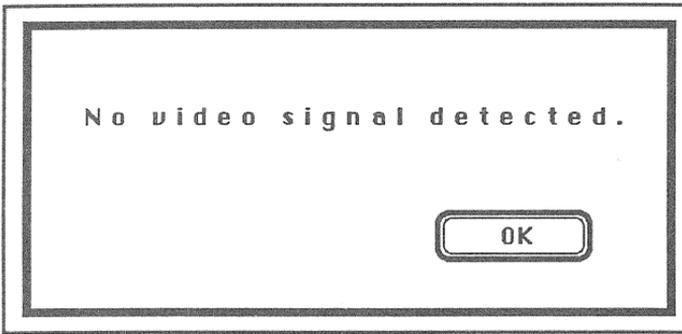If the dialog box in Figure D-2 appears:

No video signal detected.

OK

Figure D-2

Click the OK button to return to the Apple IIGS Program Launcher. Shut down your Apple IIGS.

➟ **NOTE:** You must shut down your IIGS when you see this dialog box.

Make sure that all devices connected to AST–VisionPlus are turned on.

Check the cables connecting your video source to AST–VisionPlus.

Check the cable connecting the back panel cable adapter to the AST–VisionPlus card.

Boot the IIGS and try starting AST–VisionEffects again.

Technical Support Assistance Checklist

The following checklists help you gather all of the information that AST technical support needs in order to assist you. Complete the System Information when your system is installed and update it as necessary. Complete the Trouble Report when you have specific problems.

If you already tried the solutions described in this appendix, contact your AST dealer or contact AST at (714) 553-0340. If you have a modem, you can also leave a message on the AST bulletin board system which operates 24 hours a day at (714) 660-9175.

System Information

Authorized representive in your office _____

Telephone _____

Technical Support person contacted _____

Company _____ Date _____

Date of Purchase _____

Purchased from _____

Model Number _____

Serial Number _____

Type of computer _____

Memory _____

Configuration _____

Peripherals installed _____

_____

_____

If you are using a network, which one? _____

_____

Model? _____

Trouble Report

Describe the problem. (What, when, how?) _____

_____

_____

_____

Can you duplicate the problem? What causes the
problem to occur? _____

_____

_____

_____
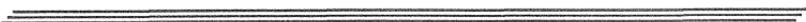
List any error messages that occur. _____

_____

_____

If the problem is intermittent, how often does it occur?

_____

You can make copies of this page to make it easier to
report problems. AST Research, Inc. grants you
permission to copy this page only.

Glossary

Aspect Ratio	The relationship of width and height. Changing the aspect ratio makes an image look stretched.
Brightness	How light an image is.
Camcorder	A video camera with a built-in VCR.
Click	To press and release the mouse button.
Color bar	Red, green and blue bars that enable you to set the amount of red, green and blue light in a color. Color bars are used for the Colorate, Change Color and Change Palette commands.
Contrast	The amount of difference between light and dark portions of an image. Also known as the gain of the video circuitry.
Current Image	The image that is currently in memory. When you digitize or load an image, it becomes the current image.

Digitize	To begin processing "live" images from a video camera, VCR or camcorder.
Digitizing Mode	The digitizing mode determines whether the image is to be digitized in black and white, red only, green only, blue only or in color.
Dither	A technique that combines one red, one green and one blue pixel to create the illusion of more colors than can actually be displayed on the screen at one time.
Double-click	To press and release the mouse button twice in rapid succession.
Drag	To press and hold the mouse button while you move the mouse.
Get File	A standard type of dialog box that enables you to load an image from a disk into memory.
Grey Level	A single shade of grey. The number of grey levels in an image can be changed to produce special effects.
Hue	A color.

Memory

Your computer's internal memory (RAM). The amount of available memory is important because images are digitized into memory before they can be saved onto a disk.

NTSC

The North American Television Standard Committee has specified the format used by most video cameras, VCRs and camcorders.

Paint application

Graphics software that lets you create drawings on your computer.

Palette

A set of colors that can be displayed on the screen.

Pixel

One dot on a computer or television screen. Images are formed by manipulating the shade or color of each pixel on the screen.

Resolution

The number of pixels per line used to display an image.

Save File

A standard type of dialog box that enables you to save an image from memory onto a disk.

VCR

A video cassette recorder.

GLOSSARY

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FCC WARNING

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to a computer that complies with Class B limits. Operation with non-certified peripherals is likely to result in interference to radio and TV reception. When connecting to a peripheral device, a shielded I/O cable is required to ensure compliance with FCC rules.

Instructions to User

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

❑ Reorient the receiving antenna.

❑ Move the computer away from the receiver.

❑ Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

❑ Ensure that all cable connectors are fastened securely to the Apple IIGS chassis.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission (FCC) helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

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AST—VISIONPLUS

AST Research, Inc. (AST) warrants the original purchaser of this AST product that it is to be in good working order for a period of 2 years from the date of purchase from AST or an authorized AST dealer. Should this product, in AST's opinion, malfunction during the warranty period, AST will, at its option, repair or replace it at no charge, provided that the product has not been subjected to misuse, abuse, or non-AST authorized alterations, modifications and/or repairs.

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The limited warranty applies to hardware products only.

Warranty Registration Form

Apple Dealer	Name	
Person to Contact	Telephone	
Address	Company	
City	Street	
State / Zip Code	City	
Telephone	State	Zip Code

Product Model Number	Purchase Date	Number of Apple computers at this site:
Purchased From	Serial Number	__Macintosh Plus __Macintosh512K __Macintosh128K __Lisa/Macintosh XL __IIe __IIGS

In order to help us meet your future needs, please fill out the lower portion of this form.	Please complete and return this card within ten (10) days of purchase. AST mass storage products are warrantied for six months from date of purchase. If you encounter a problem with an AST product that is under warranty, you should see your dealer or call AST to receive a Return Authorization Number prior to returning the product for service. It is essential that we have your warranty card on file in order for us to provide repair service or replacement at no charge to you.
Is the product used in a multi-user environment? ☐ Yes ☐ No If yes, explain _____ What three software applications do you use most frequently? _____	

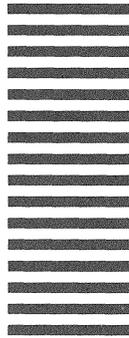**BUSINESS REPLY MAIL**

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