



# **TARGA<sup>®</sup> 2000 PCI Online Reference Manual**

**(PCI Version For Macintosh)**

Truevision, Inc.  
2500 Walsh Avenue  
Santa Clara, CA 95051

Release 2.0, March 1997  
Copyright © 1993 - 1997 Truevision, Inc.

Truevision is a registered trademark of Truevision, Inc.

TARGA is a registered trademark of Truevision, Inc.

TARGA 2000 is a trademark of Truevision, Inc.

Apple and Macintosh are registered trademarks of Apple Computer, Inc.

Premiere is a trademark of Adobe Systems, Inc. which may be registered in certain jurisdictions.

Power Macintosh is a trademark of Apple Computer, Inc.

Finder and QuickTime are trademarks of Apple Computer, Inc.

All other registered trademarks and trademarks belong to their respective holders.

Copyright © 1993-1997 Truevision Inc.  
All Rights Reserved.

Printed in the United States.

Truevision Part #0700-0447  
03/31/97  
JML

# Table Of Contents

<b>OFFICIAL NOTICES AND WARRANTIES .....</b>	<b>8</b>
FCC Declaration Of Conformity .....	8
CE Declaration Of Conformity .....	9
Limitation Of Liabilities .....	10
Warranty Disclaimer .....	10
Limited Warranty .....	10
<b>INTRODUCTION .....</b>	<b>11</b>
Using The TARGA® 2000 Online Reference Manual .....	11
Manual Overview .....	13
<b>CHAPTER 1 — BASIC CONCEPTS AND TIPS .....</b>	<b>14</b>
About Video Formats .....	15
About Device Control & MIDI .....	16
Device Control .....	16
MIDI .....	16
About Achieving Best Performance .....	17
Optimizing System Hardware .....	17
Accelerator Cards .....	17
A/V Drive Arrays .....	18
Miscellaneous .....	18
Optimizing Video Capture Rates .....	18
Optimizing Image Quality .....	20
Video Settings .....	20
Video Source .....	21
Compression Quality .....	21
Dynamic-Q (Adaptive Compression) .....	22
Optimizing Movie Playback Rates .....	23

<b>CHAPTER 2 — TARGA 2000 CONTROL PANEL .....</b>	<b>24</b>
About the Control Panel .....	25
TARGA 2000 Control Panel .....	26
Opening the TARGA 2000 Control Panel .....	26
Information Control .....	27
Using the Information Control .....	27
Video Output Control .....	28
Using Video Output .....	28
Genlock Control .....	32
Using Genlock Control .....	32
Accelerator Control .....	34
Using Accelerator Control .....	34
ScreenShift Control .....	35
Using ScreenShift Control .....	35
<b>CHAPTER 3 — TARGA 2000 &amp; DIGITAL MOVIE MAKING .....</b>	<b>36</b>
About Movie Making Software (e.g., Adobe Premiere 4.2 or greater) .....	37
Sound Control Panel Settings .....	37
Sound In .....	37
Sound Out .....	38
Sound Volume Control .....	39
Video Input Settings .....	39
Compression Setting .....	40
Disk Performance Setting .....	41
Image Setting .....	42
Phase Adjustments Setting .....	44
Source Setting .....	45
TARGA Video Fields Setting .....	47
Audio Input Selection .....	48
Sound Source .....	48
Sound Sample .....	48
Rate .....	49
Size (8 or 16 Bit) .....	49
Use (Mono or Stereo) .....	50

Video Playback Compression Selection .....	51
TARGA Player or TARGA Export To Video .....	52
Optional: Accelerated Transitions (Adobe Premiere 4.0.2 or greater) .....	54
Using the Accelerated Transitions .....	54
Obtaining More Accelerated Transitions .....	54
<b>CHAPTER 4 — TARGA 2000 PCI Tutorial .....</b>	<b>55</b>
Tutorial Introduction .....	56
Lesson 1: Configuring Your Macintosh .....	57
Hardware Setup .....	57
Software Setup .....	58
Establishing A Minimal System .....	59
The Sound Control Panel .....	61
Lesson 2: Capturing Video .....	63
Start-Up Adobe Premiere .....	63
Setting Your Scratch Disk .....	63
Video Input .....	64
Source .....	65
Disk Performance .....	66
Compression .....	67
TARGA Video Fields .....	68
Image .....	69
Recording Settings .....	70
Sound Input .....	71
Saving Capture Settings .....	72
Recording .....	72
TARGA Export To Video .....	72
Playback and Save Clip .....	74
Lesson 3: Making Movies .....	75
Compiling Your Movie .....	77
Making A Preset .....	81
Answers To Frequently Asked Questions .....	83

<b>APPENDIX A — TROUBLESHOOTING &amp; CUSTOMER SATISFACTION CENTER .....</b>	<b>88</b>
<b>TARGA 2000 Troubleshooting .....</b>	<b>88</b>
General Problems .....	88
Monitor Problems .....	90
Video Input Problems .....	91
Video Capture Problems .....	92
Recording Problems .....	93
Audio Problems .....	95
Playback Problems .....	96
<b>Truevision Customer Satisfaction Center .....</b>	<b>98</b>
Troubleshooting Questionnaire .....	99
 <b>APPENDIX B — TECHNICAL SPECIFICATIONS.....</b>	 <b>100</b>
<b>TARGA 2000 Specifications .....</b>	<b>100</b>
Hardware Specifications .....	100
General .....	100
Memory (CA/V and Pro) .....	100
Memory (DTX, RTX, and SDX) .....	100
Desktop Display (CA/V, Pro, DTX, RTX, and SDX) .....	100
Video Processor (CA/V, Pro, DTX, RTX, and SDX) .....	100
On-Board DSP (Digital Signal Processor) .....	101
Video Input Formats .....	101
Video Output Formats .....	102
Video Performance (DTX and RTX) .....	103
Audio Input/Output .....	103
Compression / Decompression .....	104

<b>APPENDIX C — CABLES AND CONNECTORS.....</b>	<b>105</b>
TARGA 2000 Cables & Connectors .....	105
CA-104A Cable Diagram .....	106
CA-104A Connector Diagram .....	107
CA-203 Cable Diagram .....	108
CA-205 Cable & Connector Diagram .....	109
CA-204 Cable Diagram .....	110
CA-204 Connector Diagram .....	111
CA-207 Cable Diagram .....	112
CA-207 Connector Diagram .....	113
CA-208 Cable Diagram .....	114
CA-208 Connector Diagram .....	115
CA-212 Cable Diagram .....	116
CA-212 Connector Diagram .....	117
<b>APPENDIX D — COMPONENT PRO MODULE</b>	
<b>UPGRADE INSTALLATION .....</b>	<b>118</b>
TARGA 2000 Component Pro Upgrade .....	118
Upgrade Installation Procedure .....	118
<b>APPENDIX E — DTX TO RTX UPGRADE INSTALLATION.....</b>	<b>123</b>
TARGA 2000 DTX To RTX Upgrade .....	123
Upgrade Installation Procedure .....	123
<b>APPENDIX F — RTX TO SDX UPGRADE INSTALLATION .....</b>	<b>126</b>
TARGA 2000 RTX To SDX Upgrade .....	126
Upgrade Installation Procedure .....	126
<b>INDEX .....</b>	<b>129</b>

### Legal Stuff

#### FCC DECLARATION OF CONFORMITY

**Note:** This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. *Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.*

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**WARNING** To minimize emissions from your system, use only shielded interface cables and certified Class B peripherals.



Carl Calabria, Senior Vice-President, Engineering  
Truevision, Inc.  
2500 Walsh Avenue  
Santa Clara, CA 95051



## DECLARATION OF CONFORMITY

Application Of Council Directive 89/336/EEC

Standards to which Conformity is Declared:  
**EN 55022 and EN 50082-1**

Manufacturer's Name: Truevision Inc.  
Manufacturer's Address: 2500 Walsh Avenue  
Santa Clara, CA 95051  
Type of Equipment: PCI Display Card  
(Macintosh Platform)  
Model Name: TARGA 2000  
Tested By: EMCE Engineering, Inc.  
44370 S. Grimmer Blvd.  
Fremont, CA 94538-6309 USA  
Manufacturer's Test Engineer: Joe Cunningham

*I, the undersigned, hereby declare that the equipment specified above  
conforms to the above Directive and Standard.*

Name (please print): Carl Calabria

Title: Senior VP of Engineering

Signature: *Carl Calabria*

Date: December 8, 1995

## LIMITATION OF LIABILITIES

This manual and the enclosed software was prepared by Truevision, Inc. While the authors and program developers have taken reasonable care in preparing this manual and the files on the enclosed diskettes to assure their accuracy, the authors assume no liability resulting from any inaccuracy or omissions contained in them or from the use of the information or programs contained herein.

## WARRANTY DISCLAIMER

The authors and Truevision Inc. make no warranties, expressed or implied, including without limitation the implied warranties of merchantability and fitness for a particular purpose, regarding the software and hardware. The authors and Truevision Inc. do not warrant, guarantee or make any representations regarding the use or the results of the use of the software and hardware in terms of its correctness, accuracy, reliability, currentness or otherwise. The entire risk as to the results and performance of the software and hardware is assumed by you. The exclusion of implied warranties is not permitted by some jurisdictions. The above exclusion may not apply to you.

**In no event will Truevision, and its directors, officers, employees or agents (collectively Truevision) be liable to you for any consequential, incidental or indirect damages (including damages for loss of business profits, business interruption, loss of business information, and the like) arising out of the use or inability to use the software and hardware even if Truevision has been advised of the possibility of such damages.** Because some jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitations may not apply to you. Truevision liability to you or actual damages from any cause whatsoever, and regardless of the form of the action (whether in contract, tort (including negligence), product liability or otherwise), will be limited to \$50.

## LIMITED WARRANTY

Please refer to the enclosed addendum for specific information on TARGA 2000 limited warranty terms and conditions.

## Introduction

# Using The TARGA® 2000 Online Reference Manual

This electronic document has been created in the Adobe™ Acrobat™ Portable Document Format (PDF). You can print this manual at your convenience. Hypertext links (the highlighted words) and a bookmarked index have been created within this manual so that you can quickly reference a word or subject matter. The controls you should use to navigate through this manual are in the toolbar and status area of the Acrobat Viewer. They are defined as follows:



Click this icon to cause a bookmarked list of the index to appear. The list will stay visible until the bookmark icon is clicked off. Clicking on an index entry within the bookmark viewing area will take you to the page where that item is located. (Click the Go Back icon to return to the page you were on.) Drag the  resizer at the lower right-hand corner of the bookmark area to increase or decrease the bookmark viewing area.



Click this icon to pan (scroll) around the page within the viewing window.



Click to zoom in or magnify the page view. When active, each click will increase magnification. Use the option key with this icon to decrease magnification.



Click to zoom out or reduce the page view. When active, each click will decrease magnification. Use the option key with this icon to increase magnification.



Clicking this icon will cause the first page of the manual to be displayed.



Clicking this icon will cause the previous page (one page back) to be displayed.



Clicking this icon will cause the next page (one page forward) to be displayed.



Clicking this icon will cause the last page of the manual to be displayed.



This is the Go Back icon. After clicking on a hypertext linked word or bookmarked item, click this icon to return to the page you were on.



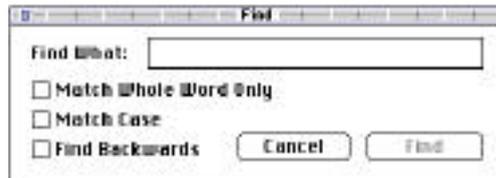
Click this item to return to the reference area that you were just at (opposite of the Go Back icon description).



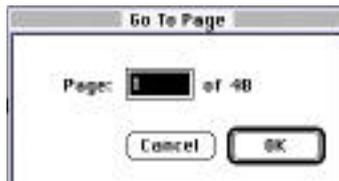
Click these icons to change the view of the page.



Click this icon to find text or a text phrase anywhere within the manual. When clicked, the following dialog will appear prompting for search information:



Click this area at the lower left-hand side of the of the Acrobat screen to go to any page within the manual. When clicked, the following dialog will appear prompting for search information:



## Manual Overview

Here is a quick overview of this manual's Chapters and Appendices.

- **Chapter 1** provides information for achieving optimum performance and results with the TARGA 2000. Read this Chapter before using the TARGA 2000.
- **Chapter 2** shows how to use the features within the TARGA 2000 Control Panel.
- **Chapter 3** discusses the various TARGA 2000 settings that are placed into your digital movie-making software. Read this Chapter before using your video and audio-editing software application with the TARGA 2000.
- **Chapter 4** is a tutorial that guides you through using the TARGA 2000 with a video and audio-editing software application (i.e., Adobe Premiere). Do the tutorial and save yourself from a headache.
- **Appendix A** covers troubleshooting and calling technical support.
- **Appendix B** lists technical specifications for the TARGA 2000 card.
- **Appendix C** gives the specifications for the cables and connectors used with the TARGA 2000 card.
- **Appendix D** describes how to upgrade a standard TARGA 2000 card to a TARGA 2000 Pro card by replacing the CA/V module with the Component Pro module.
- **Appendix E** describes how to upgrade a TARGA 2000 DTX card to a TARGA 2000 RTX card by replacing the DTX module with an RTX module.
- **Appendix F** describes how to upgrade a TARGA 2000 RTX card to a TARGA 2000 SDX card by replacing the RTX daughter card with an SDX daughter card.

## Contents

In this Chapter:

- About video formats
- About device control & MIDI
- About achieving best performance
- Optimizing system hardware
- Optimizing video capture rates
- Optimizing image quality
- Optimizing movie playback rates

## About Video Formats

Video is comprised of a series of still images called frames. When the frames are displayed in rapid succession, the eye interprets the changes between frames as motion. The NTSC video format displays 29.97 fps (often referred to as 30 fps). The PAL and SECAM formats display at 25 fps.

Each video frame is made up of a series of horizontal lines, called scan lines. In the NTSC format, there are a total of 525 lines. Not all of these lines are part of the image. Some provide synchronization and other information. The TARGA 2000 digitizes up to 486 lines in NTSC and 576 lines in PAL.

The odd and even numbered scan lines (counting from the top) are separated into two groups, called fields. When the frame is displayed, the odd field is scanned first. Then the system goes back to the top of the screen and scans the even field. In this way, the two fields are alternately drawn. This is called interlaced display because the two fields interlace on the screen. While one field is fading, the other is drawn, so that the screen is constantly and uniformly refreshed.

The resolution or dimensions of the video frame is described as the number of pixels in each line by the number of lines. The video digitizer (i.e., TARGA 2000) samples each line at up to 648 pixels in NTSC and up to 768 pixels in PAL or SECAM. NTSC is 640 x 480, PAL and SECAM are 768 x 576. (The TARGA 2000 Pro upgrade offers 720 x 486 for NTSC and 720 x 576 for PAL.)

The sound track that accompanies most videos is a completely separate set of data. The only relationship the sound track has to the video is synchronization.

# About Device Control & MIDI

## Device Control

Device control is the process of controlling the functions (record, play, stop, rewind, etc.) of your video player. With third-party tools from companies like Pipeline Digital™, DiaQuest™, and Abbate Video Toolkit™ you can control these functions through your Macintosh. Only high-end video devices (camera or VCR) are capable of external control. To take advantage of device control, both your video device and your computer must be capable of this feature. An expansion card or an external box connected to a serial port can give your Macintosh device control capabilities. Adobe Premiere supports recording with device control.

Device control requires the video source to provide time code. As video is recorded, time code signals are written onto a control track on the video tape. The computer can locate specific video frames by specifying their time code values. This enables frame-accurate in and out points, which is important if you are using your desktop system as an off-line edit bay to build an edit decision list (EDL) for on-line editing.

## MIDI

The musical instrument digital interface (MIDI) provides an alternate method of incorporating audio effects into your multimedia presentations. For example, a musician could play on a MIDI-capable keyboard (connected to a MIDI interface, connected to your Macintosh) and the Macintosh would record a series of instructions as to how the instrument was played. Then the musician could step away from the synthesizer and let the computer play it by sending the instructions back through the MIDI interface. The computer plays the instrument just as the musician did, with every note and inflection repeated exactly.

Some QuickTime applications enable you to add a MIDI track to your QuickTime movies. MIDI also offers control of other devices, like light boards, and enhances the possibilities for interactivity.

# About Achieving Best Performance

The TARGA 2000 works with most video and audio-editing software application (e.g., Adobe Premiere) that works through QuickTime 2.5. The primary purpose of the TARGA 2000 is to provide full-screen, full motion video capture and playback at 30 frames/60 fields per second for NTSC and 25 frames/50 fields per second for PAL. To achieve the best performance for your system, the following should be optimized:

- System Hardware
- Video Capture Rate
- Image Quality
- Movie Playback

## Optimizing System Hardware

**Note:** The SCSI controllers and SCSI A/V drive arrays listed in this manual as “recommended” are only those that Truevision’s internal testing have verified. The individual units tested provided adequate performance with the TARGA 2000. Other hardware may provide equal or higher performance. TRUEVISION MAKES NO WARRANTIES OR REPRESENTATIONS THAT THE HARDWARE LISTED AS “RECOMMENDED” WILL PERFORM ADEQUATELY TO MEET ANY PARTICULAR CUSTOMER’S NEEDS OR, THAT IN COMBINATION WITH TARGA 2000 WILL BE FIT FOR ANY PARTICULAR PURPOSE. This information is provided solely to aid TARGA 2000 purchasers in finding complementary hardware that will allow the user to obtain maximum performance for the TARGA 2000.

The TARGA 2000 operates as a PCI slave, and it supports block transfers. You can enhance the performance of the TARGA 2000 card by using a disk controller that supports bus mastering block transfers such as SCSI accelerator cards and “A/V” disk drive arrays. Refer to the “Digital Video Tuning” PDF document on the CD-ROM for SCSI accelerator card and drive array recommendations.

## Accelerator Cards

For best performance, third party SCSI-2 Fast and Wide accelerator cards work best. These cards are capable of initiating block transfers to and from the TARGA 2000, which will dramatically increase the throughput of data between TARGA 2000 and your hard drive(s). We have tested several SCSI accelerator configurations for use with the TARGA 2000 and have found that ATTO Technology’s Express PCI-SC is among the best

SCSI-2 Fast and Wide performers. This product accelerates the data transfer to and from the TARGA 2000 (referred to as “Bus Mastering” in its documentation).

### **A/V Drive Arrays**

A/V drive arrays work best with TARGA 2000 when the arrays can be optimized for continuous data transfers like those found when recording and playing back full-motion digital video. Drive configurations that are SCSI-2 Fast and Wide are highly recommended for digital video applications. We have also found that various other configurations, including use of both SCSI buses in parallel on some Macintosh models and various “Narrow” SCSI drives, did not offer the same level of performance.

**Note:** Whatever your drive configuration, you should configure the drive mode pages to allow for optimal A/V performance. Check with your drive manufacturer to ensure that your drive is properly configured for the rigorous demands of digital video.

### **Miscellaneous**

- In systems with more than one monitor, you should play movies on the TARGA 2000 display system for best performance.
- Make sure the TARGA 2000 monitor is set for “Millions” of colors. Lower color depths require the video images to be dithered, which takes too much time to maintain full-speed playback.
- Do not overlap floating menus over the video playback window or performance will be degraded.

### **Optimizing Video Capture Rates**

Frame capture rate is the number of video frames that the video digitizer captures per second. You will achieve the best capture rates when recording in the TARGA 2000 Video compression format. The QuickTime software places a “Compression Selection” dialog within your video and audio-editing software application where the TARGA 2000 Video compression format can be selected.

To get the best capture rate possible with your system, set the “Frames per second” in the **Image Compression dialog** of your application (e.g., Adobe Premiere) to “Best” or to 30 frames per second (for an NTSC source) or 25 frames per second (for a PAL or SECAM source).

**Note:** To check the frame rate in Adobe Premiere after capturing a clip, use the Movie Analysis tool.

If you haven’t achieved a satisfactory frame rate, the following steps can improve your capture rate:

**1. Deactivate AppleTalk (in the Chooser).**

Network activity (interrupts) may cause intermittent pauses during recording or playing of movies.

**Note:** Adobe Premiere asks if you want to disable AppleTalk when opening its Movie Capture window if AppleTalk is active.

**2. Close all control panels and quit applications that are running in the background.**

**3. Turn Virtual Memory off (in the Memory Control Panel).**

**4. Enable 32-Bit Addressing Mode (in the Memory Control Panel).**

**5. Set the disk cache to 32K (in the Memory Control Panel).**

**6. Temporarily remove unnecessary System Extensions.**

Even screen-savers can routinely “steal” processing time.

**7. Defragment the video-storage disk.**

Software packages such as “Norton Utilities” provide software that can do this.

### **8. Record audio with video only if it will be used in subsequent editing.**

Audio can increase the data rate significantly, especially when recording in stereo at 16-bits per sample. If you are recording a video-only movie, disable sound before recording. Even if no audio source is connected, recording with sound turned on takes additional processing time.

### **9. Enable data rate limiting with the Dynamic-Q feature.**

Try several recordings with different data rates. Use the “**Disk Performance**” dialog to find the appropriate data rate. (In Adobe Premiere, this dialog can be found in the “Video Input” selection of the Movie Capture menu.) Refer to the discussion on Dynamic-Q later in this Chapter.

### **10. Lower the Quality setting in the Image Compression dialog.**

The Normal setting usually provides high frame rates at acceptable quality. Higher Quality settings may reduce the frame capture rate.

## **Optimizing Image Quality**

Image quality can be affected by your system hardware, and the rate at which you captured video. The suggestions already mentioned for **optimizing the system hardware** and **optimizing the video capture rate** (discussed earlier in this Chapter) also apply to optimizing image quality. Also the video settings, video source, the recording resolution, compression quality setting, and whether or not you use Dynamic Q (i.e., Adaptive Compression) will also affect the image quality.

## **Video Settings**

The TARGA 2000 provides a great deal of control over video decoding. If you are not satisfied with the brightness or colors in the recorded video, adjust the video image and try again. Settings that affect the outgoing data stream of the TARGA 2000 can be adjusted from within the TARGA 2000 Control Panel. Settings that affect the video input are placed by the TARGA 2000 software into the “**Video Input**” settings within your video and audio-editing software application (e.g., Adobe Premiere).

## Video Source

The best quality video source will yield the best recorded image. You will have to assess your intended audience and quality needs before deciding what device to record movies from. The TARGA 2000 accepts serial digital input (SDX version only), and analog input in the form of S-Video (Y/C) and Composite Video. (Note: The SDX version of the card does not accept analog input.) If you have the SDX version of the card, the serial digital input is SMPTE 259-M compliant. If you have the Pro, DTX, or RTX version of the card, the analog inputs accepted by the card are Composite, S-Video (Y/C), RGB, and Component YUV (BetaCAM) video. Most consumer cameras and VCRs output Composite video. Higher-end video products provide an S-Video signal. Professional level video products often provide RGB or Component YUV.

Serial Digital is preferred over RGB; RGB is preferred over Component YUV; Component YUV is preferred over S-Video; and S-Video is preferred over Composite. Cost increases as you move up the scale, but the benefits are better color saturation, sharper edges, better stability, and less noise.

Every transition with digital and analog media lowers the signal quality, so recording directly from a video camera is ideal. Recording from tape involves a second step, which introduces signal loss. A second-generation tape (a copy of a tape) brings another degree of loss. A tape that has been used many times (i.e., worn tape) will also contribute to signal loss.

**Note:** Use only shielded video cable. Unshielded cable can pick up electronic noise from other hardware, like the computer and monitor, and degrade the signal. For composite video, be sure to use 75-ohm video cable, not audio cable.

## Compression Quality

The software places a “Compression Selection” dialog within your video and audio-editing software application. (In Adobe Premiere, this dialog can be found in the “**Video Input**” or “**Compression**” selections.) The Quality slider in the Compression dialog box lets you adjust the compression ratio. The setting depends on your goal — how much you value image quality versus your needs for data reduction.

When using a Full Frame resolution with the “Most” Quality setting, compression artifacts will be virtually imperceptible. This setting provides a compression ratio of about 5:1. The “Normal” setting provides compression of about 11:1, and loss is nominal. The “Least” quality setting results in compression of about 45:1. These are rough figures. Actual compression ratios will vary, depending on image content. Frames with broad areas of constant color compress further than frames with a high degree of variation.

Field One or Field Two resolutions reduce the data further, which compounds the actual compression ratio. Field One and Field Two double the ratio.

Because the Quality slider changes the amount of data reduction, the setting may affect your frame rates, and thus your image quality. This can be corrected with Dynamic-Q (adaptive compression).

### **Dynamic-Q (Adaptive Compression)**

The TARGA 2000’s variable motion JPEG compression specifies the quality of the compressed video by way of the Quality slider in the Compression dialog box. The digital video will maintain consistent quality throughout; however, when the frame content is heavily detailed, data rate spikes will occur. These data rate spikes can significantly increase the chance of frame dropping and stilted video motion.

Adaptive compression (Dynamic-Q) can eliminate this problem by compressing each frame of video in real-time based on a target frame size, rather than quality setting. That is, you are essentially forcing the data rate to stay constant by manually setting (i.e., limiting) the data rate. This technique varies the JPEG quality factor dynamically on-the-fly. The advantage is that you can match the data rate to the speed of the hard drive, thus reducing the likelihood of frame dropping. (In Adobe Premiere, this is done with the “limit data rate” option.) Adaptive JPEG compression is the optimal approach that finds the best balance between high-quality video and full-motion performance with no frame dropping.

## Optimizing Movie Playback Rates

The frame playback rate is the number of frames displayed per second. The playback rate may not equal the actual frame rate of a movie. The reason for this is frame dropping, caused by the system's failure to sustain the data rate. Dropped frames appear as moments of discontinuity in the video — the image may pause briefly, or the video may seem to jump forward a fraction of a second.

You can also minimize dropped frames during playback by checking the following:

- 1. Make sure your system is optimized for video.**

Those suggestions already mentioned for **optimizing the system hardware**, **optimizing the video capture rate**, and **optimizing image quality** (discussed earlier in this Chapter) also apply to optimizing movie playback rates. Also, your playback disk must be as fast as your recording disk.

- 2. Make sure your hard disk is de-fragmented.**

Disk defragmentation is needed on a regular basis to assure optimum performance.

- 3. Use the TARGA 2000 Export Module.**

“TARGA Export To Video” prioritizes movie playing and locks out most system events. The “Optimized” play routines are more efficient than the native QuickTime routines.

**Important:** If you are using Adobe Premiere, use the “**TARGA Export To Video**” plug-in module for Adobe Premiere. If you are using some other movie-making software package, use the TARGA 2000 “**TARGA Player**” application. Refer to *Chapter 3: TARGA 2000 & Digital Movie Making*.

- 4. Increase the amount of memory allocated to your QuickTime player application (e.g., Adobe Premiere).**

This will give QuickTime more space to pre-load frames.

- 5. Make sure your sound output rate matches the rate of the recorded audio.**

Access the Sound Control Panel from your System Folder and set the sound rate to match the recorded audio rate.

# Contents

In this Chapter:

- [About the TARGA 2000 Control Panel](#)
- [Opening the TARGA 2000 Control Panel](#)
- [Information Control](#)
- [Video Output Control](#)
- [Genlock Control](#)
- [Accelerator Control](#)
- [ScreenShift Control](#)

# About The Control Panel

The TARGA 2000 Control Panel allows you access to a suite of TARGA 2000 software controls which you may find useful.

- The **Information Control** lets you quickly access the configuration (i.e., DRAM allocation, VRAM or Ring buffer allocation, slot location, daughter cards, etc.) of the TARGA 2000 card.
- **Video Output** allows control of the outgoing video stream (i.e., video standard, field selection, color adjustments, etc.) You must make adjustments to the Video Output before sending video data to an output device with the TARGA 2000.
- **Genlock** allows additional control over video output (i.e., horizontal and subcarrier phase adjustments).
- **Accelerator** lets you toggle QuickDraw acceleration On or Off.
- **ScreenShift** lets you adjust the horizontal timing of the TARGA 2000 card to match your monitor. This will shift the position of the image horizontally on the screen. ScreenShift is useful for older monitors that do not have adjustments for horizontal positioning.

# TARGA 2000 Control Panel

The TARGA 2000 Control Panel provides access to various software controls for the TARGA 2000 card.

## Opening The TARGA 2000 Control Panel

### 1. Open your Control Panels folder.

The Control Panels window appears.

### 2. Locate the TARGA 2000 Control Panel icon and double-click to open it.

The TARGA 2000 Control Panel appears as shown in Figure 2-1. The information shown in Figure 2-1 may vary, depending on your system.

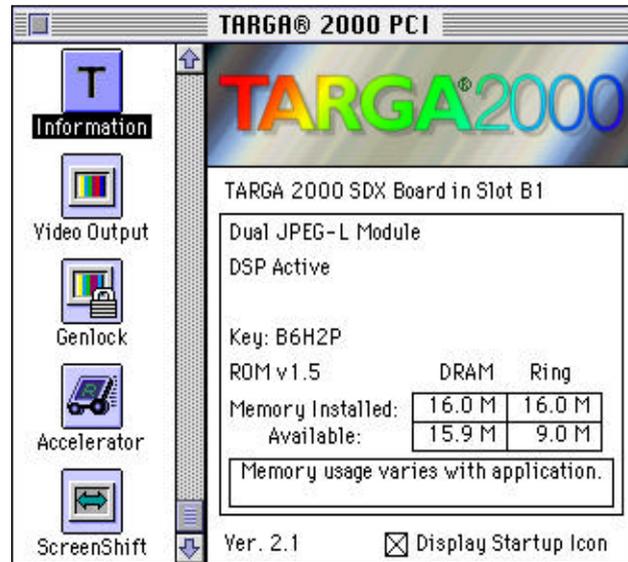


Figure 2-1 TARGA 2000 SDX Control Panel

The icons at the left in the panel show the controls that are available. To access a control, click the icon of the one you want.

## Information Control



The Information Control provides configuration information for each TARGA 2000 card installed in your computer. Some of the information displayed by this panel is as follows:

- Daughter cards attached to the TARGA 2000
- The DRAM and VRAM (or Ring buffer) allocations for the TARGA 2000
- Option to display the TARGA 2000 CDEV during the start-up process
- Slot location of the TARGA 2000

**Note:** If more than one card is installed, a “Next” button appears which allows selections across multiple cards.

## Using The Information Control

— Click the Information icon on the TARGA 2000 Control Panel.

The Information Control will appear (Figure 2-2). The information shown in Figure 2-2 may vary, depending on your system.



Figure 2-2 Information Control

## Video Output Control



Video Output Control allows you to control various options for the outgoing video stream of the TARGA 2000 card. These output options include toggling between video out sources (desktop or external), setting video standards (variations of NTSC or PAL), and making various other output settings (gamma, hue, etc.).

### Using Video Output

— Click the **Video Output** icon on the TARGA 2000 Control Panel.

The Video Output Control appears as shown in Figure 2-3.

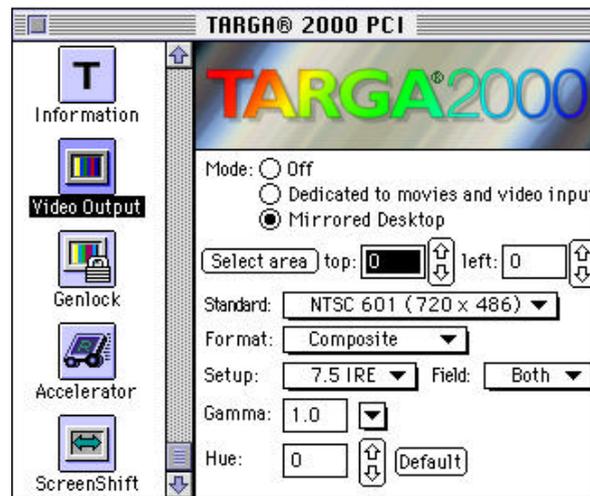


Figure 2-3 Video Output Control

— **Video Output modes can also be accessed from the Control Strip on the monitor desktop of you Power Macintosh. Refer to Figure 2-4.**



Figure 2-4 Control Strip

**Note:** The video standards listed in Figure 2-4 will vary, depending on the type of TARGA 2000 (SDX, RDX, DTX, Pro, etc.) that you have.

The Video Output Control options are defined as follows:

- **Off** -- Click the “Off” radio button to deactivate live video output from the TARGA 2000 card. The radio button for “OFF” toggles with the buttons for “Dedicated To Movies and Video Input” and “Mirrored Desktop.”
- **Dedicated To Movies and Video Input** -- Select this option if you want to output the video display from an external video source which is connected to the TARGA 2000’s input port. That is, you want to output from the card the video source that is connected to the card’s input connector. The radio button for “Dedicated To Movies and Video Input” toggles with the buttons for “Mirrored Desktop” and “Off. To turn “Dedicated To Movies and Video Input” off, click either the “Off” button or the “Mirrored Desktop” button.
- **Mirrored Desktop** -- Allows you the capability of sending whatever is being shown on that monitor’s desktop as video output. That is, you can record whatever is being shown on that monitor. See the description of the Video Output “**Selection Area**” for details. The radio button for “Mirrored Desktop” toggles with the buttons for “Dedicated To Movies and Video Input” and “Off. To turn “Mirrored Desktop” off, click either the “Off” button or the “Dedicated To Movies and Video Input” button.

- Desktop Selection -- The Video Output panel has settings for controlling the size of the desktop area to be output. “Mirrored Desktop” must be selected before “Select Area” and “Top and Left” are activated. “Top and Left” and “Select” work independently of each other. That is, you can use one or the other, but not both simultaneously.
  - Select Area -- Click “Select Area” to cause a marquee to appear. The marquee is a tool for selecting a part of an image. The marquee appears as a rectangular outline of moving dashes. The parts of an image within the area of the marquee will be output. The size of the marquee is determined by the video standard shown in the “Standard” section of the Video Output Panel. Move the mouse to move the marquee around the screen. Clicking the mouse button will cancel the marquee.
  - Top and Left -- A global coordinate setting in pixels can be set for “Top” and “Left.” For example, the menu bar on the monitor would have a setting of (top, left) of 0, 0. If a value is typed in here, the <return> key must be pressed for the value to register.
- Standard -- This pop-up menu is used to select the type of video standard for the outgoing video data stream. The TARGA 2000 allows you to select any of the following standards as output:
  - NTSC at 640 x 480
  - Full NTSC at 648 x 486
  - NTSC 601 at 720 x 486 (NTSC CCIR-601)
  - Underscan NTSC at 576 x 432 (CA/V Module Only)
  - PAL at 768 x 576
  - PAL 601 at 720 x 576 (PAL CCIR-601)
  - Underscan PAL at 684 x 512 (CA/V Module Only)

**Note:** For TARGA 2000 SDX, NTSC 601 or PAL 601 are the only selections.

- Format -- Available only if the card in use is a TARGA 2000 Pro, DTX, RTX, or SDX. The following video standards can be selected as output:

- Composite
- S-Video (Y/C)
- RGB
- Component (YUV)

**Note:** For TARGA 2000 SDX Composite and S-Video (Y/C) are the only selections.

- Setup -- This selection allows you to either have or not have video encoded with the setup pedestal. The Japanese version of NTSC uses 0 IRE for the setup pedestal. Most other users of NTSC use 7.5 IRE.
  - 7.5 IRE Setup -- Video is encoded with the setup pedestal.
  - 0 IRE Setup -- Video is not encoded with the setup pedestal.
- Field -- This Pop-up selection allows control of which fields (even, odd, or both) are output. Your computer monitor draws graphics as a sequential series of lines called non-interlaced display. Video, however, follows the standards of television (NTSC or PAL) in which a frame of video is actually comprised of two sets of lines that are combined (interlaced). These two sets of lines are called “fields.” One field is the set of odd lines while the other field is the set of even lines.
  - Both -- This is the default selection. It provides “full frame” video output.
  - Even -- Select this option only if you want the even lines of video to be output.
  - Odd -- Select this option only if you want the odd lines of video to be output.
- Gamma -- The pop-up menu selections are 1.0 for linear, 2.2 for NTSC, and 2.8 for PAL. In most instances, incoming video already has the correct gamma component factored into it at 1.0, and further correction is not needed. The gamma factor 2.2 for NTSC and 2.8 for PAL is used to compensate for the nonlinear relationship between the source and the monitor. Use these if you are creating an animation using computer generated footage which has never been gamma corrected.
- Hue -- Hue is the property of pure colors. The Hue adjustor provides a means of changing the color of the outgoing video by adjustments of the subcarrier in the burst signal. You can either click the arrows or type in the value desired. The range is from 0 to 359 degrees, with 0 being no color adjustment.

## Genlock Control



Genlock Control allows you to make color and genlock adjustments to the outgoing video stream of the TARGA 2000 card.

### Using Genlock

— Click the **Genlock** icon on the **TARGA 2000 Control Panel**.

The Genlock Control appears as shown in Figure 2-5.



Figure 2-5 Genlock Control

The Genlock Control options are defined as follows:

- **Mode** -- The TARGA 2000 card can lock the sync and color burst of its video output to the sync and burst of another signal. The following genlock options are available when this pop-up menu is selected:

- Off -- Use “Off” if genlock is not needed.
- Genlock Input -- Intended for the studio environment where there is a house sync as the external sync source.
- Video Source -- Use when the external sync source is Composite or S-Video.  
*(Note: With the TARGA 2000 you get a “timing lock” for S-Video.)*
- Horizontal Phase -- Horizontal Sync is the signal used by cameras and monitors to determine the start of each video line, and “Phase” is the timing relationship between the genlock signal and the horizontal portion of the output signal. Use of this setting requires a scope, and is for studio use only. The human eye will not be able to discern differences in adjustments. The range is from 0 to 255. For most users, it is best to leave this setting in the default position.
- Subcarrier Phase -- Subcarrier, in NTSC, refers to the 3.579545 MHz sine wave that is modulated atop the monochrome luminance signal to create the chrominance signal. The specific hue (color) is determined by the phase of the subcarrier sine wave at a point in comparison to a reference sine wave called the “color burst.” Use of this setting requires a scope, and is for studio use only. The human eye will not be able to discern differences in adjustments. The range is from 0 to 359 degrees. For most users, it is best to leave this setting in the default position.

## Accelerator Control



Accelerator Control allows you to turn on or turn off QuickDraw acceleration.

### Using Accelerator Control

- Click the Accelerator icon on the TARGA 2000 Control Panel.

The Accelerator Control appears as shown in Figure 2-6.



Figure 2-6 Accelerator Control

To turn on QuickDraw acceleration, click the enable check box (produces an “x”). To turn off QuickDraw acceleration, click the check box again to remove the “x.” The monitor connected to the TARGA 2000 must be set to “Millions of Colors” (Sound & Display Control Panel) for QuickDraw acceleration to occur.

## ScreenShift Control



ScreenShift lets you adjust the TARGA 2000 display horizontal timing, which shifts the display's horizontal positioning on your monitor. This is useful for older monitors that do not have adjustments for horizontal positioning. The adjustment is saved and loaded automatically each time you start your computer. The ScreenShift Control also allows you to disable "Sync On Green." Disabling "Sync On Green" produces a video signal identical to that produced by the Macintosh on-board video instead of the TARGA 2000 card.

## Using ScreenShift Control

- Click the ScreenShift icon on the TARGA 2000 Control Panel.

The ScreenShift Control appears as shown in Figure 2-7.



Figure 2-7 ScreenShift Control

Click the arrow buttons to shift the TARGA 2000 display screen to the left or right. To disable "Sync On Green," click the "Enabled" check box to remove the "x."

# Contents

In this Chapter:

- About movie-making software
- Sound Control Panel settings for TARGA 2000
- Video Input settings for TARGA 2000
- Audio Input selection settings for TARGA 2000
- Video Playback Compression selection settings for TARGA 2000
- Using the TARGA Player or TARGA Export To Video application for TARGA 2000
- Accelerated transitions (Adobe Premiere 4.2 or greater) for TARGA 2000

# About Movie-Making Software (e.g., Adobe Premiere 4.2 or greater)

The TARGA 2000 works with any video and audio-editing software application that works through QuickTime 2.5. A prime example of such an application would be Adobe Premiere 4.2 or greater. Regardless of the movie-making software that you're using, settings or selections for the TARGA 2000 can be made in the following areas:

- Sound Control Panel (System Folder)
- The **Video Input** within your application
- **Audio Input** selection for your application
- **Video Compression** selection for your application
- **TARGA Player** (or **TARGA 2000 Export To Video**)
- **Accelerated Transitions** selection (Adobe Premiere 4.2 or greater only)

**Important:** If you are using a video and audio-editing software application other than Adobe Premiere, you will have to relate the concepts shown and discussed here to that application.

## Sound Control Panel Settings

Sound Control settings for the TARGA 2000 can be found in the Sound Control Panel within your system folder. (*Do not use "Sound & Displays" if your system has this option.*) TARGA 2000 settings can be found in the Sound Control Panel for Sound In, Sound Out, and Volume Control.

### Sound In

Select "TARGA" when you want to record audio into your movie-making software application. Refer to Figure 3-1.

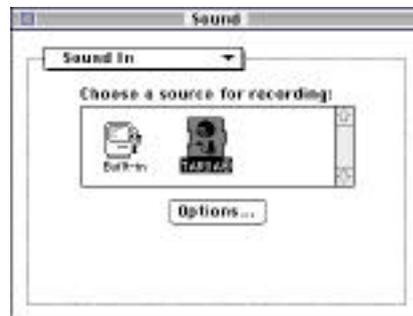


Figure 3-1 Sound In setting dialog

If you are using the TARGA 2000 RTX card, click on “Options” within the Sound In dialog. Select “Unbalanced” if you are using RCA jacks for audio. Select “Balanced” if you are using XLR jacks for audio. Refer to Figure 3-2.

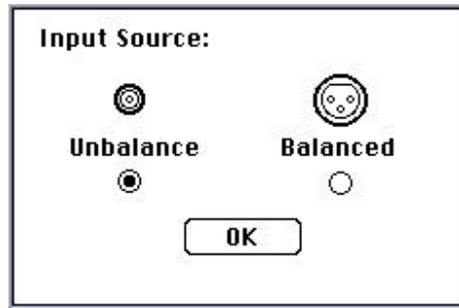


Figure 3-2 Sound Input Source dialog

### Sound Out

Select “TARGA” when you want to output audio from your movie-making software application. Refer to Figure 3-3.

**Important:** Make sure you set the sound rate in this dialog so that it matches the recorded audio rate set within your software application. Refer to the discussion on “[Audio Input Selection](#)” later in this Chapter.



Figure 3-3 Sound Out setting dialog

## Sound Volume Control

Select the volume level desired for TARGA 2000 audio. Refer to Figure 3-4.

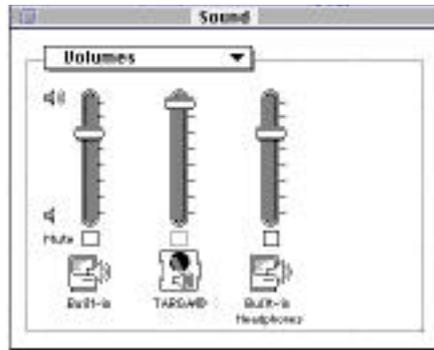


Figure 3-4 Sound Volume setting dialog

## Video Input Settings

Video Input settings for the TARGA 2000 can be found within your software application. In Adobe Premiere, the video input settings are accessed from the “Movie Capture” menu. The settings are as follows:

- **Compression Setting** -- allows for the selection of a compressor and lets you adjust the compression ratio.
- **Disk Performance Setting** -- estimates the maximum read and write data rates for your hard drive.
- **Image Setting** -- allows various adjustments to be made to the input video shown in the Preview Window.
- **Phase Adjustment Setting** -- allows pixel-by-pixel adjustment (horizontal and vertical) of the digitizing area in the capture window.
- **Source Setting** -- use to identify the Digitizer, signal input, signal format, and filter.
- **TARGA Video Fields Setting** -- Allows you to set either one or both fields captured into a movie file. Can also be used with the Option key for field dominance selection.

**Note:** For best results with NTSC, select “Both” for compression fields and “Odd” for field dominance. For PAL, select “Both” for compression fields and “Even” for field dominance.

## Compression Setting

TARGA Video should be used as the compressor. Other settings within the Compression dialog should be set as needed.

To use the Compression setting:

1. Select “Video Input” from the Movie Capture menu.
2. If necessary, use the pop-up menu at the top-left side of the dialog to select “Compression.”

The Compression dialog box will appear. Refer to Figure 3-5.

3. Select “TARGA Video” or “TARGA M-JPEG B” as the Compressor.

TARGA M-JPEG B is compatible with Apple Motion JPEG B. Use it if you want to render files purely in software and have them play back on hardware. Refer to the tutorial in Chapter 4, and your Adobe Premiere manual for information on the other settings within the Compression dialog box.



Figure 3-5 Compression Dialog Box

## Disk Performance Setting

The disk performance test is designed to simulate video activity to the disk drive. The test provides an estimate of the achievable read and write data rates which are accurate for a non-fragmented drive. The Disk Performance test does not de-fragment your hard drive. You should de-fragment the hard drive before recording high quality video onto it.

To use the Disk Performance setting:

1. Select “Video Input” from the Movie Capture menu.
2. If necessary, use the pop-up menu at the top-left side of the dialog to select “Disk Performance.”

The Disk Performance dialog box will appear. Refer to Figure 3-6.

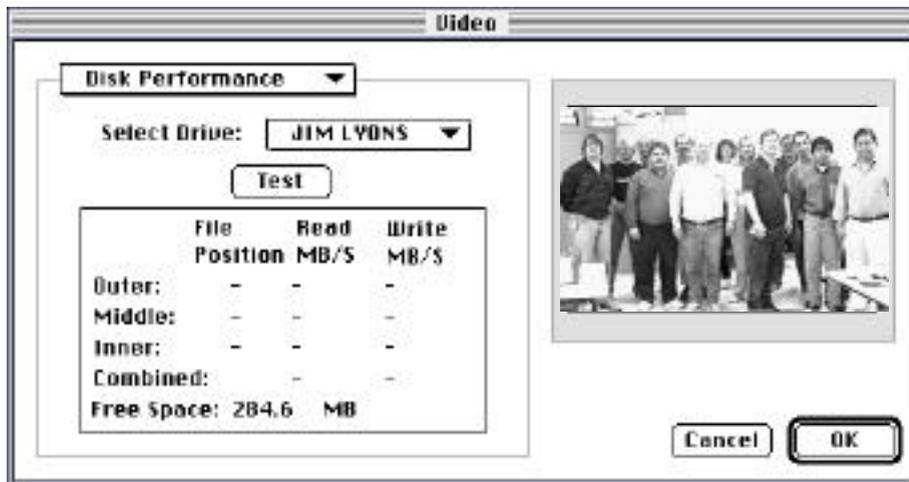


Figure 3-6 Disk Performance Dialog Box

3. Use the “Select Drive” pop-up menu to choose the drive that is to be tested.
4. Once the drive is selected, click the “Test” button on the dialog.

A calculation will be made to estimate the possible read data rate and write data rate for your hard drive. The test is accurate to within about  $\pm 15\%$ .

## Image Setting

The image setting provides color controls for the video that is going to be captured. The controls work similarly to those found on a television.

To use the image settings:

1. Select “Video Input” from the Movie Capture menu.
2. Use the pop-up menu at the top-left side of the dialog to select “Image.”

The Image dialog box will appear. Refer to Figure 3-7.

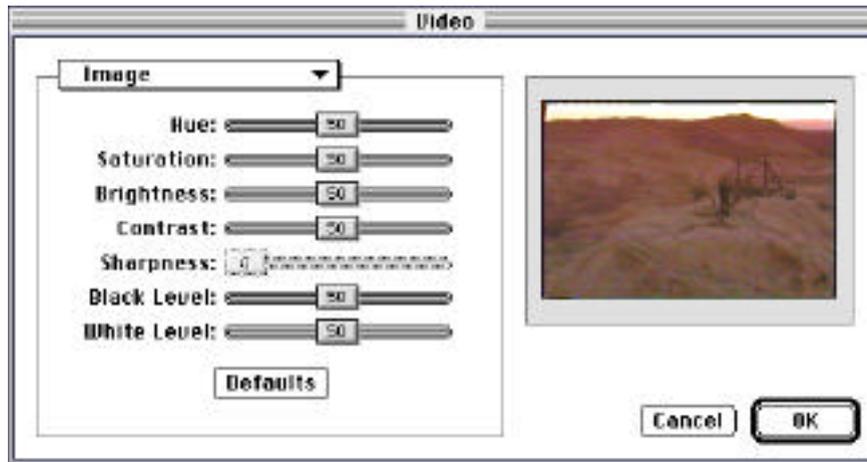


Figure 3-7 Image Dialog Box

**Note:** If Component RGB, Component RGB-Sync, or Component YUV is selected as source input, only the Brightness and Contrast sliders are active. Sharpness is not available with the TARGA 2000 DTX, RTX, or SDX.

3. Drag the slider for the control you want to adjust.

- Hue -- The property of pure color. The hues are the primary colors of red, green, and blue and their complements of cyan, magenta, and yellow. A hue has only one wavelength associated with it while a blend of hues, such as white, has multiple

wavelengths. Therefore, white and black are colors but not hues. The Hue control adjusts the subcarrier phase so that the displayed “color” agrees with your conception. An example is the flesh tone of a person. This can be adjusted over a gamut of red to green.

- Saturation -- The ratio of the Hue component to the White component. Another term for this is purity. The lower the white content the more saturated or pure the color. This controls the Chrominance Gain independent of the Luminance Gain. Decreasing the saturation moves the hue to a pastel shade.
- Brightness -- This is the amount of overall luminance perceived. Increasing “brightness” increases the amount of white light added to a picture reducing the saturation or purity of an image. Brightness implements a DC offset in the picture content.
- Contrast -- The contrast controls both luminance and chrominance to preserve the purity while increasing the “brightness” of an image. Contrast is the overall gain control.
- Sharpness -- (May not be available.) Sharpness controls the contrast at a boundary within an image. As such, it is an attribute of the luminance bandwidth. Increasing “sharpness” increases the luminance bandwidth.
- Black Level -- This is the level at which the display is cut off and no image is seen. This can be adjusted to have a “setup” pedestal (standard NTSC/PAL) or no “setup” pedestal (Japanese NTSC).
- White Level -- The white level is the threshold value above which pixels are considered white. As the White Level is decreased, more pixels are turned white.

## Phase Adjustments Setting

The Horizontal and Vertical adjustments allow manipulation of the digitized area. The Horizontal adjustment will move the signal left and right in the capture window and the Vertical adjustment will move it up and down.

To use the Phase Adjustments setting:

1. Select “Video Input” from the Movie Capture menu.
2. If necessary, use the pop-up menu at the top-left side of the dialog to select “Phase Adjustments.”

The Phase Adjustments dialog box will appear. Refer to Figure 3-8.



Figure 3-8 Phase Adjustment Dialog Box

3. Adjust the Horizontal and/or Vertical Phase as needed.

## Source Setting

This setting is used to identify the device that is going to be performing the capture, the type of signal input to the card, the signal format into the card, and the type of filter to be used by the card.

To use the source settings:

1. Select “Video Input” from the Movie Capture menu.
2. Use the pop-up menu at the top-left side of the dialog to select “Source.”

The Source dialog box will appear. Refer to Figure 3-9.

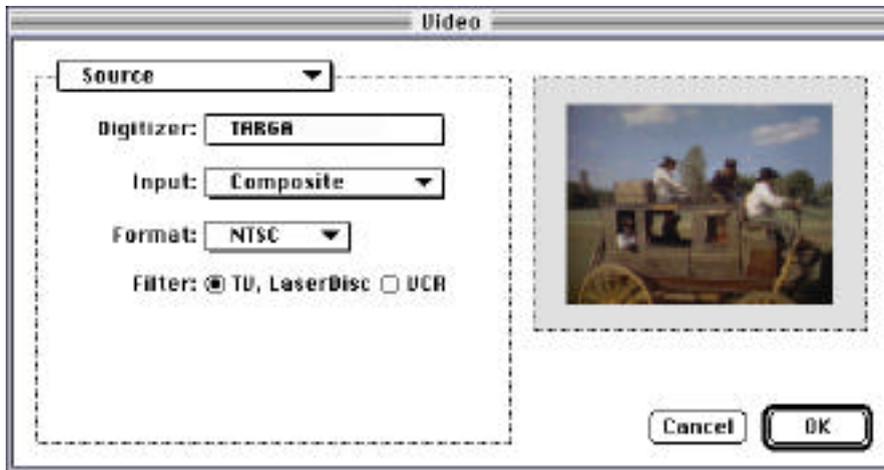


Figure 3-9 Source Dialog Box

- Digitizer -- This area identifies the device that will be performing the frame grab.

- Input -- Use this pop-up menu to select the video input source connected to the digitizer. If you have a TARGA 2000 CA/V, your choices are:

- S-Video (Y/C)
- Composite Video

If you have a TARGA 2000 Pro, DTX, or RTX, your choices are:

- S-Video (Y/C)
- Composite Video
- Component RGB
- Component RGB-Sync
- Component YUV (BetaCAM)

If you have a TARGA 2000 SDX, your choice is:

- Serial Digital

- Format -- This pop-up menu is used to select the type of video standard for the incoming video signal from which the capture is being made. The TARGA 2000 allows the following choices:

- NTSC
- PAL
- SECAM

- Filter -- These two buttons actually control the PLL (Phase Lock Loop) mode of the decoder. Alternate PLL “on” is used in VCR mode. The VCR filter is a circuit that locks onto a poor video source and minimizes distortion of the image and colors. If your source is a VCR, use this filter.

If your source is a laser disc, video camera, or other high-quality source, use the “TV, Laser Disc” filter.

## TARGA Video Fields Setting

This setting is used to identify the number of fields (one or two) to be within the capture frame.

To use the TARGA Video Fields setting:

1. Select “Video Input” from the Movie Capture menu.
2. Use the pop-up menu at the top-left side of the dialog to select “TARGA Video Fields.”

The TARGA Video Fields dialog box will appear. Refer to Figure 3-10.



Figure 3-10 TARGA Video Fields Dialog Box

**Note:** The “Resolution” area will only be seen if you are using a TARGA 2000 DTX, RTX, or SDX. For TARGA 2000 SDX, NTSC 601 or PAL 601 are the only selections.

- Resolution -- This option allows you to set the resolution size for the fields within the capture frame. Your choices are:
  - NTSC at 640 x 480
  - Full NTSC at 648 x 486
  - NTSC 720 x 480 (primarily for CD-ROM use)
  - NTSC 601 at 720 x 486 (NTSC CCIR-601)
  - PAL at 768 x 576
  - PAL 601 at 720 x 576 (PAL CCIR-601)

## Audio Input Selection

Audio Input selection settings for the TARGA 2000 can be found within your movie-making software application. If you are using Adobe Premiere, select “**Sound Input**” within the Movie Capture menu. You should set the Sound Source and the Sound Sample. Refer to Figures 3-11 and 3-12.

### Sound Source

You should select “TARGA” as the device. If you have a TARGA 2000 RTX, you should also select either “Balanced” (RCA jacks used) or “Unbalanced” (XLR jacks used). Refer to Figure 3-11.

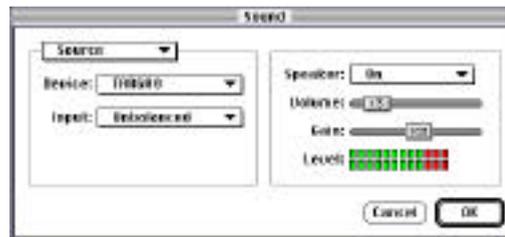


Figure 3-11 Sound Source Input Dialog

### Sound Sample

The sound sample rate is from the setting made in the Sound Control Panel. Set the sound sample size and use. Then make speaker sound adjustments as needed. Refer to Figure 3-12.



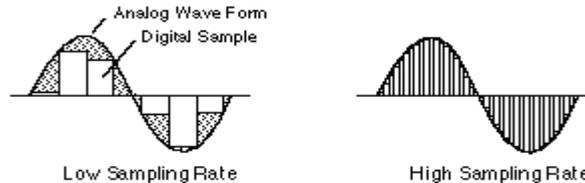
Figure 3-12 Sound Sample Input Dialog

The recommended audio settings for the TARGA 2000 are:

Rate: 44.100 kHz or 48.000 kHz  
Size: 16 Bits  
Use: Stereo

## **Rate**

The audio rate is the number of audio digital samples per second taken by the TARGA 2000 hardware. That is, the audio sampling rate is the number of times per second that the amplitude of the sound wave (analog signal) is tested and recorded. The more frequently the amplitude is sampled, the closer the sample values will follow the wave form. In the figure below, one wave form is shown with a low sampling rate and again with a higher rate. Notice that the higher sampling rate, with less gray, indicates a higher fidelity. A reference point for sampling rate is that audio CD's are sampled at 44,100 samples per second or 44.1 KHz.



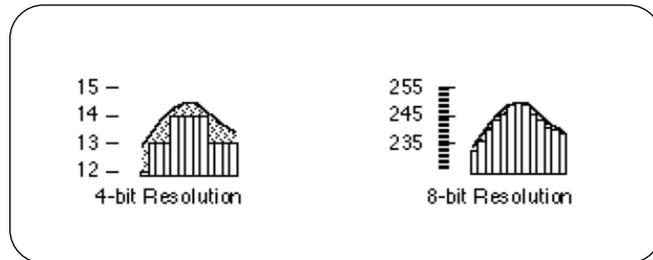
Higher audio rates will require lower data rates or higher Q factors to be chosen for the movie.

## **Size (8 or 16 Bit)**

When you select “16 bits,” digital sampling data is saved at 16 bits. When “8 bits” is selected, digital sampling data is saved at 8 bits. It is recommended that 16 bits always be selected since the hardware samples at this bit depth anyway. Efficiency is actually *decreased* by selecting 8-bit sampling, but 16 bit can be turned OFF when trying to maximize the data rate to and from disk.

The bit depth is the number of binary digits (bits) used to specify the amplitude of each digital sample. With more bits used, the digital samples approach the true amplitude more closely. An 8-bit resolution provides 256 levels (0-255) and a 16-bit resolution provides more than 65 thousand levels.

The figures below show a portion of a wave form described at two different bit depths — 4 bit and 8 bit. The shaded area beneath the wave form shows a discrepancy between the recorded amplitude of the digital sample and the true amplitude of the analog signal. The higher resolution, with less gray, indicates a higher fidelity (i.e., it more closely resembles the original sound.)



### Use (Mono or Stereo)

When you select “Stereo,” audio is saved as separate right and left channels. When stereo is not selected, audio is saved as a single channel, known as “Mono.”

It is recommended that the “Stereo” option is always selected because the hardware uses 2 channels anyway. In fact, efficiency is *decreased* by selecting “Mono.” However, stereo can be turned off when trying to minimize the data rate to and from the disk.

**Note:** When stereo is off, only one of the two channels is recorded, and that channel is the **right** channel.

## Video Playback Compression Selection

Video Compression selection settings for movie playback can be found within your movie-making software application. You should select “TARGA Video” or “TARGA M-JPEG B” as the compression format for the TARGA 2000 card to get the best frame rate possible. Refer to Figure 3-13.

**Important:** Make sure that all of the settings in this dialog exactly match the settings you used in the video input (movie capture) compression dialog.

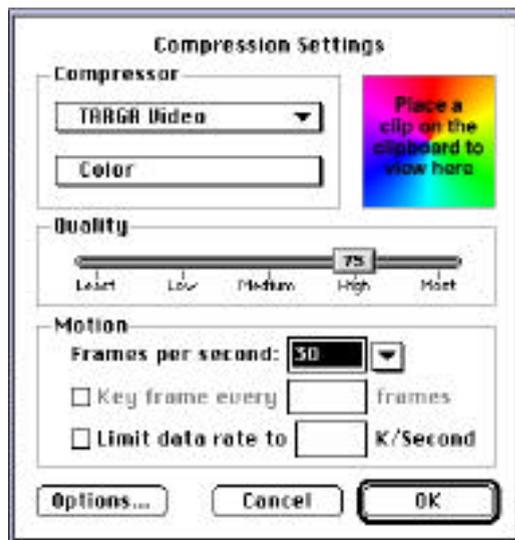


Figure 3-13 Dialog for Video Playback Compression selection

## TARGA Player or TARGA Export To Video

The TARGA Player and TARGA Export To Video application make use of features on the TARGA 2000 card that enhance the playing back of video and audio that has been recorded and stored on disk.

**Note:** If you are using Adobe Premiere, use the “TARGA Export To Video” plug-in module for Adobe Premiere. It is located within the TARGA 2000/Adobe Premiere software diskette. If you are using some other movie-making software package, use the TARGA 2000 “TARGA Player” application. It is located within the TARGA 2000 Folder.

**Important:** In Adobe Premiere, you must press and hold the “Option” key when selecting “TARGA Export To Video” to get the TARGA Export To Video dialog.

If you are using Adobe Premiere, TARGA Export To Video can be accessed from the File Menu. Refer to Figures 3-14 and 3-15. If you are using a movie-making application other than Premiere, the Export To Video dialog can be accessed by double-clicking the TARGA Player application icon or by dragging and dropping a movie file into the TARGA Player application icon. The TARGA Player will also assemble “Play Lists” (allowing movies to be played across multiple disks -- similar to Adobe Premiere).

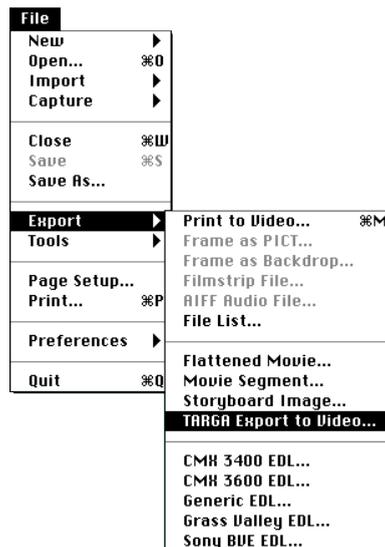


Figure 3-14 Hold “Option” key when accessing TARGA Export To Video

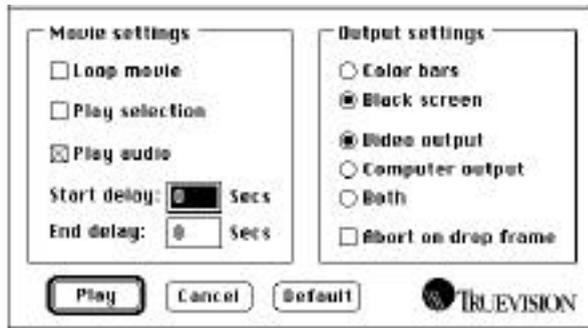


Figure 3-15 TARGA Export To Video dialog

- Loop Movie -- Makes the entire or selected portion of the movie play continuously when selected.
- Play Selection -- Is designed to play from the in-point to the out-point only when selected.
- Play Audio-- Allows you to turn the audio track off or on when previewing transition effects or video-only effects.
- Start Delay -- This is number of seconds to delay between the time the color bars go away and the movie starts. Type the number of seconds desired in its “Seconds” box.
- End Delay -- This is the delay time after the movie ends as well as the number of seconds between each time the movie is looped. Type the number of seconds desired in its “Seconds” box.
- Color Bars or Black Screen -- If “Start Delay” has a value, then you can choose to either output color bars or black screen before the movie begins. The default is black.
- Video Output, Computer Output, or Both -- These refer to the screens which the movie will be displayed on. If you choose “Video Output,” the movie will only be visible on the video output screen. If you choose “Computer Output,” the movie is only visible on the desktop display screen. If you choose “Both,” the movie will be played back on both screens simultaneously. In all cases, the video is centered in the output.

- Abort On Drop Frame -- When outputting to video, this will terminate playback early if your system does not keep up with movie.
- Default Button -- Will reset the settings back to their original preset values.

### **Optional: Accelerated Transitions (Adobe Premiere 4.2 or greater)**

Plug-in modules for Adobe Premiere have been developed for the TARGA 2000. These transitions have been specially enhanced and optimized for superfast acceleration when used with the TARGA 2000.

#### **Using The Accelerated Transitions**

The TARGA 2000 transitions must be placed into the “Adobe Premiere Plug-ins” folder. Only the TARGA transitions can be accelerated. *The following conditions must be met or the TARGA transitions will not be accelerated:*

- ✓ The files “TARGA Transitions” and “TARGA Handler” must be in the Adobe Premiere Plug-ins folder.
- ✓ Both input clips must be of equal size, and the same size as the final movie (e.g., all 640 x 480).
- ✓ Both clips must be compressed using “TARGA Video.”
- ✓ The compression on the resulting movie must be “TARGA Video.”
- ✓ No other filtering is allowed for acceleration.
- ✓ If combining clips of different resolutions, the final output clip must either be the same size or smaller.

#### **Obtaining Accelerated Transitions**

Additional information can be obtained by calling: 1-800-522 TRUE (8783).

# Contents

In this Chapter:

- [Tutorial Introduction](#)
- [Lesson 1: Configuring Your Macintosh](#)
- [Lesson 2: Capturing Video](#)
- [Lesson 3: Making Movies](#)
- [Answers to Frequently Asked Questions](#)

# Tutorial Introduction

This tutorial will guide you through the first use of your TARGA 2000 and Adobe Premiere software. This tutorial is not designed to teach you how to use Adobe Premiere; the purpose is to show you how the TARGA 2000 is used with Adobe Premiere. We assume that you have a working knowledge of the Macintosh, and that Adobe Premiere 4.2 has already been installed on your Macintosh. Every new TARGA 2000 owner, whether a total novice or an expert with a similar product, should work through these lessons. Truevision has created this tutorial to help TARGA 2000 users quickly learn and become productive with our product.

This document consists of three lessons: **Configuring Your Macintosh, Capturing Video, and Making Movies**. We recommend that you work through all three in a single session. This will take you less than two hours. Also included in the tutorial is a section called **Answers To Frequently Asked Questions**. The questions listed and answered in this section are those most frequently received by our Technical Support staff.

# Lesson 1: Configuring Your Macintosh

Before doing this tutorial, read the “[About Achieving Best Performance](#)” sections in Chapter 1. Recommendations for PCI Drive Arrays, PCI SCSI Cards, and Formatting & Striping Software can be found in the “Digital Video Tuning” PDF document on the CD-ROM. The recommendations are continuously being updated. The latest information for these and other products, including telephone and fax numbers where they can be obtained, is available from Truevision Technical Support’s FaxBack or Online services for the *TARGA 1000 for Macintosh Version Watch*. See the “[Truevision Customer Satisfaction Center](#)” in Appendix A of this manual for contact information.

## Hardware Setup

Follow the “Card Installation & Hardware Setup” procedures in Chapter 1 of your TARGA 2000 Hardware and Software Installation Guide.

For this tutorial, use the following hardware configuration:

- Use your TARGA 2000 non-interlaced (computer-style) display as your desktop monitor.

**Important:** *Your monitor must be capable of at least one of the following resolutions to use the TARGA 2000 card. If you have a monitor that does not support any of these resolutions, you must use the CA-205 cable with a monitor sense adapter:*

- 1152 x 870 at 75 Hz
  - 1024 x 768 at 75 Hz
  - 800 x 600 at 72 Hz
  - 800 x 600 at 60 Hz
  - 640 x 480 at 60 Hz
- Connect an active video source (VCR, video camera, or laser disc player) to the TARGA 2000’s video and audio inputs.
  - Connect a composite or S-video monitor (or a regular television) to the TARGA 2000 video output.
  - Connect the TARGA 2000 audio outputs to the inputs of your television, amplifier, or speakers.

## Software Setup

Follow the “Software Installation & Setup Procedures” in Chapter 2 of your TARGA 2000 Hardware and Software Installation Guide.

**Important:** *Make sure you place all of the plug-ins created by Truevision for Adobe Premiere into the Adobe Premiere Plug-ins folder.*

- Make sure the TARGA 2000 screen is set to **MILLIONS OF COLORS**.
- Open the TARGA 2000 Control Panel and select **VIDEO OUTPUT**.



Select **DEDICATED TO MOVIES AND VIDEO INPUT**, and an **NTSC** or **PAL** resolution. After you finish this tutorial, feel free to experiment with other settings. Set the **FORMAT**, **SETUP**, and **FIELD** settings for your output device. Refer to the “**Video Output Control**” section in Chapter 2.

- Open the ~ATM Control Panel.



Set the font cache to 256K. This helps to optimize video capture.

—Open the Memory Control Panel.



Select the following settings:

Disk Cache	32 KB
Modern Memory Manager	ON (When Available)
Virtual Memory	OFF
RAM Disk	OFF
32-Bit Addressing	ON (When Available)

Other available options do not matter to the TARGA 2000. If you made any changes in the Memory Control Panel, restart before continuing. Otherwise, close the box and continue.

## Establishing A Minimal System

Even with the advanced technology of the TARGA 2000 and your Macintosh, real-time video capture and playback are intensive tasks that require as much power as your CPU has to offer. Consequently, you should take out all Extensions and Control Panels that are not used by your TARGA 2000 and drive system.

—Open the Extensions Manager Control Panel. Save your current extension set by selecting **SETS: SAVE SET** from the pop-up menu at the top right of the dialog. Name your old set Pre-TARGA.

—**Disable** all Extensions and Control Panels (select **SETS: ALL OFF** from the pop-up menu), and then

—**Re-enable** the following Extensions and Control Panels:

- Any Extensions and Control Panels related to SCSI cards, disk drives, or drive arrays.
- All TARGA 2000 & Premiere Extensions and Control Panels. This includes: QuickTime™, QuickTime™ Power Plug, Sound Manager, Sound, TARGA 2000, Adobe Premiere, and ~ATM.
- The small number of Control Panels that your Macintosh requires for full functionality. These include: General Controls, Memory, Monitors, and Mouse.

—From the **SETS: MENU**, select **SAVE SET....** Name the new set **TARGA MINIMUM**.



—**Restart** your Macintosh to let the changes take effect.

As you begin working closely with the TARGA 2000, you will probably add more Control Panels and Extensions to increase your system's functionality. You will find that most of the items that you add (CD-ROM, SyQuest, printer drivers, Apple Menu Options, PC Exchange, etc.) do not have a detrimental effect on the TARGA 2000.

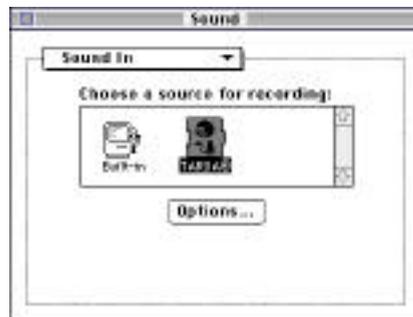
If you begin to see video performance deteriorate, a new Extension or Control Panel is often the cause. If this happens, then you can always revert to your new TARGA MINIMUM extensions set, restart, and resume productive work.

## The Sound Control Panel

—Open the Sound Control Panel.

**Important:** Use the “Sound” Control Panel. Do not use the “Sound and Display” Control Panel if your machine has this option.

—Select “TARGA®” as the SOUND IN device.



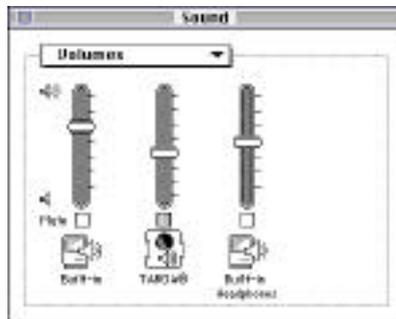
If you are using the TARGA 2000 RTX card, click on “Options” within the Sound In dialog. Select “Unbalanced” if you are using RCA jacks for audio. Select “Balanced” if you are using XLR jacks for audio.



- Select “TARGA®” as the SOUND OUT device. Use the following settings: **44.1 kHz**, **16 BIT**, and **STEREO**.



- Select **VOLUMES**. You will notice that the ability to mute the TARGA 2000 is grayed out. Make sure that the “TARGA®” volume is set about halfway.



- Close the Control Panel.

Your Macintosh is now configured to be a video production system.

## Lesson 2: Capturing Video

Before trying to capture or play full-motion video on your TARGA 2000, always remember to insert a floppy disk into your disk drive. If your Macintosh has any other removable media bays, such as CD-ROM or SyQuest drives, fill those as well. When these devices are empty, your Macintosh will periodically stop what it is doing and poll the drives to find if a disk or cartridge has been inserted. This interruption can result in dropped frames, but is easily avoided by keeping these devices filled.

**Note:** If you disabled your CD-ROM extensions in Lesson 1, you don't need to place a CD in the player.

### Start-Up Adobe Premiere

—Launch Adobe Premiere. Once Adobe Premiere is started, it asks you for a **PROJECT PRESET**. Choose the default. You will make a new TARGA 2000 preset during this tutorial.

### Setting Your Scratch Disk

Your movies need to be recorded onto the fastest drive available to achieve the best quality video capture and playback. In Adobe Premiere, incoming video and temporary files are recorded to your *Scratch Disks*.

—Choose your scratch disk by pulling down the **FILE MENU**, scrolling to the **PREFERENCES** submenu, and selecting **SCRATCH DISKS...**



—Select your fastest drive or array in all three fields.



## Video Input

—Open the **MOVIE CAPTURE** window by pressing the F10 key or by choosing **MOVIE CAPTURE** from the **COMMANDS** palette. If you get a dialog box asking if you want to turn off AppleTalk, click **DISCONNECT**.

If your video source is active, there may be video in the **MOVIE CAPTURE** window. If the window is blank, don't worry — you will adjust the inputs soon. If you do see video, but it is slow or jerky, make sure that no other windows or floating palettes are covering the **MOVIE CAPTURE** window.

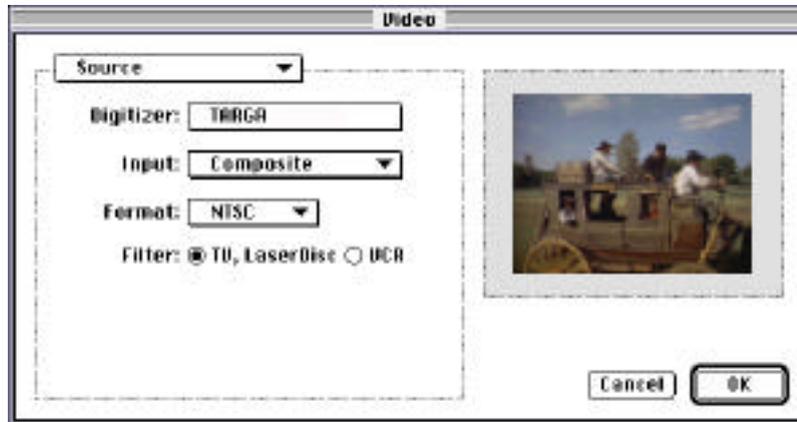
—Select **VIDEO INPUT...** from the **MOVIE CAPTURE** menu.



The **VIDEO INPUT...** dialog box controls the way the TARGA 2000 digitizes incoming video.

## Source

—Select **SOURCE** from the series of pop ups.



—Choose **TARGA** for your **DIGITIZER** (if you have a choice).

—Fill in the **INPUT**, **FORMAT**, and **FILTER** fields to match your video source. If all your settings are correct, there should be video in the preview box at right. If you don't see any video, click **OK** to close the dialog, wait a moment, then click inside the blank frame of your **MOVIE CAPTURE** window. Be patient — sometimes the TARGA 2000 takes a few seconds to display video after the input settings are changed.

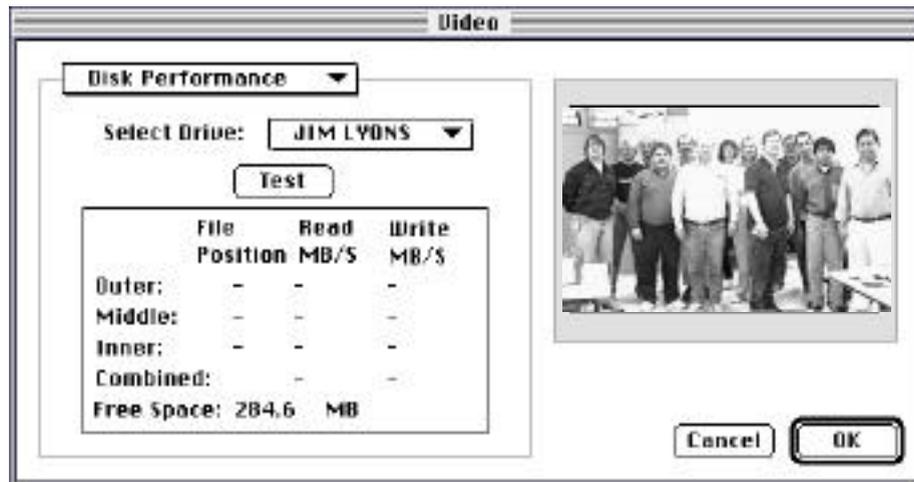
**Note:** If your Preview box is black, then your input does not match your video source. Select another input source or change your video source cabling.

If you don't see a picture after waiting about 20 seconds, close and reopen the **MOVIE CAPTURE** window. If this doesn't work, then check your cables and video source, then consult the **Troubleshooting** section of this manual. Remember to close the **MOVIE CAPTURE** window before adjusting your cables.

## Disk Performance

The **DISK PERFORMANCE** is a test of your system's ability to handle the sustained, completely uninterrupted throughput of digital video information.

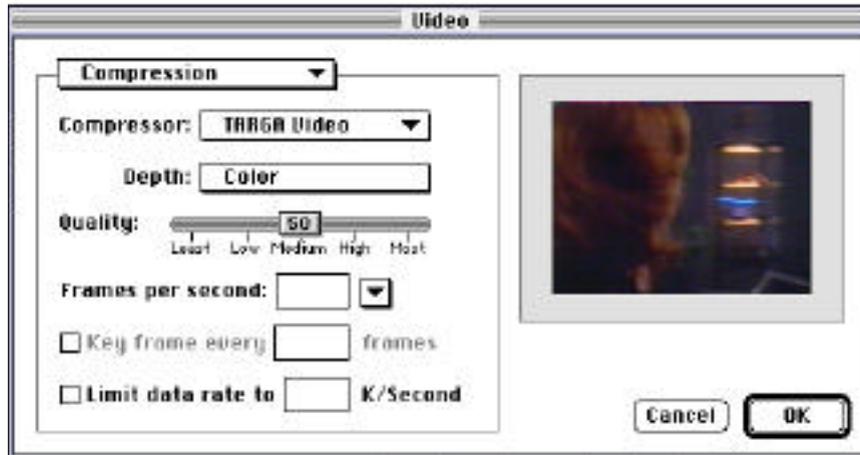
— Select **DISK PERFORMANCE** and **TEST** all of your drives.



This test is accurate to within about  $\pm 15\%$ . Drive performance tests that measure different kinds of data will show different results. Performance will vary depending on the type of TARGA board being used and the disk being evaluated.

## Compression

—Select COMPRESSION.



—Set the COMPRESSOR to TARGA VIDEO and leave the number of FRAMES PER SECOND set at **30** (NTSC), **25** (PAL), or at “Best” (blank). For now, set the QUALITY at 100% and do not limit the data rate.

As you gain a working knowledge of the TARGA 2000, you might want to experiment with the relationship between the LIMIT DATA RATE and QUALITY slider settings. Used in combination, these tools can give you some real power and flexibility to achieve the best trade-off of image quality vs. storage space.

“**Compression Quality**” and “Limit Data Rate” (limit data rate is more widely known as **Dynamic-Q** or Adaptive Compression) are discussed in Chapter 1 of this manual.

Truevision Technical Support’s **FaxBack** and many **Online services** have more documentation available on the topics of disk performance, SCSI cards, and drives.

## TARGA Video Fields

If you are using a TARGA 2000 DTX, RTX, or DTX there will be an option on the TARGA Video Fields dialog for “Resolution.” For DTX and RTX, set the resolution to 640 x 480 for NTSC, or 768 x 576 for PAL. For SDX, set the resolution to 720 x 486 for NTSC, or 720 x 576 for PAL.



## Image

These settings allow you to adjust your incoming video. Try changing some settings to see the effect.



—Click **DEFAULTS** to revert the image settings to those shown above, then **OK** to exit the **VIDEO INPUT...** dialog.

**Note:** If Component RGB, Component RGB-Sync, or Component YUV is selected as source input, only the Brightness and Contrast sliders are active. Sharpness is not available with the TARGA 2000 DTX, RTX or SDX.

## Recording Settings

Pull down the **MOVIE CAPTURE** menu and select **RECORDING SETTINGS...** The Recording Settings... dialog is a good place to start when troubleshooting video capture problems.



—NTSC users with a standard TARGA 2000 should **RECORD AT: 640 x 480** or **648 x 486**; users with a TARGA 2000 Pro or SDX should **RECORD AT: 720 x 486**.

—PAL users with a standard TARGA 2000 should **RECORD AT: 768 X 576**; PAL users with a TARGA 2000 Pro or SDX should **RECORD AT: 720 x 576**.

**Important:** *If you are using Adobe Premiere 4.2 or greater, leave Conform Movie off.*

—**REPORT DROPPED FRAMES** is a popular option, and a good way to zoom in on a realistic throughput. Keep it checked — it will bring up a **MOVIE ANALYSIS** window immediately if the clip you are capturing contains dropped frames.

—**ABORT ON DROPPED FRAMES** will cause recording to stop if frames aren't captured correctly.

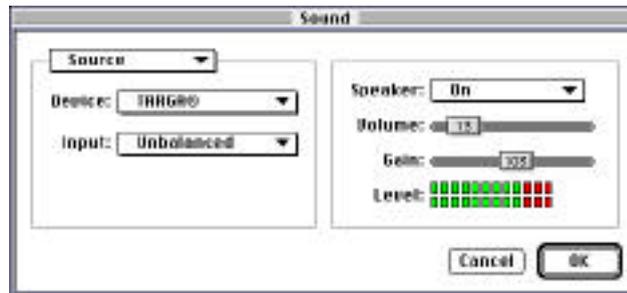
—**AUDIO BLOCK SIZE**, if available, should be set to **1/2 SECOND**.

—**POST-COMPRESS VIDEO**, **RECORD TO RAM**, and **DECODE BURNED-IN TIMECODE** should all be unselected. Most TARGA 2000 users will never need to use these options.

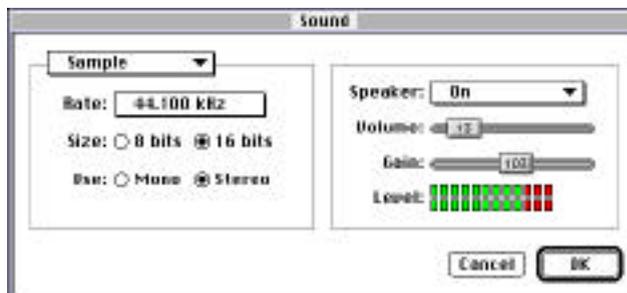
—Close the **Recording Settings** box.

## Sound Input

- Pull down your **MOVIE CAPTURE** menu. If **SOUND OFF** is checked, select it once to reactivate the sound.
- Pull down the **MOVIE CAPTURE** menu again and select **SOUND INPUT....** This is a series of pop-up dialog boxes similar to the **Video Input...** series. The relevant options are **SOURCE** and **SAMPLE**.
- Set the **SOURCE** for **TARGA**. If you have a TARGA 2000 RTX, you should also select either “Balanced” (RCA jacks used) or “Unbalanced” (XLR jacks used).



- Under **SAMPLE**, set the **SPEAKER** to either **ON** or **OFF** while recording, and the sample rate for **44.100 kHz**, with a size of **16 Bits**, and **Stereo** selected. Leave the **Gain** at **50**, and adjust the **Volume** to a comfortable level.



- Click **OK** to save your settings.

## Saving Capture Settings

Before recording, save all your new settings. This will give you a safety net, so that you can experiment with all of the different options and still have functional settings available.

- Under the **MOVIE CAPTURE** menu, select **SAVE SETTINGS..** The usual Save dialog box will appear.
- Enter your Adobe Premiere folder and create a folder called **Capture Settings**. Name your capture settings “TARGA Near Composite,” then click **SAVE**.

## Recording

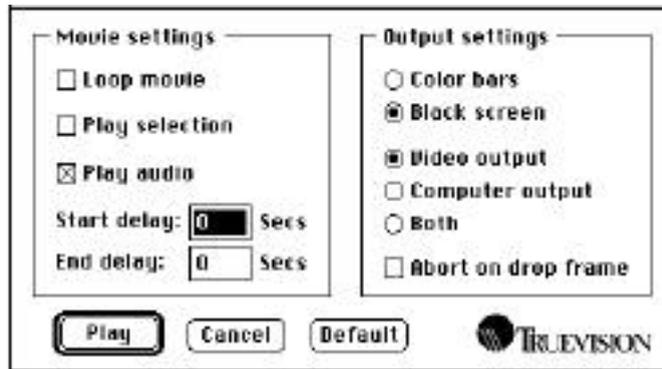
- Click **RECORD** in the **MOVIE CAPTURE** window. Let it record for about ten seconds. Click the mouse button to stop.

## TARGA Export To Video

**TARGA EXPORT TO VIDEO** should be used in place of Premiere’s **PRINT TO VIDEO** when playing back a “contained” movie. **TARGA EXPORT TO VIDEO** will support “Preview” from Premiere’s Construction window.

Your newly recorded movie will be in a **CLIP** window.

- Pull down the **FILE** menu to the **EXPORT** submenu, then press and hold the “Option” key and select **TARGA EXPORT TO VIDEO....** The following dialog opens:



- LOOP MOVIE** makes the entire or selected portion of the movie play continuously when selected. If you select **LOOP MOVIE**, type command-period to stop the looping.
- PLAY SELECTION** plays the active part of the Construction window (the yellow bar at the top -- more about that later) or the area between the In and Out points in Premiere's **Clip** window.
- PLAY AUDIO** allows you to turn the audio track off or on when previewing transition effects or video-only effects.
- The **START DELAY** is the number of seconds between the time the Color Bars go away and the movie starts.
- The **END DELAY** is the delay time after the movie ends as well as the number of seconds between each time the movie is looped (i.e., the number of seconds the output is black after playing a clip.)
- When "Start Delay" has a value, then you can choose to either output **COLOR BARS** (70% saturation) or **BLACK SCREEN** before the movie begins. The default is black.

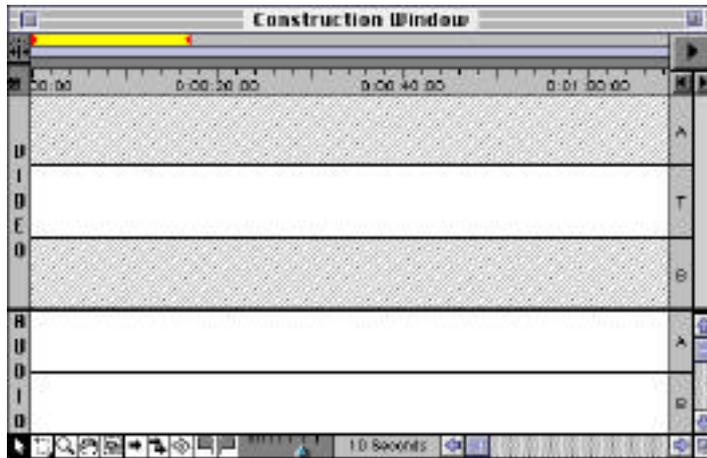
- VIDEO OUTPUT**, **COMPUTER OUTPUT**, or **BOTH** refer to the screens which the movie will be displayed on. If you choose **VIDEO OUTPUT**, the movie will only be visible on the video output screen. If you choose **COMPUTER OUTPUT**, the movie is only visible on the desktop display screen. If you choose **BOTH**, the movie will be played back on both screens simultaneously. In all cases, the video is centered in the output display.
- Leave **ABORT ON DROP FRAME** unchecked. When checked, it will terminate playback early if your system does not keep up with the movie.

## Playback and Save Clip

- Click **PLAY** at the bottom of the **EXPORT TO VIDEO** dialog. The TARGA 2000 will play back the video at full size. Select **SAVE** within the **FILE** menu to save the clip.
- RECORD**, **EXPORT TO VIDEO**, play back, and **SAVE** a few clips. Experiment with the settings in the **VIDEO INPUT...** dialog boxes, and experiment with the settings in the **RECORDING SETTINGS...** dialog.
- Try using the Movie Analysis tool to analyze a clip by selecting **MOVIE ANALYSIS** from the floating command palette when the clip is active. While quite useful, this tool isn't always accurate -- use it with caution!
- When you are ready to move on, pick your two favorite clips and close the rest. You will use these two to make a movie.

## Lesson 3: Making Movies

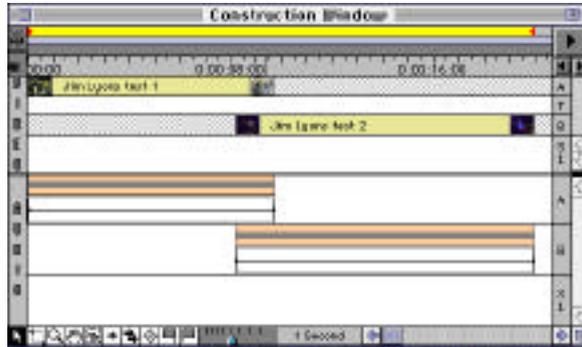
Movies are assembled in the Adobe Premiere Construction Window: If necessary, pull down the **Construction Window** menu and select **CONSTRUCTION**.



Movie clips need to be added to the Construction Window.

- Find and double-click one of the movie clips that you saved.
- Add a clip to the project by placing your cursor on the picture in the **CLIP** window. The cursor will turn into a hand. When you click and hold on the picture, the hand will close (you have 'grabbed' the clip). Now drag it to the Construction window and drop the clip on Track A. Slide the clip all the way to the left of the window. If Premiere asks you if you want to save the file before you add it to the Project, click **OK**.
- Close this **CLIP WINDOW**.
- Do the same thing with your other captured clip, dropping it onto Track B. Leave a short overlap with the movie in clip A.
- Close this **CLIP WINDOW**.

- At the top of the **CONSTRUCTION WINDOW** is a yellow bar. Drag the end of the yellow bar to stretch it to where the movie clip on **Track B** ends. Your Construction Window should have two overlapping clips and look similar to this:



The TARGA transition plug-ins for Adobe Premiere use a type of acceleration technically known as “Bottleneck Acceleration.” The interface to these transitions are through the standard Premiere transitions -- TARGA just makes them go faster. The TARGA 2000 Plug-ins diskette contains a Read Me file with more information about TARGA transitions.

The following transitions have been accelerated by Truevision:

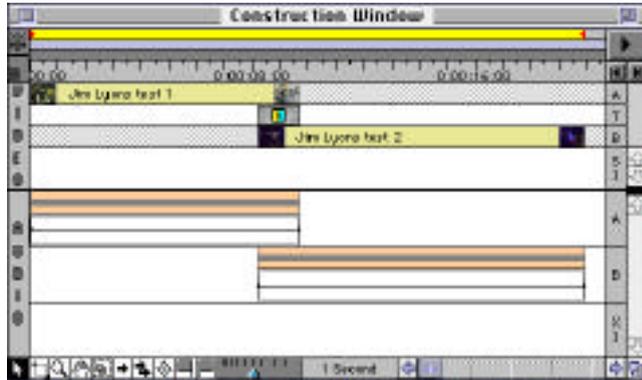
- Barn Doors
- Center Merge
- Center Split
- Checkerboard (8 box)
- Cross Dissolve
- Cross Stretch
- Direct
- Inset
- Iris Cross
- Iris Square
- Push
- Slide
- Spin
- Split
- Stretch
- Swap
- Take
- Wipe
- Zoom

- To add a transition, pull down the **WINDOWS MENU** and choose **TRANSITIONS**.

- Drag the **WIPE** transition onto the **CONSTRUCTION WINDOW** and into the “T” (for Transition) track. Slide it to the area where the two clips overlap.

**Important:** *If the transition doesn't snap exactly to this area, move the cursor over the edge of the transition. It will change to a stretch tool. Adjust the edge of the transition to line it up with the edges of the clips.*

Your Construction window should look similar like this:



Now it is time to compile the movie.

## Compiling Your Movie

The TARGA transitions can be compiled at full size and full motion in less time than it would take to create a 160 x 120 preview with a regular Premiere transition.

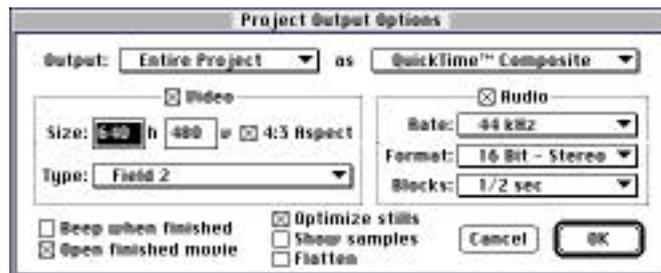
—To compile all or part of a movie, go to the **MAKE MENU** and choose **MOVIE...** If the following dialog appears, click **Continue**.



The MAKE MOVIE dialog should open: (Note: The output and compression information that you see may be different.)



Click on the OUTPUT OPTIONS... button to open the PROJECT OUTPUT OPTIONS dialog.



This dialog gives you control of many aspects of your finished movie. The OUTPUT OPTIONS on the left can be either “Work Area” or “Entire Project.” The “Work Area” is the section of the Construction Window with the yellow bar across the top. Think of the yellow bar as a selection tool, like a lasso or marquee.

For future reference, the TARGA 2000 gives better results using **Field 2** for NTSC movies. **Field 1** is usually correct for PAL movies.

—Select **ENTIRE PROJECT**.

Your other **OUTPUT OPTIONS** are **QuickTime™ Composite** or **QuickTime™ Movie**. A QuickTime™ Composite isn't recompressed when the movie is made. A QuickTime™ Movie is recompressed. What difference does it make? Compiling time is significantly shorter when you make a composite.

Why would you need to make a QuickTime™ Movie? Because the TARGA 2000 can only give you high quality, real-time playback of movies that are compressed with **TARGA VIDEO**. If you are trying to make a movie out of clips that aren't in that format, such as animation, graphics files, or older MoviePak® or VideoVision® files, you have to convert them to the TARGA Video format using the QuickTime™ Movie option.

—Select **QUICKTIME™ COMPOSITE**.

—Be sure that **AUDIO** and **VIDEO** are both selected, and that the rest of the selections are as shown above. *A common cause of long compiling times in Premiere is an **Audio Output, Rate, or Format** that is different from that in the captured material.* Then click **OK**.

—Click the **COMPRESSION...** button. The following dialog box appears:



This is similar to the **Compression** dialog that you saw in the “Video Input...” section.

**Important:** *Make sure that the settings you use here matches the **settings used** when capturing your movie.*

- Click on **OPTIONS...** at the bottom of the **COMPRESSION SETTINGS** dialog. Clicking on the **OPTIONS...** button brings up the following:



- Use the same settings that you used for **TARGA Video Fields** within Movie Capture Video Input. Click **OK** to close the **Compression Options** dialog.
- Click **OK** for **COMPRESSION SETTINGS**, name your movie, and click **SAVE** to begin compiling.

**Note:** If you ever want to compare TARGA transitions to regular Premiere transitions, highlight and delete the **Wipe** icon from the construction window. Make the project again and use a transition that has not been accelerated by Truevision. Making the movie with an unaccelerated Premiere’s transition will take about 8 times longer.

- To view your movie, make sure that the **CLIP WINDOW** that contains your new movie is selected, then select **File | Export > (hold Option key) TARGA Export to Video**. The box should be filled in as it was when you left it the last time you used it.

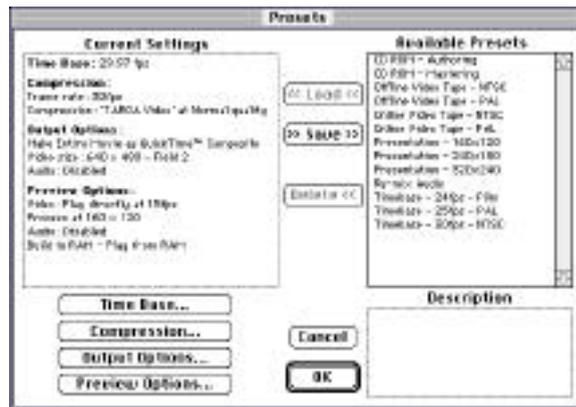
- Click **PLAY**.

**Note:** If you don't hold down the Option key, the box will not be displayed and the movie will begin to play.

## Making A Preset

Before you continue, you need to save your project settings into a Preset. You may recall that when you opened Premiere it asked you what kind of project you wanted to make, and it offered you a list of different project types. Each type of project that was offered to you was a Preset.

- To make a Preset that you can use for future projects, click on one of the Adobe Premiere windows that is open (but not the Clip Window) pull down the **MAKE** menu, and choose **PRESETS....** The following dialog will be displayed:



- If the first selection, **TIME BASE**, is at 30 fps, click the **TIME BASE...** option and select 29.97 fps. You just set the **Compression** and **Output Options**. Don't worry about the **Preview Options**. As you will discover, it is faster to make a full-size movie using TARGA transitions than it is to build a small-sized Preview.
- Click on the **>> SAVE >>** button. When the dialog comes up, you are asked to name and describe your Preset. Fill it in. An example is as follows:



You can use this Preset to make TARGA 2000 movies in the future by pulling down the **FILE** menu to the **NEW** submenu and selecting **NEW PROJECT...** You will have several Presets to choose from, including the one you just created. Feel free to make as many Presets as you have project types.

—Click **OK**, then **OK** again to close the Preset dialog.

This ends the tutorial.

For those looking for a more comprehensive introduction to Adobe Premiere, *Adobe Premiere Classroom in a Book*, from Adobe Press (ISBN #1-56830-119-7) is highly recommended.

# Answers To Frequently Asked Questions

Listed below are the most frequently asked questions about the TARGA 2000 received by our Technical Support staff. The answers to each question are in italics. Please read this section to become more familiar with our product, and possibly save yourself a phone call to Truevision Technical Support.

1. How do I optimize video capture and playback in Adobe Premiere?

*See “Chapter 1: Basic Concepts and Tips.” Also, follow the guidelines mapped out in the TARGA 2000 PCI tutorial. If you still have problems please contact our Technical Support.*

2. What are the best drives for use with the TARGA 2000? How do I configure them? Why and when do I need a SCSI card or disk array? Which SCSI card is best for use with the TARGA 2000?

*Most hard drive manufacturers build up their storage solution out of 3 main components; drive mechanisms, SCSI cards, and SCSI software. The recommended list for PCI Drive Arrays, PCI SCSI Cards, and Formatting & Striping Software is available from Truevision Technical Support’s FaxBack or Online services for the TARGA 2000. The document you need is called “Optimizing Hard Drives For Digital Video.” See the “Truevision Customer Satisfaction Center” in Appendix A of this manual for contact information.*

3. What data rates do I need for (Composite/S-VHS/BetaCAM) I/O? What compression ratio does this equate to?

*For the hobbyist or semiprofessional videographer, Composite VHS quality 2.0 - 3.5 MB/sec should be enough to meet the requirements. This will yield approximately 13:1 to 8:1 compression ratios which will introduce some artifacts to the image, but is considered satisfactory for most of the Composite VHS market.*

*The industrial videographer working with Hi 8 or S-VHS mediums will need a data transfer rate of 3.0 to 4.5 MB/sec which will yield approximately 8:1 to 6:1 compression. This is considered almost invisible to the eye, and is similar in medium degradation to a single generation loss in analog medium. For the broadcast professional data throughput is a critical variable. For the broadcaster, the data rates should sustain 4.5 - 9.0 MB/sec (150 kb/frame to 360 kb/frame). This will yield approximately 6:1 to 2:1 compression ratios. Preferably you should be working with a first generation BetaCAM SP or RGB source. As a general rule, the cleaner your input signal is, the cleaner your video capture is going to be. Motion JPEG compression is sensitive to noise introduced in multiple tape dubs. Whenever possible, use the first generation source as your capture material.*

4. Which is better to use, the Quality slider or the Limit Data Rate function?

*For CA/V or Pro users, we recommend tuning to somewhere in the 3800-5400k range and setting the Quality slider at "Most." For RTX or DTX users, setting the Quality slider at "Most" and leaving the Limit Data Rate unchecked usually works best. Also, the use current size option does not cause a falloff in the Data Rate for Movies captured with RTX/DTX.*

5. What QuickTime applications have been tested with the TARGA 2000?

*The majority of our nonlinear testing is being done on Scitex SphereOus™, Adobe Premiere, and Adobe After Effects. For animation and 3D rendering, we tested Electric Image, Strata Studio Pro Blitz, Specular Infini - D, and Avid Elastic Reality. For multimedia authoring we tested Macromedia Director.*

6. What machine control software is supported?

*For machine control we have tested Diaquest Timecoder and Pipeline Pro VTR. We also tested MediaMotion 2.6 from Videonics.*

7. Can the TARGA 2000 output broadcast quality video?

*TARGA 2000 meets all the NTSC and PAL timing requirements for both square pixel and non-square pixel CCIR 601 resolutions. TARGA 2000 DTX and TARGA 2000 RTX is within 1.5% differential phase and 2% differential gain. Refer to “**Appendix B: Technical Specifications**” for additional details.*

8. How do I export a movie to videotape if it is larger than 2 GB?

*At 4.5MB/sec you can lay off close to 7:40 to tape in one pass. Due to the file limit constraints, we require that you lay off your video in multiple steps. The easiest approach is to fade to black at the end of each section you lay off. Pipeline Technology (tel. 808 233 1120) has a frame accurate record to tape plug-in to work with TARGA 2000 which will allow for frame accurate insert editing and make this process easier. (This solution requires a VCR with built-in machine control capabilities.)*

*You can also use “**TARGA Export To Video**” and play from the Construction window. The “**TARGA Player**” can also be used. The TARGA Player can assemble ‘Play Lists’ which will allow movies to be played across multiple disks and assembled at play time.*

9. What audio applications have been tested with the TARGA 2000?

*SoundEdit 16 1.0.1, Deck 2.5, and DigiTrax 1.2.*

10. How do I use the TARGA 2000 with third party audio cards?

*We have done limited testing with the DigiDesign Pro Tools card. You can mix your audio tracks down to AIFF or Sound Designer II files in the Pro Tools software which can then be imported into Premiere. Contact DigiDesign for more details.*

11. In my Record window, the live video is offset to one side. How do I fix this?

*In Premiere, use the video cropping utility in the Movie Capture window to crop the video to whatever resolution desired. Use the **Horizontal Phase Adjustment** found in “Video Input” from the Movie Capture menu.*

12. Why can't I capture square pixel PAL 768 x 576 resolution on my TARGA 2000 Pro PCI?

*The TARGA 2000 Pro PCI has been optimized for CCIR 601 (non-square pixel ) resolution. By definition that means 720 x 486 for NTSC and 720 x 576 for PAL. TARGA 2000 DTX and RTX supports all square and non-square pixel resolutions.*

13. Do you support the UMAX, Power Computing, or DayStar Macintosh clones?

*We have done some testing on Power Computing, UMAX, and DayStar Macintosh clones. Additional information is available from Truevision Technical Support's FaxBack or Online services for the TARGA 2000 for Macintosh Version Watch. See the “**Truevision Customer Satisfaction Center**” in Appendix A of this manual for contact information.*

14. Can you read Media 100 files?

*We have no plans at this time to support reading the Media 100 file format.*

15. What are the best settings for Previews in Premiere?

*Follow the guidelines mapped out in the **TARGA 2000 PCI tutorial**. If you still have problems please contact our **Technical Support**.*

16. I keep getting a white screen when I try to capture video.

*Follow the guidelines mapped out in the [TARGA 2000 PCI tutorial](#). If you still have problems please contact our [Technical Support](#).*

17. What kind of color bars does the TARGA 2000 generate?

*The TARGA 2000 Control Panel outputs 100% saturated bars when “Color Bars” or “Video Off” is selected. TARGA Player and the TARGA Export to Video (in Premiere) generate 70% saturated bars when “Color Bars” is selected.*

**Note:** The TARGA 2000 Pro, DTX, and RTX do not generate color bars when Component YUV is selected within the TARGA Control Panel (i.e., Video Output).

18. What do the following the error codes mean that I get in Premiere?

- 2209 *TARGA monitor not in millions or movie capture size selected is bigger than desktop resolution (e.g., desktop set to 640 x 480 and selected movie capture recording set to 648 x 486).*

- 2010 or -8966

*Be sure that you are recording at current size. These errors can occur if the play-through window is set at 640 x 480, but the recording is set at 648 x 486.*

*Make sure you are in the dedicated video out mode.*

*If you are capturing at 320 x 240 or below, do not limit data rate.*

*Ensure the compression module is secure. The compression module is the component connected to the last 1/3 of the card. Press firmly with thumb and fore finger. Be sure to ground yourself off prior to touching the card.*

# TARGA 2000 Troubleshooting

Occasionally, you may have a problem while using your Truevision TARGA 2000 card. This Appendix covers potential situations and describes steps you can take to identify and correct them. TARGA 2000 troubleshooting in this Appendix is subdivided into the following categories:

- General Problems
- **Monitor Problems**
- **Video Input Problems**
- **Video Capture Problems**
- **Recording Problems**
- **Audio Problems**
- **Playback Problems**

**Important:** Additional troubleshooting information discovered after this manual was printed can be found in the TARGA 2000 “Read Me” file within the TARGA 2000 folder.

## General Problems

### Audio and Video Not in Sync

1. Check your disk performance with TARGA 2000’s “**Disk Performance**” feature and then limit the data rate to match your disk.
2. Check your “**Video Input**” settings and “**Audio Input**” selections.
3. Make sure your sound output matches the rate of the recorded audio.

### Low Memory Situations

— Low finder memory can cause numerous problems including poorly captured movies, no audio in movies and crashes. Be aware that there should be at least 2 MB of memory available for the finder at all times.

## **Poor Performance**

- For best performance be sure to have a Bus Mastering SCSI Accelerator card with Fast and Wide drives attached.

## **Movie-Making Application (e.g., Adobe Premiere) Is Inconsistent**

- Sometimes, when an application is forced to stop abruptly, it can be left in an “unknown” or “confused” state. Evidence of this might be incorrect default settings or failure in simple operations.
  - If you suspect this has happened, quit the application. Open the Preferences folder (in the System folder) and drag that application’s Preferences file to the trash. The next time you launch the application, it will create a new Preferences file.

## **Can’t Open TARGA Control Panel**

1. Reboot and check that TARGA INIT shows up during the INIT Parade. (The INIT will not be seen if “Display Start-up Icon” in the TARGA 2000 Control Panel has been disabled.)
2. Check that the card is properly installed.
3. Check that the TARGA Control Panel is in the Control Panel folder of your current System Folder.

## **Get “Device In Use” warning after attempting to change input or output setting in Sound Control Panel.**

- Makes sure Movie Capture window of your video application is not active.

## Monitor Problems

### Screen Is Black on Boot Up

1. Check the card installation. Make sure it is firmly inserted into the PCI slot.
2. Check the cables. Make sure they are plugged into both the card and monitor.
3. Make sure your Monitor runs at a supported resolution.
4. Remove TARGA Preferences.
5. Check Extension Manager (or similar software) to verify that TARGA Control Panel is not deselected for installation.
6. Reinstall the TARGA software.
7. Call [Tech Support](#).

### Composite Monitor Black

1. Check Monitor power.
2. Check cables.
3. Check TARGA Control Panel.

### Screen Has Greenish Tinge

- Disable “Sync On Green” in Screen Shift TARGA Control Panel.

## **Screen Not in Center of Monitor**

1. Check Screen Shift in TARGA Control Panel.
2. Use Horizontal shift control of monitor.
3. Check the resolutions supported by your monitor.

## **Video Input Problems**

### **Live Video Does Not Work**

1. Verify that you have all of the software components correctly installed.
2. Make sure the software is set to match your video format and source signal.
  - NTSC, PAL, or SECAM format and RGB, S-Video, or Composite signal.
3. Check your video source.
  - Some video cameras shut off automatically after a few minutes.
4. Check the cable from the video source to your multimedia card.
5. Make sure to set the display to “Millions of Colors.”

### **Can't Get Video in the Preview or Capture Windows**

1. Check that the video source is turned on.
2. Check cabling.

3. Check that the Source and Video In settings match those of your capture application (e.g., Composite, S-Video, PAL, NTSC etc.).
4. Check that the output monitor is attached. TARGA 2000 will put video on the output monitor primarily. If you see video on the output monitor, but not on the internal desktop, it's just an indication that the application isn't allowing the copying of the frames back to the desktop. Recording and playback will still happen.

## **Video Capture Problems**

### **Capture Not Working**

1. Check that the video source is turned on.
2. Check cabling.
3. Check that the Source and Video In settings match those of your capture application (e.g., Composite, S-Video, PAL, NTSC etc.).
4. Make sure to set the display to “Millions of Colors.”
5. Check that the output monitor is attached. TARGA 2000 will put video on the output monitor primarily. If you see video on the output monitor, but not on the internal desktop, it's just an indication that the application isn't allowing the copying of the frames back to the desktop. Recording and playback will still happen.

## Recording Problems

### TARGA 2000 Records Nothing or a Few Frames

1. Verify that all necessary software is installed
  - Make sure you are using System 7.5.5 or greater.
  - Use the version of QuickTime that was provided with the TARGA 2000 software.
  - Make sure that only one copy of QuickTime is in the Extensions folder.
  - The application you are using to record must be compatible with the QuickTime version being used in the computer.
2. Check that the TARGA 2000 card is correctly installed on a compatible multimedia card.
  - Verify the multimedia card is compatible.
3. Check the video signal.
  - You should see video playing before you try to record.  
(May depend on the application.)
  - Make sure to set the display to “Millions of Colors.”
4. If you have more than one multimedia card, make sure the correct card is selected.
  - You must record from the TARGA 2000 card.

## Movie Doesn't Record at Full Speed

1. Use TARGA compression format.
2. If you have more than one multimedia card, make sure the correct card is selected.
3. Make sure outdated Apple QuickTime software is removed from the System Folder.
  - Using the TARGA Installer to install the software should prevent multiple copies from accumulating.
4. Review the optimizing considerations described in Chapter 1, “**Basic Concepts and Tips.**”

## Drop Frames on Record

1. Check your disk performance with TARGA 2000's “Disk Performance” feature and then limit the data rate to match your disk.
  - Refer to “**Video Input**” settings in Chapter 3.
2. Adjust “Limit Data Rate” and/or “Quality” slider until captured video is free of dropped frames.
3. Record to the fastest array or drive for “Scratch Disks” within “Preferences” in the File Menu.

## **Audio Problems**

### **Audio Output Crackles or Pops**

- Check your disk performance with TARGA 2000's “**Disk Performance**” feature and then limit the data rate to match your disk.

### **No Sound on Playback**

- Make sure sound output device in Sound Control Panel is set to TARGA.

### **Sound Will Not Record**

- Make sure sound input in your application is set to the correct source.

### **Sound too Low When Recording**

1. Turn speaker “On” in Sound Out of your application.
2. Turn volume up in Sound Out of your application.

### **Audio Is Distorted or Clipping**

1. Turn Gain down in Sound Input of your application.
2. Turn off “Conform Movie” in Adobe Premiere.

## Playback Problems

### Movie Doesn't Play at the Full Frame Rate or Pauses Intermittently

1. Verify that the movie is in the TARGA video format. If it is not, convert it to the TARGA video format. (Note: Simply converting the movie will not change its frame rate.)
2. Check that the movie is playing entirely on the screen of the TARGA-connected display system.
  - If even a portion of the movie window is on an adjacent screen, the software goes into still-decompression mode.
3. Check that the Video Control Panel is set for the correct playback format: NTSC or PAL
4. Review [Optimizing Movie Playback Rates](#) in Chapter 1, “Basic Concepts and Tips.”
5. Verify the movie frame rate.
6. Free as much RAM as possible. (Quit other applications.)
7. Check that AppleTalk is turned off and all unnecessary Extensions and Control Panels are disabled.
8. Verify that the movie is playing from the drive connected to the SCSI Accelerator Card.

### Application Won't Playback Captured Movie

- Check that the application's playback feature is correctly set.

## Movie Doesn't Look Right During Playback

1. Check TARGA Control Panel settings.
2. Make sure to set the display to “Millions of Colors.”

## Playback Is Very Slow

1. Make sure to set the display to “Millions of Colors.”
2. Move any windows overlapping the playback window (even palettes).

## Drop Frames on Playback

- Check your disk performance with TARGA 2000's “**Disk Performance**” feature and then limit the data rate to match your disk.
  - Refer to “**Video Input**” settings in Chapter 3.

## Problems with Taped Output

1. Check cabling.
2. Make sure you have a Time Based Correction unit between the card and your recording device.

# Truevision Customer Satisfaction Center

You can contact the Truevision Customer Satisfaction Center for additional help. **Before contacting the Customer Satisfaction Center, please complete the Troubleshooting Questionnaire (next page) and have the answers ready when you contact us.**

Online services are available 24 hours per day. Customer Satisfaction Center personnel are available Monday through Friday 9:00 A.M. to 6:00 P.M. Eastern Standard Time (1300 - 2200 Universal Time/GMT).

## On-Line Services

Internet: support@truevision.com

FTP Site: ftp.truevision.com

WWW Site: http://www.truevision.com/

DirectAccess BBS: (317) 577-8777  
Settings: 8 bits, no parity, 1 stop bit  
Up to 28,800 baud

## Fax Inquires

U.S. and Canada: (317) 576-7770

Worldwide: (317) 594-2900

## Telephone Contact

Sales Information, Technical Support, FaxBack System

U.S. and Canada: (800) 522-TRUE {8783}

Worldwide: (317) 577-8788

**Note:** The FaxBack System is an automated system that allows you to obtain immediate information on products, price lists, bulletins, and upgrades.

## Mailing Address

Truevision Customer Satisfaction Center  
7340 Shadeland Station  
Indianapolis, IN 46256-3925

## Troubleshooting Questionnaire

Please have answers to the following questions before calling for additional help:

1. What are the serial numbers, model numbers, and software version numbers of the Truevision products that you have installed on your computer?
2. Which Macintosh computer are you using with the product listed in item 1 of this questionnaire (Power Macintosh 9500, Power Macintosh 8500, etc.)?
3. What version of System are you using?
4. How much memory (RAM) is installed on your computer?
5. What INITs, Control Panels, Extensions, and/or Desk Accessories (DAs) do you have installed on your computer?
6. What other hardware is connected to your computer (multimedia cards, monitors, network cards, hard drives, etc.)? Please include all relevant model numbers, ROM version numbers, and software version numbers, where applicable.
7. What are the steps to duplicate the problem?

# TARGA 2000 Specifications\*

## Hardware Specifications

### General

Card Size .....	12.3" x 4.2"
Bus Interface.....	1 PCI slot (non-shared PCI interrupt)
Power Consumption .....	CA/V: 24 Watts max    Pro: 27 Watts max
	DTX: 28 Watts max    RTX: 34 Watts max
	SDX: 30 Watts Max
Regulatory Compliance .....	FCC Class B and CE

### Memory (CA/V and Pro)

Frame Buffer Memory.....	4 MB VRAM
Offscreen Memory.....	16MB DRAM

### Memory (DTX, RTX, and SDX)

Frame Buffer Memory.....	4MB VRAM
Offscreen Memory.....	32MB DRAM

### Desktop Display (CA/V, Pro, DTX, RTX, and SDX)

Desktop Resolutions .....	1152 x 870, 1024 x 768, 800 x 600, 640 x 480
Vertical Refresh Rate .....	Max 75 Hz (non-interlaced)
Output Signals .....	R,G,B, H-Sync, V-Sync
Connector .....	HD 15-pin VGA Female Receptacle
VGA Loopthrough.....	Analog
DAC Resolution .....	10 bits for each primary
Gamma Correction Tables.....	256 x 10 bits for each primary
Pixel Depth .....	24-Bit (True color)

### Video Processor

Video Resizer .....	2D filter
Video Compositor .....	256 levels
Video Ports .....	3 (Video In, Video Out, Compression)
Video Port Bandwidth .....	640 x 480 x 30 fps (37 MB/sec)
	780 x 576 x 25 fps (44 MB/sec)
Hardware BLIT .....	CA/V and Pro: 100 MB/sec
	DTX, RTX, and SDX: 160 MB/sec

\* All specifications subject to change without notice.

## On-Board DSP (Digital Signal Processor)

Processor.....AT&T 3210 Floating Point DSP  
Processor Clock Speed .....50 MHz maximum  
Local Processor Memory.....128 KB SRAM  
Memory Bandwidth.....CA/V and Pro: 237 MB/sec  
DTX, RTX, and SDX: 320 MB/sec

## Video Input Formats

Video Inputs .....Composite and Y/C (S-Video)  
Pro adds: GBRs, GsBR and Y, B-Y, R-Y  
(NTSC Betacam, SMPTE/EBU)  
DTX/RTX adds: GBRs, GsBR, Y,B-Y,R-Y  
(NTSC Betacam, SMPTE/EBU, M II)  
SDX is SMPTE 259-M compliant only

Video Standards.....CA/V: square pixel only NTSC or PAL  
Pro/DTX/RTX adds: CCIR-601 support  
SDX is CCIR-601 compliant only

Video Resolution .....CA/V: 640 x 480, 648 x 486 NTSC square pixel  
768 x 576 PAL square pixel  
Pro/DTX/RTX adds: 720 x 486 NTSC CCIR 601  
720 x 576 PAL CCIR 601  
SDX is: 720 x 486 60 Hz CCIR 601 (NTSC)  
720 x 576 50 Hz CCIR 601 (PAL)

ADC Resolution .....8 bits

Sampling Structure .....CA/V: 4:2:2 YCbCr  
Pro/DTX/RTX: 4:4:4 RGB  
4:4:4 YUV subsampled to 4:2:2 YCbCr

Color Space Conversion .....YUV to 24-bit RGB (8:8:8)

Gamma Correction Tables.....256 x 8 bits for each primary (all models)

Genlock Input .....Genlock to input video (all models)

## Video Output Formats

Video Outputs.....	CA/V: Composite and Y/C (S-Video) Pro adds: GBRS, GsBR, Y,B-Y,R-Y (NTSC Betacam or SMPTE/EBU N10 calibrate specific) DTX and RTX adds: GBRS, GsBR, Y, B-Y, R-Y, and Alpha (key) channel (NTSC Betacam, MII, and SMPTE/EBU N10) SDX is SMPTE 259-M compliant only
*Composite CA/V: .....	RCA 1 Volt p-p, 75 Ohm
*S-Video (4 Pin DIN).....	Y Signal: 1 Volt p-p, 75 Ohm C Signal: 627 mV p-p, 75 Ohm
*Component .....	Y Signal: 1 V, p-p 75 Ohm R-Y Signal: $\pm$ 350 mV p-p, 75 Ohm B-Y Signal: $\pm$ 350 mV p-p, 75 Ohm
Genlock Input .....	Genlock to video input (Black Burst or Composite) or via external
Video Standards.....	CA/V: NTSC or PAL Pro/DTX/RTX adds: CCIR-601 support SDX is CCIR-601 compliant only
Video Resolution .....	CA/V: 640 x 480, 648 x 486 NTSC square pixel 768 x 576 PAL square pixel Pro, DTX, RTX adds: 720 x 486 NTSC CCIR-601, 720 x 576 PAL CCIR-601 SDX is: 720 x 486 60 Hz CCIR 601 (NTSC) 720 x 576 50 Hz CCIR 601 (PAL)
Gamma Correction Tables.....	256 x 8 bits for each primary
DAC Resolution .....	CA/V: 10 bit Cv and Y/C Pro adds: 8 bit RGB, Betacam or SMPTE/EBU DTX and RTX adds: 8 bits each for RGB MII, Betacam and SMPTE/EBU have 10 bit Y resolution and 8 bit Alpha output SDX is SMPTE 259-M 8 bit and 10 bit
Sampling Structure .....	CA/V: 4:4:4 RGB Pro: 4:4:4 RGB and 4:4:4 YUV DTX/RTX: 4:4:4:4 RGBA and 4:4:4:4 YUVA SDX: 4:2:2 YUV

\*Output levels are based on NTSC 100% white 75% amplitude fully saturated bars.

## Video Performance (DTX and RTX)

Frequency Response .....	0-5 MHz $\pm 0.5$ dB max for each input and output <sup>†</sup> 5.5 MHz -1.5 dB max for each input and output <sup>†</sup>
Bandwidth.....	Greater than 6MHz @ -3dB with $\sin x/x$ compensation filter. Greater than 7MHz @ -1dB without filter.
Noise Floor .....	Greater than -65dB pk to rms captured single frame. Greater than -55dB pk to rms throughput.
2T Pulse (K factor) .....	<1% max
Differential Gain.....	<2% max
Differential Phase .....	<1.5 degrees max
(Spurious Free)	
Dynamic Range .....	$\pm 50$ dB min 55 dB Typ
(Chroma-Luma)	
Delay Variation .....	$\pm 15$ nsec max $\pm 10$ nsec Typ
Luma Non-Linearity .....	1.5% max 1% Typ
S/N Unweighted .....	-60 dB rms -67 dB rms Typ
S/N Weighted (NTC-7) .....	-65 dB rms -70 dB rms Typ

## Audio Input/Output

Audio Inputs .....CA/V and Pro: Two unbalanced input channels configured as  
L&R stereo channels with 20K nominal ohm input  
impedance, -10 dBu typical input level

DTX/RTX: Two balanced input channels configured as  
L&R stereo channels with 20k ohm input impedance,  
+4 dBu typical input level.

SDX: Digital AES/EBU compliant

Audio Outputs .....CA/V and Pro: Two unbalanced output channels configured as  
L&R stereo channels capable of driving a 600 ohm  
load to -10 dBu typical

<sup>†</sup>Output has  $\sin(x)/x$  correction and anti-aliasing filters

DTX/RTX: Two balanced output channels configured as  
L&R stereo channels capable of driving a 600 ohm  
load to +4 dBu typical

SDX: Digital AES/EBU compliant

ADC/DAC Resolution.....16 bits (all models)  
Sampling Rate .....Up to 48 kHz, 64X oversampling  
SDX 48 kHz, 44.1 kHz, 32 kHz  
Input Gain.....0 to 22.5 in 1.5 dB steps (all models)  
Output Attenuation .....0 to -45 dB in 1.5 dB steps (all models)  
Frequency Response .....20Hz to 22kHz at a sample rate of 48kHz  
(all models) 20Hz to 20kHz at a sample rate of 44.1kHz  
20Hz to 15kHz at a sample rate of 32kHz  
Crest Factor .....DTX/RTX: +14 dB min (peak to rms)

### **Compression/Decompression**

Standard.....Motion JPEG  
Processor.....LSI  
Processor Clock Speed .....30 MHz  
Fields per Second .....60 NTSC, 50 PAL  
Compressed Data Rate\* .....CA/V and Pro: Up to 5 MB/sec sustained on record  
7MB/sec sustained on playback

DTX: 15 MB/sec sustained on record and playback

RTX: 15 MB/sec (one stream) sustained on record  
15 MB/sec (total for two streams) sustained on playback

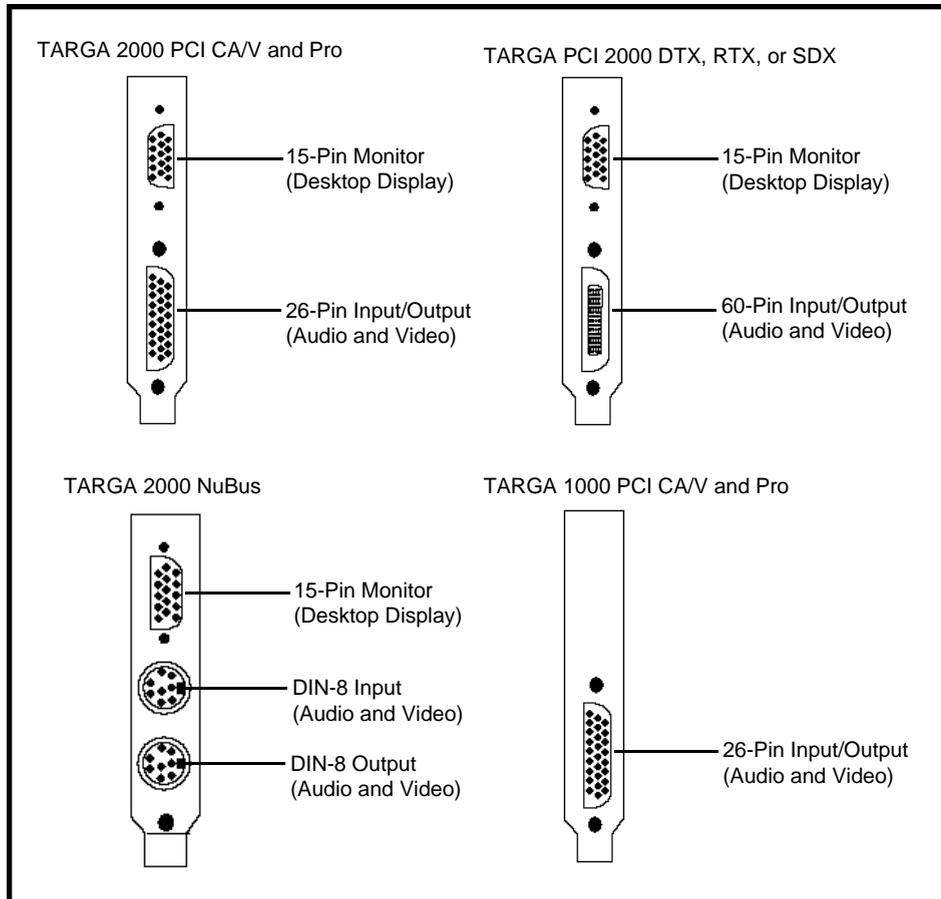
SDX: 15 MB/sec (one stream) sustained on record  
15 MB/sec (total for two streams) sustained on playback

\* This rate is obtainable when the TARGA 2000 is used with a SCSI-2 Fast and Wide accelerator card and A/V Drive Array. Refer to “[Optimizing System Hardware](#)” in “Chapter 1: Basic Concepts And Tips.”

## Appendix C: Cables And Connectors

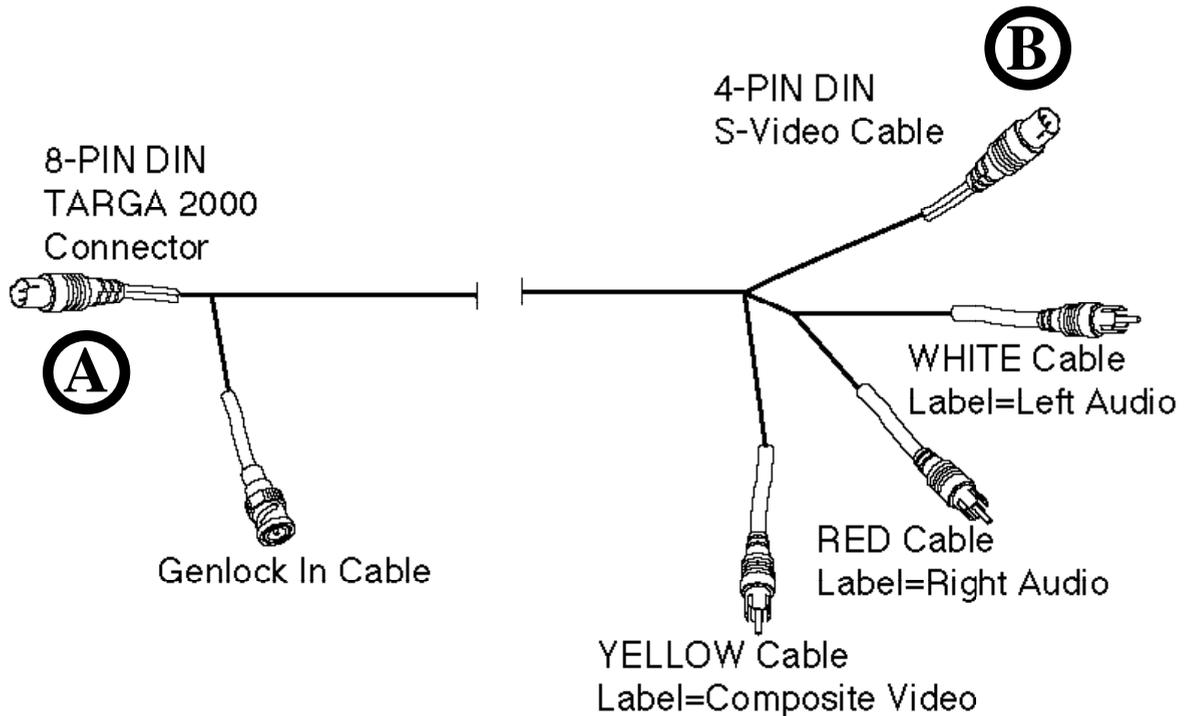
### TARGA 2000 Cables & Connectors

Input and output connectors on the TARGA 1000 and TARGA 2000 card bracket are as follows:



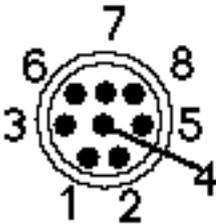
## CA-104A CABLE DIAGRAM

The diagram below shows the connector descriptions for Cable Number CA-104A. The pin assignments for connector A and connector B are discussed on the next page. (Two CA-104A cables are included in a TARGA 2000 NuBus board purchase.)



## CA-104A CONNECTOR DIAGRAM

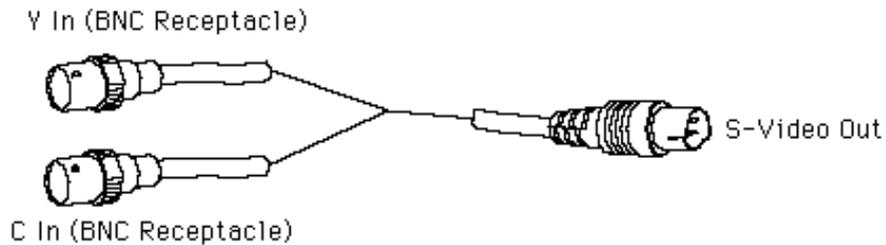
The diagram below shows the connector pin assignments for the 8-pin DIN connector (labeled A) and the 4 pin DIN S-Video connector (labeled B) on Cable Number CA-104A (described on the previous page).

<b>Connector A:</b>	<b><u>Pin Number</u></b>	<b><u>Signal</u></b>
	1	Left audio
	2	Right audio
	3	Genlock (Output Connector Only)
	4	Ground
	5	No Connect
	6	Composite
	7	Chrominance (C)
	8	Luminance (Y)

<b>Connector B:</b>	<b><u>Pin Number</u></b>	<b><u>Signal</u></b>
	1	Ground
	2	Ground
	3	Luminance (Y)
	4	Chrominance (C)

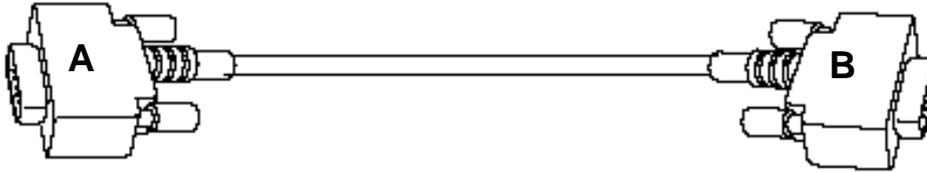
## CA-203 CABLE DIAGRAM

The following is a diagram of the CA-203 cable. Two of these cables are used with the TARGA 2000 Pro. The CA-203 cable is used for hooking the CA-207 cable to S-Video jacks. Attach the CA-203 BNC receptacle labeled “Y” (Luminance) to the CA-207 BNC connector labeled “Y.” Attach the CA-203 BNC receptacle labeled “C” (Chrominance) to the CA-207 BNC connector labeled “C.” The resulting output through the 4-pin connector on the CA-203 will be S-Video.

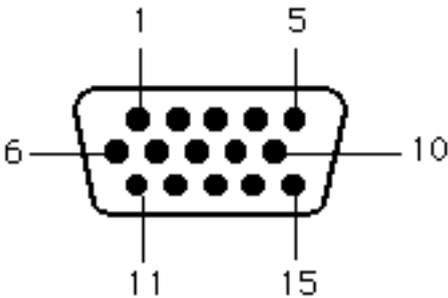


## CA-205 CABLE & CONNECTOR DIAGRAM

The diagram below shows the CA-205 Macintosh-to-VGA cable and connector pin assignments.



### Male Connector A:



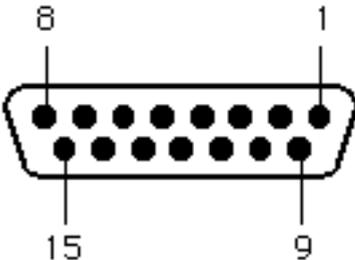
### Pin Number

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15

### Signal

Red  
Green  
Blue  
Monitor ID 2  
Ground  
Red Ground  
Green Ground  
Blue Ground  
No Connect  
Ground  
Monitor ID 0  
Monitor ID 1  
H-Sync  
V-Sync  
Composite Sync

### Female Connector B:



### Pin Number

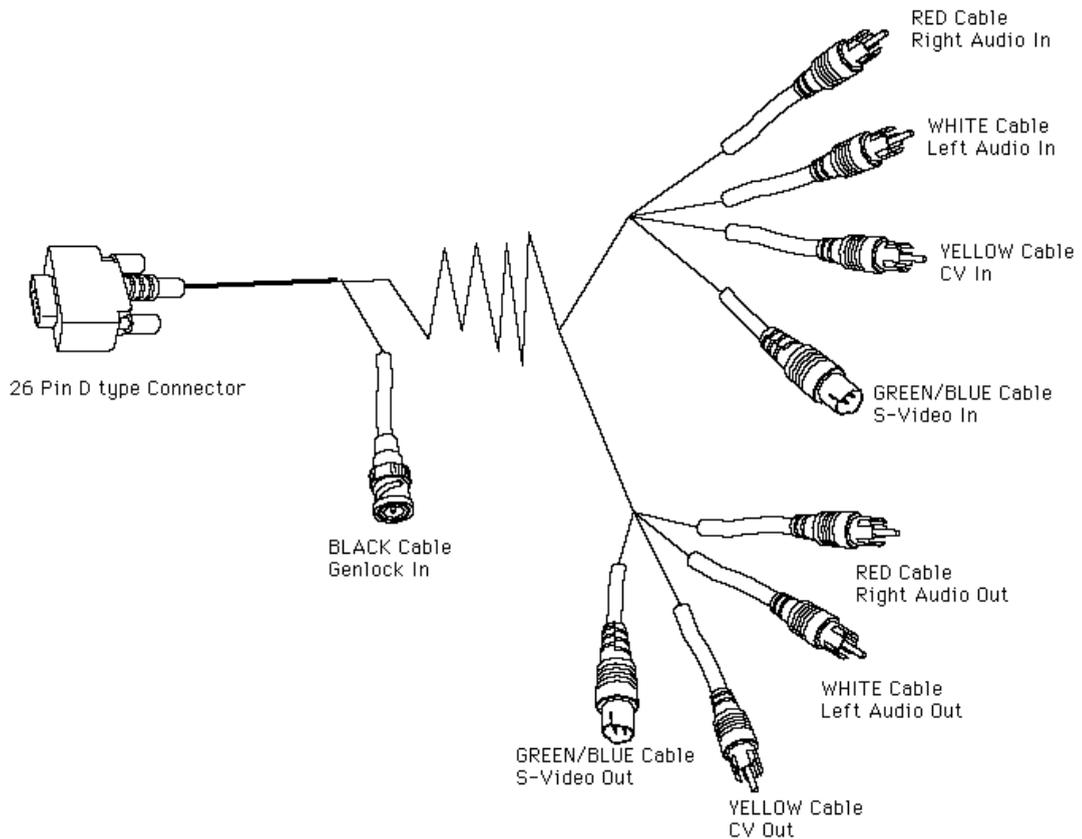
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15

### Signal

Ground  
Red  
Composite Sync  
Monitor ID 0  
Green  
Ground  
Monitor ID 1  
No Connect  
Blue  
Monitor ID 2  
Ground  
V-Sync  
Ground  
No Connect  
H-Sync

## CA-204 CABLE DIAGRAM

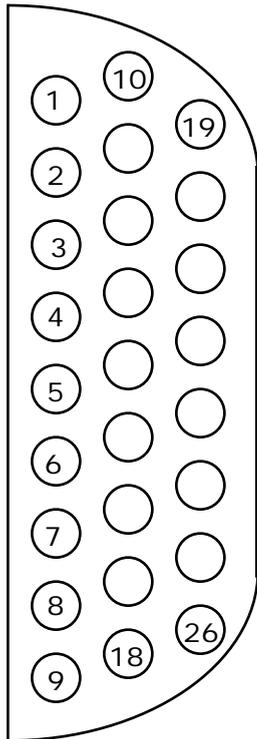
The diagram below shows the connector descriptions for Cable Number CA-204. The pin assignments for the 26-pin D-type connector are displayed on the next page. One CA-204 cable is included with the TARGA 2000 CA/V card.



## CA-204 CONNECTOR DIAGRAM

The diagram below shows the connector pin assignments for the 26-pin D-type connector on Cable Number CA-204 (described on the previous page).

### 26 Pin D-type Connector:



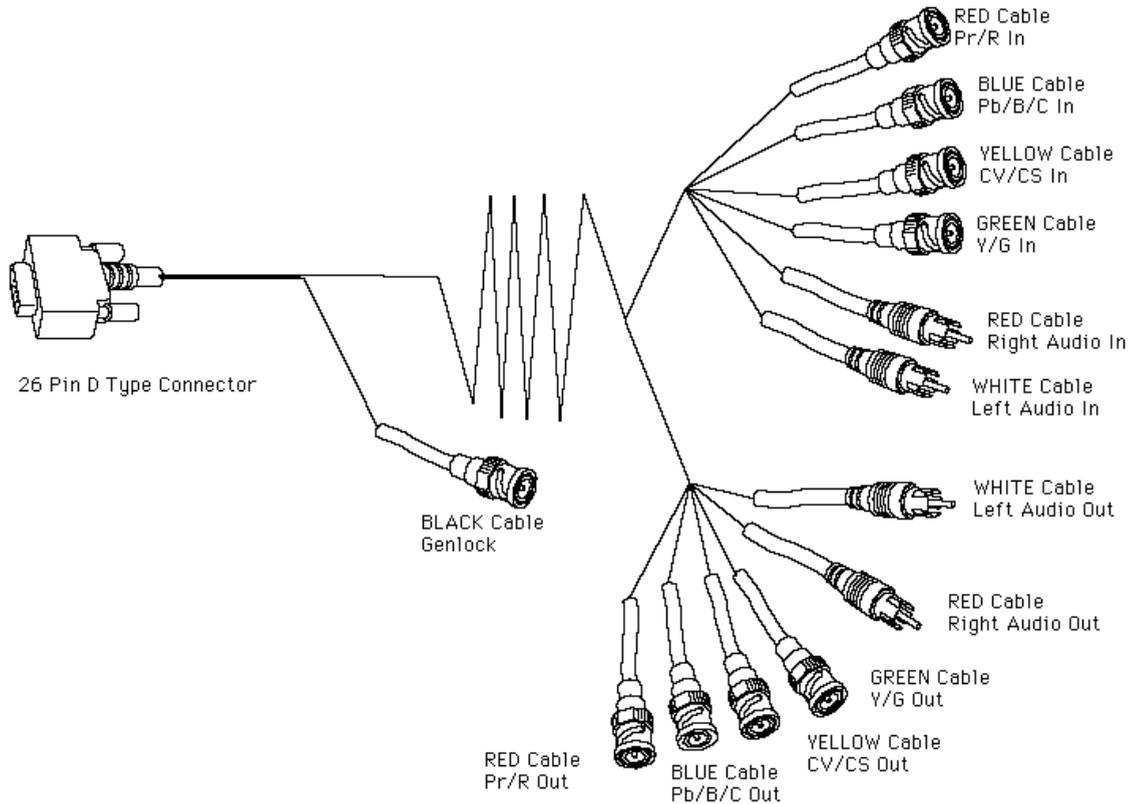
### Pin Number

### Signal

1	Right Audio In
2	Left Audio In
3	Spare
4	Genlock Input
5	Not Used
6	Not Used
7	Chrominance Input
8	Luminance Input
9	Composite Video Input
10	Audio Out Ground
11	Right Audio In Ground
12	Left Audio In Ground
13	Genlock Ground
14	Not Used
15	Not Used
16	Chrominance Ground
17	Luminance Ground
18	Composite Video Ground
19	Right Audio Output
20	Left Audio Output
21	Video Out Ground
22	Not Used
23	Not Used
24	Chrominance Output
25	Luminance Output
26	Composite Video Output

## CA-207 CABLE DIAGRAM

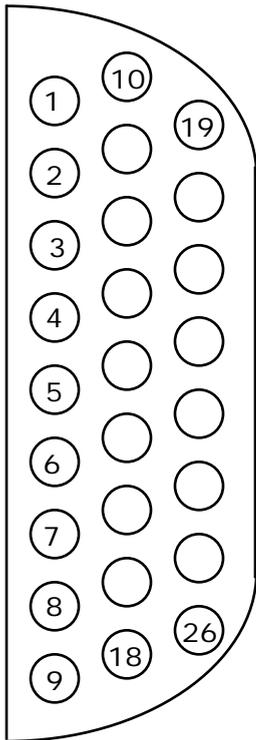
The diagram below shows the connector descriptions for Cable Number CA-207. This cable is used with the TARGA 2000 Pro, and replaces the CA-204. The pin assignments for the 26 pin D-type connector are shown on the next page.



## CA-207 CONNECTOR DIAGRAM

The diagram below shows pin assignments for the 26-pin D-type connector on the CA-207 cable (see previous page).

### 26 Pin D-type Connector:



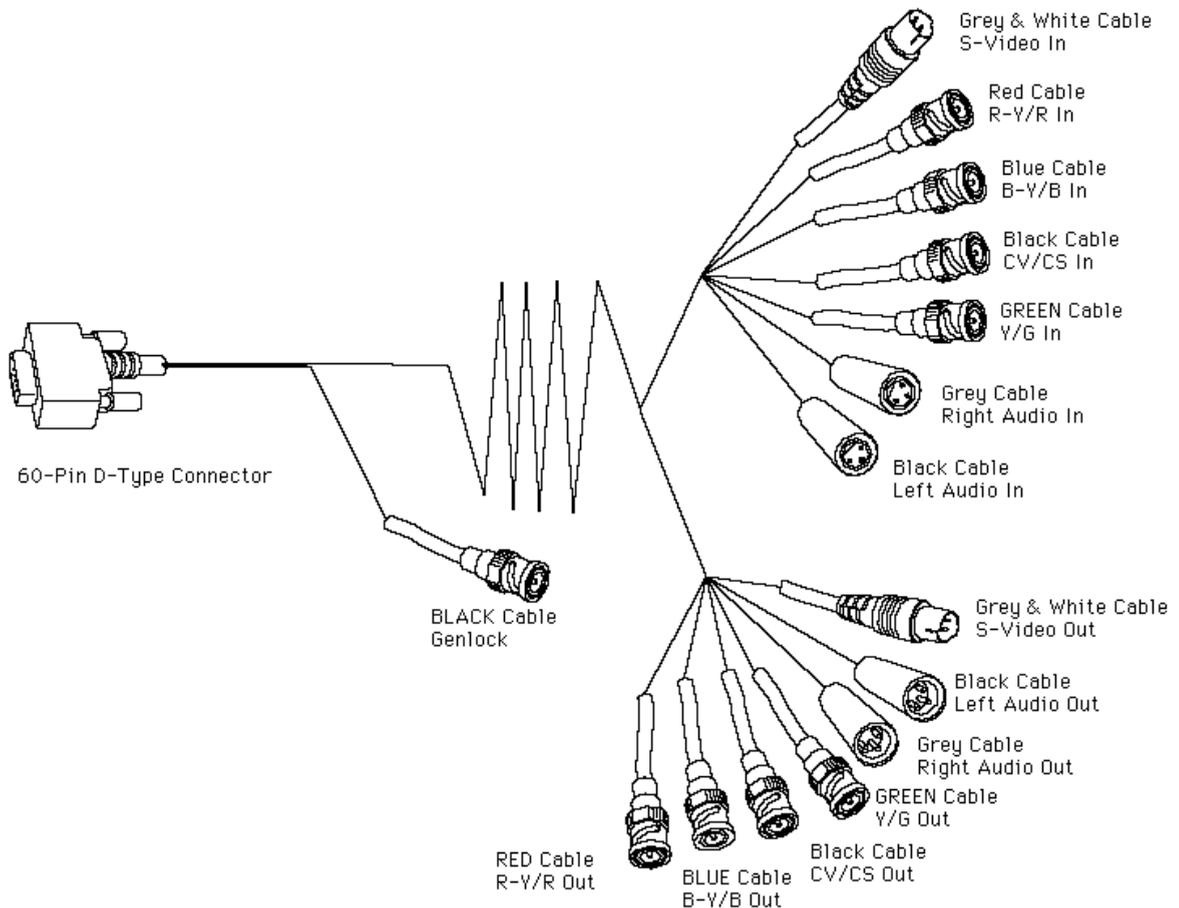
### Pin Number

### Signal

1	Right Audio In
2	Left Audio In
3	Spare
4	Genlock Input
5	Reserved
6	Pr/R Input
7	Pb/B/C Input
8	Y/G Input
9	CV/CS Input
10	Audio Out Ground
11	Right Audio In Ground
12	Left Audio In Ground
13	Genlock Ground
14	Reserved
15	Pr/R Ground
16	Pb/B/C Ground
17	Y/G Ground
18	CV Ground
19	Right Audio Output
20	Left Audio Output
21	Video Out Ground
22	Reserved
23	Pr/R Output
24	Pb/B/C Output
25	Y/G Output
26	CV/CS Output

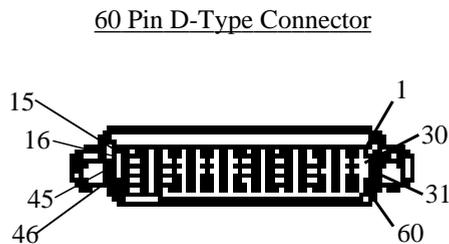
## CA-208 CABLE DIAGRAM

The diagram below shows the connector descriptions for Cable Number CA-208. This cable is used with the TARGA 2000 DTX or RTX. The pin assignments for the 60 pin D-type connector are shown on the next page.



## CA-208 CONNECTOR DIAGRAM

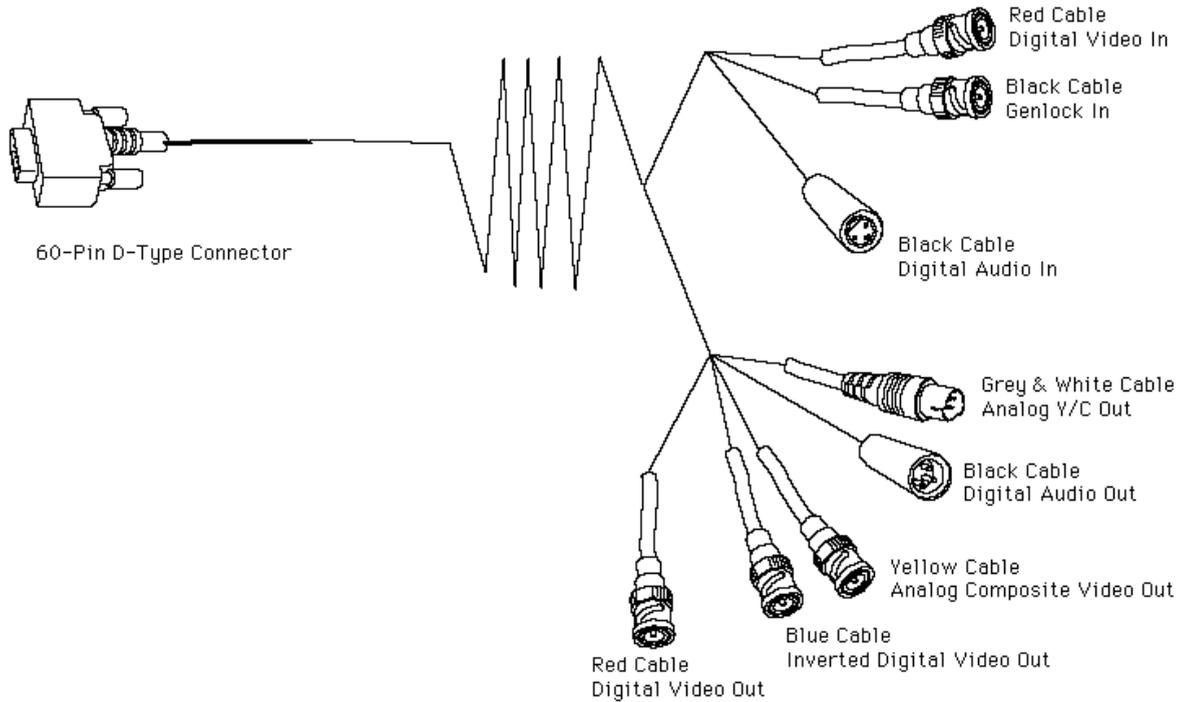
The diagram below shows pin assignments for the 60-pin D-type connector on the CA-208 cable (see previous page).



<u>Pin</u>	<u>Signal</u>	<u>Pin</u>	<u>Signal</u>
1	Right Audio In (+)	31	Right Audio Out (-)
2	Left Audio In (-)	32	Shield (Pins 31&60)
3	Left Audio In (+)	33	Shield (Pins 58&59)
4	Ground	34	Ground
5	Ref In	35	Shield (Pin 56)
6	I <sup>2</sup> C Clock	36	Shield (Pin 55)
7	CV In	37	Shield (Pin 54)
8	Ground	38	Ground
9	C In (S-Video)	39	Shield (Pin 52)
10	Ground	40	Ground
11	Y In (S-Video)	41	Shield (Pin 50)
12	Y/G In	42	Shield (Pin 49)
13	Ground	43	Ground
14	R-Y/R In	44	Shield (Pin 47)
15	B-Y/B In	45	Shield (Pin 46)
16	Shield (Pin 15)	46	B-Y/B Out
17	Shield (Pin 14)	47	R-Y/R Out
18	Ground	48	Ground
19	Shield (Pin 12)	49	Y/G Out
20	Shield (Pin 11)	50	Y Out (S-Video)
21	Ground	51	Ground
22	Shield (Pin 9)	52	C Out (S-Video)
23	Ground	53	Ground
24	Shield (Pin 7)	54	CV Out
25	Shield (Pin 6)	55	I <sup>2</sup> C Data
26	Shield (Pin 5)	56	Key Out
27	Ground	57	Ground
28	Shield (Pins 2&3)	58	Left Audio Out (+)
29	Shield (Pins 1&30)	59	Left Audio Out (-)
30	Right Audio In (-)	60	Right Audio Out (+)

## CA-212 CABLE DIAGRAM

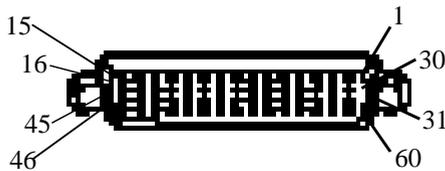
The diagram below shows the connector descriptions for Cable Number CA-212. This cable is used with the TARGA 2000 SDX. The pin assignments for the 60 pin D-type connector are shown on the next page.



## CA-212 CONNECTOR DIAGRAM

The diagram below shows pin assignments for the 60-pin D-type connector on the CA-212 cable (see previous page).

60 Pin D-Type Connector



<u>Pin</u>	<u>Signal</u>	<u>Pin</u>	<u>Signal</u>
1	Not Used	31	Not Used
2	Digital Audio In (-)	32	Not Used
3	Digital Audio In (+)	33	Shield (Pins 58&59)
4	Not Used	34	Not Used
5	Genlock In	35	Not Used
6	Not Used	36	Not Used
7	Digital Video In	37	Shield (Pin 54)
8	Not Used	38	Not Used
9	Not Used	39	Shield (Pin 52)
10	Not Used	40	Not Used
11	Not Used	41	Shield (Pin 50)
12	Not Used	42	Not Used
13	Not Used	43	Not Used
14	Not Used	44	Shield (Pin 47)
15	Not Used	45	Shield (Pin 46)
16	Not Used	46	Inverted Digital Video Out
17	Not Used	47	Digital Video Out
18	Not Used	48	Not Used
19	Not Used	49	Not Used
20	Not Used	50	Y Out (S-Video)
21	Not Used	51	Not Used
22	Not Used	52	C Out (S-Video)
23	Not Used	53	Not Used
24	Shield (Pin 7)	54	Analog Composite Video Out
25	Not Used	55	Not Used
26	Shield (Pin 5)	56	Not Used
27	Not Used	57	Not Used
28	Shield (Pins 2&3)	58	Digital Audio Out (+)
29	Not Used	59	Digital Audio Out (-)
30	Not Used	60	Not Used

# TARGA® 2000 Component Pro Upgrade

The standard TARGA® 2000 card can be easily upgraded to a TARGA® 2000 Pro. This is done by replacing the CA/V module (Composite Video and S-Video analog input) on the base with the Component Pro module (i.e., daughter card). The Component Pro module allows the TARGA 2000 base card to have the following analog input and output formats:

- Composite Video
- S-Video (Y/C)
- Component YUV (BetaCAM)
- RGB

**Note:** A standard A/V module can be identified by a smooth outer surface. A Component Pro module is identifiable by an assortment of chips, capacitors, and resistors on its outer surface.

The TARGA 2000 with Component Pro module allows you to select any of the following video standards as output:

- NTSC at 640 x 480
- NTSC 601 at 720 x 486 (NTSC CCIR-601)
- Full NTSC at 648 x 486
- PAL at 768 x 576
- PAL 601 at 720 x 576 (PAL CCIR-601)

## Upgrade Installation Procedure

### Component Kit Parts:

- One Component Pro Module
- 3/16" Hex Nut Driver
- Anti-Static Wrist Strap
- One CA-207 Cable
- Two CA-203 Cables
- Warranty Card

### Equipment Needed:

- One pair needle-nose pliers
- Small flat-head screwdriver

## 1. Put on Wrist Strap and Remove Hex-head Screws from base card.

Remove the lower 3/16" hex-head screws and washers (see Figure 1) from the TARGA 2000 base card with the supplied hex-nut driver. Unfasten the stand off from base card by lifting the corner of the module. If the stand off does not come out, it may be necessary to use needle-nose pliers to squeeze the tip.

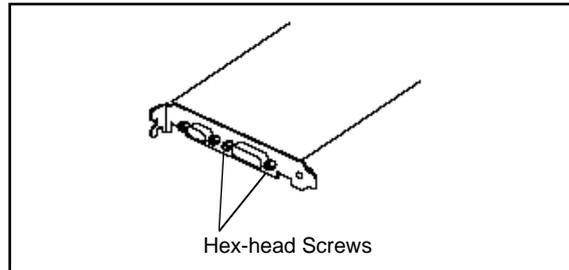


Figure 1. Remove Hex-head Screws

## 2. Remove CA/V Module from base card. Refer to Figure 2.

Once the stand off has been unfastened, pull module from base card to separate the video module connectors. Lift the card to clear the module's 26-pin D-type connector from the slot-connector bracket. Once removed, place the card in an antistatic bag for storage.

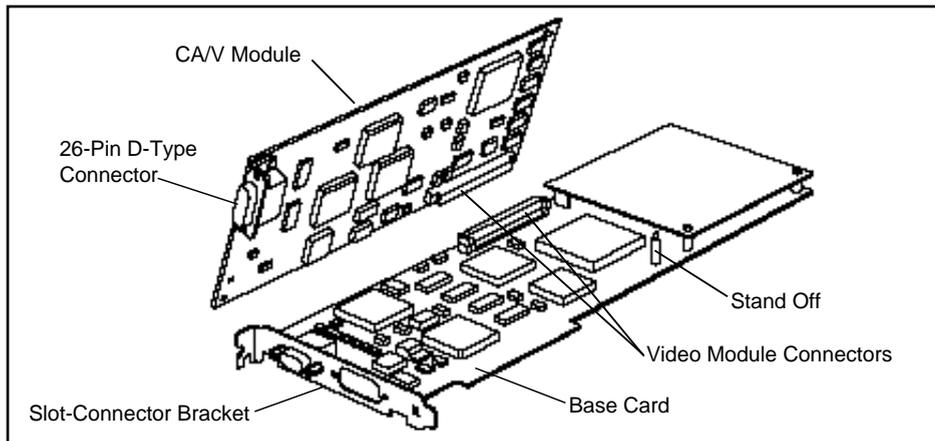


Figure 2. Remove CA/V Module

### 3. Attach Component Pro Module to base card.

Position the 26-pin D-type connector of the Component Pro module through the slot-connector bracket (see Figure 3). Seat the module connector and stand off to connect the Pro module to base card. Use the hex-head screws and washers to secure the Component Pro module.

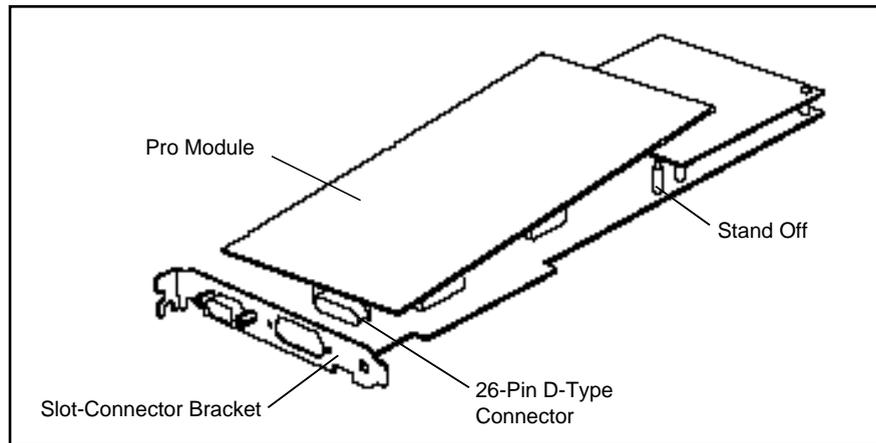


Figure 3. Attach Component Pro Module

### 4. Insert TARGA® 2000 with attached Component Pro module into computer expansion slot.

If necessary, refer to the “Installation Procedure” section in the Installation Guide.

### 5. Use CA-207 Cable to connect Input and Output Devices to Component Pro.

The CA-207 (see Figure 4) cable is designed to allow high quality video devices to be attached to your TARGA 2000 card. The BNC connectors are individually labeled on the cable for convenience. Your peripherals should have specifically labeled BNC connectors that should be labeled either R,G,B, YPbPr, or Y,R-Y,B-Y.

In the case of Y, R-Y, B-Y attach the Pb cable to the B-Y connector and the Pr cable to the R-Y connector.

The CA-207 cable also has BNC connectors for your component inputs and outputs, and RCA jacks for audio. Two CA-203 cables are provided for hooking the CA-207 cable to S-Video jacks if desired. The CA-203 (see Figure 5) consists of two BNC receptors combined to a 4-pin DIN S-Video adapter. The CA-207 connectors labeled Y and C should be hooked into the CA-203 cable connectors, also labeled for Y and C, to produce S-Video.

**Note:** Unused video inputs/outputs should be terminated to minimize cross talk between signals. Truevision recommends 75-ohm terminators.

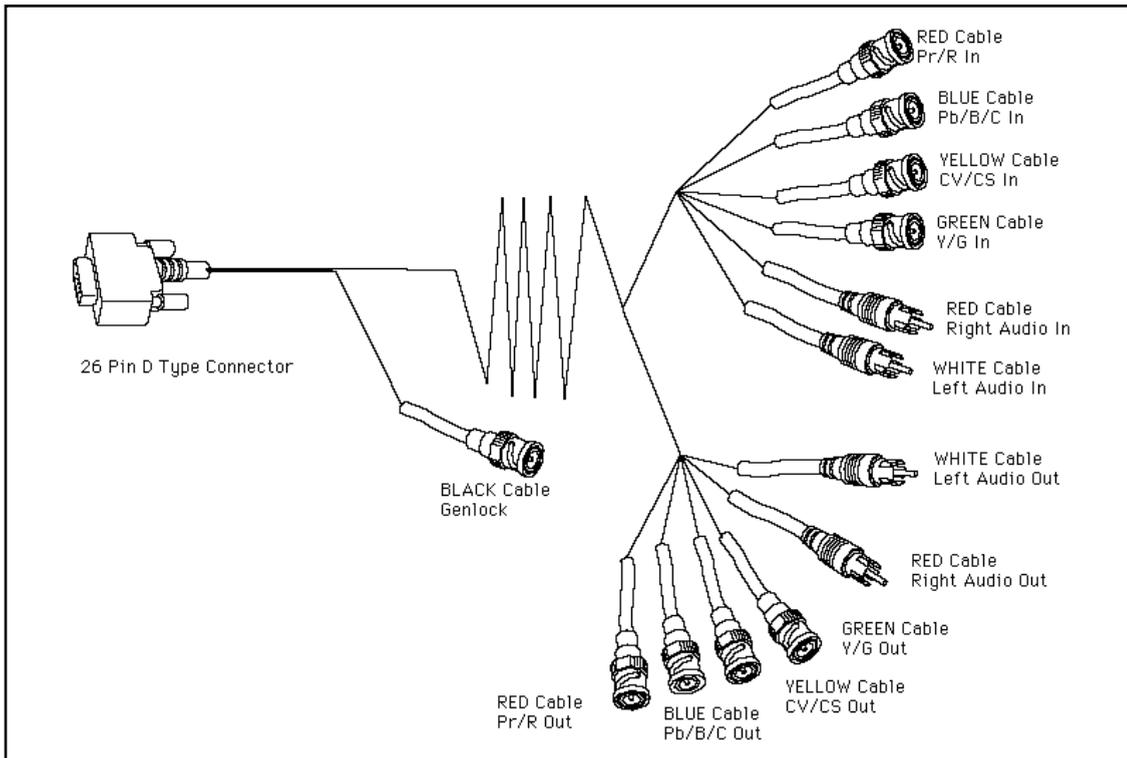


Figure 4. CA-207 Cable

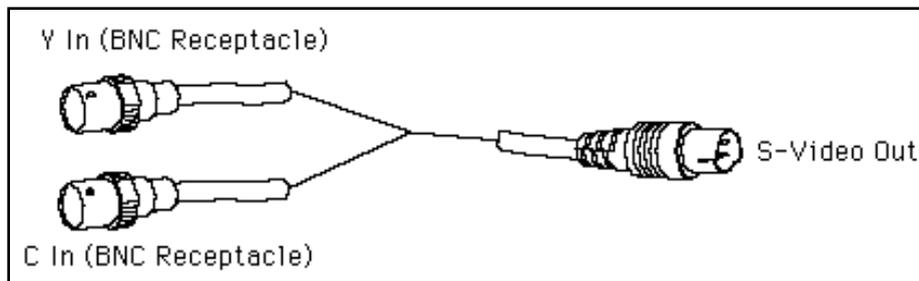


Figure 5. CA-203 Cable

## Appendix E: DTX To RTX Upgrade Installation

# TARGA® 2000 DTX To RTX Upgrade

The TARGA® DTX card can be easily upgraded to the RTX version. This is done by replacing the DTX Compression module on the TARGA base with the RTX module.

**Note:** A DTX module can be identified by its relatively smooth outer surface. An RTX module is identifiable by an assortment of chips, capacitors, and resistors on its outer surface.

## Upgrade Installation Procedure

### Component Kit Parts:

- One RTX Module
- Anti-Static Wrist Strap
- Warranty Card

### Equipment Needed:

- One pair needle-nose pliers

### 1. Put on Wrist Strap and remove DTX Module from base card. Refer to Figures 1 and 2.

Unfasten the stand offs from the base card by lifting each stand-off corner of the module. If a stand off does not come out, it may be necessary to use needle-nose pliers to squeeze the tip. Once the stand offs has been unfastened, pull the DTX module from its 120-pin base connector to separate the module from the base card.

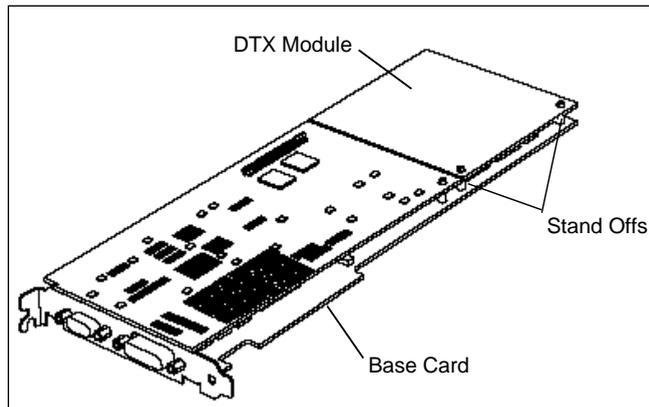


Figure 1. TARGA 2000 DTX

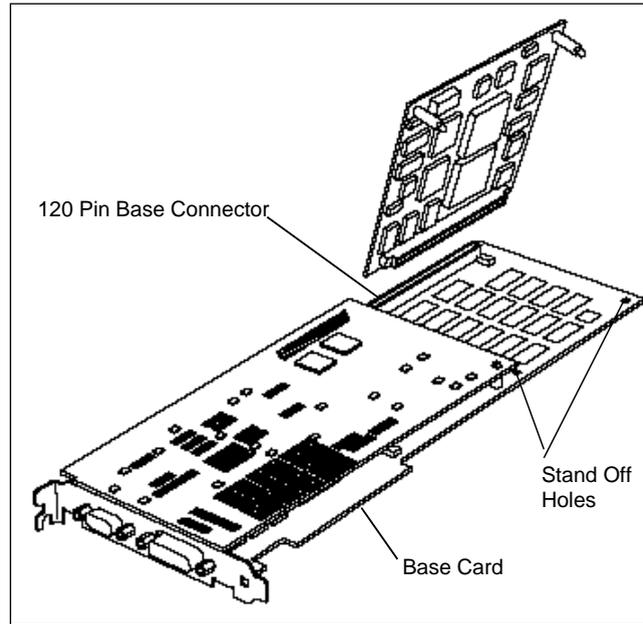


Figure 2. DTX Module Removal and RTX Attachment

**2. Attach RTX Module to base card. Refer to Figures 2 and 3.**

Align and then seat the RTX module connector and stand offs to the 120 pin connector and stand off holes on the base card.

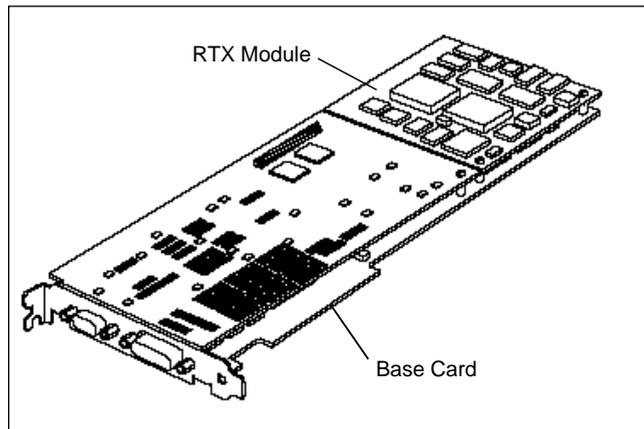


Figure 3. TARGA 2000 RTX

**3. Insert TARGA® card with attached RTX Module into computer expansion slot.**

If necessary, refer to the installation procedures in the Installation Guide.

# TARGA® 2000 RTX To SDX Upgrade

The TARGA® RTX card can be easily upgraded to the SDX version. This is done by replacing the RTX daughter card on the TARGA base with the SDX daughter card.

## Upgrade Installation Procedure

### Component Kit Parts:

- One SDX Daughter Card
- Anti-Static Wrist Strap
- Warranty Card

### Equipment Needed:

- One pair needle-nose pliers

- 1. Put on Wrist Strap and remove RTX daughter card from base card. Refer to Figures 1 and 2.**

Unfasten the stand offs from the base card by lifting each stand-off corner of the daughter card. If a stand off does not come out, it may be necessary to use needle-nose pliers to squeeze the tip. Once the stand offs has been unfastened, pull the RTX daughter card from its base connector to separate the daughter card from the base card.

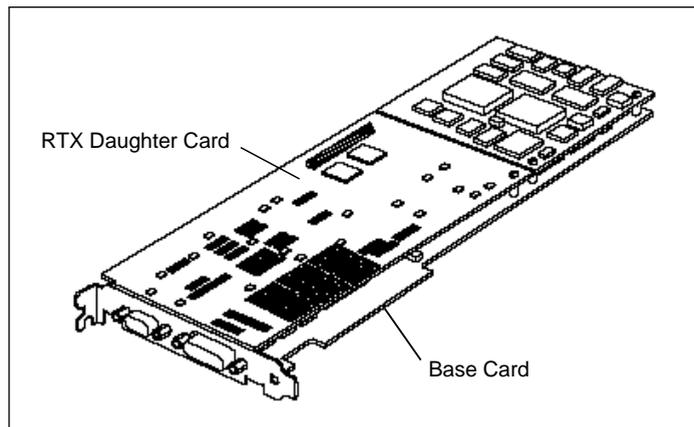


Figure 1. TARGA 2000 RTX

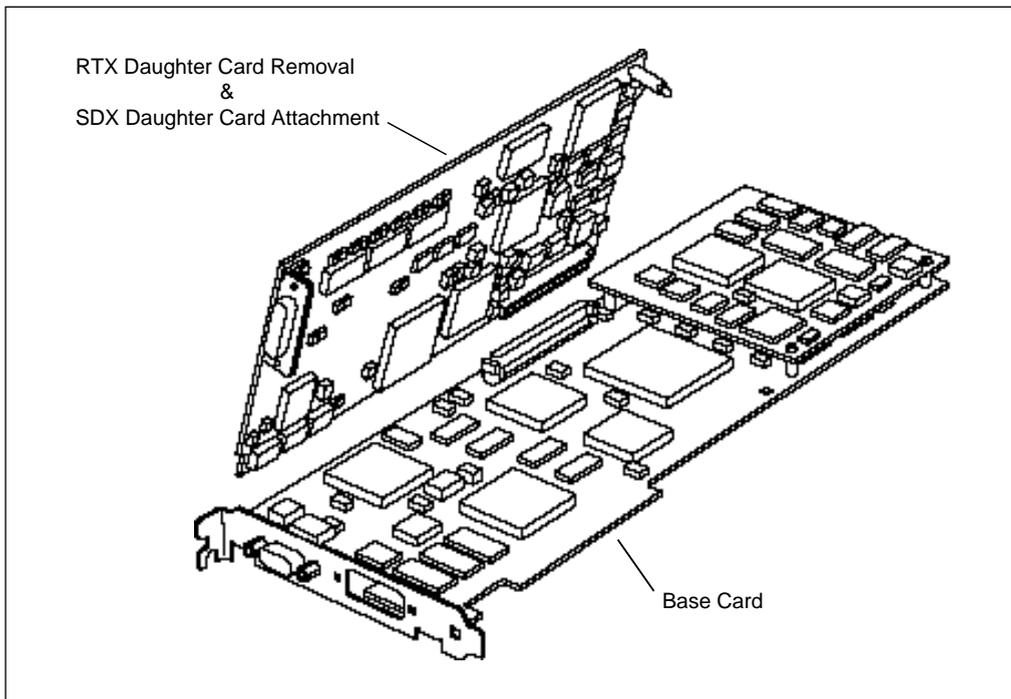


Figure 2. RTX Daughter Card Removal and SDX Attachment

**2. Attach SDX Daughter card to base card. Refer to Figures 2 and 3.**

Align and then seat the SDX daughter-card connector and stand offs to the connector and stand off holes on the base card.

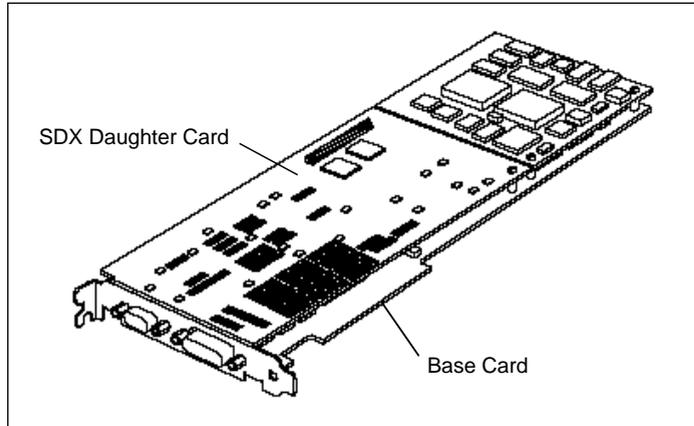


Figure 3. TARGA 2000 SDX

**3. Insert TARGA® base card with attached SDX daughter card into computer expansion slot.**

If necessary, refer to the installation procedures in the Installation Guide.

# Index

## Symbols

- ~ATM Control Panel 58
- 16-BIT
  - Audio Digital Sampling Data 50
- 32-Bit Addressing Mode 19

## A

- A/V Disk Drive Arrays 17
- A/V Drive Arrays 18
- Abort Dropped Frames 70
- Accelerated Transitions 54
- Accelerator 25
- Accelerator Cards 17
- Accelerator Control 34
- Achieving Best Performance 57
- Acrobat Viewer 11
- Adaptive Compression 22
- Adobe Acrobat 11
- Adobe Premiere 19, 52, 63
- AppleTalk 19
- ATTO Technology 17
- Audio Applications 85
- Audio Block Size 70
- Audio Cards 85
- Audio Input Selection 48
- Audio Inputs 57
- Audio Output 57
- Audio Problems 88, 95
- Audio Processor 103, 104

## B

- Balanced Audio 38, 48, 61, 71
- BetaCAM 21
- Bit Depth 49
- Black Level 43
- Bookmark Icon 11

- Bookmarked Index 11
- Both Fields 31
- Bottleneck Acceleration 76
- Brightness 43
- Broadcast Quality 85

## C

- CA-104A Cable 106
- CA-203 Cable 108
- CA-204 Cable 110
- CA-205 Cable 109
- CA-207 Cable 112
- CA-208 Cable 114
- CA-212 Cable 116
- Cables 13
- Cameras 21
- Capture Settings 72
- Card Size 100
- CCIR 601 Resolutions 85
- CD-ROM Drive 63
- Clear Screen 53, 54, 74
- Clip Window 75
- Color Bars 53, 73, 87
- Composite Video 21, 31
- Compression Dialog 80
- Compression Fields 47
- Compression Options 80, 81
- Compression Quality 21
- Compression Ratio 83
- Compression Settings 79, 80
- Compressor 67
- Construction Window 75, 76, 77
- Contrast 43
- Control Panel 26, 58, 60
- Customer Satisfaction Center 98

## **D**

- DayStar 86
- Decode Burned-in Timecode 70
- Defragment 19
- Depth Flipper 25
- Desktop Display 100
- Device Control 16
- Digitizer 45
- Disk Defragmentation 23
- Disk Drive Arrays 17
- Disk Performance 20
- Disk Performance Dialog 40, 41, 44
- Disk Performance Setting 39
- DRAM Allocations 27
- Drive Arrays 18
- Dynamic-Q 22

## **E**

- End Delay 53, 73
- Entire Project 78
- Even Fields 31
- Export To Video 23, 52, 74
- Extensions 60

## **F**

- FaxBack 57, 83, 86
- FCC Notice 8
- Field 31
- File Limit Constraints 85
- Filter 46
- Find Text Icon 12
- First Page Icon 11
- Format 30, 46
- Frame Capture 18
- Frame Capture Rate 18
- Frame Play Rate 23

- Frames 15
- Frames Per Second 19, 67
- Full Frame 31

## **G**

- Gain 71
- Gamma 31
- General Problems 88
- Genlock 25, 32
- Genlock Control 32
- Go Back Icon 11
- Go To Page Area 12

## **H**

- Hand (Scroll) 11
- Hard Drive 83
- Hardware Setup 57
- Hardware Specifications 100
- Horizontal Phase 33
- Horizontal Timing 35
- Hue 31, 42
- Hypertext Links 11

## **I**

- Image Compression 20
- Image Quality 17
- Image Setting 39, 42
- Information Control 25, 27
- Input Source Setting 45
- Installation 57

## **J**

- JPEG Compression 22

## L

Last Page Icon 11  
Limit Data Rate 67, 84  
Limitation Of Liabilities 10  
Limited Warranty 10  
Loop Movie 53, 73

## M

Machine Control Software 84  
Magnify 11  
Mailing Address 98  
Make Menu 81  
Make Movie Dialog 78  
Manual Overview 13  
Marquee 30  
Media 100 86  
Memory Control Panel 19, 59  
MIDI 16  
Monitor 57  
Monitor Problems 88, 90  
Monitor Resolutions 57  
Motion JPEG Compression 84  
Movie Analysis 74  
Movie Capture 70  
Movie Capture Menu 71, 72  
Movie Capture Window 64, 65  
Movie Playback 17  
Movie Playback Rates 23

## N

Next Page Icon 11  
NTSC 15, 17, 70

## O

Odd Fields 31  
Online Services 57, 83, 86  
Optimizing Image Quality 20  
Optimizing Movie Playback Rates 23  
Optimizing System Hardware 17  
Optimizing Video Capture Rates 18  
Options 38, 61  
Output Options 78, 81  
Overview 13

## P

Page Icon 11  
Page View Icon 12  
PAL 15, 17, 70  
Pan 11  
Pan Cursor 30  
PDF 11  
Pipeline Technology 85  
Play Selection 53, 73  
Playback Problems 88, 96  
Post-Compress Video 70  
Power Computing 86  
Preset 82  
Preview Options 81  
Previews Setting 86  
Previous Page Icon 11  
Print To Video 72  
Project Output Options Dialog 78

## Q

Quality Slider 21, 67, 84  
QuickDraw Acceleration 25  
QuickTime 16, 17, 18  
QuickTime Applications 84  
QuickTime Composite 79  
QuickTime Movie 79

## R

Radius 86  
RCA Jacks 38, 48, 61  
Record To Ram 70  
Recording From Tape 21  
Recording Problems 88, 93  
Recording Settings 70  
Report Dropped Frames 70  
Return To Icon 12  
RGB 21, 31

## S

S-Video (Y/C) 21  
Sample 71  
Saturation 43  
Scan Lines 15  
Scratch Disks 63  
ScreenShift 25, 35  
SCSI Accelerator Card 17  
SCSI-2 Fast and Wide 17  
Sharpness 43  
SiliconExpress IV 17  
Slot Location 27  
Software Installation 58  
Sound Control 37  
Sound Control Panel 61  
Sound Control Panel Settings 37  
Sound In 37, 48, 49, 61, 65  
Sound Input 71  
Sound Out 38, 62  
Sound Sample 48  
Source 71  
Source Setting 39, 45  
Specifications 100  
Square Pixel 85, 86

Standard 30  
Start Delay 53, 73, 74  
Subcarrier Phase 33  
SyQuest Drive 63  
System Extensions 19  
System Hardware 17

## T

TARGA 2000 Cables 105  
TARGA 2000 CDEV 27  
TARGA 2000 Connectors 105  
TARGA 2000 Control Panel 25, 26, 58  
TARGA Export To Video 23, 52, 72, 85  
TARGA M-JPEG B 40  
TARGA Player 52, 85  
TARGA Transitions 76  
TARGA Video 67  
TARGA Video Fields Setting 47  
Technical Support 13, 57, 83, 86  
Text (Find) Icon 12  
Time Base 81  
Transitions 76  
Troubleshooting 13, 98  
Troubleshooting Questionnaire 98, 99

## U

Unbalanced Audio 38, 48, 61, 71

## V

VCR 21  
Video (Y/C) 31  
Video Cable 21  
Video Capture 83  
Video Capture Problems 88, 92  
Video Capture Rate 17  
Video Compression Selection 51

Video Decoding 20  
Video Fields Setting 39  
Video Formats 15  
Video From Desktop 29, 30  
Video Input Problems 88, 91  
Video Input Settings 39  
Video On 29  
Video Output 57  
Video Playback 83  
Video Settings 20  
Video Source 21, 57  
Video Window Manager 101  
Virtual Memory 19  
Volume 71  
Volumes 62  
VRAM Allocations 27

## **W**

Warranty Disclaimer 10  
White Level 43  
Work Area 78

## **X**

XLR Jacks 38, 48, 61

## **Y**

YUV BetaCAM 21, 31

## **Z**

Zoom 11, 25