Matrox DV-1394

Installation & User Guide

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matrox
Digital Video Solutions

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Matrox Video Products Group
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Each individual, returned unit or group of units MUST have an RMA number issued by Matrox. Matrox must authorize the number of units grouped under one RMA number. Any units received without prior approval by Matrox will be returned to you freight collect.

The Customer will incur the cost of consolidated freight (one way only) for Warranty units from the Customer's location to the location designated by Matrox. Once repaired, Matrox will incur the cost of consolidated freight for warranty units to the Customer's location.

FCC compliance statement

Warning

Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment.

The use of shielded cables for connection of the monitor to the card is required to meet FCC requirements.

Note

This device complies with Part 15 of 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.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

Grounding information

If this device is connected to a CATV system, please ensure that proper grounding guidelines are followed. Specifically, the cable ground should be connected to the grounding system of the building as close to the point of cable entry as practical. Consult the relevant code entries for your area, such as Art. 820-40 of the National Electrical Code (NEC).

Industry Canada compliance statement

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Industry Canada Radio Interference Regulation.

Le présent appareil numérique n'émet aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada.

Grounding information

If this device is connected to a CATV system, please ensure that proper grounding guidelines are followed. Specifically, the cable ground should be connected to the grounding system of the building as close to the point of cable entry as practical. Consult the relevant code entries for your area or section 54 of the Canadian Electrical Code.

Dans le cas où cet équipement est branché au réseau de câblodistribution, il est nécessaire de s'assurer que les pratiques de mise à la terre soient respectées. Particulièrement, le câble de mise à la terre devrait être relié à la terre du réseau électrique à un point le plus près possible de l'entrée de câblodistribution. Pour de plus amples renseignements, veuillez vous reporter aux règlements locaux pertinents ou à la section 54 du Code canadien de l'électricité.

EC declaration of conformity

This device complies with EC Directive 89/336/EEC for a Class A digital device. It has been tested and found to comply with EN50081-1 (EN55022/CISPR22), EN50082-1 (EN61000-4-2:1995, EN61000-4-4:1995, ENV50140:1994) and EN60950. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Le présent appareil numérique répond aux exigences stipulées dans la directive européenne 89/336/EEC prescrite pour les appareils numériques de classe A. Ce produit a été testé conformément aux procédures EN50081-1 (EN55022/CISPR22), EN50082-1 (EN61000-4-2:1995, EN61000-4-4:1995, ENV50140:1994) et EN60950. Lorsque cet appareil est utilisé dans un environnement résidentiel, il peut entraîner des interférences radioélectriques. Dans ce cas, l'usager est prié de prendre des mesures correctives appropriées.

Table of Contents

Introducing the Matrox DV-1394

This chapter outlines some features of the Matrox DV-1394. It also specifies the computer system requirements for your DV-1394 card and explains the available documentation.

CHAPTER

1

The DV-1394 card

Your DV-1394 card is a combined 1394/Wide Ultra SCSI/PCI host adapter that creates a bridge between your system and a new generation of 1394 devices.

The 1394 interface provides one input connection that supports speeds of up to 100 Mbits/sec, while the Wide Ultra SCSI interface supports speeds of up to 40 MB/sec.

With the DV-1394 card, you can connect Digital Video (DV) devices such as DV camcorders and VTRs with a 1394 digital interface to your DigiSuite system.

Features

The following summarizes some of the DV-1394 card features:

- 1394 and Wide Ultra SCSI interface on a single card.
- IEEE-1394 compliance.
- One external and one internal SCSI connector.
- Two external 1394 connectors to choose from for your input/output connection.
- Compatibility assurance.
- Your 1394 device is instantly recognized by your computer when connected to the DV-1394 card. There is no need to reboot your computer when connecting or disconnecting your DV device.

Note Your nonlinear video editing or capture program (such as Adobe Premiere RT or the DVCapture program) must be closed when your connect your 1394 device.

DV-1394 kit contents

Your DV-1394 kit should contain at minimum the following items:

- DV-1394 card.
- 6-to-4 pin 1394 cable.
- External SCSI cable.

System requirements

Hardware requirements

To use the DV-1394 card, you must have the following DigiSuite card set options installed in your system:

- DigiMix, DigiMotion, and DigiDesktop with the optional TriMedia Module

or

- DigiSuite LE

or

- DigiSuite DTV

DigiSuite system requirements

DigiSuite components require a computer with the following minimum computer system configuration:

- An Intel Pentium II CPU, 266 MHz or higher.
- 128 MB or more of physical RAM.
- Windows NT 4.0 operating system with Service Pack 3 or later. Service Pack 4 is recommended[1].

Recommended systems and storage devices

You should refer to the Customer Support section of our Web site at www.matrox.com/video for information on recommended DigiSuite computer systems and storage devices. As new technology becomes available, we at Matrox test it and make recommendations we feel will benefit our customers.

Supported 1394 devices

For a list of supported DV camcorders and other 1394 devices that you can use with the DV-1394 card, visit the 1394 section of Adaptec's Web site at www.adaptec.com/products/solutions/1394.

[1] Available from the Microsoft Web site at www.microsoft.com.

DigiSuite documentation

All of the information you'll require to install the DV-1394 card and use the associated DV-1394 software is included in this manual. However, for information on your other DigiSuite cards and software, you should consult the following documentation:

- The *DigiSuite Installation Manual*, *DigiSuite LE Installation Manual*, or *DigiSuite DTV Installation Manual.*
- The *Getting the Most from DigiSuite* manual, which explains how to use the software included with DigiSuite so that you can take full advantage of your system's features.

Any important information that wasn't available for inclusion in the manuals at print time is provided to you in the following ways:

- The *Readme* file installed with the DigiUtils software in the Matrox DigiSuite Utilities folder.
- Printed Release Notes packaged with the manuals.

The DigiSuite manuals are also available as Portable Document Format (PDF) files in the *DigiUtils\Docs* directory on the DigiSuite CD-ROM. You can view these documents using Adobe Acrobat Reader version 3.0 or later. To install the Acrobat Reader, run Windows NT Explorer or File Manager, go to the *AcrobatReader* directory on the DigiSuite CD-ROM, then double-click the *.exe* file contained therein.

About this manual

This manual provides you with specific reference information about installing the DV-1394 card in your computer system and using the associated software.

- Chapter 1, "Introducing the Matrox DV-1394," contains information about the DV-1394 card, system requirements, and the available documentation.
- Chapter 2, "Installing Your DV-1394,"describes how to install the DV-1394 card in your DigiSuite system.
- Chapter 3, "Connecting Your External Devices," shows you how to connect 1394 and SCSI devices to the DV-1394 card. It also provides information on configuring the DV-1394 SCSI controller.
- Chapter 4, "Installing the DV-1394 Software," explains how to install the software that lets you use your DV-1394 card to capture DV clips on your DigiSuite system.

- Chapter 5, “Working with Clips Using DVCapture details the use of the DVCapture program to capture DV clips on DigiSuite or DigiSuite LE.
- Chapter 6, “Using the DV-1394 Plug-in for Adobe Premiere RT,” describes how to set up and use the DV-1394 plug-in so that you can capture clips directly within Adobe Premiere RT.
- Chapter 7, “Troubleshooting,” provides some possible answers if you have trouble installing or operating your DV-1394 card.
- Appendix A, “DigiSuite Glossary,” serves as a reference for the terminology used in the DigiSuite manuals.
- Appendix B, “Customer Support,” tells you how to contact us for customer support.

Style conventions

The following style conventions are used in this manual:

- The names of files, directory paths, and manuals appear in *italics*. For example:
  - The data is stored in the *sample.wav* file.
  - The file is located in your *C:\Windows\System* directory.
  - Please refer to your *DigiSuite Installation Manual*.
- Menus and commands that you need to choose are displayed in the form **Menu | Command**. For example, **File | Save** means click **File** in the menu bar, then click **Save** in the menu that appears.

About DV technology

Digital Video (DV) is a standard compression format for recording video and audio data onto a digital tape. DV uses a fixed 5:1 compression ratio to reduce the size of the video data that is stored on digital tape. DV is intra-frame based, saving each video frame separately, and uses the discrete cosine transform (DCT) in 8 x 8 pixel blocks as the basis for compression. A 4:2:0 luminance, or 4:1:1 chrominance (color) sampling further reduces file sizes.

The DV-1394 software lets you capture live or recorded DV video. Your DV clips are saved to DirectShow *.avi* files in Motion-JPEG format on DigiSuite or DigiSuite LE, or in native DV format on DigiSuite DTV.

About 1394 technology

1394 is an international standard data transfer protocol created by Apple Computer and standardized as IEEE-1394. Like other data input/output protocols such as SCSI, Fibre Channel, and IDE, 1394 itself knows nothing about video, compression, or editing. It is simply a series of standardized commands for moving data from one device to another.

1394 offers advantages that make it ideal for use with audio and video devices:

- It's fast — 100-400 Mbits/sec data transfer rates.
- It's guaranteed — both isochronous (guaranteed bandwidth) and asynchronous data transfers.
- It's consumer friendly — small connectors, hot-pluggable (meaning you can connect and disconnect your 1394 device without re-booting your computer), and no need for terminators or setting device IDs.

Installing Your DV-1394

This chapter describes how to install the DV-1394 card in your DigiSuite system.

CHAPTER

2

Important!

The instructions in this chapter cover installing the DV-1394 card in a computer system that already contains core DigiSuite components (DigiMix-DigiMotion-DigiDesktop with the TriMedia Module, DigiSuite LE, or DigiSuite DTV). For information on installing these DigiSuite cards, refer to the *installation manual for your DigiSuite system.*

Before you begin

Antistatic and safety precautions

Read the following information carefully before attempting to install the DV-1394 card in your computer system.

Static electricity from your body can damage your DV-1394 card and other DigiSuite cards, Movie-2 bus, or your computer. Although you may not notice it, static electricity is generated every time you move. Static electricity often carries an electrical charge too small to cause a spark, but it can still cause damage to sensitive electronic components or at least reduce their lifespan.

To avoid damage, please observe the following precautions:

- Do not remove the DV-1394 card from its antistatic bag until you're ready to install it. Before removing the card, place the package within easy reach of the area where you intend to perform the installation.
- You should avoid touching the chips and other components on the card. Try to handle the card by its edges.
- Try to work in an area where the relative humidity is at least 50%.
- Do not wear wool or synthetic clothing. These fabrics tend to generate more static electricity than cotton, which is best for this kind of work.
- Turn off the power switches on your computer and its connected components, and unplug your computer.
- Once you've opened your computer, drain static electricity from your body by touching a bare metal surface on your computer chassis before you install or remove any parts of your system. If you have a grounding wrist strap, use it while handling and installing any components in your computer.

Installation overview

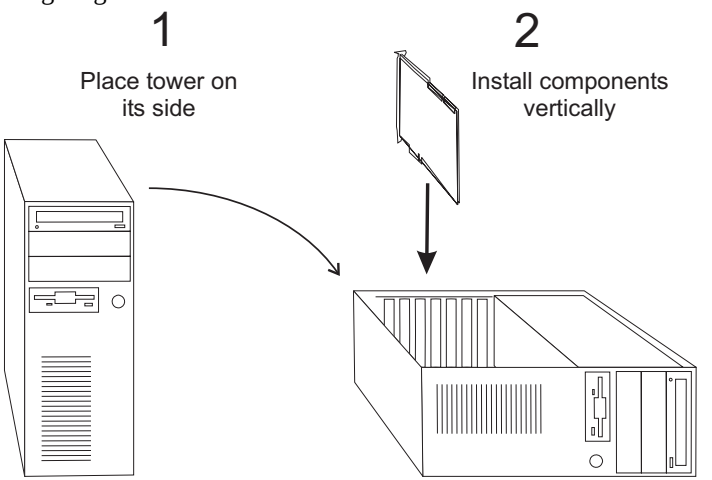
The following steps summarize the complete installation procedure for the DV-1394 card. This is simply to give you an overview.

Important Please do not attempt to install your DV-1394 card without reading the detailed instructions on the following pages. Failure to do so may result in broken parts and/or system malfunctions. Do it right the first time!

1. Prepare your computer and DV-1394 card for installation.
2. Locate an unused expansion slot in which you'll install your DV-1394 card.
3. Insert your DV-1394 card in your computer.
4. Connect your 1394 and SCSI devices and configure your SCSI controller, as explained in Chapter 3, "Connecting Your External Devices," on page 13.
5. Install the DV-1394 software, as explained in Chapter 4, "Installing the DV-1394 Software," on page 25.

Choose the best installation position

It's much easier to install the DV-1394 card if you do so vertically from above. For typical desktop systems, this is easy because access to the expansion slots in such systems is from the top. If, however, you have a tower-type system, it's best to place the computer on its side. This provides you with vertical access to the expansion slots, as illustrated in the following diagram:



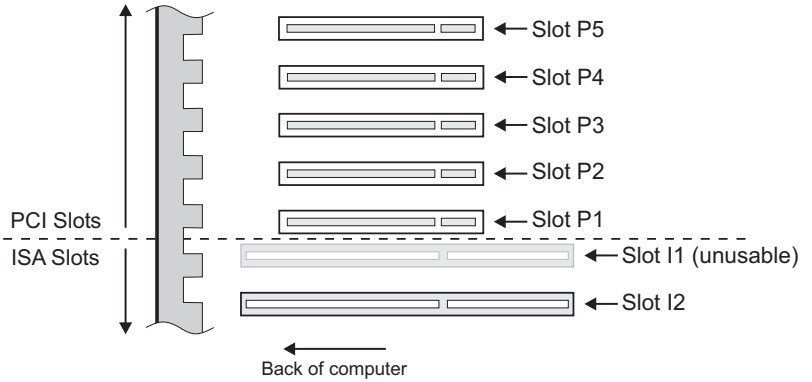
Identify your expansion slots

All DigiSuite cards are installed in your computer's expansion slots. Most PCI-bus computers currently manufactured have a combination of PCI slots and, for example, ISA slots. Usually, the PCI slots are made with a plastic of a contrasting color (generally white) and are shorter than the ISA slots in your system.

While some computer motherboards have numbered slots, these do not follow any standard industry convention. For example, one computer may have five PCI slots and two ISA, whereas another may have four PCI slots and three ISA slots, and so on.

With this in mind, we've developed a numbering scheme for identifying each slot position. Since all PCI-based systems have two types of slots, there is always one PCI slot bordering the other type (usually ISA). We start counting outwards from this "border" in each direction for each type.

In the following diagram, there are two ISA slots referred to as I1 and I2. There are also five PCI slots, P1 to P5.



It's important to note that the two "border slots"—those that are next to the other type—are considered "shared" slots. As such, only **one** of the two may be used at a time. For the sake of consistency, most DigiSuite systems will use slot P1, the first PCI slot from the center. Thus, the first ISA slot, I1, is unusable in most DigiSuite systems.

You can install your DV-1394 card in any unused PCI slot.

Important Make sure you are using a validated computer system or motherboard. For more details, see the Customer Support section of our Web site at www.matrox.com/video.

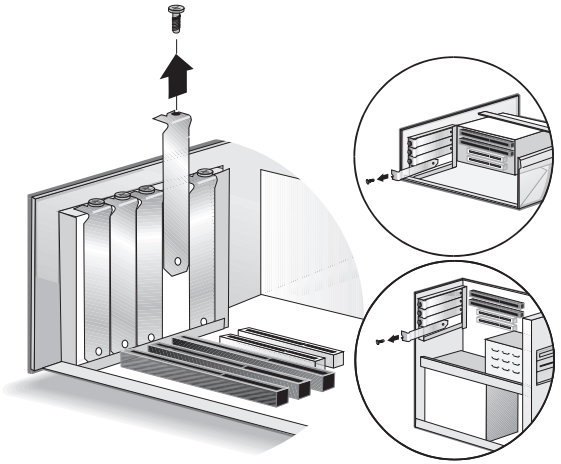
Make sure your system is adequately ventilated

Before you install your DV-1394 card, make sure your system is properly ventilated, as indicated in the installation manual for your DigiSuite system.

Install your DV-1394 card

Note Before proceeding, you should review the antistatic and safety precautions described earlier on page 8.

1. Identify an unused PCI slot in which to install your DV-1394 card.
2. Remove the metal plate located at the back of the PCI slot in which you'll be installing the DV-1394 card, as shown below. Don't lose the screw as you'll need it to fasten the card later on.



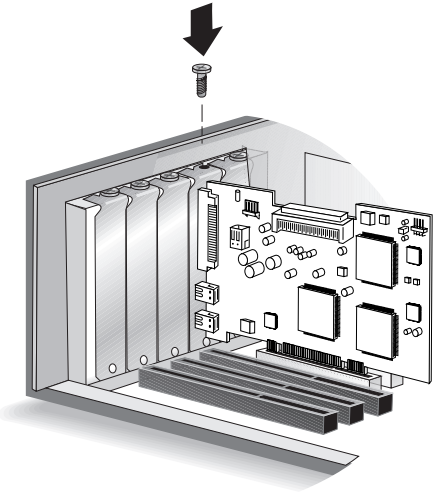
3 Install the DV-1394 card in the following manner:

a Carefully align the card with its expansion slot.

b Slide the card towards the slot until it touches. Make sure that the metal plate at the back of the card slips into the opening left by the blank metal plate you removed in step 2.

c Once the card touches its slot, make sure it's perfectly aligned and then press it into the slot connector until it's firmly in place.

d Secure the card by fastening its metal bracket to the computer chassis using the screw you removed in step 2, as shown below.



4 Proceed to "Connecting Your External Devices" on page 13.

Connecting Your External Devices

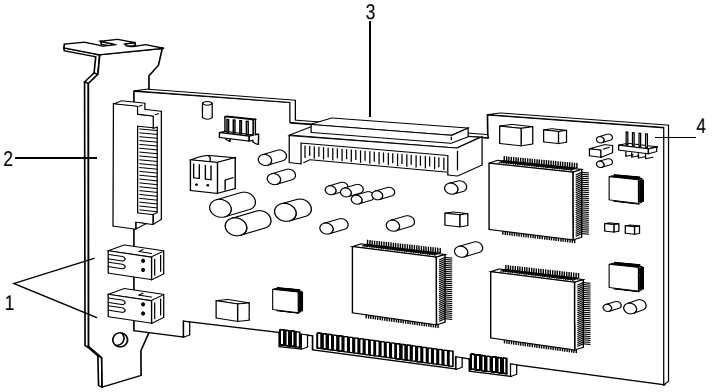
This chapter shows you how to connect your 1394 device to the DV-1394 card. It also provides information on connecting SCSI devices and configuring the DV-1394 SCSI controller.

CHAPTER

3

Identifying your connectors

The following diagram shows the location of the connectors on your DV-1394 card:



1) 1394 Connectors2)External 68-pin Ultra High Density SCSI Connector
3) Internal 68-pin SCSI Connector4)LED Connector

Connecting your 1394 device

You can plug your 1394 device (such as a DV camcorder or DV deck) into either of the input connectors on the DV-1394 card and attain identical performance.

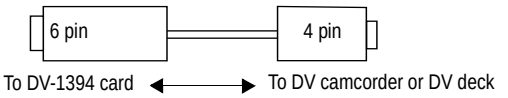
Important Keep in mind that the DV-1394 card supports only **one** input connection at a time. If you wish to capture material from different DV devices, you must disconnect the first device before connecting the second.

Hot-plugging

Your 1394 device can be plugged into or unplugged from the DV-1394 card at any time; there's no need to turn off the computer when connecting or removing your device, provided your capture program is closed. 1394 devices are instantly recognized and ready for use as soon as they're connected to the DV-1394 card.

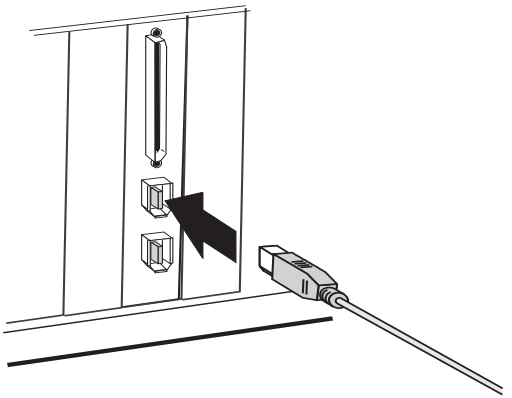
Connecting the 1394 cable

The following diagram depicts the supplied 6-to-4 pin 1394 cable:

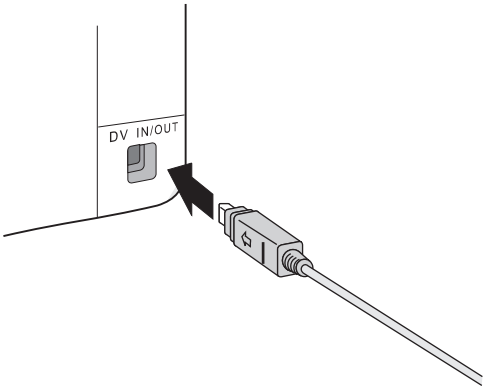


➢ To connect your 1394 device to the DV-1394 card:

1 Plug the larger connector (6-pin end) of the 1394 cable into one of the 1394 connectors on the DV-1394 card, as shown below.



2 Match the notch on the smaller connector (4-pin end) of the 1394 cable to the notch on the 1394 port (DV In/Out port) of your DV device, and insert the connector, as illustrated below.



Caution Use extra care when plugging in or unplugging this connector. It's very easy to bend the connector pins inside your DV device, rendering it useless. Use only minimal force.

Viewing your input signal

To view your DV material when you're setting it up for capture, you must connect your Program monitor to one of the analog outputs on your DV deck or DV camcorder.

Connecting A/V SCSI devices

SCSI devices are cabled together in a single connected series called the SCSI bus. SCSI cables must run sequentially from one device to the next, with no branching.

Caution The SCSI controller on the DV-1394 card supports single-ended devices only. Do **not** connect high-voltage-differential SCSI devices to this controller, as this may damage the SCSI controller and your storage devices. Refer to your SCSI device documentation if you're not sure whether your storage devices are single-ended or high-voltage-differential.

Selecting SCSI cables

Use the provided 68-pin external Ultra-High-Density SCSI cable to connect your 16-bit external Wide SCSI drives. If you opt for 16-bit internal Wide SCSI drives, you'll have to use a 68-pin internal SCSI cable (with or without termination).

Important For your system to operate properly, you must connect all your A/V drives to the SCSI controller on the DV-1394 card. If you have a DigiMix-DigiMotion system, **do not** connect your A/V drives to the controller on DigiMotion. If you have a DigiSuite LE or DigiSuite DTV system with a separate SCSI controller card, you must disconnect your A/V drives and connect them to the DV-1394 card. We also recommend that you put all non-audio/video SCSI devices (tape backup, zip drives, CD-ROM drives, etc.) on a separate SCSI controller.

SCSI cable lengths

The total length of cabling (internal and external) on the SCSI bus must not exceed the maximum lengths listed in the following table.

Data Transfer Rate	Number of Peripherals Supported (including controller)	Maximum Cable Length (in feet)
Ultra SCSI (40 MB/sec for 16-bit)	1-4	9
Ultra SCSI (40 MB/sec for 16-bit)	5-8[a]	4.5

a. Ultra SCSI data transfer rates do not currently support more than eight devices (Remember that the SCSI Controller is a device as well).

Important The SCSI controller on the DV-1394 card is compatible with low-voltage-differential drives (LVD), also known as Ultra2 SCSI drives. However, when connecting these drives, you'll have to follow the guidelines outlined above for Ultra SCSI drives. Also, the data transfer rate obtained will be equivalent to that of an Ultra SCSI bus.

Terminating the SCSI bus

To ensure reliable communication, the last physical SCSI device on each end of the SCSI bus must be terminated. Termination must be disabled on all other devices in the middle of the SCSI bus. You may need to change the termination setting on some SCSI devices.

Terminating the SCSI controller

Termination on the DV-1394 card itself is controlled by software commands via the SCSI*Select* utility.

By default, termination on the DV-1394 card is enabled. The default setting, **Automatic**, should therefore not be changed. When set to **Automatic**, if the DV-1394 card detects that a SCSI cable is connected to its external SCSI connectors, it automatically sets the termination setting for the low and high bytes of the 16-bit Wide SCSI bus.

Terminating SCSI devices

Read your SCSI device documentation to determine how to enable or disable termination. On most internal SCSI drives, a jumper or a switch lets you control termination, while on most external SCSI devices, this is done by installing or removing a terminating plug (resistor pack embedded in a small plug).

Setting the SCSI ID

The SCSI ID serves two purposes:

- It uniquely defines each SCSI device on the SCSI bus.
- It determines the device's priority on the SCSI bus.

Each device connected to the SCSI controller, as well as the controller itself, must have a unique SCSI ID number, which can range from 0 to 15. SCSI ID 7 has the highest priority. The priority of the remaining IDs, in descending order, is 6 to 0 and 15 to 8.

Note SCSI IDs play no role in determining the order in which devices are cabled to the controller.

The DV-1394 card supports the SCSI Configured AutoMatically (SCAM) protocol, which assigns SCSI IDs dynamically and resolves SCSI ID conflicts automatically at boot time. If your system includes SCSI disk drives or other devices that support SCAM, you don't need to manually assign SCSI IDs to these devices (to enable SCAM support, see "Configuring the SCSI controller using SCSISelect" on page 20). However, because most SCSI devices currently in use don't support SCAM, you'll probably need to set the SCSI IDs manually.

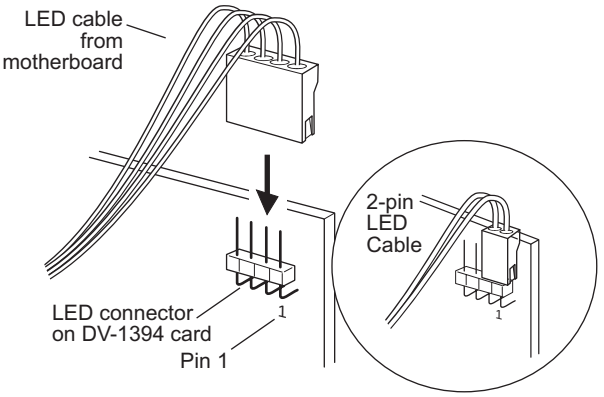
➢ **To set SCSI IDs:**

- We recommend that you leave the SCSI controller on the DV-1394 card set to its default setting of SCSI ID 7. If you need to change the DV-1394 card SCSI ID, see "Configuring the SCSI controller using SCSISelect" on page 20.
- Once an ID has been assigned to the controller, IDs for the other SCSI devices can be selected from the remaining available values. To change IDs on your SCSI devices, refer to the devices' documentation.

Note If you install more than one SCSI controller in your computer (one for all your A/V drives, and the other for other SCSI devices), keep in mind that each controller forms a separate SCSI bus. SCSI IDs can be reused as long as the ID is assigned to a device on a separate SCSI bus (for example, each SCSI bus can have a device with SCSI ID 0).

Connecting the LED connector (optional)

Most computers have an LED disk activity light on the front panel. If you disconnect the cable from the LED connector on the motherboard and connect it to the LED connector on the DV-1394 card, the LED on the front panel of the computer will light up whenever there's activity on the SCSI bus.



Restarting the computer

Once you've connected your 1394 and SCSI devices:

1. Be sure all cables are connected securely.
2. Put the chassis cover back on the computer, following the instructions in the computer's documentation.
3. Be sure all power switches are off, then reconnect the computer power cables.
4. Turn on the external device(s) and then turn on the computer.
5. If your system BIOS setup requires you to enable PCI bus parameters, do so now.

Note The PCI bus usually assigns IRQs and port addresses automatically. However, in some PC systems you may need to edit the PCI bus parameters manually in your BIOS setup. Refer to your computer documentation.

Configuring the SCSI controller using SCSISelect

Your DV-1394 card includes the onboard, menu-driven SCSI*Select*® configuration utility, which allows you to change SCSI controller settings without opening the computer or handling the card. SCSI*Select* also contains SCSI disk utilities that let you perform a low-level format or verify the disk media of your SCSI hard drives.

- To run SCSI*Select*, press **CTRL+A** when the following prompt appears briefly at boot time:

Press <Ctrl><A> for SCSISelect (TM) Utility!

The first menu displays the options **Configure/View Host Adapter Settings** and **SCSI Disk Utilities**.

- To select an option from the SCSI*Select* menu, use the ↑ and ↓ keys to move the cursor to the option, then press **ENTER**. Return to the previous menu at any time by pressing **ESC**. To restore the original SCSI*Select* default values, press **F6**. To toggle the display between color and monochrome modes, press **F5** (this feature may not work on all monitors).
- To exit SCSI*Select*, press **ESC** until a message prompts you to exit. If you changed any SCSI controller settings, you are prompted to save the changes before you exit. At the prompt, select **Yes** to exit, then press any key to reboot the computer. Any changes you made in SCSI*Select* take effect after the computer boots.

Configuring your SCSI controller

The DV-1394 card's default settings are appropriate for most PCI systems and should therefore not be changed. However, you should do the following:

1. Select **Configure/View Host Adapter Settings** from the menu that appears after starting SCSI*Select*.
2. Make sure that:
   - **Advanced Host Adapter Settings/Host Adapter BIOS** is disabled. This option enables or disables the host adapter BIOS.
   - **Advanced Host Adapter Settings/Support for Ultra SCSI Speed** is enabled. This option determines whether the host adapter supports the fast transfer rates (13.4, 16, 20.0) of Ultra SCSI devices.

Using the SCSI disk utilities

To access the SCSI disk utilities, select the **SCSI Disk Utilities** option from the menu that appears after starting SCSI*Select*.

Once the option is selected, SCSI*Select* immediately scans the SCSI bus and displays a list of all SCSI IDs and the devices assigned to each ID. When you select a specific ID and device, a menu appears displaying the following options:

- **Format Disk** Allows you to perform a low-level format on a hard drive. Most SCSI disk devices are preformatted at the factory and do not need to be formatted again. The **Format Disk** utility is compatible with most SCSI disk drives.

Caution A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You **cannot** abort a low-level format once it is started.

- **Verify Disk Media** Allows you to scan the media of a hard drive for defects. If bad blocks are found on the media, you're prompted to reassign them; if you select **Yes**, these blocks will no longer be used. You can press **ESC** at any time to abort the utility.

Notes on using A/V drives with DigiSuite

We recommend the you regularly consult the Customer Support section on our Web site at www.matrox.com/video for up-to-date information on recommended storage devices, test results, references, etc.

Formatting your SCSI drives

It's important to format your SCSI A/V drives using the Windows NT File System (NTFS) and not the traditional File Allocation Table (FAT) system. To do this, choose **Start | Programs | Administrative Tools (Common) | Disk Administrator**. In Disk Administrator, select the drive you wish to format and choose **Tools | Format**. In the **File System** box, select **NTFS**.

Caution Formatting your drive will erase any data that is stored on it.

What to store on your A/V drives

To ensure maximum performance, you should store your graphic and audio files on a different SCSI A/V drive than the one you use to store your video files. Also, your virtual memory paging (swap) file must be stored only on a SCSI drive. If your paging file is presently on an IDE drive, move it to one of your SCSI drives. To change the settings for your paging file, run Control Panel, double-click the **System** icon, then click the **Performance**

tab. Under **Virtual Memory**, click **Change**, then select the drive whose settings you want to change from the displayed list of drives on your computer.

Creating a stripe set

When creating a stripe set using Windows NT Disk Administrator, make sure you choose **Partition | Create Stripe Set**. If you accidentally create a volume set, your drives will appear to work as a stripe set, but their performance will be degraded.

Access to IDE drives during capture

If your system includes both SCSI and IDE drives, do **not** create or access files on your IDE drives while capturing or playing back material on your SCSI A/V drives. Doing so may interrupt the capture or playback process if you don't have the correct bus-mastering EIDE settings.

Using third-party disk defragmentation programs and disk optimizers

To ensure maximum system performance, we recommend that you use a defragmentation utility such as Diskeeper from Executive Software International (www.execsoft.com/) or Norton Utilities for Windows NT 4.0 from Symantec (www.symantec.com/)[1]. The amount of footage you capture to your A/V drives determines how often you should use your defragmentation utility. On average, however, you should defragment your A/V drives once a month. Remember to quit your defragmentation program after each use, that is, do not leave it running in the background.

However, you should never use an A/V disk optimizer utility, such as Dr. SCSI, on the A/V drives you use with DigiSuite. These utilities often bypass the error detection/correction mechanism that ensures the integrity of your files, and may therefore cause serious problems with DigiSuite (for example, your system may crash or become unstable).

Correct BIOS versions on Ciprico

When using a Ciprico RAID disk array, make sure the drive's BIOS is version 4.0 or later. To get the best performance, make sure the **Ciprico**

[1]We recommend that you install Norton Utilities before the DigiSuite software, as installing it after will replace the *mfc42.dll* (*Winnt\System 32*) file with a non-compatible older version. If you install Norton Utilities after the DigiSuite software, you'll have to rename or delete the *mfc42.dll* file and then uninstall and reinstall your DigiSuite software. Contact our Customer Support department for further assistance.

Write Mode option is selected in the DigiMotion, DigiSuite LE, or DigiSuite DTV **Storage dialog box of the DigiSuite Configuration program.** For information on using the DigiSuite Configuration program, see the installation manual for your DigiSuite system.

Testing the performance of your A/V drives

The DigiMotion, DigiSuite LE, or DigiSuite DTV **Storage** dialog box in the DigiSuite Configuration program lets you determine the maximum data rates supported by your A/V drives. For complete step-by-step instructions, refer to the installation manual for your DigiSuite system.

DigiSuite DV-1394 software

To use your DV-1394 card, you must install the DigiSuite DV-1394 software as explained in the next chapter.

Notes

Installing the DV-1394 Software

This chapter explains how to install the software that lets you use your DV-1394 card to capture DV clips on your DigiSuite system.

CHAPTER

4

Overview

To use your DV-1394 card, you must install DigiUtils version 4.0 or later on your computer. When you run the DigiUtils Setup program, it will detect that you've installed the DV-1394 card and automatically install the required 1394 drivers as well as the following software:

- **DVCapture program** Lets you capture DV clips from your DV camcorder or VTR and save the clips to DirectShow *.avi* files in Motion-JPEG format on DigiSuite or DigiSuite LE, or in native DV format on DigiSuite DTV. You can also use this program to record your DV clips onto tape using your DV deck.
- **DV-1394 plug-in for Adobe Premiere RT** Lets you capture DV clips from your DV camcorder or VTR directly within Adobe Premiere RT. As with the DVCapture program, your DV clips are saved to DirectShow *.avi* files in Motion-JPEG format on DigiSuite or DigiSuite LE, or in native DV format on DigiSuite DTV.

For complete details on DigiUtils Setup and a description of additional software you can choose to install, see the chapter "Installing the DigiSuite Software" in the installation manual for your DigiSuite system.

Important The DV-1394 plug-in for Adobe Premiere RT will be installed only if you choose to install the DigiSuite Effects plug-in for Adobe Premiere RT when you run DigiUtils Setup.

Before you begin

Before running DigiUtils Setup, make sure that:

- You have correctly installed your DV-1394 card and connected your 1394 and SCSI devices as explained in the previous chapters.
- You are logged on as a user with Administrator privileges in Windows NT.

Running DigiUtils Setup

➢ **To run DigiUtils Setup:**

1. Close Control Panel and all Windows programs.
2. Insert the DigiSuite CD-ROM in your CD-ROM drive.
3. Choose **Start | Run**.
4. In the resulting dialog box, type *e:\digiutils\setup* (where *e:* represents your CD-ROM drive), and click **OK**.

5 Follow the instructions that appear on the screen. If you already have DigiUtils installed on your computer, select **Update the current installation** to update your system with the DV-1394 software.

Note If your computer hangs when Setup scans your system for installed cards, reboot your computer and run Setup again.

6 Make sure you choose to install all the optional software you require, such as DigiTools and the DigiSuite Effects plug-in for Adobe Premiere RT.

7 When the installation is complete, click **OK**. Setup will then restart your computer in order for the changes to take effect.

Uninstalling DigiUtils

➢ **To remove all the DigiUtils software from your system:**

1 Do either one of the following:

– Choose **UnInstall DigiUtils** from the Matrox DigiSuite Utilities folder.

– Run DigiUtils Setup again, select **UnInstall DigiUtils**, then click **Next**.

2 The program will restart your computer for the changes to take effect.

Notes

Working with Clips Using DVCapture

This chapter explains how to use the DVCapture program to capture and record clips to tape, using DV-1394 devices such as DV camcorders and VTRs.

CHAPTER

5

What can you do with DVCapture?

You can use DVCapture to:

- Capture live DV from your camcorder.
- Capture DV from a tape (camcorder or DV deck).
- Record onto DV tape the DV clips you create on your DigiSuite system.

On DigiSuite and DigiSuite LE, the captured video is converted from DV format to Motion-JPEG format. On DigiSuite DTV, video is captured in native DV format (that is, in Matrox DV 4:1:1 or DV 4:2:0 format). Captured video is saved to DirectShow *.avi* files on your computer. You can use these *.avi* files in your nonlinear editing, compositing, or animation program along with other *.avi* files you've created on your DigiSuite system.

Captured DV audio is sampled at a rate of 48 kHz, 16-bits/sample, and saved as *.wav* files on your computer. Any audio recorded at a lower sampling rate or bit depth will be resampled to these values. For the best results, it's recommended that both your camcorder and DV deck be able to support 16-bit, 48 kHz audio.

Starting DVCapture

Important Before starting your computer, make sure your camcorder is turned off.

Before you start DVCapture, make sure that:

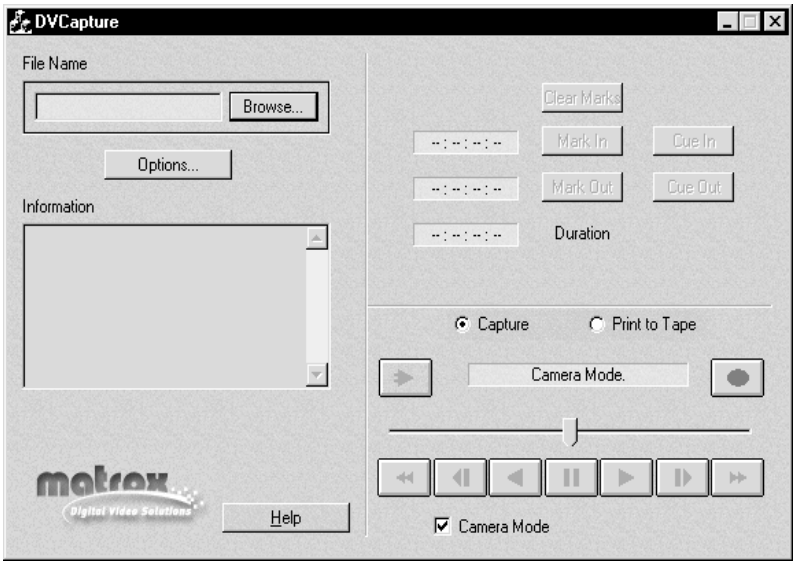
- The camcorder has been set manually to the device mode you want to use (either Camera Mode to capture live video, or VTR Mode to capture material from tape or record onto tape).
- The tape deck is empty when in Camera Mode.

➢ **To start DVCapture:**

1. Close any DirectShow program that uses DigiSuite, such as Speed Razor RT or Adobe Premiere RT.
2. Choose **Start | Programs | Matrox DigiSuite Utilities | DVCapture.**

Using the DVCapture interface

When you start DVCapture, a dialog box similar to the following appears:



Note When using DigiSuite DTV, the DVCapture dialog box will not have an **Options** button. For details, see "Before you start capturing clips" on page 33.

The following sections describe how to use some of the common controls in the DVCapture dialog box.

Selecting and saving files

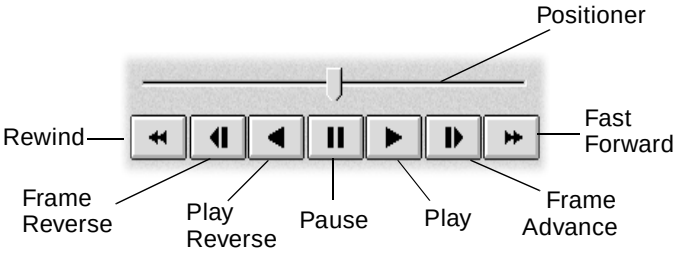
Use the **File Name** box or **Browse** button in the DVCapture dialog box to select the *.avi* file to which you want to store your captured video, or the DV *.avi* file you want to print to tape:

To print a file to tape using DVCapture, it must be in Matrox DV 4:1:1 format on an NTSC system, or Matrox DV 4:2:0 format on a PAL system. If you select an *.avi* file that is not in an appropriate format, a warning will appear asking you to select another file. If you select an existing file name for the purpose of creating a file, a warning will appear asking if you want

to replace that file. To ensure the best capture and playback performance for your file, save it onto one of your A/V drives.

Navigating through clips with the transport controls

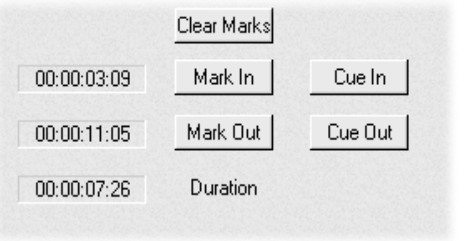
DVCapture includes a set of transport controls for navigating through your tape. These transport controls are much like those on your VTR and perform standard functions:



You can drag the slider on the **Positioner** to shuttle through your tape.

Using the time code fields

The time code fields display the In and Out points and duration of your clip.



To mark the In and Out points of the clip you want to capture, do one of the following:

- Play your tape and click the **Mark In** or **Mark Out** button when you see the frame where you want your clip to start or end, respectively.
- For increased precision, pause your clip at the appropriate frame and click the **Mark In** or **Mark Out** button.

You can cue to your In or Out point by clicking the **Cue In** or **Cue Out** button, respectively.

Before you start capturing clips

Before you start capturing clips on DigiSuite or DigiSuite LE, you can:

- Select your audio format (stereo or mono files).
- Select your video capture quality.

On DigiSuite DTV, your DV audio is always captured to stereo *.wav* files, and your DV video is captured in native DV format.

Selecting stereo or mono files

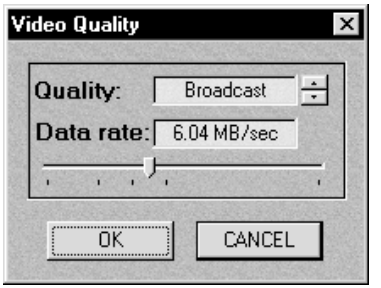
To indicate whether you want to create stereo or mono *.wav* files when using DigiSuite or DigiSuite LE, click the **Options** button. This displays the following dialog box:

- **Mono Files** Select this option to save captured audio channels as separate *.wav* files. For example, if you specify *MyFile.avi* as your capture file, the audio channels of a stereo clip will be saved as *MyFile.A1.wav* and *MyFile.A2.wav* when you perform your capture. This is the format supported by DigiTools.
- **Stereo File** Select this option to save captured audio channels to a single *.wav* file. For example, if you specify *MyFile.avi* as your capture file, both the audio channels of a stereo clip will be saved to *MyFile.wav* when you perform your capture.This is the format most often used for Adobe Premiere RT and Speed Razor RT. (DigiTools does not support stereo *.wav* files.)

Selecting the video quality for captured material

To select the video quality you want for your captured material when using DigiSuite or DigiSuite LE:

1. Click the **Options** button.
2. Click **Select Video Quality**. This displays the following dialog box:



Select a preset quality

3. You can either select one of several preset video qualities, or select a custom quality by using the data rate slider. The quality of your captured video depends on the data rate at which it's captured — higher data rates provide better quality video.
   – To select one of the following preset video qualities, click the arrows beside the **Quality** box. The approximate data rates for the preset qualities are:
     - **Preview** 0.1 MB/sec
     - **Industrial** 3 MB/sec
     - **Broadcast** 5 MB/sec
     - **Digital** 7 MB/sec
     - **Uncompressed** Lossless (about 13 MB/sec, but varies depending on the complexity of the video). This quality is **not** available on DigiSuite LE. To select the highest possible quality on DigiSuite LE, select **Best Quality**.

Select a custom quality

   – To select a custom video quality, drag the slider. For example, to select a broadcast quality at a data rate of approximately 6.0 MB/sec, simply drag the slider until that value is displayed in the **Data rate** box.

Only the uncompressed (lossless) quality **guarantees** identical quality to your source video. You can, however, achieve results that are virtually lossless by selecting a digital quality at a high data rate.

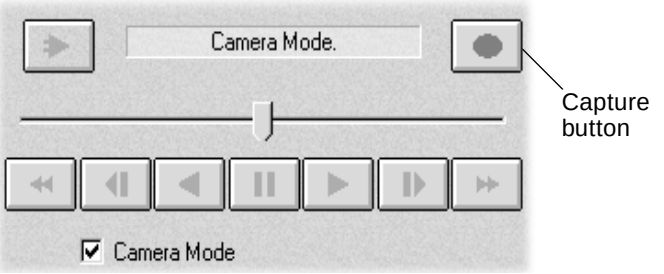
Capturing live DV to disk

➢ **To capture live DV from your camcorder:**

1. Turn your camcorder on, and switch it to Camera Mode (make sure the tape deck in your camcorder is empty).
2. Start DVCapture.
3. Select the **Capture** option in the dialog box.

4. Select the **Camera Mode** option at the bottom of the dialog box:

5. Use the **File Name** box to select the *.avi* file to which you want your clip to be saved.
6. Click the **Capture** button to start capturing material.



7. Click the **Pause** button to stop the capture. Details of the clip you've just captured will be displayed in the **Information** box:

To play back your captured clip, use DigiTools or any other program that accepts *.avi* files. Make sure you quit DVCapture before viewing clips in other DirectShow programs.

Capturing DV from a videotape to disk

➢ **To capture DV from a tape:**

1. Turn your camcorder or DV deck on. If you're using a camcorder, switch it to VTR Mode.
2. Start DVCapture.
3. Select the **Capture** option in the dialog box.

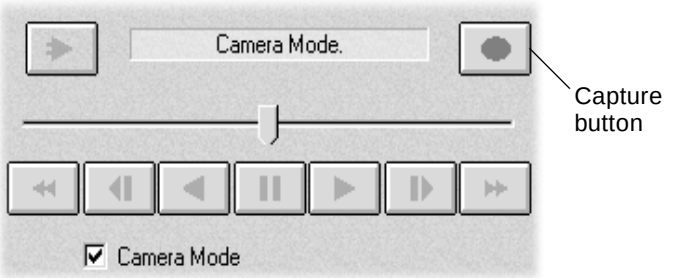
4. Make sure the **Camera Mode** option is cleared at the bottom of the DVCapture dialog box:

5. Use the **File Name** box to select the *.avi* file to which you want your clip to be saved.

6. Press **Play** to start the tape.
7. Mark the In and Out points of your clip.

Note If you don't set an In or Out point for your clip, you can start or stop your capture as explained in the following steps.

8 Click the **Capture** button to start capturing. If you set an In point, DVCapture will cue your VTR to start capturing at the specified time code.



9 To manually stop the capture before the Out point is reached or if you left the Out point blank, click the **Pause** button.

10 Details of the clip you've just captured will be displayed in the **Information** box:

To play back your captured clip, use DigiTools or any other program that accepts *.avi* files. Make sure to quit DVCapture before viewing clips in other DirectShow programs.

Printing DV clips to tape

You can use DVCapture to record onto tape the DV clips you create on your DigiSuite system. Your *.avi* files must be in Matrox DV 4:1:1 format if you're using an NTSC system. On a PAL system, your *.avi* files must be in Matrox DV 4:2:0 format (for a DV or DVCAM clip). For details on how to export or render video to an *.avi* file in the appropriate format, see "Exporting or rendering video to a Matrox DV .avi file" on page 39.

When you create an *.avi* file that you'll be recording onto DV tape with DVCapture, you'll need to pad the file with black video at the start and end of the clip:

- At the start of the clip, add about 10 seconds of black.
- At the end of the clip, add one second of black.

Depending on the particular edit delay of your DV deck, you might choose to add less black at the start or end of your clip. If you find that too many black frames are being recorded to tape, simply reduce the amount of black padding accordingly.

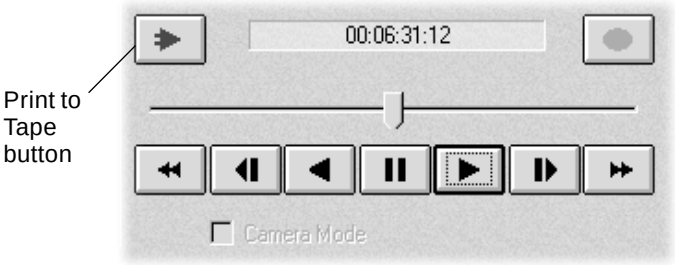
If your *.avi* file has associated audio that you'll be printing to tape, make sure that you also pad the clip's *.wav* files with a corresponding amount of silence.

➢ To record a DV clip onto tape using your DV deck:

1. Turn your camcorder or DV deck on. If you're using a camcorder, switch it to VTR Mode.
2. Start DVCapture.
3. Select the **Print to Tape** option in the dialog box.

4. Select the *.avi* file you want to record onto tape. Details of the file you've selected will be displayed in the **Information** box. Any associated *.wav* files in the same folder as the *.avi* file you selected will also be recorded.
5. Use the DVCapture transport controls to find the region on your tape where you want to start recording your clip. Click **Mark In**, if desired, to set your In point.

6 Click the **Print to Tape** button to start the recording. If you set an In point, DVCapture will cue your VTR and start recording at the specified time code.



7 To manually stop printing to tape before the clip is finished, click the **Pause** button.

Exporting or rendering video to a Matrox DV .avi file

To print an *.avi* file to tape using DVCapture, the file must be in Matrox DV 4:1:1 format on an NTSC system, or Matrox DV 4:2:0 format on a PAL system. If you're using DigiSuite DTV with an editing program for which you've installed a DigiSuite plug-in, such as Adobe Premiere RT or Speed Razor RT, you can choose the appropriate DV format when you export your production to an *.avi* file.

Render to a VFW .avi file

If you're using DigiSuite or DigiSuite LE, you can still export or render material to Matrox DV format. You do this by creating a Video for Windows *.avi* file using the Matrox DV 4:2:0 PAL/4:1:1 NTSC codec. When you perform the export or render:

- Set the frame size for your *.avi* file to 720×480 on an NTSC system, or 720×576 on a PAL system.
- If you'll be rendering audio, set your program to render audio to a separate *.wav* file (that is, don't include the audio in your *.avi* file).
- Select the following codec from your program's list of compressors:
  - **Matrox DV 4:2:0 PAL/4:1:1 NTSC**

See your program's documentation for complete details on how to export or render material to a Video for Windows *.avi* file.

Note When you export to a Video for Windows *.avi* file using Adobe Premiere RT, set the **File Type** to **Microsoft AVI**. If you're using Speed Razor RT, set the video device type (file format) to **AVI Multimedia Device**.

Notes

Using the DV-1394 Plug-in for Adobe Premiere RT

This chapter explains how to set up and use the DV-1394 plug-in so that you can capture DV clips directly within Adobe Premiere RT.

CHAPTER

6

Overview

The DV-1394 plug-in for Adobe Premiere RT lets you capture DV clips from your DV camcorder or VTR directly within Adobe Premiere RT. Your DV clips are saved to DirectShow *.avi* files in Motion-JPEG format on DigiSuite or DigiSuite LE. On DigiSuite DTV, your DV clips are saved in native DV format (that is, in Matrox DV 4:1:1 or DV 4:2:0 format).

When you installed the DigiSuite Effects plug-in for Adobe Premiere RT, RS-422 device control was provided for the deck you connected to your DigiSuite system. The DV-1394 plug-in, however, lets you use device control to capture clips from the DV deck you've connected to your DV-1394 card. For information specific to using Adobe Premiere RT with the DigiSuite Effects plug-in, see the "Creating DigiSuite Effects" chapter of your *Getting the Most from DigiSuite* manual.

Setting up DV device control in Adobe Premiere RT

To set up device control for capturing material from your DV deck in Adobe Premiere RT:

1. Choose **File | Preferences | Scratch Disks/Device Control**.
2. In the **Device Control** section, select **Matrox DV Device Control**.
3. Click **OK**.
4. You can now use 1394 device control when capturing DV material. You must, however, make sure that the **Editing Mode** in the **Project Settings** dialog box is set to **Matrox DigiSuite**. For details on how to capture clips, see your *Adobe Premiere User Guide.*

Note The DV-1394 capture plug-in does **not** support recording the Timeline to tape using your DV deck. To record material with device control in Adobe Premiere RT, you must set the device control back to **Matrox Device Control**. Remember that when you do this, you'll be controlling your RS-422 deck, not your DV deck. You can, however, use the DVCapture program to record DV clips to tape using your DV deck. For details on how to do this, see "Printing DV clips to tape" on page 38.

Things you need to know about capturing DV clips

Please remember the following when working with the DV-1394 plug-in for Adobe Premiere RT:

- Before starting your computer, make sure your camcorder is turned off.

- Before starting Adobe Premiere RT, set your camcorder to either Camera Mode (to capture live video), or VTR Mode (to capture material from tape). When in Camera Mode, make sure the tape deck is empty.
- On DigiSuite or DigiSuite LE, your DV clips are captured at the video quality you selected for your Adobe Premiere Capture Settings. On DigiSuite DTV, your DV clips are captured in native DV format.
- When preparing for your DV capture, you won't see your source video in the **Movie Capture** dialog box. You must therefore refer to your Program monitor to see the frames where you want to set your clip's In and Out points (assuming you've connected your Program monitor to one of the analog outputs on your DV deck or camcorder).

Note If you have DigiDesktop, you'll be able to see your source video in the **Movie Capture** dialog box providing that you set the output source for DigiDesktop in the DigiSuite Configuration program to **Movie-2 Bus Main**.

- Captured DV audio is sampled at a rate of 48 kHz, 16-bits/sample, and saved as *.wav* files on your computer. Any audio recorded at a lower sampling rate or bit-depth will be resampled to these values. For the best results, it's recommended that both your camcorder and DV deck be able to support 16-bit, 48 kHz audio.

Notes

Troubleshooting

This chapter provides some possible answers if you have trouble installing or operating your DV-1394 card.

CHAPTER

7

Connections checklist

Most problems result from errors in preparing and connecting 1394 and SCSI devices. If you have problems using your DV-1394 card, check these items first.

1394 connections

- Did you install the DV-1394 card in a **bus master** PCI slot? Refer to your computer documentation or try a different PCI slot.
- Are all self-powered devices turned on?
- Is the 1394 cable properly connected?

SCSI connections

- Are all SCSI devices powered?
- Are all SCSI bus cables and power cables properly connected?
- Is pin-1 orientation maintained throughout the SCSI bus?
- Do the DV-1394 card and all devices on the SCSI bus have unique SCSI IDs?
- Are all devices on the SCSI bus terminated properly?
- Are the PCI configuration parameters set correctly in your computer's setup program?
- Is parity checking consistently enabled or disabled on all devices on the SCSI bus?
- If you changed any values on the SCSI controller, in a setup program, or on a SCSI device, did you turn the power off and on to ensure that the new values are loaded?

If your problem persists, proceed to the following sections.

Problems, possible causes, and solutions

Up-to-date information

The following pages contain information about the most common problems solved by our DigiSuite Customer Support department. These solutions are also available on our web site at www.matrox.com/video in the Customer Support section. As new information becomes available, we'll add it there first, so it's always a good idea to check the site on a regular basis.

Multiple solutions

Some of the problems identified here may have more than one possible cause, and there are frequently several possible solutions.

Note In this chapter, references to shutting off and/or restarting your system mean to actually use the physical On/Off switch. Simple software restart (from **Start | Shut Down**) or logging off the system and the logging back on is not sufficient.

Warning Never open your computer system when its power is on!

Installation/configuration

The card does not fit

Possible cause **Unused slot** If you're installing your card in a new or previously unused slot, there may be considerable resistance as the card slides into the slot. This is normal.

Solution **Install carefully** Make sure that the card is perfectly aligned with the PCI slot and push it in firmly but gently until it's correctly seated.

Your computer system does not start

Possible cause 1 **Incompatible system** If your DigiSuite hardware is installed in a computer system we haven't tested and validated, the hardware may not run correctly.

Solution **Check the list of compatible computers** You can consult our list of compatible computers and motherboards located on our web site at: www.matrox.com/video.

Possible cause 2 **Incorrect BIOS version** If your system BIOS version is out of date, there may be conflicts with hardware and thus your computer may not be able to start.

Solution **Check BIOS version** Make sure your system BIOS version is the latest available.

Can't install DigiUtils software

Possible cause **Not properly logged on to NT** Windows NT features different levels of user privileges on a single computer. Most levels other than that of an "Administrator" don't allow the user to install/configure software.

Solution **Log on as administrator** You must log on as a user with Administrator privileges in Windows NT before you can install the DigiUtils software. If you aren't logged on as Administrator, the DigiUtils Setup program will not install the software.

DV-1394 card not initializing or drivers not loading

Possible cause 1 **DV-1394 card not properly installed** The DV-1394 card may not be properly seated in its slot. This could prevent the software drivers from loading and/or running.

Solution **Re-install card** You can re-install your DV-1394 card to see if doing so will cause your system to initialize the card properly.

1. First, check to see if the DigiCtrl service started ok. To do so, run **Control Panel | Services**. Check the service **DigiCtrl**. If all necessary software drivers are loaded and running, DigiCtrl should have the indication **Started** in its **Status** column. If not, one or more drivers are not running.
2. If **DigiCtrl** is listed but not indicated as running or not listed at all, turn off your system, open the cover, and re-install the DV-1394 card.
3. Restart your computer.

Possible cause 2 **Incompatible motherboard** In the System Recommendations section of our web site, we provide a list of motherboards that we've tested for compatibility with our DigiSuite products. If you're using a motherboard not validated by us, there's no guarantee that our cards will work with this motherboard. In addition, the support we can offer will be limited.

Solution **Use recommended motherboard** Consult "System Recommendations" located in the Customer Support section of our web site at www.matrox.com/video to make sure you're using a motherboard validated by Matrox. If you use a non-validated motherboard, we can't guarantee anything more than limited support.

Operation

Random or erratic system operating behavior

Possible cause 1 **Inadequate ventilation** The components on all DigiSuite cards are placed very close together and thus generate a lot of heat. It's therefore vitally important to provide adequate ventilation.

Solution 1 **Provide ventilation** Make sure your computer system is well ventilated with no obstructions blocking any openings, especially at the rear of the unit.

Solution 2 **Operate in safe area** Avoid operating your DigiSuite-equipped computer system in areas where the temperature is above 86°F (30°C). **Do not** operate it in areas with an ambient temperature above 104°F (40°C).

Possible cause 2 **Not enough memory** Without enough physical RAM installed in a system running DigiSuite, performance is drastically reduced. DigiSuite requires a minimum of 128 MB of physical memory to perform properly.

Solution **Install memory** Make sure you have at least 128 MB of physical RAM installed in your system.

Some or all functions are not operating properly

Possible cause 1 **Faulty hardware installation** Your DV-1394 card may not be installed properly.

Solution 1 **Check card installation in computer** Your DV-1394 card must be properly installed. See appropriate sections of this manual for more details.

Possible cause 2 **Drivers may not be running** The DV-1394 software drivers may not be running. To verify this, run **Control Panel | Services**. Check the service **DigiCtrl**. If the software drivers are loaded and running, DigiCtrl should have the indication **Started** in its **Status** column. If not, the DV-1394 drivers are not running.

Solution **Check version of NT** Make sure you're running Windows NT version 4.0 with at least Service Pack 3 installed. Service Pack 4 is recommended.

You get error messages during capture

Error message **MJPEG miniport found no usable adapter cards.**
MJPEG miniport hardware initialize failed.
(Error messages 3 and 4 are generated in Windows NT Event Viewer).

Possible cause 1 **System unstable after application failure** The system may be in an unstable state after one or more of your programs have failed.

Solution **Restart your system** Once a program has failed, system resources such as memory, etc., may not be freed up for proper use. Completely restarting your system will resolve this problem.

Possible cause 2 **SCSI problems** Your SCSI drives and/or chain may be damaged or not configured properly.

Solution 1 **Check equipment** Check your SCSI cable and drives for broken or bent connector pins.

Solution 2 **Check configuration** Make sure each drive connected in the SCSI chain has a separate ID number and that the last drive in the SCSI chain is the only one terminated. Refer to your drive's documentation for further details.

Solution 3 **Check driver version** Make sure you're using the latest version of software drivers for your SCSI devices. The drivers that shipped with Windows NT in 1996 are probably outdated now.

Storage

General SCSI problems

Possible cause 1 **SCSI devices not detected** The SCSI BIOS may not have detected your SCSI devices.

Solution 1 **Check the SCSI BIOS** To check your SCSI BIOS configuration:

1. Press **CTRL+A** when prompted during computer start-up to enter the SCSI BIOS (if you are unable to **CTRL+A**, check to make sure that jumper J10 on the card is set to ON).
2. Make sure your SCSI devices are detected.
3. If your SCSI devices are detected, make sure each hard drive has a unique SCSI ID number—other than seven, which is usually reserved for the SCSI controller. If your SCSI devices aren't detected, your problem lies with the SCSI controller or SCSI cable.

Solution 4 **Check the SCSI driver version** Make sure you're using the latest version of software drivers for your SCSI devices. The drivers that shipped with Windows NT in 1996 are probably outdated now.

Possible cause 2 **Correct SCSI driver not installed** If the SCSI driver is not installed, your drives may not work with your SCSI controller.

Solution **Check SCSI driver** To check your SCSI driver:

1. Run Windows NT Control Panel.
2. Double-click on the **SCSI Adapters** icon.
3. Make sure the following SCSI driver is installed:

   Adaptec AHA-290x/291x/294x/394x/4944/AIC-78xx PCI SCSI Controller.

   If it isn't, you'll have to install it.

Possible cause 3 **SCSI chain setup** The SCSI chain must be the correct length and properly terminated for your stripe set to perform optimally.

Solution 1 **Use cable of correct length** Observe the following limitations when choosing SCSI cable length:

- Up to four single-ended (or non-differential) Ultra SCSI devices (including the SCSI controller) connected to a cable no longer than nine feet.
- Five to eight single-ended Ultra SCSI devices connected to a cable no longer than four-and-a-half feet.

See “SCSI cable lengths” on page 17 for more details.

Solution 2 **Terminate your SCSI connections** Each end of the SCSI chain must be properly terminated, which depends on the type of hard drive you have. Consult your hard drive documentation for termination instructions.

Possible cause 4 **Damaged SCSI cable** Your SCSI cable must be free from damage or data transfer may be interrupted.

Solution **Check cable for damage** Inspect your cable for damage and replace if necessary.

When capturing video with a Matrox-recommended stripe set, the process stops after capturing a few frames

Possible cause **Stripe set configuration** Video capture stops capturing video when the hard drives can’t sustain the selected video data rate. In other words, the hard drives have to be fast enough to store the data stream moving on the SCSI bus. If your stripe set is not properly configured, optimal performance won’t be achieved

.

Solution **Check SCSI configuration** In addition to the problems and solutions outlined in "General SCSI problems" on page 52, the following solutions may be of help with this problem:

1. Open the Windows NT Event Viewer and look for "STOP"errors in the Event column. These are non-specific errors related to video capture and indicate a hardware problem.
2. Just after your computer starts, press **CTRL+A** to run the SCSI controller configuration utility. Check the following to ensure support for Ultra SCSI speed:
3. Highlight **Configure/View Host Adapter Settings**. Press the **ENTER** key. Highlight **Advanced Host Adapter Settings** and verify that **Support for Ultra SCSI Speed** is enabled. Then press the **ESC** key.
4. Highlight **SCSI Device Settings** then press the **ENTER** key. Verify that the **Maximum Sync Transfer Rate** is set to 40 MB/sec and that bus negotiation is set to **Wide**. Press the **ESC** key. Save your settings when prompted.

Hard drives are not recognized by the DV-1394 SCSI controller or by Windows NT Disk Administrator

Possible cause **Problems with SCSI configuration** In addition to the problems and solutions outlined in "General SCSI problems" on page 52, the following solutions may be of help with this problem:

Solution 1 **Connect devices properly** Make sure you've only connected single-ended SCSI devices to the SCSI controller on the DV-1394 card.

Solution 2 **Use correct termination** If you plan to connect an Ultra2 LVD SCSI device to the DV-1394 card, you'll need to use active single-ended termination at the end of the SCSI chain to be backward compatible with the controller.

Solution 3 **Disconnect unrelated devices** Put all non-audio/video SCSI devices (tape backup, zip drives, CD-ROM drives, etc.) on a separate SCSI controller.

The Format/Verify utility doesn't run

Possible cause **Problems with disk device or media** If you tried to use the Format/Verify utility on a disk device and got an **Unexpected SCSI Command Failure** pop-up box with error information, the utility probably

encountered a problem with the disk device or the media and therefore cannot run.

Solution **Refer to the Sense Key information** You can probably determine from the Sense Key information (for example, 06h - Unit Attention) both the cause of the problem and its solution. Here are some of the more common Sense Key values and their meanings:

- **02h - Not ready** The media is not ready to format. Be sure that media is inserted in the drive and that the media is spun up.
- **03h - Medium error** The disk media may be defective. If it's a removable-media drive, try using a different disk media. If it's a hard drive, the disk may be physically damaged. Verify and format the media with SCSI*Select*, as indicated in "Using the SCSI disk utilities" on page 21.
- **04h - Hardware error** The disk drive may be defective. Consult the hardware documentation and contact the manufacturer.
- **05h - Illegal request** The formatting utility does not support a low-level format of this device; however, the device may already be low-level formatted by the manufacturer. (This error rarely occurs.)
- **06h - Unit attention** The removable media may be write-protected. Disable write protection and run the utility again.

Other problems and solutions

If the problem you're experiencing is not identified in this chapter, it may stem from your other DigiSuite cards. Refer to the troubleshooting section of the installation manual for your DigiSuite system.

If nothing works

Contact your DigiSuite representative. Before doing so, please have the following information ready:

- A description of what happened.
- The serial number for each of your DigiSuite cards (printed on the cards themselves as well as on the cards' packaging).
- As much system information as possible.
  - Your computer specs.
  - The manufacturer and version number of your computer's BIOS.
  - Windows NT version.
  - Operating environment.
  - Peripherals (especially cards occupying other slots in your computer).
- Anything else you feel will help us correct the problem.

Need more answers?

We're constantly adding new information to our documentation, both printed and on the internet. Check our web site often and keep in touch with your Matrox DigiSuite representative.

DigiSuite Glossary

This glossary defines many of the terms used in the DigiSuite documentation.

APPENDIX

A

Glossary of terms

Use this glossary as a reference for many of the basic terms in the DigiSuite manuals.

Numerics

1394 *See* IEEE-1394.

4:2:2P@ML 4:2:2 Profile@Main Level. An international standard video compression profile introduced by MPEG-2. It supports 4:2:2 luminance/chrominance sampling at up to 720×608 pixel resolution, and data transfer rates up to 50 Mb/sec (6.3 MB/sec). This profile is used for high-quality distribution and for archiving. *See also* MP@ML.

A

A/B roll Typically, A/B roll is an editing technique where scenes or sounds on two source reels (called roll A and roll B) are played simultaneously to create dissolves, wipes, and other effects. On nonlinear editing systems, A/B roll refers to using two source streams (*.avi*, *.wav*, *.tga*, and so on) to create an effect.

accelerated print-to-disk The process of rendering to an *.avi* file a realtime sequence of effects on DigiSuite (excluding Inscriber/CG rolling and crawling titles). This is the fastest type of rendering available on DigiSuite. *See also* multi-layer compositing.

aliasing A display characteristic of computer-generated text or graphics that appears as jagged or stair-stepped edges on diagonal lines. *See also* anti-aliasing.

alpha key An effect that makes parts of a foreground image fully or partially transparent based on alpha (transparency) values stored within the image's file, so that an underlying image can show through.

analog component video *See* component video.

analog signal A video or audio signal that varies continuously, as opposed to a digital signal which varies only by fixed steps.

anti-aliasing A technique that smooths jagged edges in computer-generated text or graphics.

aspect ratio A width-to-height ratio. For example, a 12-by-9-inch image has an aspect ratio of 4:3 (four-to-three). Most TV screens have a 4:3 aspect ratio. HDTV screens have a 16:9 aspect ratio. *See also* pixel, square.

assemble editing Recording new video and audio material sequentially onto tape. Because all the signals are recorded (video, audio, and control track), the new material completely replaces any previously recorded material on the tape. *See also* insert editing.

attenuation A decrease in an electrical signal's amplitude.

A/V drive SCSI hard drive capable of storing high-bandwidth audio/video data.

B

backplane PCB (printed circuit board) on a Movie-2 bus connector.

base board Printed circuit board (and mounted components such as integrated circuits, etc.) that is inserted into the computer's expansion slot. A module board is often attached to the base board.

B-frame (Bi-directional frame) A frame created during the MPEG or MPEG-2 IBP compression process. A B-frame is generated by forwards and backwards referencing of the P-frames and I-frames respectively, which allows it to have the highest compression ratio of the three frame types. B-frames contain only predictive data (that is, not enough data to make up an entire picture), and therefore cannot be edited

independently. *See also* I-frame (Intra-frame) and P-frame (Predicted frame).

BIOS Basic Input/Output System settings for system components, peripherals, etc. This information is stored in a special battery-powered memory and is usually accessible for changes at computer start-up.

bitmap A graphics image in which a set of values defines each pixel's relative brightness and color.

blackburst A composite video signal that combines the sync information of a basic video signal with a pure black signal. Used as a reference in synchronizing the different video sources in a system. *Also called* color black.

burnt-in time code Time code that's superimposed onto each frame of video, generally created using the overlay feature of a VTR. Used for rough-cut and edit-list processing. *Also called* burn in.

bus 1. Electrical signal path between different physical connection points. 2. System bus on computers, represented by the expansion slot connectors. 3. Movie-2 bus.

C

capture The process of digitizing video or audio material, usually from a VTR, and storing it in a file on a hard disk.

card DigiSuite card as assembled and installed. For our purposes, a card is the final assembled product, whereas a board is simply one the of the printed circuit boards that make up a card.

card set One or more DigiSuite cards recognized by DigiSuite software as a single functional unit. If a card set contains two or more cards, these are connected by a Movie-2 bus. There may be more than one card set connected by a Movie-2 bus connector.

character generator A device or computer program used to create text that can be overlaid onto video.

chroma key An effect that makes portions of a foreground image fully or partially transparent based on the color of that image (or another source), so that an underlying image can show through. *See also* key source, self-key, and filled key.

chrominance The color portion of a video signal that carries the hue and saturation information. *See also* luminance.

codec Compressor/decompressor. A processor that compresses video to reduce its file size by eliminating redundancies in information. It also decompresses files to play them back.

color bars A standard test signal that appears as a series of vertical rows of color by which the chrominance and video levels of a camera's output or a recorded signal can be checked.

compile *See* render.

component video A video signal having separate channels for the video information, as opposed to a combined (composite) signal. On DigiSuite, analog component video refers to a signal containing three channels: Y (luminance), R-Y (red minus luminance), and B-Y (blue minus luminance).

composite video A video signal containing luminance and chrominance information that has been combined using a video standard such as NTSC or PAL. *See also* component video.

CON 1 and CON 2 1. Male connectors (usually with 90 or 70 pins) mounted at the top of a DigiSuite card closest to the center of the card. 2. Their female counterpart on a Movie-2 bus.

connector set Combination of the Movie-2 bus connectors CON 1 and 2 on a DigiSuite card and/or a Movie-2 bus.

contrast The difference in brightness between the lightest and darkest areas of an image on the screen.

control track A continuous, stable, low-frequency signal recorded onto tape. It is used to identify frame locations and control the playback of the video signal.

crawl Sideways movement of text across a screen. *See also* roll (1).

cut A direct switch from one video and/or audio source to another.

D

Digital-S A professional variant of the DV format developed by JVC that uses a data rate of 50 Mb/sec (6.25 MB/sec), which is double the data rate of most other DV formats. Video is sampled at 4:2:2 for both NTSC and PAL sources to give enhanced chroma resolution. It uses a 1/2" metal particle tape.

digital signal A signal representing video or audio information as binary digits that can be easily regenerated with no noise or distortion. *See also* analog signal.

Digital Video *See* DV.

digitize To convert analog information, such as a video signal from a VTR, into digital information that can be processed and stored by a computer.

dissolve A transition in which one image smoothly fades to another image. It is characterized by the gradual ending of one image occurring simultaneously with the gradual beginning of another.

DMC Dynamic Motion Control. The ability to change the playback speed of video and audio clips.

drop-frame time code For NTSC video, time code is normally produced by a generator that counts at 30 frames per second. NTSC color signals, however, actually have a display frequency rate close to 29.97 frames per second. Drop-frame time code compensates for this time difference by dropping two frames from the count every minute except for every tenth minute so that the time code matches clock time.

DV Digital Video. A standard digital bit stream and compression format used for recording video and audio onto a digital tape. DV is intra-frame based, saving each frame separately, and uses a fixed 5:1 compression ratio to reduce the size of video files. DV's data rate is fixed at 25 Mb/sec (3.13 MB/sec). Video is sampled at 4:1:1 for NTSC sources or 4:2:0 for PAL sources. *See also* DVCAM, DVCPRO, DVCPRO50, and Digital-S.

DVCAM A professional variant of the DV format developed by Sony that records a 15 micron track on a metal evaporated (ME) tape at a data rate of 25 Mb/sec (3.13 MB/sec). Video is sampled at 4:1:1 for NTSC sources or 4:2:0 for PAL sources.

DVCPRO A professional variant of the DV format developed by Panasonic that records an 18 micron track on metal particle tape at a data rate of 25 Mb/sec (3.13 MB/sec). Video is sampled at 4:1:1 for both NTSC and PAL sources.

DVCPRO50 A professional variant of the DV format developed by Panasonic that uses a data rate of 50 Mb/sec (6.25MB/sec), which is double the data rate of most other DV formats. Video is sampled at 4:2:2 for both NTSC and PAL sources to give enhanced chroma resolution. It uses the same type of tape as DVCPRO.

DVE Digital Video Effect. Generally, an effect that resizes and repositions a picture on the screen. On DigiSuite, a 2D DVE is referred to as a "video window."

DVE move Making a picture shrink, expand, tumble, and/or move across the screen.

E

Edit Decision List (EDL) A file containing a list of edit decision statements used to create a video production.

edit master The first generation (original) of a final edited tape.

EISA slot Connection slot to a type of computer expansion bus found in some computers. EISA is an extended version of the standard ISA slot design.

expansion slot Electrical connection slot mounted on a computer's motherboard (main circuit board). It allows several peripheral devices to be connected inside a computer.

F

fade to black A transition commonly used to signify the end of a scene, in which an image or sound smoothly fades to a black screen or silence (also called a fade-out transition). Similarly, you could start a new scene with a fade up from black (or fade-in) transition.

field One-half of the horizontal lines needed to make a complete scan of an interlaced video frame. In the NTSC system, two consecutive fields of 262.5 lines each create a frame of 525 scan lines. In the PAL system, two consecutive fields of 312.5 lines each create a frame of 625 scan lines.

filled key A key effect in which the key source image is different from the foreground image. Areas not keyed (that is, not made transparent) in the key source image are filled with the corresponding areas of the foreground image. *Contrast with* self-key.

FireWire Apple computer's original implementation of the technology that would be standardized as IEEE-1394 in 1995.

frame A single video image. An interlaced video frame is comprised of two consecutive fields (the odd and even fields).

G

graphics overlay Text or a graphics image that's superimposed on video.

genlock The process of synchronizing the timing between different video signals by generating a new video signal that is time-locked to the sync of the original signals. Genlock devices enable computer text and graphics to be superimposed onto video. *See also* blackburst.

GOP Group of Pictures. The sequence of I, B, and P-frames produced during MPEG or MPEG-2 IBP compression. This sequence of frames contains all of the information required to reproduce a complete video segment. The longer the GOP, the less editable it is.

GPI General Purpose Interface. An interface that controls an external device through a remote data signal. *See also* GPI trigger.

GPI trigger The signal sent by a GPI that instructs an external device to execute a particular command, such as to start or stop playback of a video effect.

H

hard key A key effect in which areas of the keyed image are either completely transparent or completely opaque, creating a hard edge between the keyed image and background image. *See also* soft key.

hardware-accelerated effect *See* realtime effect.

host bus Computer system bus to which a DigiSuite card is connected by insertion in the appropriate slot. This will be either a PCI, an EISA, or an ISA bus.

hue The tint or tone of a color. For example, the difference between the color green and red is its hue.

I

IBP compression *See* MPEG-2 IBP.

IEEE-1394 An international standard data transfer protocol created by Apple Computer under the FireWire trademark and standardized by the Institute of Electrical and Electronics Engineers (IEEE). It enables simple, low-cost, realtime data transfer between computers and consumer and prosumer electronics products, such as DV camcorders and DV decks. *Commonly referred to as* 1394.

I-frame compression *See* MPEG-2 I-frame.

I-frame (Intra-frame) A frame created during the MPEG or MPEG-2 compression process that contains all the information required to reproduce a complete image. It allows random access points within a video stream, and acts as a reference point for B-frames and P-frames to be built. I-frames are editable because they contain enough data to construct an entire video frame, unlike B-frames or P-frames. *See also* MPEG-2 IBP, B-frame (Bi-directional frame), and P-frame (Predicted frame).

insert editing Recording new video and/or audio material onto a prerecorded (or striped) tape. Insert edits can be made in any order, unlike assemble edits, which must be made sequentially.

inter-frame compression A video compression method that compares a series of frames in a video sequence and removes the redundant data. Inter-frame compression treats all the frames in the sequence as an interdependent group. As a result, most of the frames can't be edited independently. *Also called* temporal redundancy reduction. *Contrast with* intra-frame compression. *See also* GOP.

interlaced scanning A method of creating a video image by scanning only the odd numbered lines on the screen in one pass, then the even numbered lines in the next pass. Two passes are therefore required to create a complete frame of video. Non-interlaced scanning displays the odd and even lines sequentially so that the complete image is displayed in one pass. NTSC and PAL displays are interlaced, VGA displays are non-interlaced.

interpolate To create a gradual transition between different DigiSuite effect settings applied to a clip. For example, interpolating between a blue tint effect and a red tint effect makes the clip gradually change from blue to red. *See also* keyframe.

intra-frame compression A video compression method that removes redundant information from within a frame. Intra-frame compression treats each frame of a video segment independently. Several video compression formats use the intra-frame method. These include Motion-JPEG, DV, and MPEG-2 I-frame. *Also called* spatial redundancy reduction. *Contrast with* inter-frame compression. *See also* I-frame (Intra-frame).

ISA slot Connection slot to a type of computer expansion bus found in most computers. It's larger in size than the PCI slots found on most Pentium-based computers and provides connections to the slower ISA bus. A variation found in some newer computers is the EISA bus.

J

JPEG (pronounced "jay-peg") Joint Photographic Experts Group. A compression and storage standard used for still, digital images. *See also* Motion-JPEG.

K

keyframe A particular frame at which one or more DigiSuite effects have been defined on a clip using the DigiSuite Effects plug-in. Effects applied at a keyframe remain active on the clip until a later keyframe is defined to turn off or change the effects. *See also* interpolate.

key source The image that contains the colors or luminance values on which you key to create a chroma or luminance key effect.

L

lossless compression *See* mathematically lossless compression.

lossless video *See* uncompressed-quality video.

lossy compression A method of compressing video that results in loss of image information, and thus degrades the image quality. The loss of image quality, however, may not be visible. On DigiSuite, lossy compression performed using a high data rate creates video that's virtually lossless. *Contrast with* mathematically lossless compression.

LTC Longitudinal Time Code. Time code that is generally encoded as an audio signal onto a linear audio track of a tape. This type of time code can be read only while the tape is moving. *See also* VITC.

luminance The brightness portion of a video signal. The luminance of a pixel determines its brightness on a scale from black to white. *See also* chrominance.

luminance key An effect that makes portions of a foreground image fully or partially transparent based on the luminance of that image (or another source), so that an underlying image can show through. *See also* key source, self-key, and filled key.

M

mark in To select the first frame of a clip.

mark out To select the last frame of a clip.

mathematically lossless compression A method of compressing video without losing image quality. The video is identical to uncompressed video, but requires less disk space. *Contrast with* lossy compression. *See also* uncompressed-quality video.

M-JPEG *See* Motion-JPEG.

module board Printed circuit board and mounted components that is attached to the base board using screws and spacers.

mosaic An effect that "blurs" an image by copying pixels into adjacent pixels both horizontally and vertically. This gives the image a blocky appearance, often used to hide people's identities on television.

Motion-JPEG A compression and storage standard used for motion video. The JPEG compression process is applied to each video field, in succession. *Also called* M-JPEG.

Movie-2 bus or **Movie-2 bus connector** Over-the-top connector used for high-speed data transfer. These two terms refer to the assembled component, which consists of a printed circuit board (backplane) with attached connectors.

MP@ML Main Profile@Main Level. An MPEG-2 video compression profile that supports 4:2:0 luminance/chrominance sampling at up to 720×576 pixel resolution, and data transfer rates up to 15 Mb/sec (2 MB/sec). This profile is used for broadcast transmission and distribution on DVD. *See also* 4:2:2P@ML.

MPEG A video compression standard that specifies a series of compression profiles and image resolution levels, introduced in 1990 by the Motion Picture Experts Group. MPEG takes advantage of the redundancy inherent in video data through a combination of inter-frame and intra-frame redundancy reduction. The MPEG standard supports data transfer rates of up to 1.5 Mb/sec (0.2 MB/sec). *Also called* MPEG-1. *See also* MPEG-2, inter-frame (IBP) compression, and intra-frame (I-frame) compression.

MPEG-1 *See* MPEG.

MPEG-2 A video compression standard that improves upon the MPEG standard by supporting data rates of up to 100 Mb/sec (12.5 MB/sec), scalable modes, field or frame searching, and much larger screen sizes. *See also* inter-frame (I-frame) compression, intra-frame (IBP) compression, 4:2:2P@ML, and MP@ML.

MPEG-2 IBP An MPEG-2 compression type that uses inter-frame compression to create a group of I, B, and P-frames. *See also* GOP and inter-frame compression.

MPEG-2 I-frame An MPEG-2 compression type that uses only intra-frame compression (that is, only I-frames are created). *See also* intra-frame compression.

multi-layer compositing The process of rendering a sequence that contains multiple layers of realtime effects on DigiSuite for the purpose of playing back the effects or saving them to an *.avi* file. This type of rendering isn't as fast as an accelerated print-to-disk, but is faster than when you render sequences containing software effects.

N

nonlinear editing Random access editing that generally uses video and audio clips stored on disks. Nonlinear editing programs let you rearrange and edit clips without having to redo the entire production, and provide instant cueing to any frame in a clip without waiting for tapes to rewind.

NTSC National Television Systems Committee. The NTSC RS-170A standard defines a method of broadcasting a color signal that can be received by both monochrome and color TVs. It uses a composite interlaced display comprised of 525 scan lines per frame, refreshed at a rate of approximately 30 frames per second. Broadcast systems in North America and Japan use the NTSC standard.

P

PAL Phase Alternate Line. A video standard that uses a composite interlaced display comprised of 625 scan lines per frame, refreshed at a rate of 25 frames per second. This is the broadcast video standard for most of Europe.

PCI retainer bracket Bracket attached to DigiSuite PCI cards with the function of extending their length to line up with and be inserted in standard ISA card guides.

PCI slot Connection slot to a type of expansion bus found in most Pentium-based computers. It is smaller in size than older ISA slots and provides connections to the high-speed PCI host bus.

P-frame (Predicted frame) A frame created during the MPEG or MPEG-2 IBP compression process. A P-frame is created by using motion vectors to predict the differences between it and the closest previous I-frame or P-frame. This forward prediction allows for higher compression than with I-frames, but not as high as with B-frames. P-frames, like B-frames, contain only predictive data and therefore cannot be edited independently. *See also* I-frame (Inter-frame) and B-frame (Bi-directional frame).

pixel Picture element. The smallest portion of an image that can be written to a display. Each pixel in an image represents a single dot on the computer screen. A picture's resolution depends on the number of pixels on the screen. *See also* pixel, square.

pixel, square A pixel having equal width and height. Graphics programs normally create images with square pixels. NTSC and PAL video pixels, however, are generally rectangular. This means that graphics displayed on a TV screen will be distorted (for example, a circle will display as an ellipse), unless the pixel aspect ratio of the graphics is adjusted to suit video. On DigiSuite with the standard 4:3 screen format, NTSC pixels

have an aspect ratio of 0.9, and PAL pixels have an aspect ratio of 1.067. On DigiSuite with the wide screen 16:9 format, NTSC pixels have an aspect ratio of 1.185, and PAL pixels have an aspect ratio of 1.422.

posterization An effect that reduces the various luminance levels of an image so that it looks flat or two-dimensional, somewhat like a poster or paint-by-number picture.

proc amp An electronic device that adjusts the different aspects of a video signal, such as its hue, saturation, and contrast.

R

realtime effect An effect that is played back instantly, without having to be rendered by an editing program. *Also called* hardware-accelerated effect. *Compare with* software effect.

render To compute an image or effect using a nonlinear editing, compositing, or animation program. The result is generally saved in a file on the computer. *Also called* compile.

RGB video A component video signal that uses three signals to carry the separate Red, Green, and Blue channels of colored images.

roll 1. Vertical movement of text across the screen. *Also called* scroll. *See also* crawl. 2. Unwanted vertical roll of a video image, indicating unstable sync.

RS-232 A non-differential serial data transmission standard used for computer connections.

RS-422 A differential serial data transmission standard that is often used for linking video production equipment (VTRs, mixers, etc.). Because this standard is differential, RS-422 connections are less subject to interference and noise than RS-232 connections.

S

saturation A measure of the depth of a color. Fully saturated colors are vivid, while colors that lack saturation look washed out or faded.

scroll *See* roll (1).

SDI Serial Digital Interface. A communications standard for broadcast digital equipment in which data is transmitted and received one bit at a time over a signal line.

SDTI Serial Digital Transport Interface.

self-key A key effect in which the key source image is also the foreground image. *Contrast with* filled key.

serial control A method of remotely controlling a device via a data line. The control data is transmitted in serial form (that is, one bit after another).

soft key A key effect that has a fuzzy, soft edge or semi-transparent areas. *See also* hard key.

software effect An effect that must be rendered by an editing program before it can be played back. *Compare with* realtime effect.

soft wipe A split screen or wipe effect with a soft border or edge where the two images join.

spatial redundancy reduction *See* intra-frame compression.

striping a tape Preparing a tape for editing by recording continuous control track, time code, and a video signal (such as black or color bars).

S-Video *See* Y/C video.

sync A circuit or signal that directs the electron gun in a camera or TV picture tube to hold a picture steady on the screen. It also synchronizes the electronics of other video equipment.

sync generator An electrical device that generates sync (timing) signals used to

synchronize video equipment and keep pictures stable on the screen.

T

TBC *See* time base corrector.

temporal redundancy reduction *See* inter-frame compression.

tile A transition in which one image is gradually replaced by another image that appears part-by-part in successive squares. The squares follow a given pattern until the entire screen is filled with the new image.

time base corrector (TBC) An electronic device that, when connected to the output of a VTR, corrects the stability and timing of the VTR's playback video. This is achieved by stripping the unstable horizontal and vertical sync pulses from the video signal, and replacing them with new, clean sync pulses.

time code A sequential code number assigned to successive video frames on tape. Each frame has its own time code, which is electronically encoded on the tape in the form hours:minutes:seconds:frames. *See also* drop-frame time code, LTC, and VITC.

tint An effect that replaces the chrominance information of an image with a single color, but keeps the luminance levels of the image intact. The result is an image formed with shades of only one color. This is useful for simulating "old-time" sepia images.

U

Uncompressed-quality video Video that has the same image quality as uncompressed video, but has been compressed using mathematically lossless compression to optimize storage space. *Also called* lossless video.

V

Video window *See* DVE.

VITC Vertical Interval Time Code. Time code that is encoded onto the vertical blanking interval of a video signal. VITC can be read by a VTR whenever an image is displayed, but not usually during high-speed operation. *See also* LTC.

Voice over Narration added to a video segment and mixed in louder than the original background sounds.

W

wipe A transition in which one image is gradually replaced by another image that is revealed in a given pattern. For example, the second image could be revealed from the top of the screen downwards until it fills the entire screen.

Y

Y/C video A component video signal in which the luminance (Y) and chrominance (C) information are separate. S-VHS videocassette recorders use the Y/C video format. *Also called* S-Video.

Y, R-Y, B-Y video An analog component video signal comprised of three channels: Y (luminance), R-Y (red minus luminance), and B-Y (blue minus luminance).

Customer Support

This appendix explains how to reach us to obtain customer support.

APPENDIX

B

DigiSuite customer support

If you have a problem that you're unable to solve by referring to your DigiSuite documentation, please contact your Matrox DigiSuite representative. He or she should be able to help you quickly correct any installation or system configuration problem.

If your representative is unable to solve your problem, you may contact Matrox for further information and assistance.

Contacting us

Matrox is proud to offer worldwide technical support. Please use the contact information for your area.

United States & Canada

Telephone 1 800 810-2550

Fax 1 514 685-2853

Email ..... video.techsupport@matrox.com

Europe, Middle East, & Africa

Telephone (France) ..... +33 (0) 1 45 60 62 09

Telephone (Germany) ..... +49 (0) 89 61 44 74 57

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Email ..... video.tech.europe@matrox.com

All other countries

Telephone ..... 1 514 685-7230, ext. 2388

Fax 1 514 685-2853

Email ..... video.techsupport@matrox.com

World Wide Web

We also invite you to visit our World Wide Web site for up-to-the-minute information about Matrox products, free software updates, access to our support databases, and a complete list of computer equipment compatible with the DigiSuite platforms.

Internet ..... www.matrox.com/video

DigiForum

If you'd like to join your peers on DigiForum, send Email to:

```
listproc@matrox.com
```

The **body** of the message should contain:

```
SUBSCRIBE DIGIFORUM <your name>
```

Substitute your first and last name for `<your name>`.

Only customers who've purchased and registered a DigiSuite product will be allowed to join DigiForum.

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Notes

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