Matrox DigiSuite

Installation Manual

matrox
Digital Video Solutions

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You can fax the Registration form to Matrox at **(514) 685-2853**, or mail it to:

Matrox Video Products Group
Matrox Electronic Systems Ltd.
DigiSuite End-User Customer Support
1055 St. Regis Blvd.
Dorval, Quebec
Canada H9P 2T4

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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.

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Introducing DigiSuite

This chapter presents an overview of Matrox DigiSuite and explains the contents of this manual.

DigiSuite — digital audio/video building blocks

Matrox DigiSuite provides a solid foundation of digital video hardware and software components. These can be combined to form various state-of-the-art audio/video systems, such as nonlinear editing suites, digital media post-production workstations, live video switchers, media servers, and digital animation recorders.

Features

DigiSuite offers you the advantage of cutting-edge performance with key features such as the following:

- Multiple channels of 2D DVE.
- Multiple channels of color correction.
- Independent transparency control on each layer.
- 32-bit uncompressed animated graphics—roll or crawl 32-bit credits over video (and transitions) in real time.
- Two advanced chroma/luma keyers with chroma suppression, shadow preservation, and anti-aliased edges.
- Hundreds of user customizable transitions with anti-aliased edges and soft borders.
- 16:9 editing support for wide-screen capture, editing, and display.
- Multilayer compositing engine quickly builds productions with dozens (or even hundreds!) of video and/or graphics layers with traveling mattes, 2D and 3D DVEs, transitions, color correction, keying, and all the other Matrox realtime effects.
- Compression-free internal processing prevents multiple generation loss.
- Accelerated print-to-disk quickly puts your realtime sequences into an AVI file so you can easily convert them into video for the web or send them to a broadcast server, ready to air.
- Accelerated image transfer high-speed transfer of video frames to system memory increases performance of host CPU-based software effects.
- 4 in/4 out, balanced/unbalanced analog audio input/output.
- Audio clock genlocked to video reference ensures perfect synchronization in accordance with SMPTE-272M and AES11-1991.
- Microsoft-standard enhanced AVI file format compatible with DirectShow and Video for Windows (VFW) applications.

- DigiSuite AVI file size limit exceeds 12 TeraBytes, over 200 hours of D1 video!
- Versatile software codec allows you to:
  – Read and write DigiSuite-compatible files without having the DigiSuite hardware in the system.
  – Concurrently run multiple applications that would normally require a unique hardware resource.
  – Render a project in a compositing application while doing realtime editing on DigiSuite.
  – Facilitate media sharing over a network among editors, graphic artists and animators where only the editing station requires the DigiSuite hardware for capture and realtime online finishing. The other stations access material stored on the editing station, manipulate the material without making a local copy, and feed material to the editing station without interrupting the edit session.
  – Easily share work on CD-ROM or other removable media with sub-contractors and clients.
- WYSIWYG lets you:
  – See your video paint, compositing, and animation work directly on a broadcast video monitor from within most popular third-party applications.
  – Ensure proper 4:3 or 16:9 aspect ratio in NTSC or PAL.
  – Check for exact color temperature, safe-title area, and any interlaced artifacts that may be present in the image.
- Realtime 3D DVE option turns one 2D DVE channel into a 2D/3D channel, and performs hundreds of 3D effects including perspectives, zooms, page turns, water ripples, spheres, and bumps.
- DV-1394 option transfers DV material digitally over the 1394 interface into the editing system.

Matrox DigiSuite hardware components

Matrox has developed the DigiSuite family of products to meet the needs of industry professionals by offering advanced features. The following are the core DigiSuite components:

DigiMix

Video/graphics mixer with powerful 2D effects capabilities.

Features

- ❑ True D1-quality, 10-bit digital video.
- ❑ Multilayer digital mixing, keying, effects, and switching.
- ❑ Five advanced, ADO-quality digital video effects processors featuring anti-aliased edges, subpixel motion, and transparent shadows.
- ❑ Full proc amp control on capture and playback—tint, hue, chroma, setup, and level adjustments.
- ❑ Onboard digital signal processor, master/genlockable video time base with built-in time base correction (TBC) and blackburst input.
- ❑ Ultra high-speed, 32-bit graphics frame buffer—scroll or crawl 32-bit credits over video (and transitions) in real time.
- ❑ Two advanced chroma/luma keyers with chroma suppression, shadow preservation, and anti-aliased edges.
- ❑ Two independent wipe/tile generators with anti-aliased edges and soft borders.
- ❑ Advanced, over-the-top, Movie-2 expansion bus.
- ❑ Analog component, S-Video, or composite input (one at a time).
- ❑ Analog component, S-Video, and composite program output (simultaneous).
- ❑ Linear key output.
- ❑ Y/C and composite preview output.

DigiMotion

Hybrid component featuring two Motion-JPEG codec modules, a digital audio mixer, and an onboard Fast-20 Ultra-Wide SCSI controller.

Features

- Advanced, over-the-top, Movie-2 expansion bus.
- Internal PCI bus with bridge-to-system PCI bus.
- Onboard Fast-20 Ultra SCSI interface for 40 megabytes (MB)/sec. SCSI bandwidth.
- Memory
  - Onboard DRAM 32 or 64-MB memory buffers using 72-pin, FPF, low-profile, tin-plated SIMM sockets.
  - Direct bus transfer from other adapters (LAN or SCSI).
- Two Motion-JPEG video codec modules.
- ITU-R 601 digital video compression and decompression.
- 60 fields/sec for NTSC and 50 fields/sec for PAL.
- Analog input/output audio.
  - Four mono XLR/line inputs and outputs.
- Digital input/output.
  - Two stereo AES/EBU or S/PDIF digital inputs and outputs.
  - 16-bit analog-to-digital and digital-to-analog conversion.
- Sampling.
  - 16-bit, 44.1 and 48 kHz sampling rates.
  - Audio sampling clock genlocked to video.
  - Analog input level adjustment.
  - 17 dB headroom.
- Panning, mixing, and playback of eight streams with the capability of mixing down to one, two, or four outputs.

Movie-2 bus

By using an over-the-top expansion bus for high-speed, audio/video data transfer, DigiSuite systems free up the host system bus for other tasks, thus offering you much more power.

Movie-2 bus for high-speed, audio/video data transfer between cards

Card #1

Card #2

Card #3

Host bus (PCI, EISA, ISA...) for regular system data transfer
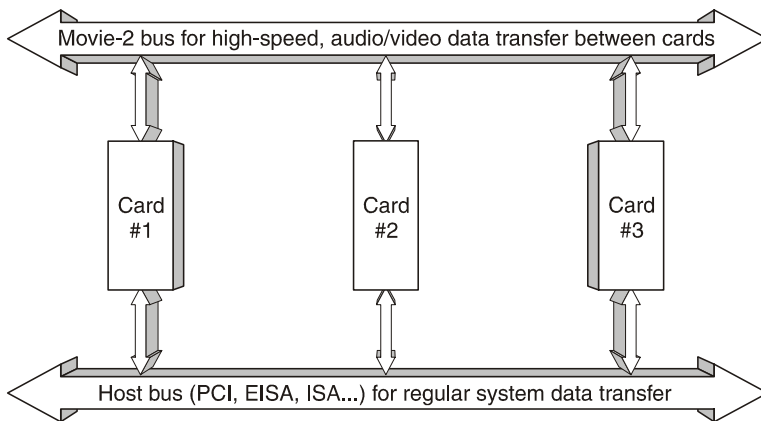
Note The movie-2 bus model you use for your system will depend on the optional cards and features you install.

Other members of the DigiSuite family

In addition to original DigiSuite card sets based on DigiMix and DigiMotion, we've added other cards to our DigiSuite family in order to offer you access to a wide variety of technologies.

Note For information on installing, configuring, and troubleshooting these cards, see their respective installation manuals.

DigiSuite LE

Combines many of the best DigiMix and DigiMotion features into a single card offering outstanding realtime compressed data rates, an advanced realtime feature set, and a great price.

Features
- Two simultaneously available DVE processors provide scaling, motion effects, and color correction control for two video streams.
- Full proc amp control on capture and playback—tint, hue, chroma, setup, and level adjustments.
- Ultra high-speed, 32-bit graphics frame buffer—scroll or crawl 32-bit credits over video (and transitions) in real time.

- Two advanced chroma/luma keyers with chroma suppression, shadow preservation, and anti-aliased edges.
- Two independent wipe/tile generators with anti-aliased edges and soft borders.
- Analog component, Y/C, and composite input and program output.
- Y/C and composite preview output.
- Linear key output.
- Advanced, over-the-top, Movie-2 expansion bus.
- M-JPEG data rates exceeding 15 MB/sec per stream (30 MB/sec combined) are supported. That's 500 KB/frame in NTSC and 600KB/frame in PAL, a compression ratio of 1.3:1.
- Field- and frame-based variable-speed motion control lets you speed-up and slow-down multiple layers of video at any rate you choose.

Options
- A live video window through an optional Matrox DigiDesktop or any other Matrox display card (such as Millennium, G400, etc.).
- Optional plug-on module provides serial digital (SDI) video and AES⁄EBU digital audio input/output.
- Optional audio and video breakout boxes.

DigiSuite DTV

Combines the DigiSuite realtime editing engine with support for DV, DV50, and MPEG-2 native editing, audio and video input/output, and connectivity interfaces that are important in the era of digital television.

Features
- Single PCI slot card.
- All DV formats including JVC Digital-S (D-9), Panasonic DVCPRO and DVCPRO50, Sony DVCAM, and the DV "Blue Book" specification used by several vendors including Canon, JVC, Panasonic, Sharp, and Sony.
- MPEG-2 4:2:2 I-frame variable bit rate editing between 10 and 50 Mb/sec per stream.
- Two simultaneously available DVE processors for scaling, motion effects, and color correction control for two video streams.
- Frame-based variable-speed motion control.

Other members of the DigiSuite family

- ❑ MPEG-2 4:2:2P@ML and MPEG-2 MP@ML transcoding and output for distribution applications such as broadcast transmission, video server storage, archiving, DVD authoring, and web video streaming.

- ❑ Multiple 2D digital video effects processors featuring anti-aliased edges, subpixel motion, and transparent shadows.

- ❑ Full proc amp control on capture and playback—tint, hue, chroma, setup, and level adjustments.

- ❑ Ultra high-speed, 32-bit graphics frame buffer—scroll or crawl 32-bit credits over video (and transitions) in real time.

- ❑ Two advanced chroma/luma keyers with chroma suppression, shadow preservation, and anti-aliased edges.

- ❑ Two independent wipe/tile generators with anti-aliased edges and soft borders.

- ❑ Analog component, Y/C, and composite input and program output.

- ❑ Y/C and composite preview output.

- ❑ Linear key output.

- ❑ Advanced, over-the-top, Movie-2 expansion bus.

Options

- ❑ A live video window through an optional Matrox DigiDesktop or any other Matrox display card (such as Millennium G400, etc.).

- ❑ Optional plug-on module provides serial digital (SDI) video and AES∕EBU digital audio I/O.

- ❑ Optional SDI/SDTI interface card with eight embedded audio input/ output channels supports faster than realtime DV and DV50 transfers. An additional codec onboard the SDTI card provides realtime print-to-disk, realtime SDTI output, realtime MPEG-to-DV transcoding, and realtime MPEG-to-MPEG transcoding for GOP structure and bit-rate modifications.

- ❑ Optional audio and video breakout boxes.

DigiDesktop

Display card with a dual-screen, high-resolution Windows NT desktop and multiple video windows. This single-slot card is based on award-winning Matrox Millennium graphics technology.

Features

- ❏ Two graphic display controllers with independent non-interlaced output.
- ❏ Dual-screen Windows NT desktop.
- ❏ Ultra-high resolution up to $1600 \times 1200 \times 24$-bit color.
- ❏ Accelerated 3D modeling.
- ❏ Up to four simultaneous video windows.
- ❏ Four composite or four Y/C video inputs.
- ❏ Two independent YUV 4:2:2 video decoders.
- ❏ Multiple YUV 4:2:2 video input sources over the Movie-2 bus.
- ❏ PCI mezzanine connector that supports daughter-board expansibility.
- ❏ Optional TriMedia Module.

Note   For information on installing, configuring, and troubleshooting DigiDesktop, see the *DigiDesktop Installation & User Guide*. For information on installing DigiDesktop with DigiSuite LE or DigiSuite DTV, see the *DigiSuite LE Installation Manual* or *DigiSuite DTV Installation Manual*, respectively. If you're installing DigiDesktop with any other DigiSuite cards, refer to Chapter 2 of this manual.

Third-party components

In addition to our own DigiSuite components, leading video equipment vendors are offering powerful DigiSuite components such as the following:

DigiLinx

Multichannel serial digital (SDI) input/output by Miranda Technologies Inc. for DigiSuite (DigiMix and DigiMotion).

Genie

Digital video 3D-effects card by Pinnacle Systems Inc. for DigiSuite and DigiSuite LE.

DigiSuite system requirements

The following recommendations provide good performance when using DigiSuite hardware and software in most situations. Since some software packages may have additional or different requirements, you should always consult the software company and/or your Matrox representative.

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 at least Service Pack 4. Service Pack 5 is recommended[1].
- ❑ Well ventilated chassis.

Note If you're planning on running DigiMix by itself for CG applications, you can achieve acceptable performance with a less-powerful computer system than the one described above. In order to allow for maximum expansibility, however, we recommend that you use a system meeting the above requirements. By doing so, you'll be sure to benefit from the best performance possible should you decide to add other DigiSuite components to your system in the future.

Recommended systems and storage devices

You should refer to our web site at www.matrox.com/video for information on recommended DigiSuite computer systems and storage devices. As new technology becomes available, Matrox tests it and makes any recommendations we feel will benefit our customers.

DigiSuite documentation

Our DigiSuite documentation consists of two manuals plus additional support documentation.

An overall installation manual

DigiSuite Installation Manual
Provides necessary information for installing, configuring, and troubleshooting all the individual components to assemble a state-of-the-art audio/video system tailored to your specific needs.

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

A software user guide

Getting the Most from DigiSuite

Explains how to use the software included with DigiSuite so that you can take full advantage of your system's powerful features.

Important, last-minute information

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

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

PDF documents on CD-ROM

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 run the *.exe* file located there.

About this manual

This manual contains instructions for DigiSuite hardware and software installation and configuration.

- ❑ Chapter 1, "Introducing DigiSuite," presents an overview of Matrox DigiSuite and explains the contents of this manual.
- ❑ Chapter 2, "Installing the DigiSuite Hardware," provides you with instructions for installing the DigiSuite cards and related Movie-2 bus connector.
- ❑ Chapter 3, "Connecting and Configuring Your External Devices," offers instructions for connecting external devices to your DigiSuite cards and configuring your system.
- ❑ Chapter 4, "Installing the DigiSuite Software," explains how to install the drivers required to use your cards, and optional software that's provided with DigiSuite.
- ❑ Chapter 5, "Configuring Your DigiSuite Cards and VTR Settings," explains how to configure your DigiSuite cards to meet specific input and output requirements. It also explains how to test the maximum data rates your A/V drives can achieve, configure your VTR for

RS-422 device control, and stripe your tapes for frame-accurate editing.

❑ Appendix A, "Special Installation Instructions," explains how to install multiple DigiSuite card sets or change your hardware installation by adding or removing cards.

❑ Appendix B, "Upgrading DigiMotion Onboard Memory," provides you with instructions for upgrading DigiMotion's onboard DRAM memory buffer.

❑ Appendix C, "DigiSuite Specifications," provides DigiSuite hardware specifications.

❑ Appendix D, "DigiSuite Glossary," serves as a reference for the terminology used in the various DigiSuite manuals.

❑ Appendix E, "Customer Support," lets you know 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.

❑ The names of keys are displayed in small capital bold letters, such as the **CTRL** key.

❑ A plus (+) sign is used to indicate combinations of keys and/or mouse operations. For example:
– **CTRL+C** means to hold down the **CTRL** key while pressing the **C** key.
– **SHIFT+click** means to hold down the **SHIFT** key while you click an item with the mouse.

Installing the DigiSuite Hardware

This chapter provides you with instructions for installing the DigiSuite cards and related Movie-2 bus connector.

Important notes!

Start with a functioning system

Before attempting any DigiSuite installation, you should have a computer system with Windows NT 4.0 and at least Service Pack 4 fully installed and functioning smoothly (Service Pack 5 is recommended). This will avoid potential problems later on.

Special installation instructions

When installing multiple DigiSuite card sets or adding/removing cards to your present DigiSuite system, there are specific steps that **must** be carried out in the proper order. Because these combine both hardware and software installation procedures, you'll find a description of the proper installation sequences in Appendix A, "Special Installation Instructions," on page 105. You should read the information if your situation fits one of the following categories.

Multiple card sets

It's possible to install more than one DigiSuite card set in a single computer system. A card set is considered to be one or more DigiSuite cards recognized as a single functional unit by DigiSuite software. For more details, refer to "Installing more than one card set in a system" on page 107.

Adding or removing hardware

If you already have DigiSuite cards installed in your system and are adding or removing cards, you must carry out the procedures in a specific order. For detailed instructions, see "Changing an existing card set" on page 108.

Installation overview

The following steps summarize the installation of DigiSuite cards and the appropriate Movie-2 bus. This is simply to give you an overview.

Important   Please do not attempt to install any of the components without reading the detailed instructions that follow. Failure to do so may result in broken parts and/or system malfunctions. Do it right the first time!

1 Prepare your computer and cards for installation.

2 Open your computer and identify the expansion slots in which you'll install your DigiSuite cards.

3 Carefully assemble the cards and Movie-2 bus connector as a unit outside of your computer.

4 Insert the assembled unit in your computer.

5 Connect your external devices, including A/V hard drives.

6 Close your computer's cover and restart your system.

7 Configure your system for the new components.

8 Install the software.

Before you begin

Read the following information carefully before attempting to install DigiSuite cards in your computer system.

Avoid costly damage

CAUTION

STATIC
DISCHARGE

Static electricity from your body can damage your DigiSuite cards or your computer. Although you may not notice it, static electricity is generated every time you move. It's often too small to cause a spark, but it can still cause damage to sensitive electronic components or at least reduce their life span.

To avoid damage to your computer, please read the following precautions before opening it:

❏ Do not remove your DigiSuite cards from their antistatic bags until you're ready to install them. Before removing the cards, place the packages within easy reach of the area where you intend to perform the installation.

❏ You should avoid touching the chips and other components on the circuit boards. Try to handle the cards by their edges.

❏ Try to work in an area where the relative humidity is at least 50%.

❑ Do not wear wool or polyester 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 peripherals.

❑ Once you've opened your computer, drain static electricity from your body by touching a gray metal part 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.

Make sure your computer is compatible

To make sure that your computer is compatible with the DigiSuite cards you'll be installing, refer to our web site for system recommendations. You can find this information in the Customer Support section at: http://www.matrox.com/video.

You can also call Matrox Video Products Group Customer Support at:

800-810-2550.. U.S. and Canada

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

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

+44 (0) 1753 665 679 ....UK, Middle East, and Africa

1 514 685-7230 ext. 2388 ....All other countries

Choose the best installation position

It's much easier to install DigiSuite components 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:

1

Place tower on
its side

2

Install components
vertically
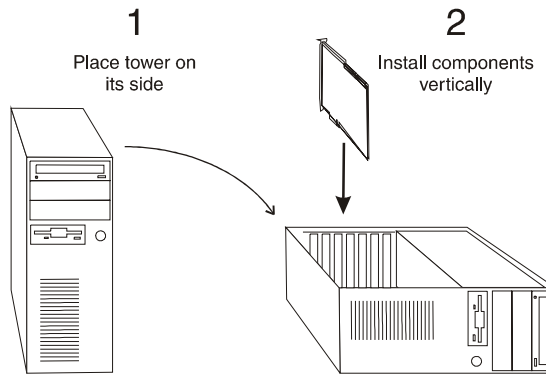
Identify your expansion slots

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 four PCI slots and three ISA, whereas another may have five PCI slots and two 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 four PCI slots referred to as P1, P2, P3, and P4. There are also three ISA slots, I1 to I3.
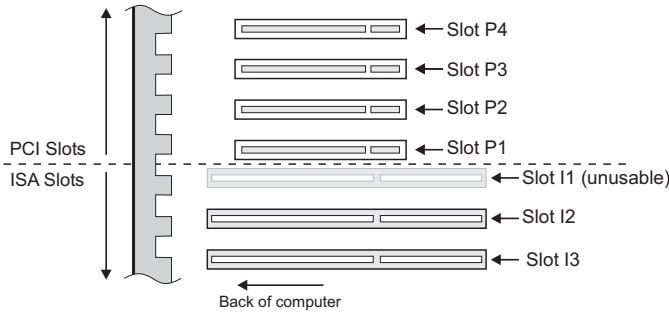
It's important to note that the two "border slots"—those that are next to the other type—are considered "shared" slots. As such, only **one** of the two may be used at a time. For the sake of consistency, most DigiSuite systems will use slot P1, the first PCI slot from the center. Thus, the first ISA slot, I1, is unusable in most DigiSuite systems.

In "Determine your DigiSuite card set order" on page 23, you'll find diagrams showing suggested card placement in your computer system. Please pay careful attention to the slot positions recommended for each card in the combination you'll be installing.

Plan for adequate ventilation

Before using your DigiSuite-equipped system, you must ensure adequate ventilation in your computer. Because some DigiSuite cards consist of two printed circuit boards sandwiched closely together, the assembled units produce a significant amount of heat. Forced air ventilation is therefore extremely important, particularly when you use more than one DigiSuite card. Inadequate ventilation may result in erratic operating behavior and can cause damage to your cards.

Recommendations

The best solution is to provide as much air flow as possible between the cards; especially between the base and module boards of the card sandwich.

Adding one fan

❑ Position a fan directly facing the end of the DigiSuite cards with the PCI retainer brackets. You should make sure the fan directs air between the various circuit boards.
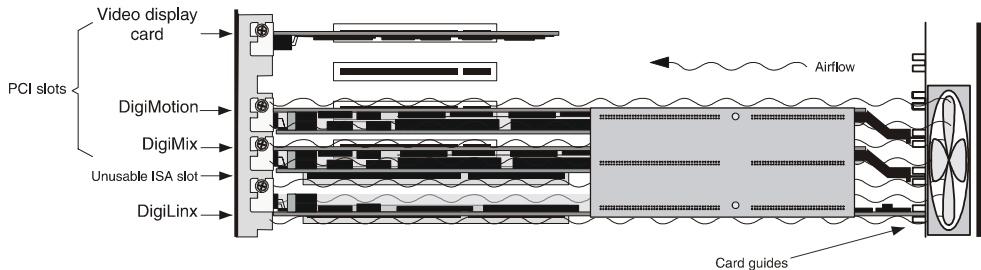
❑ The fan should have a minimum rating of 40 CFM (CFM stands for cubic feet of air displaced per minute and is a measurement standard for fans). An example of a fan that meets this requirement well is the Sunon model KD1208PTB1, which is a 12 VDC fan with a rating of 42.5 CFM.

❑ Make sure to mount the fan as close to the cards as possible. In most systems, you should be able to place the fan directly behind the card guide slots as shown in the above diagram.

❑ Make sure to close your computer's cover once you've finished installing your hardware. This ensures that the aiflow generated by the fan is directed through the cards and does not escape through the top of your system.

Adding two fans

Since the area of highest heat buildup is near the middle of the card set, you can try to install an additional fan directly over the expansion slots, but in such a way that it will draw air out from between the cards. The resulting air current flow will pull heated air out from between the circuit

boards, thus dissipating more heat. This is only possible if your system has enough room for the mounted fan.
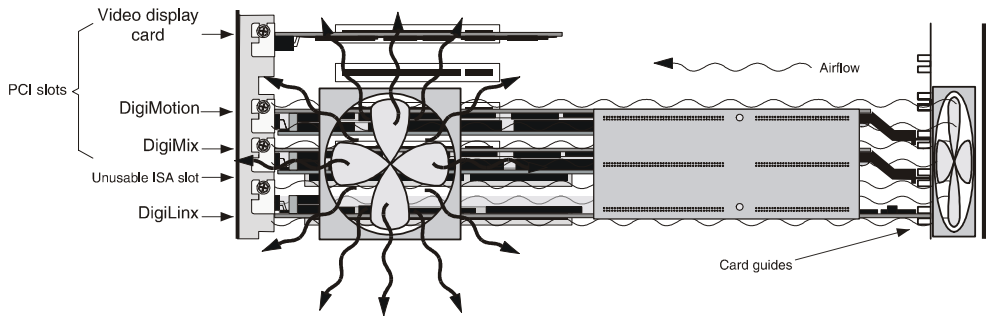
🖙 **Important**   Fan installation should be done by a qualified technician. Improper installation procedures can result in damage to your DigiSuite components and/or your computer system. Matrox Electronic Systems Ltd. is not responsible for any damage caused by faulty installation.

Use the PCI retainer brackets

Almost all computers contain card guides at the front end of the computer chassis. These help to stabilize cards. Since PCI cards are neither long enough nor correctly centered to use these guides, most of the PCI-based DigiSuite cards are equipped with a PCI retainer bracket. The following diagrams depict the retainer bracket's use:

DigiSuite card's base board

DigiSuite card's module board

PCI retainer bracket

ISA card guide
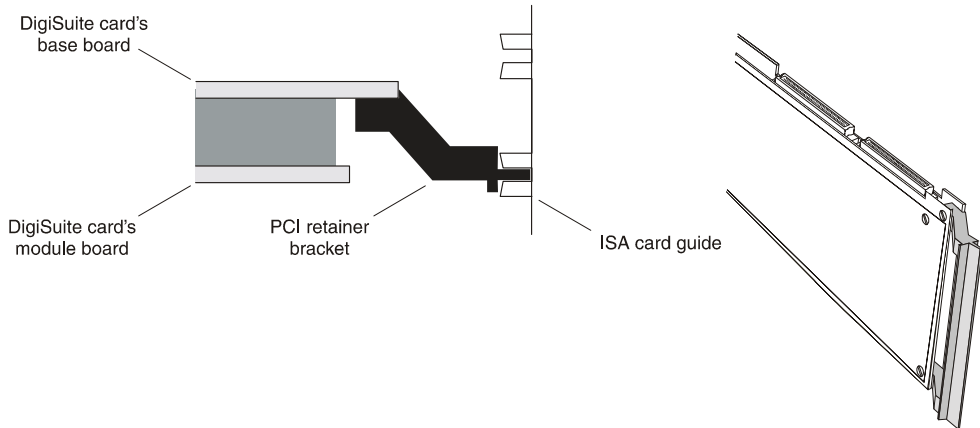
Removing the PCI retainer bracket

Important   Make sure you have read "Avoid costly damage" on page 15 before handling your DigiSuite cards.

With some computer models, you may have to remove the PCI retainer bracket. In such a case, simply remove the screws holding the bracket in place and then carefully remove the bracket.

In the case of DigiMix, however, the PCI retainer bracket also acts as a spacer between the base and module circuit boards. With this in mind, we supply you with a metal spacer plus two extra screws. DigiMix already has an existing spacer near the top of the card that you should leave in place (see the illustration below).

➢ **To remove the DigiMix PCI retainer bracket:**

1 Remove the three screws and one nylon washer (**C**) that fasten the PCI retainer bracket (A) and carefully extract the bracket from between the DigiMix base and module circuit boards.

2 Carefully insert the large metal spacer (**B**) and nylon washer (**C**), align both with the screw holes in the DigiMix base and module circuit boards, and carefully fasten them with the two provided screws.

Existing
Spacer
DO NOT
REMOVE
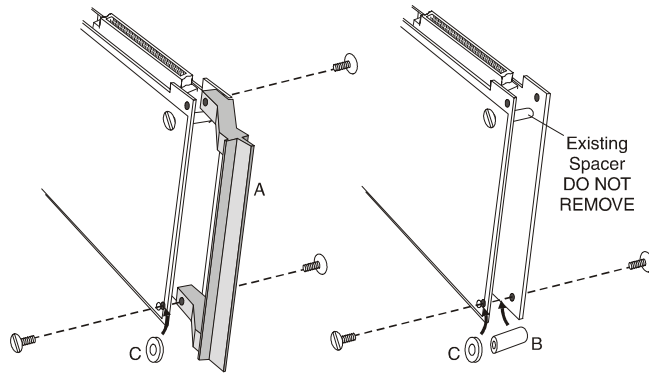
Set your DigiMix termination switch

Important Make sure you have read "Avoid costly damage" on page 15 before handling your DigiSuite cards.

DigiMix has a 75 Ω termination switch mounted on its baseboard at the top near the back plate. The card is shipped with this switch set to the position marked "75" for termination. If you're using the DigiConnect/Video breakout box or another device for termination, set the termination switch to Hi Z.

Switch 1 position for
75 Ω termination

Switch 1 position
for Hi Z

(required for use with
DigiConnect/Video)

Switch 2 (not used)
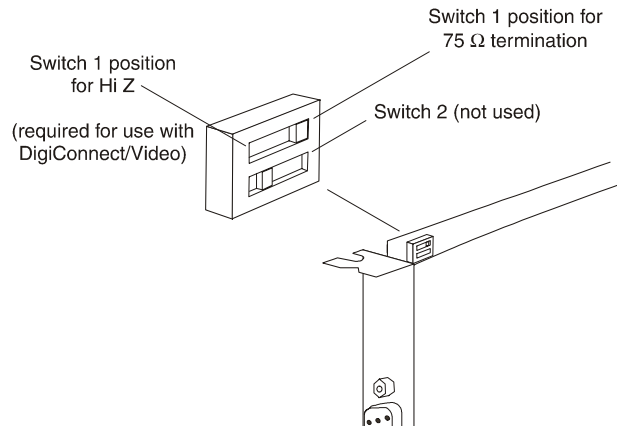
Install non-DigiSuite cards first!

It's important to install any non-DigiSuite cards in your system before installing your DigiSuite cards. If you don't do so, your DigiSuite system may not work properly.

In addition, try to leave empty slots between your DigiSuite card sets and non-DigiSuite cards if it's possible. This will permit additional air flow between cards. For more details on providing adequate ventilation, see "Plan for adequate ventilation" on page 18.

Determine your DigiSuite card set order

Each of the following diagrams illustrates the proper placement of DigiSuite cards in your computer system. The following card combinations are presently available:

- ❑ DigiMix (stand-alone).
- ❑ DigiMix–DigiMotion.
- ❑ DigiLinx–DigiMix–DigiMotion.
- ❑ DigiMix–DigiMotion–DigiDesktop.
- ❑ DigiLinx–DigiMix.
- ❑ DigiLinx–DigiMix–Genie.
- ❑ DigiMix–DigiMotion–Genie.
- ❑ DigiLinx–DigiMix–DigiMotion–Genie.
- ❑ DigiLinx–DigiMix–DigiMotion–Genie–DigiDesktop.
- ❑ Two DigiLinx–DigiMix card sets on one Movie-2 bus.
- ❑ DigiLinx–DigiMix card set, with two additional DigiMix stand-alone card sets.
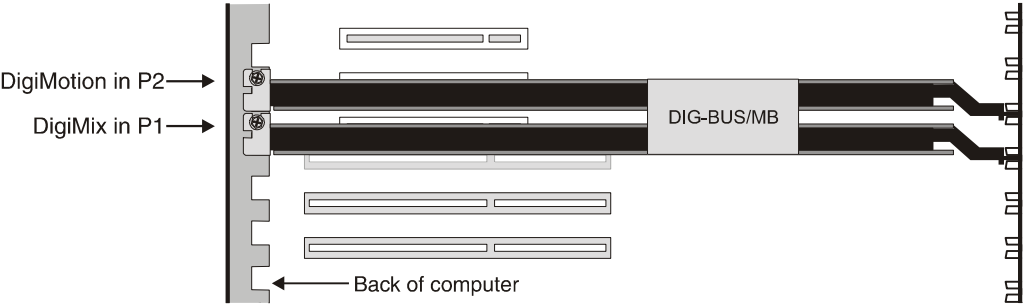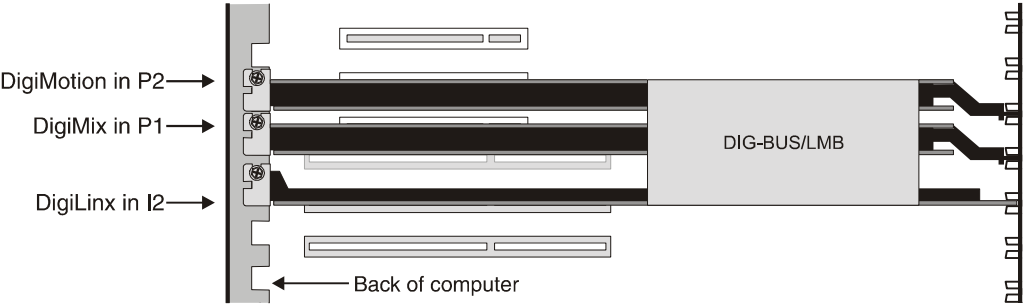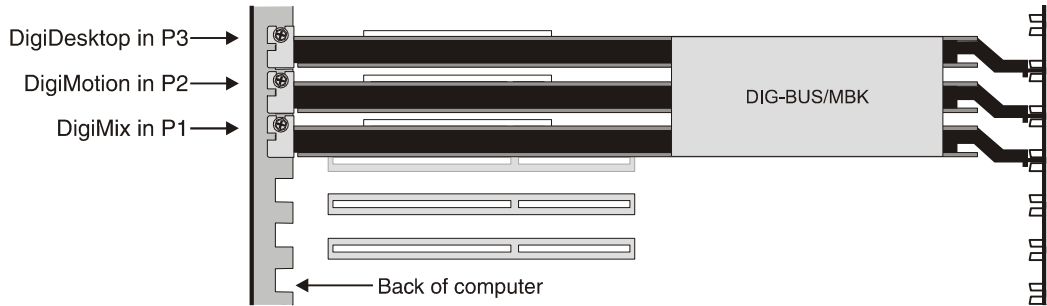
The diagrams that follow show the typical installation order for single card sets.

DigiMix (stand-alone)

DigiMix in P1 →

Back of computer ←

DigiMix–DigiMotion

DigiMotion in P2 →

DigiMix in P1 →

DIG-BUS/MB

Back of computer ←

DigiLinx–DigiMix–DigiMotion

DigiMotion in P2 →

DigiMix in P1 →

DigiLinx in I2 →

DIG-BUS/LMB

Back of computer ←

DigiMix–DigiMotion–DigiDesktop

DigiDesktop in P3 →
DigiMotion in P2 →
DigiMix in P1 →

DIG-BUS/MBK

← Back of computer

DigiLinx–DigiMix

DigiMix in P1 →

DIG-BUS/LM

DigiLinx in I2 →

← Back of computer

DigiLinx–DigiMix–Genie

Genie in P2 →
DigiMix in P1 →

DIG-BUS/LMD

DigiLinx in I2 →

← Back of computer

Determine your DigiSuite card set order

DigiMix–DigiMotion–Genie
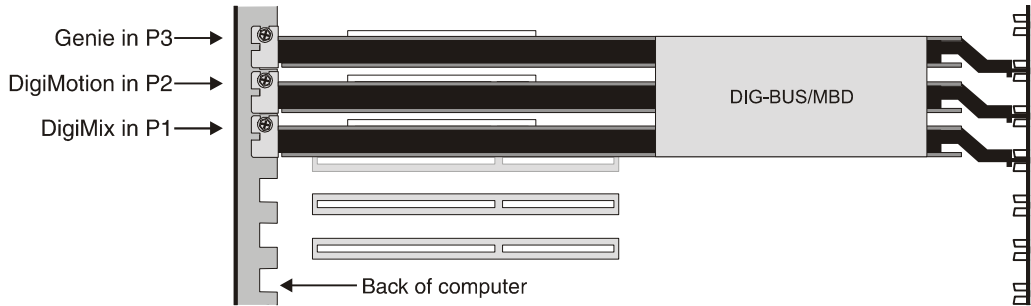
Genie in P3 →
DigiMotion in P2 →
DigiMix in P1 →

DIG-BUS/MBD

← Back of computer

DigiLinx–DigiMix–DigiMotion–Genie

Genie in P3 →
DigiMotion in P2 →
DigiMix in P1 →

DigiLinx in I2 →

DIG-BUS/LMBD

← Back of computer

DigiLinx–DigiMix–DigiMotion–Genie–DigiDesktop

DigiDesktop in P4 →
Genie in P3 →
DigiMotion in P2 →
DigiMix in P1 →

DigiLinx in I2 →

DIG-BUS/LMBDK

← Back of computer

Chapter 2, Installing the DigiSuite Hardware
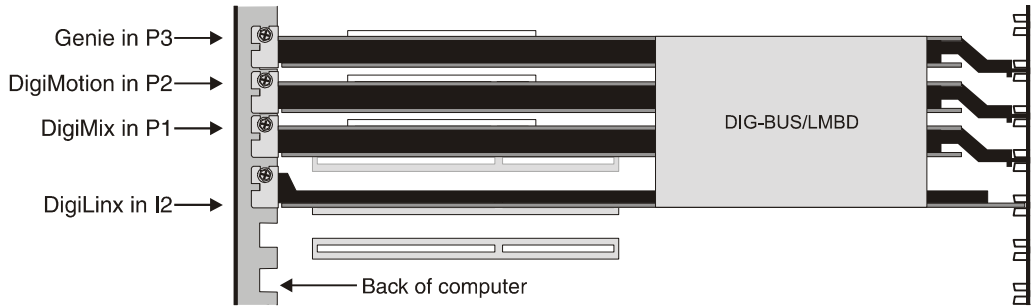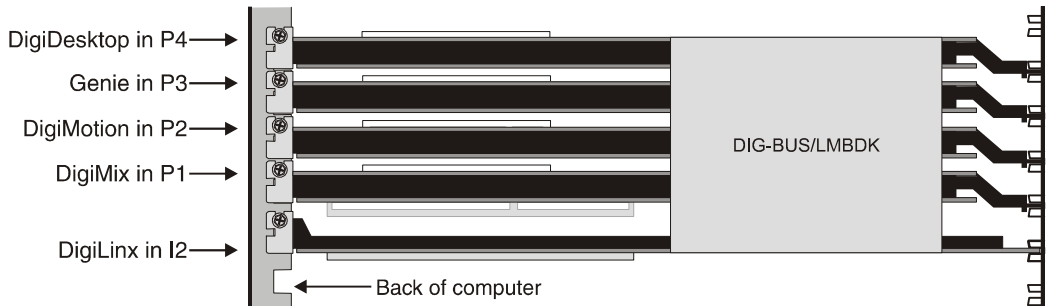
👉 **Important**   Special installation procedures are necessary for the following configurations. For details, see Appendix A, "Special Installation Instructions," on page 105.

Two DigiLinx–DigiMix card sets
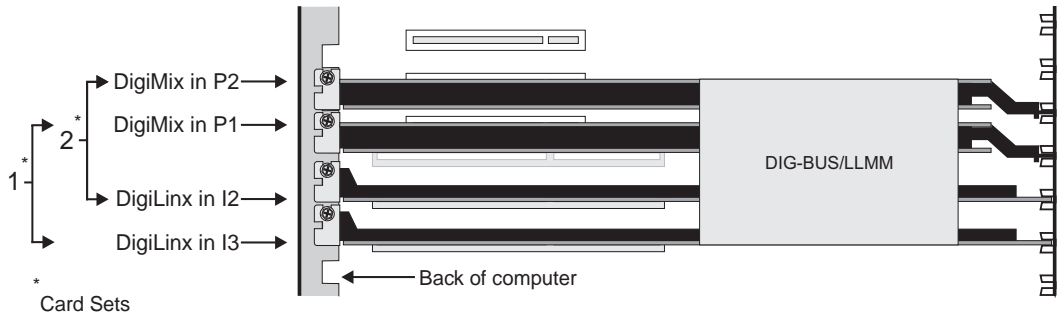
DigiLinx–DigiMix card set with two additional DigiMix stand-alone card sets
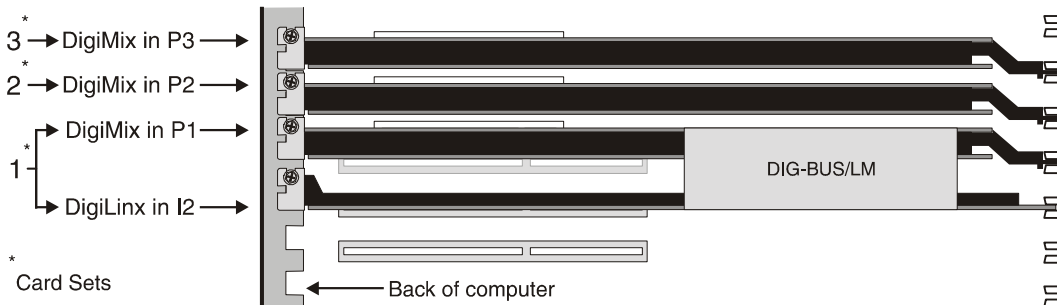
Determine your DigiSuite card set order

Take care of your Movie-2 bus—Important!

The Movie-2 bus is one of the most important parts in a multi-card DigiSuite system because it allows for the high-speed audio/video data transfer between different cards. This speed is required for high-performance digital media systems where professional quality is a must.

Although it's possible to install DigiSuite cards in your computer and then connect the Movie-2 bus to the cards, this method often results in unreliable connections (particularly when more than two cards are connected to a bus). We recommend assembling the individual components as a unit outside your computer, and then installing the unit as a whole. The following section describes this procedure for several cards in a system.

❑ Before installing your Movie-2 bus, carefully inspect the connectors on the bus and on the DigiSuite cards themselves, as well as their pins. The connectors should not be cracked or broken, and none of the pins should be bent or missing.

❑ Never force the parts together! Align the bus connector carefully and gently press it into place. When you're sure the connector is properly seated, insert the two mounting screws in their holes and turn them several times with a screwdriver.

❑ Do not overtighten the Movie-2 bus mounting screws! Even when the screws are properly tightened, there will be a small space between the Movie-2 bus circuit board and the top of the cards.

❑ When installing or removing your Movie-2 bus, be sure to do so in a straight motion with no significant lateral angle. Failure to do so will result in bent pins and/or broken connectors.
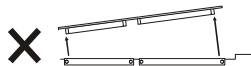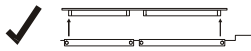
❑ If you have to remove your Movie-2 bus, use a simple tool to gently pry it loose at one end—one of the blank metal plates used to cover an empty computer slot position works well. Then do the same with the other end of the connector.
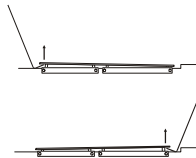
Install your DigiSuite cards

Note Before proceeding, you should review the antistatic and safety precautions described earlier on page 15.

1 If any of the slots in which you'll be installing your DigiSuite cards already contain other cards, either move them to unused slots or remove them completely.

2 Remove the metal plate located at the back of each slot you'll be using. Don't lose the screws as you'll need them to fasten the cards later on.

3 Determine the order of installation for the cards. This is indicated on the top of the Movie-2 bus. You'll install the cards from right to left when facing the back of the computer.

4 Make sure the termination switch is set to the proper position, as explained in "Set your DigiMix termination switch" on page 22. Also, make sure you've removed the PCI retainer bracket, as indicated in "Removing the PCI retainer bracket" on page 21, if necessary. If you're installing a stand-alone DigiMix, skip the remaining steps. Simply install DigiMix in slot P1 and then secure it to the back plate of the computer using the screw you removed in step 2.

5 Lay the card to be installed in the rightmost position on its side and carefully install the Movie-2 bus as shown below. Insert the mounting screw through the top of the Movie-2 bus and secure it to the card.
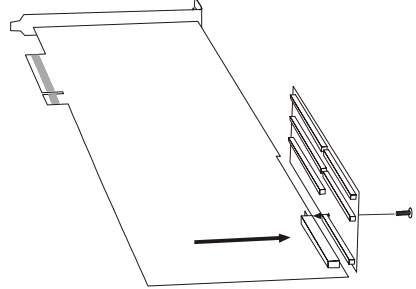
6 Flip the assembled card and Movie-2 bus over with the bus underneath. Rest the plate end of the card on a flat surface and place one hand under the Movie-2 bus while installing the second card with the other hand.
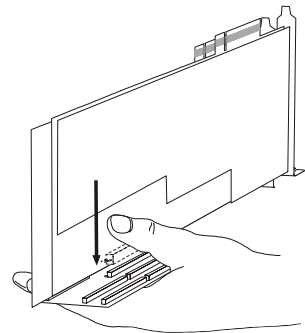
7 Continue supporting the Movie-2 bus with one hand while installing the third card with the other hand.
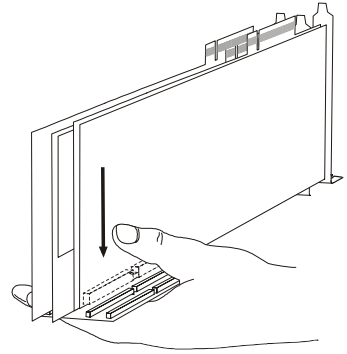
8 Install the fourth card in the same way.
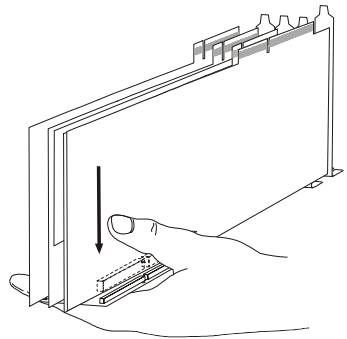
9 Flip the entire unit over and insert the remaining mounting screws through the top of the Movie-2 bus. Avoid putting too much stress on the Movie-2 bus.

10 Carefully install the entire card-bus unit in the intended host computer making sure all cards are firmly seated in their slots. Secure each card's back plate to the computer.

Before restarting your computer

You must connect your external devices such as VTRs, A/V (SCSI) drives, etc., before attempting to restart your computer. The next chapter provides details about these tasks.

Connecting and Configuring Your External Devices

This chapter offers instructions for connecting external devices to DigiSuite, such as your VTRs and A/V drives.

C H A P T E R

3

Connecting external devices to DigiMix

There are various connection possibilities available to you for DigiMix.

To view the signal that you'll be recording, connect a Program monitor (NTSC or PAL) to your recorder's output.

External sync source   Source   Recorder   Program monitor
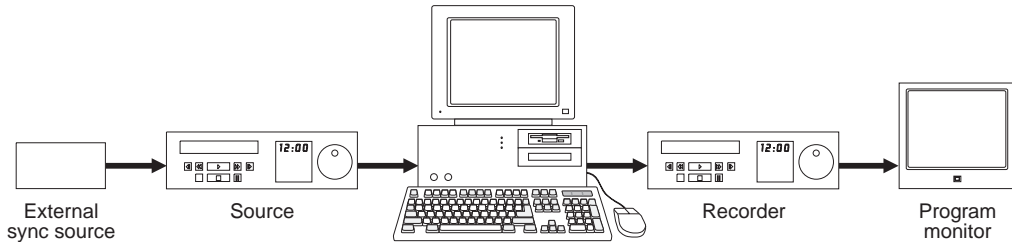
DigiConnect/Video breakout box

DigiConnect/Video is a breakout box providing you with the maximum flexibility possible for connecting external devices to your DigiMix.

Available DigiMix cables

The analog component input/output cable (DMX/CAV/CBL) lets you connect either an analog component or composite input source and one recorder. The S-Video input/output cable (DMX/YC/CBL) lets you connect two S-Video sources and one recorder.

Preparing your DigiConnect/Video breakout box

This section explains how to prepare your video breakout box for use.

Prepare for mounting

You have two choices for mounting your DigiConnect/Video breakout box, either standard 19" rackmount or desktop.

Important   Make sure you use the correct screws for each mounting method. If you use the wrong ones, you can damage your equipment. Compare the length of the supplied screws. Use the four long screws **only** with the desktop-mount pedestals.

Attaching the desktop pedestals

1 Unpack the two desktop pedestals and their four long mounting screws.

2 Line up each pedestal with its respective screw holes on the bottom of the breakout box.

3 Using a hand screw driver only (**no power screwdrivers**), carefully tighten each screw until snug. **Do not overtighten**!

Attaching the rackmount brackets

Left rackmount bracket

Right rackmount bracket

1 Unpack the two rackmount brackets and their eight short mounting screws. **Do not use the long screws!**

2 Line up each bracket with its respective screw holes on the side of the breakout box.

3 Using a hand screw driver only (**no power screwdrivers**), carefully tighten each screw until snug. **Do not overtighten**!

Connect DigiConnect / Video to your computer

Attach the connector on your cable to the jack on the backplate of your installed DigiMix. Tighten the thumb screws until snug to ensure a stable connection.

Important   Do not bend the attached cable too sharply. Excessive bending or flexing can damage the internal shielded wires.

DigiConnect/Video

DigiMix
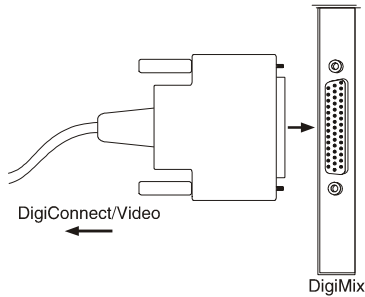
Choosing your connection signal options

As you can see by reading the front panel labels, DigiConnect/Video offers several signal options.

Note   The front switches on DigiConnect/Video are all recessed to prevent unwanted changes. Use a small screwdriver or other appropriate object to change the settings as required.

Video input

Inputs 1 and 2 allow you to choose analog component, S-Video, or composite input. Input 3 accepts either composite or S-Video.
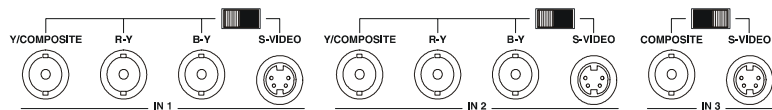
Note   When using Input 3 for S-Video, you cannot use Input 2 for analog component. In such a situation, Input 2 can only be used for S-Video or composite input.
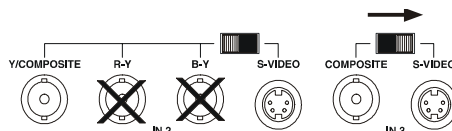
75 Ω termination

As shown below, the 75 OHMS switch on DigiConnect/Video provides a convenient way of switching between 75 Ω termination and loop-through.
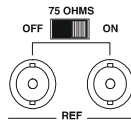
Video outputs

The output signal is always present at all video output jacks.

Typical DigiMix connections

The following illustrations show some typical video connections. In these illustrations we've connected separate source and record decks. You may, however, use the same deck as both your source and record device by making the input and output connections to a single deck.

Important   If your system includes a DigiLinx card, do not connect an external sync source to DigiMix. Instead, you must connect an external sync source to the REF IN connector (some connectors may be labelled IN) on DigiLinx or genlock to one of your digital input sources.

Analog component connections with DigiConnect/Video

S-Video connections with DigiConnect/Video

External Sync Source

SYNC OUT

Program Monitor Input

VIDEO IN

ON
75Ω
OFF
SYNC

S-VIDEO IN   S-VIDEO OUT

Source (Deck 1)

IN   OUT
VIDEO

SYNC   ON
75Ω
OFF

S-VIDEO IN   S-VIDEO OUT

Recorder (Deck 2)

REF IN

S-VIDEO IN 1

S-VIDEO OUT

matrox

Y/COMPOSITE R-Y B-Y S-VIDEO   Y/COMPOSITE R-Y B-Y S-VIDEO   COMPOSITE S-VIDEO   OFF 75 OHMS ON   KEY OUT   — PREVIEW OUT — COMPOSITE S-VIDEO   Y R-Y — PROGRAM OUT — B-Y COMPOSITE S-VIDEO

IN 1   IN 2   IN 3   REF

DigiMix

Analog component connections with DMX/CAV/CBL

External Sync Source

Program Monitor Input

Source (Deck 1)

Recorder (Deck 2)

REF IN

Y/CMPS IN
R-Y IN
B-Y IN

B-Y OUT
R-Y OUT
Y OUT

DigiMix Connector

Composite connections with DMX/CAV/CBL

External
sync
source

Program
monitor
input

SYNC
OUT

VIDEO
IN

ON
75Ω
OFF SYNC

IN OUT
VIDEO

SYNC
ON
75Ω
OFF

COMPOSITE VIDEO
IN OUT

COMPOSITE VIDEO
IN OUT

Source
(Deck 1)

Recorder
(Deck 2)

REF IN

IN Y1/COMPS1

PROGRAM COMPS

DigiSuite video connector

S-Video connections with DMX/YC/CBL

External Sync Source

SYNC OUT

Program Monitor Input

VIDEO IN

ON
75Ω
OFF
SYNC

IN   OUT
VIDEO

SYNC
ON
75Ω
OFF

S-VIDEO IN   S-VIDEO OUT

S-VIDEO IN   S-VIDEO OUT

Source
(Deck 1)

Recorder
(Deck 2)

REF IN

Y/C IN 1 or 2

Y/C OUT

DigiMix Connector

Connecting external devices to DigiMotion

DigiConnect/Audio breakout box

DigiConnect/Audio is a breakout box providing you with the maximum flexibility possible for connecting external devices to your DigiMotion.

Available DigiMotion cables

The balanced audio input/output cable (DMT/XLR/CBL) lets you connect balanced audio inputs and outputs to your DigiMotion. The unbalanced RCA input/output cable (DMT/RCA/CBL) is also available for RCA-type audio connections.

Preparing your DigiConnect/Audio breakout box

This section explains how to prepare your audio breakout box for use.

Prepare for mounting

You have two choices for mounting your DigiConnect/Audio breakout box, either standard 19" rackmount or desktop.

Important Make sure you use the correct screws for each mounting method. If you use the wrong ones, you can damage your equipment. Compare the length of the supplied screws. Use the four long screws **only** with the desktop-mount pedestals.

Attaching the desktop pedestals

1 Unpack the two desktop pedestals and their four long mounting screws.

2 Line up each pedestal with its respective screw holes on the bottom of the breakout box.

3 Using a hand screw driver only (**no power screwdrivers**), carefully tighten each screw until snug. **Do not overtighten**!

Attaching the rackmount brackets

Left rackmount bracket   Right rackmount bracket

1 Unpack the two rackmount brackets and their eight short mounting screws. **Do not use the long screws!**

2 Line up each bracket with its respective screw holes on the side of the breakout box.

3 Using a hand screw driver only (**no power screwdrivers**), carefully tighten each screw until snug. **Do not overtighten**!

Connect DigiConnect/Audio to your computer

Connect the two connectors on your cable to the correct jacks on the backplate of your installed DigiMotion. Tighten the thumb screws until snug to ensure a stable connection.

Important   Do not bend the attached cable too sharply. Excessive bending or flexing can damage the internal shielded wires.

DigiConnect/Audio

DigiMotion
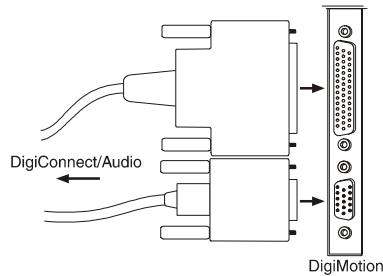
Choose your connection signal options

As you can see by reading the front panel labels, DigiConnect/Audio offers several signal options.

Note   The front switches on DigiConnect/Audio are all recessed to prevent unwanted changes. Use a small screwdriver or other appropriate object to change the settings as required.

Digital audio input/output

You can choose between the AES/EBU and S/PDIF connections by simply sliding the appropriate switch towards the jack you wish to use.

AES/EBU

S/PDIF
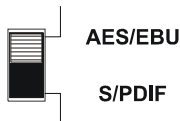
Analog audio input

You can choose between the XLR and RCA input connections by simply sliding the appropriate BAL/UNBAL switch towards the jack you wish to use. In addition, each 600 OHM switch provides termination on the XLR jack located directly above it.
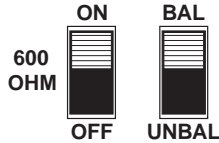
Analog audio output

The output signal is always present at both XLR and RCA output jacks.

About DigiMotion audio connections

Please read the following information to avoid problems with audio connections as well as possible damage to or malfunction of your equipment.

Avoiding unwanted pops and clicks

As is the case with many electronic audio components, DigiMotion may generate audible popping and clicking sounds that will be reproduced in any external audio equipment connected to it.

To avoid this problem, make sure that all external devices connected to DigiMotion are turned off and their volume controls turned down whenever you are doing one of the following actions:

- ❑ Connecting or disconnecting cables.
- ❑ Turning power on and off.
- ❑ Rebooting your computer.

Using adapters

When connecting an XLR cable to RCA equipment, or vice versa, make sure you are using properly impedance-matched adapters. Using the wrong type of adapter may degrade the audio quality.

Other important reminders

- ❑ Avoid using the unit near a power amplifier or other equipment containing large transformers as this may induce hum.

- ❑ Do not use this unit on the same power circuit with any device that generates line noise, such as a motor or a variable lighting system.

- ❑ Do not bundle audio cables with AC power cords.

- ❑ Avoid running audio cables near sources of electromagnetic interference such as transformers, monitors, etc.

- ❑ Do not place cables where they can be stepped on. Although stepping on a cable may not cause immediate damage, it can compress the insulation between the cable's center conductor and its shield. This may degrade performance and/or reduce the cable's reliability.

- ❑ Avoid twisting the cable or placing it in such a way that there are sharp, right-angle bends.

- ❑ Never unplug a cable by pulling on the wire itself. Always unplug by firmly grasping the body of the plug and pulling directly outward.

Connect your A/V SCSI Drives

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.

Connecting cables

Caution The standard DigiMotion card includes a SCSI module that supports single-ended devices only. Do **not** connect high-voltage-differential SCSI devices to this module, as this may damage the SCSI controller and your storage devices. Refer to your SCSI device documentation if you are not sure whether your storage devices are single-ended or high-voltage-differential. A replacement high-voltage-differential module (DMT-MOD/SD) is available as an option for DigiMotion.

Connecting external drives

If you plan to use an external SCSI drive or array with your DigiSuite system, you should connect the external SCSI cable adapter (DMT/SCSI/CBL3) to DigiMotion before closing your computer, as explained below:

1 Locate an unused slot position at the back of your computer. Typically this will be an ISA slot. Remove the blank metal plate.

2 Insert the plate end of the cable in this space and attach it to the computer chassis with the screw you removed in step 1.

3 Connect the other end of the cable to the Wide SCSI connector on DigiMotion as indicated in the diagram.
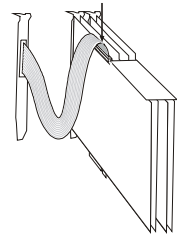
SCSI cable length

When using single-ended SCSI devices with DigiMotion, the total length of all cables on the SCSI bus (internal and external) should not exceed the following values:

Number of attached SCSI devices (including controller)	Maximum SCSI cable length (in feet) Single-ended devices		
	Normal	Fast	Ultra
1 to 4	18	9	9
5 to 8	18	9	4.5
9 to 16	18	9	not supported

Important   If you are connecting between five and eight single-ended Ultra SCSI devices to the SCSI bus, it is crucial that the SCSI cable not exceed 4.5 feet.

If you have not yet purchased the SCSI devices and plan on connecting more than five, we strongly recommend that you opt for the high-voltage-differential setup (high-voltage-differential DigiMotion module and high-voltage-differential devices), which offers more flexibility:

Number of attached SCSI devices (including controller)	Maximum SCSI cable length (in feet) High-voltage-differential devices		
	Normal	Fast	Ultra
Up to 16	82	82	82

Terminating the SCSI bus

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

SCSI controller termination is controlled by the SCSI*Select* utility. By default, termination on the DigiMotion SCSI controller is enabled. The default setting, **Low ON/High ON**, should therefore not be changed.

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 SCSI IDs

You must assign a different SCSI ID to each device on the SCSI bus connected to the DigiMotion controller. Refer to your SCSI device documentation for information on determining and changing IDs.

- ❑ **ID 7** is the default SCSI ID for the DigiMotion controller. You can change the ID to any value ranging from 0 to 15 in SCSI*Select*, if necessary. See "Configuring the DigiMotion SCSI controller" on page 49 for information on running the SCSI*Select* utility.

- ❑ Once an ID has been assigned to the controller, IDs for the other SCSI devices can be selected from the remaining available values.

The first time you start your system

Once you've connected your external devices, you're ready to restart your computer. The first time you do so after having installed DigiSuite components, you have to carry out the following tasks:

❑ Configure your computer BIOS settings for proper operation with DigiSuite.

❑ If you're using DigiMotion's onboard Adaptec SCSI controller for your A/V drives, you have to configure the controller's settings, then install the Adaptec driver.

System BIOS settings for PCI cards

For DigiSuite cards to function properly as a part of your PCI-based computer system, you may have to change certain BIOS settings.

Selecting **Optimal** under **Defaults** will suffice in most cases. However, if the BIOS on your PCI system allows for enabling/disabling of interrupts, interrupt selection, and enabling/disabling of bus mastering for individual slots, configure the slots you've chosen for DigiSuite cards to the settings outlined below.

The method for accessing the BIOS settings varies from one system to another. Please refer to your computer's manuals for the correct procedure.

BIOS settings for DigiMix PCI slot

PCI Interrupts.. Enabled

PCI Interrupt number ....Any available

Bus mastering..Disabled

Plug 'n Play ....Disabled

BIOS settings for DigiMotion PCI slot

PCI Interrupts.. Enabled

PCI Interrupt number ....Any available

Bus mastering..Enabled[1]

PCI burst mode .... Enabled

Plug 'n Play ....Disabled

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[1] DigiMotion must be bus master

Configuring the DigiMotion SCSI controller

Your DigiMotion SCSI controller (or host adapter) includes the built-in SCSI*Select* configuration utility that lets you access the SCSI controller settings.

❑ To run SCSI*Select*, press **CTRL+A** immediately when the SCSI*Select* message appears on the screen at the time your computer boots.

❑ Use the arrow and **ENTER** keys to make selections in the SCSI*Select* **Options** menu. Press **ESC** at any time to return to the previous menu and **F6** to restore the original default settings.

❑ To abandon changes made in the **Configure/View Host Adapter Settings** menu, press **ESC** and select **NO** when asked if you want to save the changes.

Configure/View Host Adapter Settings menu

In this menu, make sure that:

❑ **Advanced Configuration Options/Host Adapter BIOS** is disabled.

❑ **Advanced Configuration Options/Support for Ultra SCSI Speed** is enabled.

SCSI Disk Utilities menu

Select **SCSI Disk Utilities** in the **Options** menu to display a list of installed SCSI devices. When you select a device, the **Utilities** menu appears, giving you the following choices:

❑ **Format Disk** Runs the Adaptec SCSI low-level format utility. Most SCSI devices are preformatted and do not need to be formatted again.

❑ **Verify Disk Media** Scans the selected device's media for defects. If bad blocks are found, you are prompted to reassign them; if you choose **Yes**, these blocks will no longer be used.

Installing the Adaptec driver in Windows NT

Note Make sure you have your Windows NT installation CD available for this procedure.

1 Run Control Panel and double-click **SCSI Adapters**.

2 Choose the **Drivers** tab.

3 Click the **Add** button.

4   In the resulting **Install Driver** dialog box, select **Adaptec** in the **Manufacturers** box, and then scroll to find and select:

    Adaptec AHA-294X/AHA-394X or AIC-78XX PCI SCSI Controller

    in the **SCSI Adapter** list.

5   Click **OK**.

6   Windows copies the device driver to your system disk and updates the NT configuration so that the new device driver loads when Windows NT reboots.

7   When the installation is complete, Windows NT Control Panel again displays a list of currently installed host adapter types. Verify that the new host adapter appears on the list.

8   Click **Close** to exit the SCSI adapters portion of Windows NT Control Panel, and then close the program.

9   Click **OK** if your system displays a message prompting you to restart your computer. If such a message doesn't appear, no changes have been made to the Windows NT system configuration.

10   Restart your computer. Note that some drive letter assignments from the previous configuration may change.

Notes on using A/V drives with DigiSuite

Recommended storage devices

Hard disks play an important role in the overall functionality of any DigiSuite system. Although your DigiSuite cards should be compatible with most storage solutions now available on the market (EIDE, SCSI, SSA, Fibre Channel), choosing and configuring an adequate storage solution that suits your particular needs is a difficult task that should only be performed by an experienced technician or systems integrator. See the Customer Support section on our Web site at http://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**.

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.

Copying files

Do not copy audio or video files between NTFS and FAT drives. Such files may become unusable.

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 (http://www.execsoft.com/) or Norton Utilities for Windows NT 4.0 from Symantec (http://www.symantec.com/)[2]. The amount of

Notes on using A/V drives with DigiSuite

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 Write Mode** option is selected in the **DigiMotion Storage** dialog box of the DigiSuite Configuration program.

Testing the performance of your A/V drives

The **DigiMotion Storage** dialog box in the DigiSuite Configuration program lets you determine the maximum data rates supported by your A/V drives. Refer to "Testing the performance of your A/V drives" on page 76 for complete step-by-step instructions.

DigiSuite software

DigiSuite comes with software consisting of drivers and utilities to make the most of its advanced capabilities. You can find instructions for proper DigiUtils installation and configuration in the following chapters.

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[2] 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 Customer Support for further assistance.

Installing the DigiSuite Software

This chapter explains how to install the drivers required to use your DigiSuite cards, and optional software that's provided with DigiSuite.

What does DigiUtils Setup install?

The DigiUtils Setup program that's provided on your DigiSuite CD-ROM installs the drivers needed to use your DigiSuite cards with Video for Windows and DirectShow programs, and the DigiSuite Configuration program that lets you configure your cards to meet specific requirements. If you have DigiDesktop, the Matrox DigiView program will also be installed. This program lets you display live video in a window on your computer's monitor.

Note The Microsoft DirectShow runtime files are always installed by DigiUtils Setup. If you have a more recent version of the runtime files on your system, however, those files will **not** be overwritten.

You can also choose to install any or all of the following components:

❑ **DigiTools**   A suite of tools you can use to capture and play back high-quality video and audio clips, as well as convert files between different formats and record clips onto tape.

❑ **3D Studio MAX plug-in**   Lets you render high-quality alpha-keyed animations in 3D Studio MAX.

❑ **LightWave 3D plug-in**   Lets you render high-quality alpha-keyed animations in LightWave 3D (version 5.5 or later).

❑ **Adobe After Effects plug-in**   Lets you display the contents of your Composition window in Adobe After Effects (version 4.0 or later) on your NTSC or PAL Program monitor.

❑ **DigiSuite Effects plug-in**   Lets you add realtime transitions and effects to your nonlinear editing projects. Plug-ins are available for Adobe Premiere RT and Speed Razor RT.

❑ **VTR driver**   Lets you control your VTR with DigiTools and various nonlinear editing programs to perform frame-accurate capture and print-to-tape of clips using time code. (This driver will be installed automatically if you install the DigiSuite Effects plug-in for Adobe Premiere RT.)

Each of the above optional components require DigiMix and DigiMotion cards to be installed as the **first** card set in your computer. For instructions on how to use the DigiSuite software, see your *Getting the Most from DigiSuite* manual.

If you'd like to create and play back DigiSuite-compatible *.avi* files **without** having the DigiSuite hardware installed in your computer, see

Before you begin

This section explains what you need to do to prepare your system for the DigiUtils software installation.

Important Make sure you've correctly installed your DigiSuite hardware before attempting to install the software on your system. To install more than one card set, you must run DigiUtils Setup after installing **each** set. For details, see Appendix A, "Special Installation Instructions."

Install your third-party software

To install the DigiSuite plug-in for a program, such as the plug-in for 3D Studio MAX or Adobe Premiere RT, you must first install that program on your computer. This is because DigiUtils Setup must locate the directory where you've installed your program in order to install the plug-in for it.

You should avoid installing any software on your system's A/V drives as this may degrade system performance. If possible, use your A/V drives exclusively for storing audio and video files.

Note If you update your version of 3D Studio MAX, you'll need to re-install the DigiSuite 3D Studio MAX plug-in. If you update other software for which you've installed a DigiSuite plug-in, you'll need to re-install the plug-in only if you place the new version in a different directory.

Check your Windows NT version

To run DigiUtils software, you must have installed Windows NT version 4.0 with at least Service Pack 4 (Service Pack 5 is recommended). If you aren't sure which Service Pack is presently installed, do the following:

❑ Choose **Start | Programs | Administrative Tools (Common) | Windows NT Diagnostics**.

The resulting message box displays your Windows NT version number, followed by the Service Pack that's presently installed on your system.

Set Administration permission level

In order to install or remove any DigiSuite software, you must be configured as an Administrator in Windows NT User Manager. For details about the User Manager program, consult the appropriate Microsoft documentation.

Update the display driver for your DigiDesktop or other Matrox display card

If your system includes DigiDesktop or any other Matrox display card (such as Matrox Millennium G400, etc.), update your Matrox display driver with the one provided on your DigiSuite CD-ROM before running DigiUtils Setup. To install the driver, run the *setup.exe* program located in the directory named *MatroxDisplayDriver\Nt40* on your DigiSuite CD-ROM, then follow the on-screen instructions. For complete details on installing software for DigiDesktop, see your *DigiDesktop Installation & User Guide*.

Connect your VTR for device control

If you'll be installing the VTR driver that lets you control your VTR with DigiTools and Adobe Premiere RT, you should connect your VTR to your computer as explained in the "Working with Clips Using DigiTools" chapter of your *Getting the Most from DigiSuite* manual.

Once the software installation is complete, you'll need to configure your VTR settings using the DigiSuite Configuration program as explained in the next chapter (see).

Running DigiUtils Setup

The following instructions will guide you through the DigiUtils installation process. DigiUtils Setup will prompt you to choose a directory in which to install the DigiUtils files and a location for the program icons. Certain messages appear throughout the process to inform you of installation progress or errors.

Some of the DigiUtils Setup dialog boxes feature **Back** and **Next** buttons. These allow you to move in either direction through the installation. If you wish to change an installation choice in a previous dialog box, move back; when you've finished, go on to the next step.

Step-by-step installation instructions

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. An information box indicates when Setup is complete.

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

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

Installing Video Clipboard for DigiSuite

Inscriber Technology's *Video Clipboard for DigiSuite* lets you copy images to DigiMix from any application that supports the shared Windows Clipboard. You'll see the copied images on your Program monitor when DigiMix is configured to display the graphic frame buffer (for details, see "Configuring the video and key output signals" on page 67).

➢ **To install Video Clipboard for DigiSuite:**

1 Close 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:\videoclipboard\setup* (where *e:* represents your CD-ROM drive), and click **OK**.

5 Follow the instructions that appear on the screen. An information box indicates when the installation is complete.

6 You must restart your computer in order for the changes to take effect. To do so, click **OK** when prompted.

For instructions on how to use Video Clipboard for DigiSuite, refer to the online Help included with the program.

Installing the VFW software codecs for use on a system without the DigiSuite hardware

The Matrox VFW software codecs let you render (compile) and play back DigiSuite-compatible *.avi* files in your Video for Windows programs without having the DigiSuite hardware installed in your computer.

➢ **To install the Matrox VFW codecs:**

1 Close 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:\vfwsoftwarecodec\setup* (where *e:* represents your CD-ROM drive), and click **OK**.

5 Follow the instructions that appear on the screen. An information box indicates when the installation is complete.

☞ **Important**   To capture material, your system must be equipped with the DigiSuite hardware. If you later decide to add the DigiSuite hardware to your computer, you must remove the Matrox VFW software codecs from your system (using **Add/Remove Programs** in your Windows NT Control Panel) before running DigiUtils Setup to install the DigiUtils software.

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.

Changing your DigiSuite hardware

If you want to change your card set combination, such as by adding a new DigiSuite card, you must first uninstall DigiUtils. Once you've installed the new card set, run DigiUtils Setup again to update your current installation.

For details on the procedure for installing multiple card sets and changing your hardware installation, see Appendix A, "Special Installation Instructions."

Configuring Your DigiSuite Cards and VTR Settings

This chapter explains how to configure your DigiSuite cards to meet specific input and output requirements. It also explains how to test the maximum data rates your A/V drives can achieve, configure your VTR for RS-422 device control, and stripe your tapes for frame-accurate editing.

C H A P T E R

5

Using the DigiSuite Configuration program

When you ran DigiUtils Setup to install the DigiSuite software, your cards were assigned default settings that are suitable for most applications. The DigiSuite Configuration program lets you customize these settings to meet specific video and audio input or output requirements. For example, you may want to change the default proc amp settings for your analog video input signal.

If you chose to install the VTR driver for DigiTools or you installed the DigiSuite Effects plug-in for Adobe Premiere RT, you must use the DigiSuite Configuration program to configure your VTR for RS-422 device control with these programs. This is required to perform frame-accurate capture and recording to tape.

☞ **Important**   Before starting the DigiSuite Configuration program, close any program that uses DigiSuite, such as DigiTools or Adobe Premiere RT. If you don't do so, your system and audio/video signals may become unstable.

➢ **To start the DigiSuite Configuration program:**

1 Choose **Start | Settings | Control Panel**.

2 Double-click the **DigiSuite** icon.

The DigiSuite Configuration window opens, similar to this one:
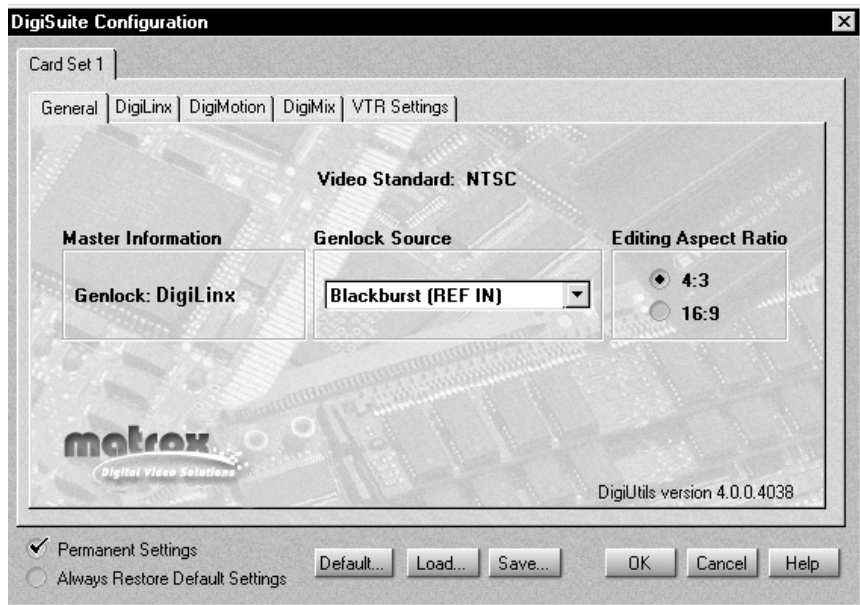
All your cards are grouped into one or more card sets. Under the card set tab, such as **Card Set 1**, tabs are provided for each card you can configure in the set. To configure a card, click its tab. To switch between card sets, click the required card set tab.

The **General** tab displays basic information for a card set, and lets you select your genlock source and editing aspect ratio. The **VTR Settings** tab will be present for Card Set 1 only if the VTR driver is installed. Use this tab to configure your VTR for RS-422 device control with DigiTools and various nonlinear editing programs, and also to stripe your tapes.

Default button

To restore the factory default settings for the current card set (that is, the one whose tab is presently selected), click the **Default** button. You can choose which settings you want to restore, such as those for DigiMix.

Save and Load buttons

The **Save** button lets you save your configuration settings to a *.cfg* file. To apply those settings to the current card set, click the **Load** button and select your *.cfg* file. Then select which settings you want from the file, such as **DigiMix**, and click **Open**.

Note   Once you've configured all your cards, it's a good idea to save the settings for each card set to a *.cfg* file for backup purposes.

Making permanent or temporary settings

Unless you want your card configuration settings to be effective **only** for the current work session, make sure you select **Permanent Settings**. If you clear this option, any changes you make (except to DigiMotion and VTR settings) will be cleared the next time you start your system. This lets you assign temporary settings to your cards.

For example, if **Permanent Settings** isn't selected when you click **OK**, the card configuration changes you've made will be saved only until you reboot your computer. Once you reboot, your settings will be returned to their previous state.

Changing default proc amp settings

If you'd like your default proc amp settings to be restored each time you start the DigiSuite Configuration program, select **Always Restore Default Settings**. This causes any temporary changes you made to these settings (either in the DigiSuite Configuration program or another program) to be cleared the next time you start the DigiSuite Configuration program.

Alternately, if you don't select **Always Restore Default Settings**, when you start the DigiSuite Configuration program you'll be notified if the proc amp settings were changed during the current work session. You can then indicate whether or not you want to use those settings as your new defaults.

Selecting your genlock source

To select the source to which you want to genlock all devices for a given card set, click the card set's tab, such as **Card Set 1**, then the **General** tab.
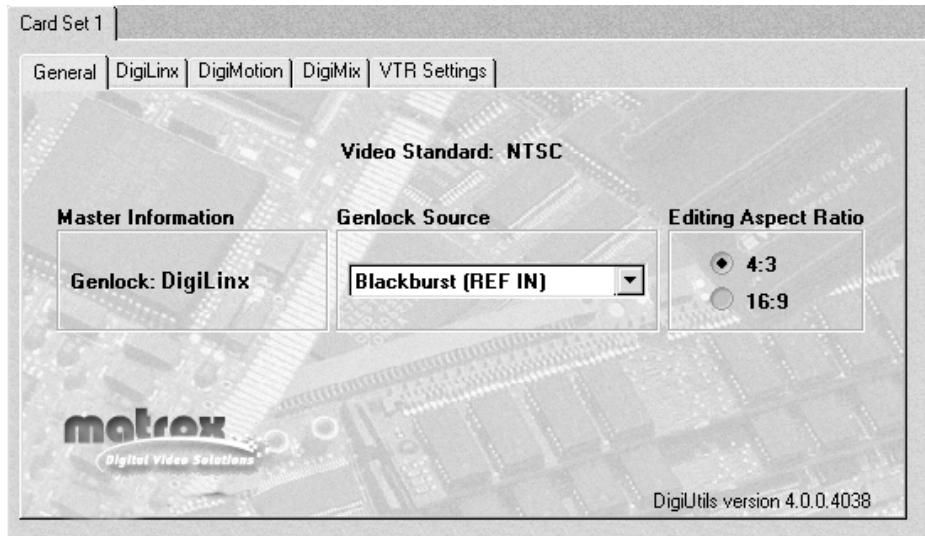
Different genlock options are available depending on whether DigiMix or DigiLinx is the genlock master for the card set, as indicated in the **Master Information** box. The genlock master is automatically set when you install the DigiSuite card drivers, and **cannot** be changed using the DigiSuite Configuration program.

☞ **Important** When using an external video genlock source, you must genlock DigiSuite and all your external devices to the same source. Otherwise, you may experience synchronization problems between your system and the various devices and/or media you're working with.

If, however, your studio includes a digital audio player that doesn't support a video genlock source, you'll need to genlock your audio to one of your digital audio input pairs. To select an audio genlock source, use the **DigiMotion Audio Genlock** dialog box as explained on page 73.

The following sections describe the master genlock options.

Genlock options for DigiMix

When DigiMix is the genlock master, you can select one of the following genlock options:

❑ **External Broadcast Quality**   Genlock to an external sync generator connected to REF IN on DigiMix. This is the only genlock option that ensures frame-accurate editing.

❑ **External VTR Quality**   Genlock to your source VTR connected to REF IN on DigiMix, such as your composite VTR. This option is preferable to using the internal reference signal on DigiMix if you don't have an external sync generator.

❑ **Internal**   Genlock to DigiMix's internal reference signal. Select this option only if you don't have an external sync generator or other external video sync source.

Genlock options for DigiLinx

When DigiLinx is the genlock master, you can select one of the following genlock options:

❑ **Blackburst (REF IN)**   Genlock to an external analog sync source connected to REF IN on DigiLinx, such as an external sync generator.

❑ **4:2:2 (SDI) 1**, **2**, or **3**   Genlock to one of your digital video input sources. For example, select **4:2:2 (SDI) 1** to genlock to your source connected to 4:2:2 IN 1 on DigiLinx. Use this option for minimum jitter.

Note   You may have one, two, or three digital video inputs available depending on your particular DigiLinx model and card set combination.

Selecting your editing aspect ratio

To specify the aspect ratio of the material you're editing on a given card set, click the card set's tab, such as **Card Set 1**, then the **General** tab.

Editing Aspect Ratio — Standard screen format — 4:3 — 16:9 — Wide screen format
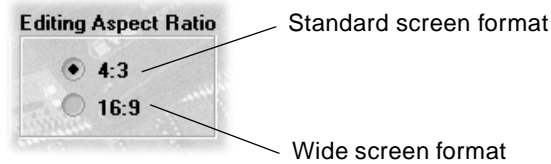
Under **Editing Aspect Ratio**, select the aspect ratio that matches your source material. For video recorded using the standard TV screen format, select **4:3**. For video recorded using the wide screen 16:9 format, select **16:9**.

Setting the editing aspect ratio to match your source material's format ensures that the effects you create on DigiSuite will be displayed with the correct proportions. If the editing aspect ratio isn't set correctly, effects such as circular wipes and borders added to 2D DVEs will be distorted (that is, squeezed or stretched horizontally). For example, applying a circular wipe to 16:9 source material using a 4:3 aspect ratio will cause the wipe to be squeezed into an elongated ellipse.

Remember to create all graphics, animations, and titles for your production using the same aspect ratio as your source video.

Important   Your new aspect ratio will take effect only after you restart your computer.

Configuring DigiMix

You can customize your DigiMix card's configuration to take full advantage of its capabilities, and meet specific video input and output requirements. For example, you can select a default video source, adjust your incoming video signal's proc amps, and calibrate your video and key output signals.

Configuring the video input signal

To select a default video source and configure your video input signal, click the **DigiMix** tab, then the **Input** tab.
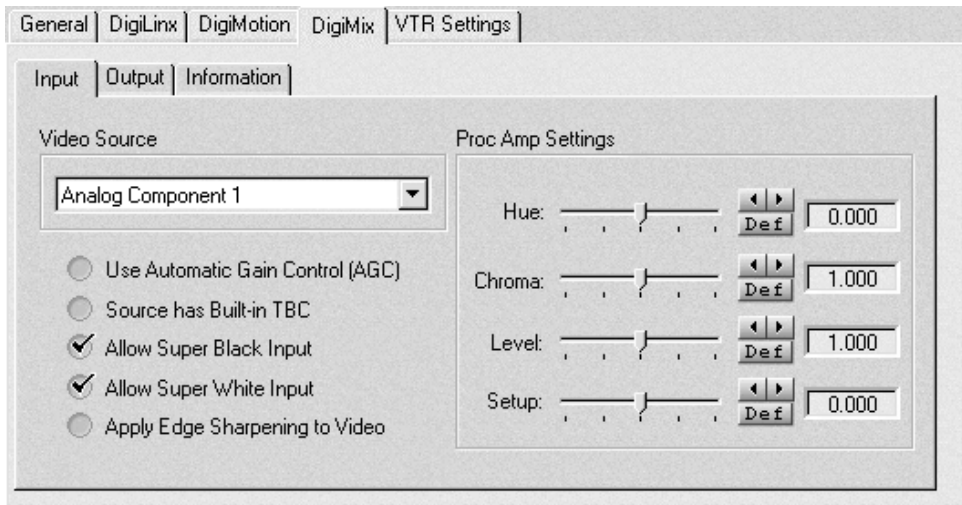
❑ **Video Source** Use this list to select your default video source for use with DigiTools and third-party programs. For example, select **Y/C (S-Video) 1** to use your S-Video VTR connected to Y/C IN 1 as your default capture source with DigiTools and Adobe Premiere.

❑ **Proc Amp Settings** Use these controls to adjust the default proc amps for your incoming analog video signal. To obtain a precise setting for a control, click its left or right arrow instead of dragging the slider. To return a control to its factory default setting, click its **Def** button or **SHIFT**+**click** the slider.

– **Hue** Adjusts the tint of the colors in the picture.

– **Chroma** Adjusts the vividness (saturation) of the picture's colors.

– **Level** Adjusts the difference in luminance between the lightest and darkest areas of the picture.

– **Setup** Adjusts the level of black in the picture.

❑ **Use Automatic Gain Control (AGC)**   Select this option if you want the gain of your analog input signal to be adjusted automatically to compensate for very bright or dark images. This improves the brightness or contrast of your picture.

❑ **Source has Built-in TBC**   Select this option if your analog input signal is stable and broadcast-quality. This allows DigiMix to reproduce the input signal as-is, without degradation.

If your source device **doesn't** have a time base corrector or meet broadcast-quality standards, make sure this option isn't selected. DigiMix will then filter the signal to increase the tolerance for sync pulse instability.

Note   Whether or not you select the **Source has Built-in TBC** option, the input signal is always processed through the TBC on DigiMix.

❑ **Allow Super Black Input**   Select this option to allow the lowest luminance level of your analog input signal to fall below the standard black level.

❑ **Allow Super White Input**   Select this option to allow the highest luminance level of your analog input signal to exceed the standard maximum white level.

❑ **Apply Edge Sharpening to Video**   Select this option to slightly sharpen the edges in your picture (for analog input only). The edge sharpening is done by amplifying the high frequency component of the video input's luminance signal. Be aware that selecting this option may reduce the clarity of fine details in your image.

Configuring the video and key output signals

To configure the output signals from DigiMix, click the **DigiMix** tab, then the **Output** tab.
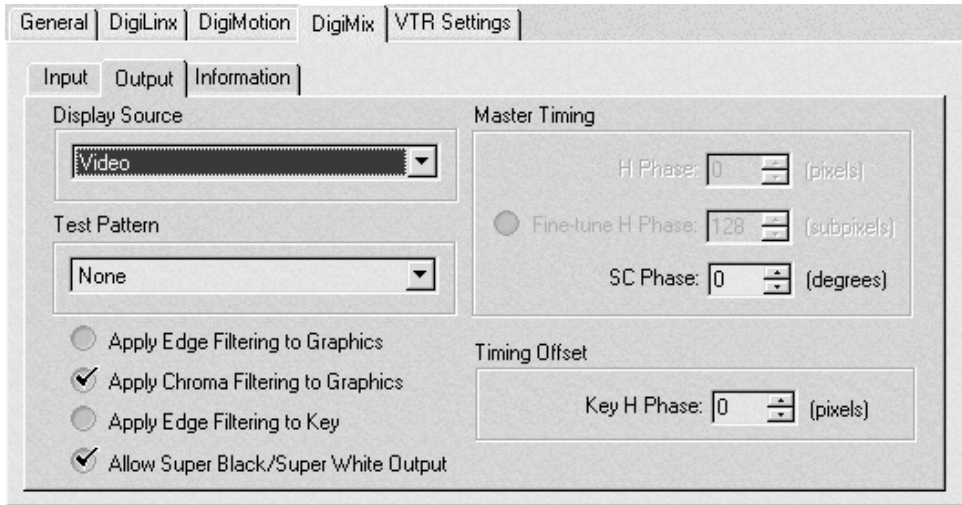
To ensure you make accurate adjustments, you must connect your system to a vectorscope and select an appropriate test pattern. To check your timing adjustments, make sure you genlock DigiMix or DigiLinx and all your external devices to the same external video genlock source.

❑ **Display Source** Use this list to select the source you want to display on your NTSC or PAL monitor each time you start your system. For example, to display your default video source as selected in the **DigiMix Input** dialog box, select **Video**. To display the graphic in the DigiMix graphic frame buffer without the internal key signal, select **Graphic (external key)**.

❑ **Test Pattern** To check the effect of making adjustments in this dialog box, select a test pattern from this list. Your selected pattern will be displayed on your NTSC or PAL monitor **only** while the **DigiMix Output** dialog box is open.

⇨ Important To display any of the graphic test patterns, such as the **Graphic for Edge Filtering Adjustment**, you must select a graphic display source from the **Display Source** list.

❑ **Apply Edge Filtering to Graphics** Select this option to help eliminate distorted or "ringing" edges in your graphics. These can result from abrupt changes in brightness at the edges of objects. Because this option reduces the sharpness of your graphics, you should

select it only when needed. If your graphics have been created using a program designed for video purposes, such as Inscriber/CG Supreme or Speed Razor RT, do **not** select this option.

❑ **Apply Chroma Filtering to Graphics**   Select this option to reduce the chroma bandwidth of RGB graphics, if needed. For most video editing programs, it's best that you **not** select this option. If your rendered images appear to be blurred, try clearing this option.

❑ **Apply Edge Filtering to Key**   Select this option to help eliminate distorted or "ringing" edges in your keyed images. This problem typically occurs in hard-keyed images where you have abrupt changes between opaque and completely transparent areas. Because edge filtering reduces the sharpness of your images, you should apply it only when needed. For most video editing programs, it's best that you **not** select this option.

❑ **Allow Super Black/Super White Output**   Select this option to allow the lowest luminance level of your output signal to fall below the standard black level, and the highest luminance level to exceed the standard white level. When producing your final video production for broadcast, you should clear this option to ensure that you output a standard (legal) video signal.

❑ **Master Timing** and **Timing Offset**   Use these controls to make various timing adjustments to your system.

– **H Phase** and **Fine-tune H Phase**   Use these controls to advance or delay the horizontal timing of the video and key outputs from DigiMix with respect to your video genlock source. This lets you compensate for cable delays within your system. Select **Fine-tune H Phase** and use the corresponding control only if you need to fine-tune the **H Phase** adjustment by subpixels.

When DigiLinx is genlock master, the **H Phase** and **Fine-tune H Phase** controls are unavailable in the **DigiMix Output** dialog box. Instead, use the **Master Timing Settings** in the **DigiLinx Output** dialog box (see).

☞   **Important**   After adjusting the **H Phase** for DigiMix, make sure you also make an appropriate adjustment to the **SC Phase** (explained below).

– **SC Phase**   Use this control to advance or delay the video output's subcarrier phase with respect to your video genlock source.

Because of the method used to perform the SC Phase adjustment, not all values between –180 and 180 degrees are supported. If needed, the value you enter will be clipped to the nearest supported value.

– **Key H Phase**   Use this control to advance or delay the key output signal from DigiMix with respect to the video output signal. You may need to do this to align your key images with their underlying images when routing the key output to a downstream switcher.

To check the external key alignment, set the display source to **Graphic (external key)**, then select **Graphic for Key H Phase Adjustment** from the **Test Pattern** list.

Displaying DigiMix information

To display system usage and other information about your DigiMix, click the **DigiMix** tab, then the **Information** tab.
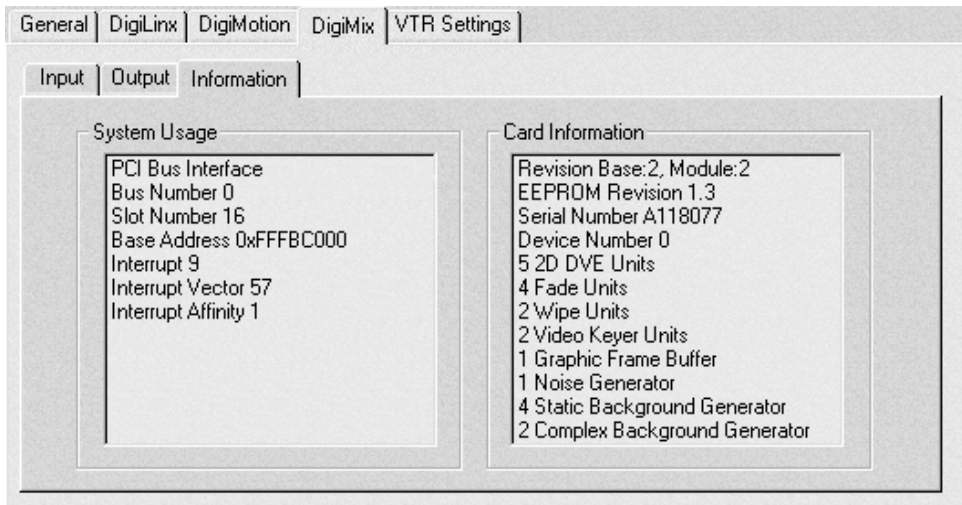
You may be asked to provide this information if you call the Matrox DigiSuite Customer Support Department for assistance.

Configuring DigiLinx

You can configure DigiLinx to meet specific video or key input and output requirements. For example, you can set your third digital input to a key input, and invert and expand the key input signal.

Configuring Input 3

To configure Input 3 to DigiLinx (labelled 4:2:2 IN 3), click the **DigiLinx** tab, then the **Input** tab.
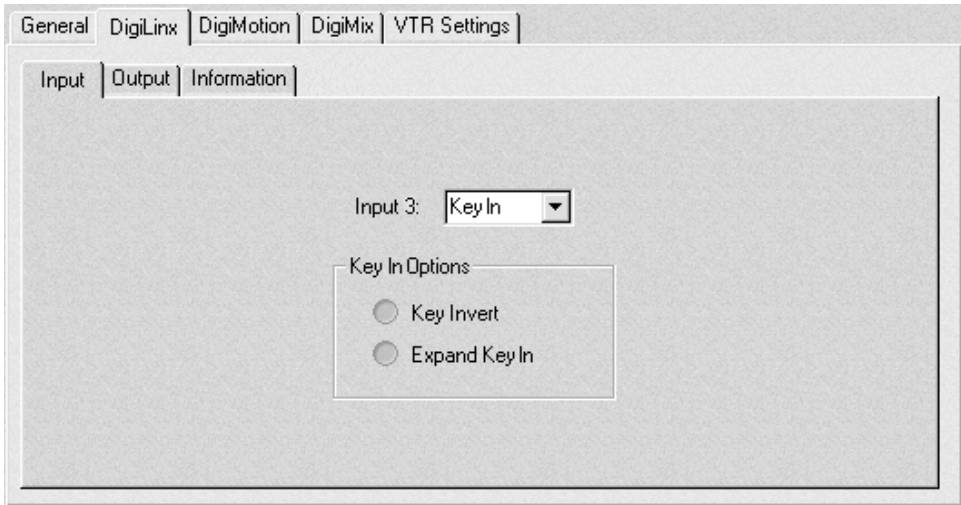
> **Note**   Depending on your DigiLinx model, Input 3 to DigiLinx may not be available. Inputs 1 and 2, when available, are always video inputs.

- ❑ **Input 3**   Use this list to select the type of digital input you want for Input 3. You can select either **Video** or **Key In**.

- ❑ **Key Invert**   Select this option to invert the key input signal so that transparent areas of the keyed image become opaque, and opaque areas become transparent.

- ❑ **Expand Key In**   Select this option if your key input signal has the standard range of luminance levels (that is, 16 to 235), and you require the signal to be expanded to include the full range of levels from 0 to 255.

  For example, you'll need to select **Expand Key In** if areas of your keyed image that should be completely transparent, such as the background of a title, are displayed as partially transparent.

Configuring the video and key output signals

To configure the output signals from DigiLinx, click the **DigiLinx** tab, then the **Output** tab.
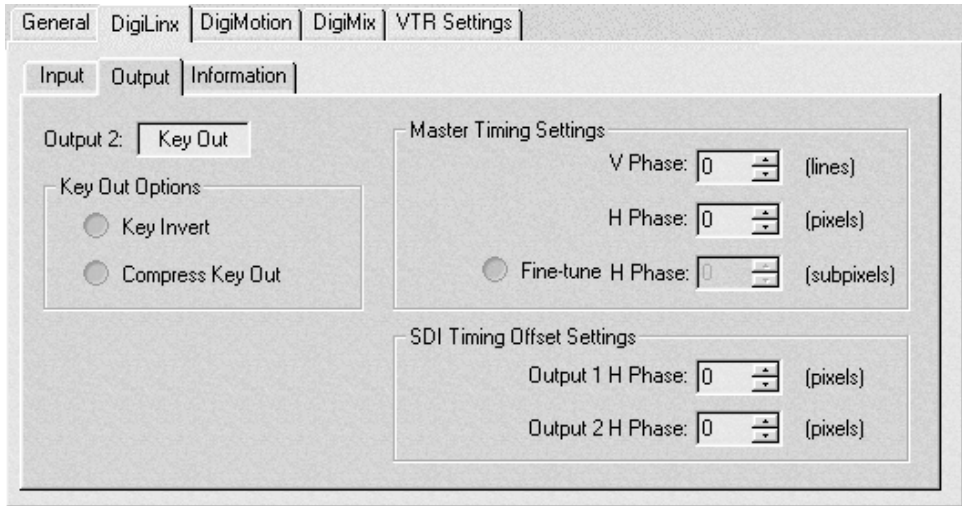
> **Note**   The second output from DigiLinx (labelled 4:2:2 OUT 2) is set to Key Out.

- ❑ **Key Invert**   Select this option to invert the key output signal from DigiLinx so that transparent areas of the keyed image become opaque, and opaque areas become transparent.

- ❑ **Compress Key Out**   Select this option if your digital mixer requires that your key output signal have the standard range of luminance levels (that is, 16 to 235). This setting is required for most devices. If areas of your keyed image that should be opaque are displayed as partially transparent, try clearing this option.

> **Important**   Unless your mixer supports key signals having 0 to 255 luminance levels, clearing **Compress Key Out** may cause your video to be displayed erratically.

- ❑ **Master Timing Settings**   Use these controls to advance or delay the video and key outputs from both DigiLinx and DigiMix with respect to your video genlock source (the DigiLinx and DigiMix signals are adjusted **simultaneously**). This lets you compensate for cable delays within your system.
  - – **V Phase**   Adjusts the vertical timing of the video and key outputs.

    – **H Phase** and **Fine-tune H Phase**   Adjusts the horizontal timing of the video and key outputs. Select **Fine-tune H Phase** and use the corresponding control only if you need to fine-tune the **H Phase** adjustment by subpixels.

Note   The **Fine-tune H Phase** control is available only for DigiLinx cards with Firmware Version 7.0 or later.

❑ **SDI Timing Offset Settings**   Use these controls to advance or delay the video or key output from **only** DigiLinx with respect to your video genlock source.

    – **Output 1 H Phase**   Adjusts the horizontal timing of the SDI video output.

    – **Output 2 H Phase**   Adjusts the horizontal timing of the SDI key output.

Displaying DigiLinx information

To display system usage and other information about DigiLinx, click the **DigiLinx** tab, then the **Information** tab.
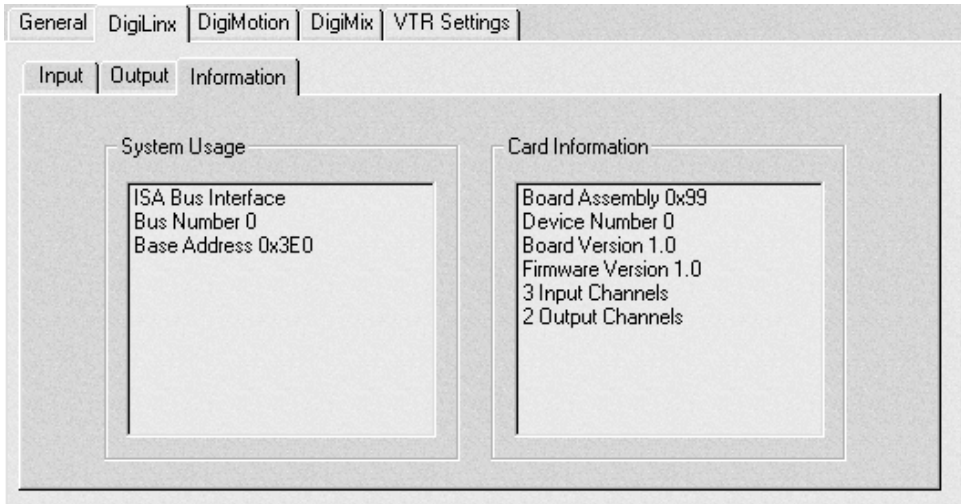
You may be asked to provide this information if you call the Matrox DigiSuite Customer Support Department for assistance.

Configuring DigiMotion

You can configure DigiMotion by selecting the default audio input and output pairs you want to use with DigiTools and third-party programs. You can also adjust the gain of your analog audio input pairs, select an audio genlock source, and test the maximum data rates supported by your A/V drives.

Note DigiTools uses only audio Input and Output Pair 1.

Selecting your audio genlock source

To select the source to which you want to genlock your audio, click the **DigiMotion** tab, then the **Audio Genlock** tab.
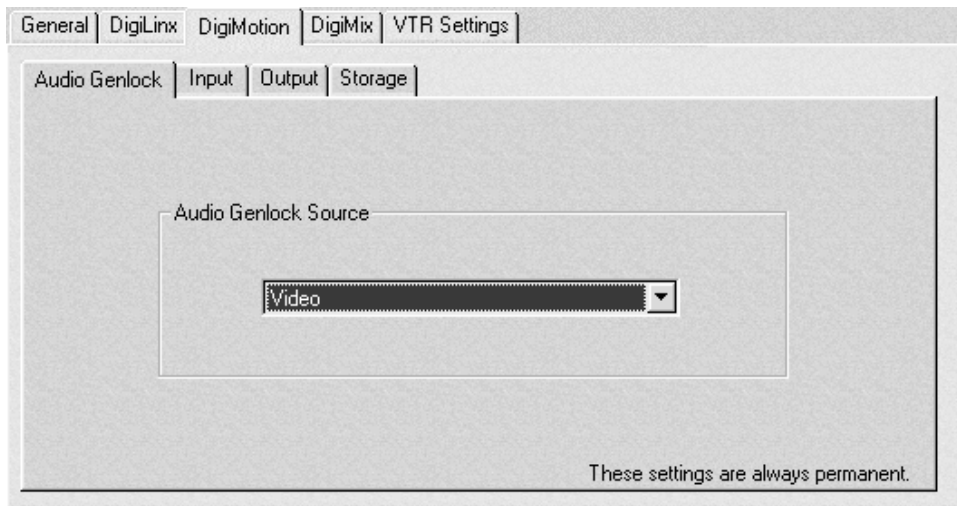
You can select one of the following audio genlock options:

- ❑ **Video** Select this option to genlock your audio to the same source you're using to genlock video as defined in the **General** dialog box. This option is suitable for most studio setups.

- ❑ **Digital Input Pair 1** or **Digital Input Pair 2** Select one of these options to genlock your audio to your first or second digital audio input pair, respectively. You'll need to do this when working with a digital audio player that doesn't support a video genlock source.

Configuring the audio input pairs

To configure your audio input pairs, click the **DigiMotion** tab, then the **Input** tab.
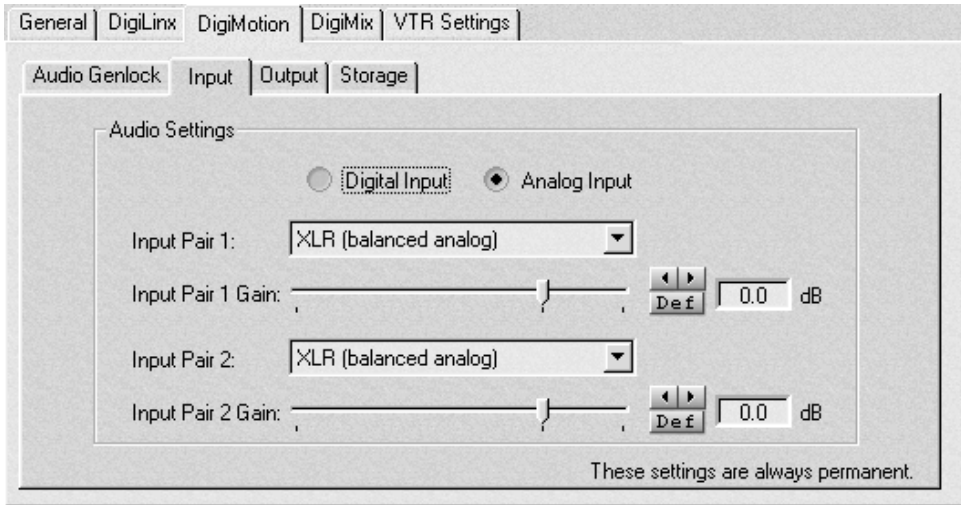
➪ **Important** Both audio input pairs must be either analog or digital.

- ❑ **Analog Input** or **Digital Input** Select the option that matches the type of audio input you're using. If you select **Digital Input**, the remaining controls in this dialog box will be unavailable.

- ❑ **Input Pair 1** Use this list to select your default analog audio Input Pair 1. For example, to use the source connected to your balanced analog IN 1 and IN 2 inputs, select **XLR (balanced analog)**.

- ❑ **Input Pair 1 Gain** Use these controls to adjust the default gain of your analog audio Input Pair 1. To obtain a precise setting, click the arrows instead of dragging the slider. To return to the factory default setting, click the **Def** button.

- ❑ **Input Pair 2** Use this list to select your default analog audio Input Pair 2. For example, to use the source connected to your unbalanced analog IN 3 and IN 4 inputs, select **RCA (unbalanced analog)**.

- ❑ **Input Pair 2 Gain** Use these controls to adjust the default gain of your analog audio Input Pair 2. The controls work the same as explained for **Input Pair 1 Gain**.

Configuring the audio output pairs

To configure your audio output pairs, click the **DigiMotion** tab, then the **Output** tab.
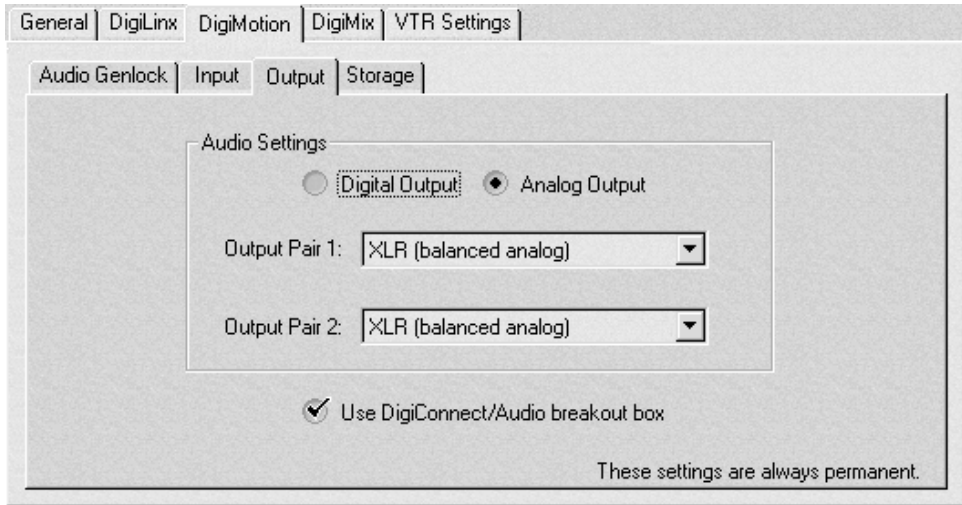
> **Important**   Both audio output pairs must be either analog or digital.

- **Analog Output** or **Digital Output**   Select the option that matches the type of audio output you're using.

- **Output Pair 1** and **Output Pair 2**   Use these lists to select your default audio output pairs. Different selections are available, depending on whether you're using analog or digital output.

  For example, to use the recorder connected to your balanced analog OUT 1 and OUT 2 outputs, set **Output Pair 1** to **XLR (balanced analog)**. To use the recorder connected to your first balanced digital stereo output, set **Output Pair 1** to **AES/EBU (balanced digital stereo)**.

- **Use DigiConnect/Audio breakout box**   Select this if you're using the DigiConnect/Audio breakout box with DigiMotion.

Testing the performance of your A/V drives

➤ **To determine the maximum data rates supported by your A/V drives:**

1 Click the **DigiMotion** tab, then the **Storage** tab.
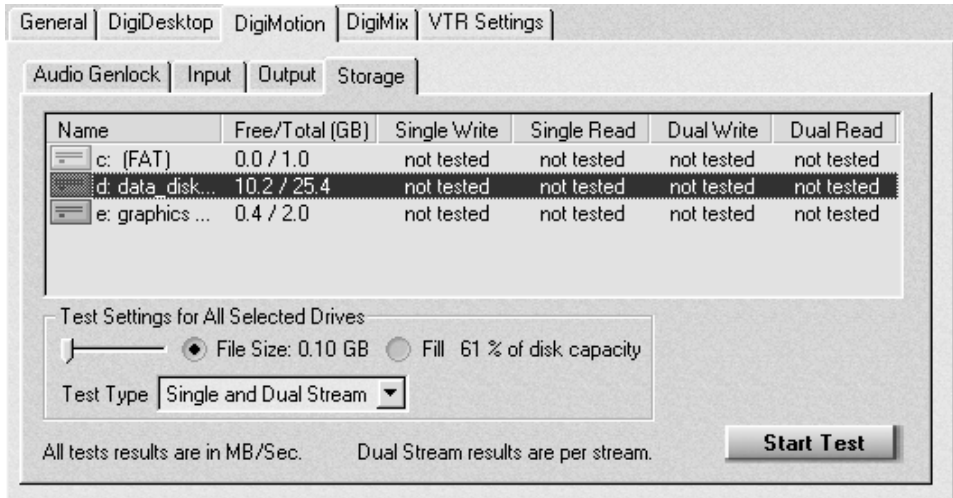
2 From the list of hard drives connected to your computer, select the A/V drives you want to test. Use **CTRL**+**click** to select drives in any order, or **SHIFT**+**click** to select a range of drives.

✍ **Note** Only your writable hard drives appear in the list. All NTFS-formatted drives (the format required for DigiSuite) are identified with a green icon. To test a drive, you must have at least 50 MB of free disk space on the drive.

3 Under **Test Settings for All Selected Drives**, drag the slider to set the size of the test files to be created. You can select **Fill x% of disk capacity** to set the file size according to a percentage of the total disk space on the drives you're testing. To get the most accurate results, your test files should fill about 80% of the disk capacity.

4 From the **Test Type** list, select the type of test you want to perform:
   – **Single Stream Only** Tests drive performance for writing and then reading (playing back) a single video file.
   – **Dual Stream Only** Tests drive performance for writing and then reading two video files simultaneously (this technique is used to support A/B roll edits in your projects).

- **Single and Dual Stream**   Performs both the Single Stream and Dual Stream tests.

5 If you have a Ciprico RAID disk array connected to your system, the **Ciprico Write Mode** option will be available. When selected, this mode optimizes your system to use the high-performance features of your Ciprico disk array.

☞ **Important**   If you also have other types of A/V drives, leave **Ciprico Write Mode** selected **only** when working with your Ciprico disk array. For example, make sure that **Ciprico Write Mode** is selected before capturing material to your Ciprico disk array, but clear this option before using your other drives.

6 To start the disk performance test, click the **Start Test** button. The test progress is displayed in a dialog box.

```
Click Cancel to stop the test.
                                                    Single Stream
Drive Test Progress (21%)                           Write Test
■■■■■■■
d: data_disk              Maximum Data Rate : 23.19 MB/sec
                          Minimum Data Rate : 17.00 MB/sec
Total Test Progress (5%)
■■
                    Estimated Time Remaining :   14 Minutes
                          Cancel
```
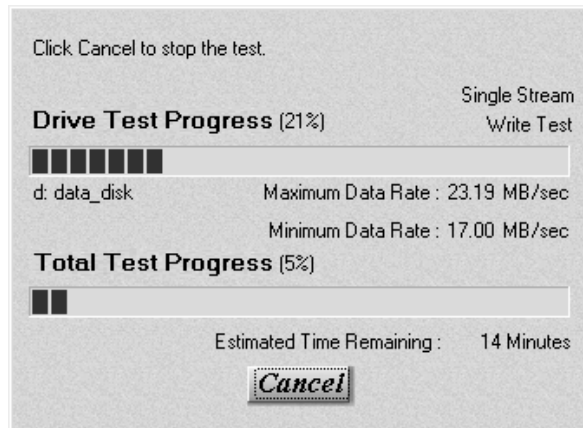
7 The test results appear in the **Storage** dialog box as a range of maximum data rates for each of the write and read tests. The lowest number is the maximum data rate your A/V drive will always be able to achieve. The highest number is the maximum data rate your drive can achieve under optimum conditions.

You should use the lower (conservative) number as a guideline when selecting the data rate for creating *.avi* files on DigiSuite to be sure that you won't exceed the data rate your A/V drive is capable of achieving.

8 Click **OK** to save the results of the test and quit the DigiSuite Configuration program.

✎ **Note**   The test files will be deleted automatically from your drives when the test has finished. If the test ends abnormally, such as during a power failure, the test files (named *testcfg.vid* for the Single Stream test or *testcfg1.vid* and *testcfg2.vid* for the Dual Stream test) will remain in the

Configuring DigiMotion

root directory of each tested drive. You should delete these files from your drives.

Configuring your VTR settings

☞ **Important** If you have the Matrox DV-1394 option, the following procedures do **not** apply to the DV camcorder or deck you've connected to your DV-1394 card.

The DigiSuite Configuration program lets you configure your VTR for RS-422 device control with DigiTools and many nonlinear editing programs, such as Adobe Premiere RT, IMC Incite, and United Media On-Line Express.

Be aware that some editing programs provide their own RS-422 device control, and therefore don't use DigiSuite's VTR settings as explained in this section. For example, Speed Razor RT and Discreet edit* use their own RS-422 device control rather than DigiSuite's.

If after configuring your VTR using the DigiSuite Configuration program you find that you have frame-accurate capture and printing to tape with DigiTools but **not** with your nonlinear editing program, then your program uses its own RS-422 device control. In this case, see your program's documentation for instructions on how to set up and configure your VTR for device control.

➢ **To configure your VTR for DigiSuite RS-422 device control:**

1 Connect your VTR as explained in the "Working with Clips Using DigiTools" chapter of your *Getting the Most from DigiSuite* manual.

2 Switch your VTR to Remote mode.

3 Install DigiTools with the VTR driver or the DigiSuite Effects plug-in for Adobe Premiere RT as explained in the previous chapter of this manual.

4 Start the DigiSuite Configuration program, click the **Card Set 1** tab, then the **VTR Settings** tab.
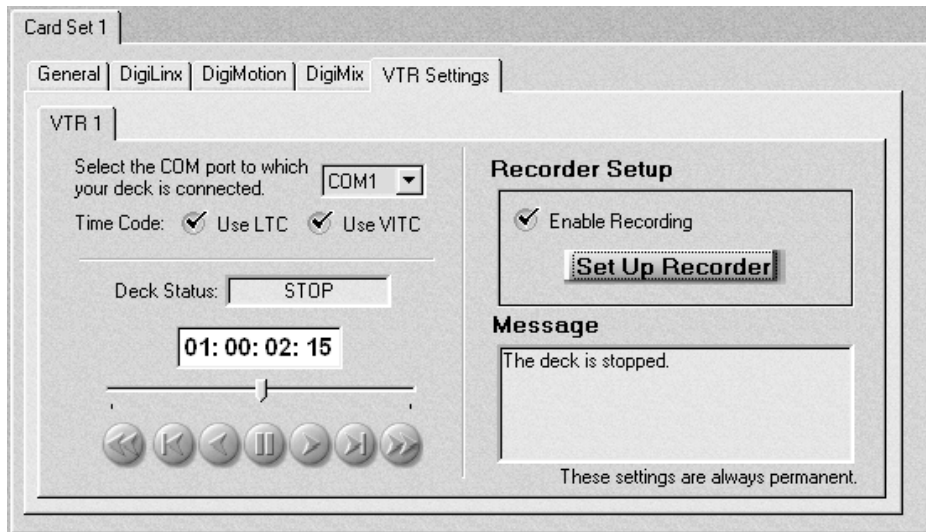
> **Note** If the VTR driver detects a problem, such as would happen if your VTR is not properly connected, you'll see a warning in the **Message** box.

You use the **VTR Settings** dialog box to configure your VTR for device control, as well as to stripe your tapes. You can use the transport controls in this dialog box to play back a tape and check that your VTR works correctly under device control.

- ❑ **COM Port** From this list, select the COM port to which your VTR is connected.

- ❑ **Time Code** Select either **LTC** or **VITC** to require the use of one or the other type of time code. You would do this if the two types of time code don't match on your tapes. If this isn't the case, you can select both types of time code to let the VTR decide which one to use in different operational modes. Your VTR must be set to **Auto** if both types are selected.

- ❑ **Enable Recording** Select this option if you want to use your VTR to record material (assuming your deck is capable of recording). Clear this option to use your VTR only as a player, thus avoiding any unintentional tape erasure.

- ❑ **Set Up Recorder** Click this button to do any of the following:
  - Run the Calibration Wizard to calibrate your VTR for frame-accurate recording.
  - Run the Frame Accuracy Test Wizard to test the frame accuracy of your recorder.

– Manually adjust your recorder's calibration settings, if needed.

– Stripe your tapes.

For instructions on how to perform these operations, see the following sections.

Note   For details on how to set up RS-422 device control on DigiSuite in Adobe Premiere RT, see the "Creating DigiSuite Effects" chapter of your *Getting the Most from DigiSuite* manual.

Calibrating your recorder using the Calibration Wizard

The Calibration Wizard guides you through a sequence of steps to calibrate your VTR for frame-accurate recording. It records color bars, time code, and a series of Matrox logos onto your tape, prompts you to locate the first and last frames in the series of logos, then adjusts your VTR's calibration settings (**Edit On Delay** and **Edit Off Delay**) according to your response.

Although you can manually adjust your VTR's calibration settings, running the Calibration Wizard is the easiest way to obtain a frame-accurate recorder.

➢ **To run the Calibration Wizard:**

1 Set your VTR to record time code, and load a recordable tape into your VTR.

2 Click the **Card Set 1** tab, then the **VTR Settings** tab.

3 Make sure **Enable Recording** is selected, then click **Set Up Recorder**.

4 Click **Calibration Wizard**, then follow the instructions that appear on the screen.

5 When you've finished running the Calibration Wizard, you should test the frame accuracy of your recorder as explained in the next section.

Checking the frame accuracy of your recorder using the Frame Accuracy Test Wizard

The Frame Accuracy Test Wizard guides you through a sequence of steps to check the frame accuracy of your recorder. It records color bars, time code, and a series of Matrox logos onto your tape. You're then prompted to check that the first and last frames in the series of logos appear at provided **Cue In** and **Cue Out** time codes.

Note   You can use the same tape to run the Frame Accuracy Test Wizard that you used to run the Calibration Wizard.

➢ **To run the Frame Accuracy Test Wizard:**

1   Set your VTR to record time code, and load a recordable tape that has been striped with continuous and consecutive time code.

2   Click the **Card Set 1** tab, then the **VTR Settings** tab.

3   Make sure **Enable Recording** is selected, then click **Set Up Recorder**.

4   Click **Validate Calibration**, then follow the instructions that appear on the screen.

5   If you find that your recorder is **not** frame accurate, you'll need to manually adjust its calibration settings as follows:

   – Note the number of frames you had to rewind or advance from the provided **Cue In** time code in order to locate the **first** frame of the Matrox logo. Adjust the current **Edit On Delay** value by this amount (either deduct the number of frames you rewound, or add the number of frames you advanced).

   – Note the number of frames you had to rewind or advance from the provided **Cue Out** time code in order to locate the **last** frame of the Matrox logo. Adjust the current **Edit Off Delay** value by this amount (either deduct the number of frames you rewound, or add the number of frames you advanced).

For details on how to manually adjust your recorder's calibration settings, see the next section.

Manually adjusting your recorder's calibration settings

☞ **Important** In most cases, the Calibration Wizard will correctly adjust your VTR's calibration settings for frame-accurate recording. You should change these settings **only** if you've run the Frame Accuracy Test Wizard to determine the amount of adjustment you need to make.

➢ **To manually adjust your recorder's calibration settings:**

1 Click the **Card Set 1** tab, then the **VTR Settings** tab.

2 Make sure **Enable Recording** is selected, then click **Set Up Recorder**.

3 Click **Advanced Settings**. This displays the **Calibration Settings** dialog box:
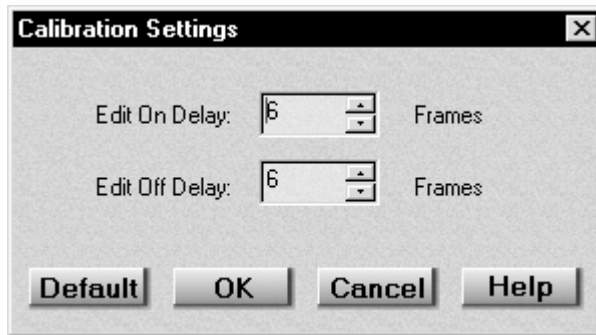
4 Adjust the **Edit On Delay** and **Edit Off Delay** values as needed (see step 5 on page 81). If you want to return the calibration settings to their default values, click **Default**.

5 Click **OK** to save your changes.

6 Run the Frame Accuracy Test Wizard again to ensure that the new calibration settings are correct.

Striping your tapes

Before recording material onto a tape, you should stripe the tape with color bars and time code. Having continuous and consecutive time code on a tape lets you perform frame-accurate editing. You may also want to stripe the tape with a 1-kHz tone to help you check the record level of your VTR.

You can stripe your tapes using the capabilities of your VTR as explained in your VTR's manual, or you can use the Stripe Tape utility included with the DigiSuite Configuration Program.

➢ **To run the Stripe Tape utility:**

1 Set your VTR to record time code, and load the tape you want to stripe into your VTR.

2 Click the **Card Set 1** tab, then the **VTR Settings** tab.

3 Make sure **Enable Recording** is selected, then click **Set Up Recorder**.

4 Click **Stripe Tape**. This displays the following dialog box:
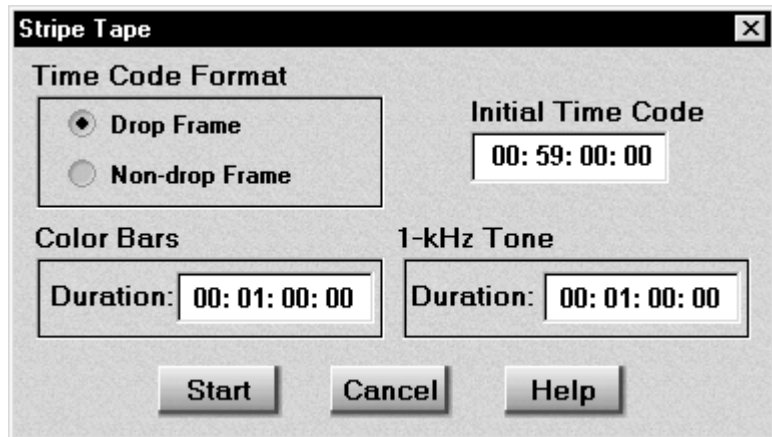
5 Under **Time Code Format**, select the type of time code you want recorded onto your tape (applicable to NTSC systems only).

6 In the **Initial Time Code** box, type the initial (starting) time code you want to be recorded onto your tape.

7 In the **Color Bars Duration** and **1-kHz Tone Duration** boxes, type the amount of time you want the color bars and 1-kHz tone to be recorded, respectively.

8 Click **Start** to start the striping.

Notes

Troubleshooting

This chapter provides some possible answers if you have trouble installing or operating your DigiSuite system.

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 and then logging back on are 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 is correctly seated.

Your computer system does not start

Possible cause **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 7 **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/configure the DigiUtils software. If you aren't logged on as Administrator, the DigiUtils Setup program will not install the software.

DigiUtils setup cannot find DigiSuite cards

Possible cause **Incorrect setting**   If you choose AGP as your Primary Video setting (it's the default) and have an AMI BIOS, DigiUtils Setup will not find your DigiSuite cards.

Solution **Choose PCI**   Even if you have an AGP card, choose PCI as your Primary Video setting.

DigiSuite cards not initializing or drivers not loading

Possible cause 1 **DigiSuite cards not properly installed**   One or more of your DigiSuite cards may not be properly seated in its slot. This could prevent the software drivers from loading and/or running.

Solution **Re-install cards**   You can re-install your DigiSuite cards to see if doing so will cause your system to initialize the cards 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 indicate **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 is not listed at all, turn off your system, open the cover, and re-install the DigiSuite cards.

3 Restart your computer.

Possible cause 2 **Hardware conflict**   There could be a conflict with another card (such as a VGA or network card) in your system. This could also prevent the DigiSuite software driver from running.

Solution **Remove/change other hardware**   You should try running DigiSuite after removing the network card or installing a different video card.

1 Turn off the computer.

2 Remove all other non-essential cards (such as a network card) from your system.

3 Restart your computer. If the DigiSuite software drivers are still not loading, then there could be a conflict with the VGA card. Sometimes there is a conflict between the DigiSuite Graphic Frame Buffer (GFB) and the following VGA cards:
   – Number Nine Motion
   – Number Nine 770
   – STB

If you have one of these video cards, you may have to replace it with another video card. If your card isn't listed here but doesn't work with your DigiSuite system, please contact our Customer Support department.

If removing non-essential cards from your system allows the DigiSuite software drivers to load and function as they should, then you can be sure that one of them is causing a hardware conflict with DigiSuite.

4 Re-install one card at a time to determine which card is causing the hardware conflict. Check for IRQ sharing in **Start | Programs | Administrative Tools | Windows NT Diagnostics | Resources**. Problems can occur when the same IRQ is assigned to the same bus for more than one device. This can prevent a DigiSuite driver from loading, thereby rendering the card inoperable.

5 If the same IRQ is assigned on the bus for more than one device, try to assign a different IRQ to the non-DigiSuite card, providing it's an ISA card. Remember though, that IRQ 4; ISA; Bus 0 is not the same as IRQ 4; PCI; Bus 0, for example. You cannot assign an IRQ to a PCI card as the system BIOS handles this task dynamically every time the computer is turned on. As well, updating the drivers for non-DigiSuite cards may help resolve the problem.

Possible cause 3 **Incompatible motherboard**   In the System Recommendations section, 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 in 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.

Possible cause 4 **Damaged Movie-2 bus**   The Movie-2 bus connectors might have bent pins or may not be properly seated.

Solution **Re-install or replace Movie-2 bus**

1 Remove the Movie-2 bus and check for bent pins. If there are no bent pins, reseat the Movie-2 bus.

2 Restart your computer. If the DigiSuite card drivers are still not loading, contact Matrox DigiSuite Customer Support.

Cards moved to different slots in the system and now DigiSuite doesn't work

Possible cause **Didn't reconfigure software**   Failure to uninstall DigiUtils software before moving a card set from one slot to another will cause this problem.

Solution **Uninstall/re-install DigiUtils**   Do not attempt to use the update option in Matrox DigiUtils Setup. Uninstall the DigiUtils software as follows:

1 Choose **Start | Programs | Matrox DigiSuite Utilities | Uninstall DigiUtils**.

2 Move the card set(s).

3 Re-install the DigiUtils software by running DigiUtils Setup. Doing so updates the Windows NT registry file.

Remarks   If you have more than one card set, you must remove all your DigiSuite card sets and then run DigiUtils Setup after re-installing each card set.

Adding a non-DigiSuite PCI card to the computer causes DigiSuite operating problems

Possible cause **Hardware Conflict**   If you add a non-DigiSuite card to your computer after installing DigiUtils, it may result in an IRQ conflict between the new card and the DigiSuite hardware.

Solution **Check for IRQ conflicts**   You can check the status of system IRQs by choosing **Start | Programs | Administrative Tools | Windows NT Diagnostics | Resources**. An IRQ conflict can prevent one of the DigiSuite drivers from loading.

If you do discover an IRQ conflict, turn off your system and install the new card in another motherboard slot. Then restart the computer. Make sure you're using the latest versions of the software drivers for the card you're installing.

Remarks   ❑ Problems such as this can occur when the same IRQ is assigned to the same bus for more than one device.

❑ If you have more than one card set, you must remove all your DigiSuite card sets and then run DigiUtils Setup after re-installing each card set. Furthermore, you must log on as a user with Administrator privileges in Windows NT before you can install/uninstall the DigiUtils software. If you aren't logged on as such, the DigiUtils Setup program will not install/uninstall the software.

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.

DigiTools either won't load or it freezes up

Possible cause **DigiSuite drivers not initialized** The software drivers for the DigiSuite card set won't initialize if the DigiSuite cards aren't properly seated. This situation will leave your computer in an unstable state.

Solution **Check for errors** Look in the Windows NT Event Viewer for potential problems. If no errors are reported in the Event Viewer, then turn off your computer and check to make sure your DigiSuite cards and Movie-2 bus are properly seated. If the problem still persists after restarting your computer, contact Matrox DigiSuite Customer Support.

DigiSuite Configuration program is slow to open

Possible cause **Improper genlock**   If you're not using the same video standard (NTSC or PAL) for your genlock source as the one you selected when you installed DigiUtils, the Configuration program may not work.

Solution **Check genlock video standard**   You won't obtain a warning message if your genlock source's video standard isn't the same as that of your system.

1 Run the DigiSuite Configuration program.

2 In the **General** dialog box, the video standard that you selected when you installed DigiUtils is indicated. When genlocking to an external sync source, always make sure the source is connected and working properly, and that it matches your system's video standard.

No video output

Possible cause **Improper cable setup**   Your video cables might be improperly connected.

Solution **Check VTR device selection**

1 Run the DigiSuite Configuration program.

2 In the **DigiMix Output** dialog box, load a test pattern such as the **75% color bars**. If you see an output, then your output cable and frame buffer are working correctly.

3 Verify the following aspects of your video input:
   – The input cables are properly connected.
   – The proper input is selected in the **DigiMix Input** dialog box (**Composite 1**, for example) so that it matches the physical connection.

In addition...
   – Make sure the card is not overheating.
   – Make sure your video source is turned on.

If the problem persists, contact Matrox DigiSuite Customer Support.

Remarks   The above assumes that the DigiSuite cards are operational. If not, see .

DigiSuite video output is jumpy

Possible cause **Improper genlocking** Your genlock termination and/or cable connections may not be set up properly.

Solution **Check genlock** Check various aspects of your genlock setup as follows:

1 If you're using an external sync signal, make sure the cable is properly connected and terminated only once.

2 Select the **External VTR Quality** setting in the **General** dialog box of the DigiSuite Configuration program only if you're genlocking to your source VTR.

3 Finally, try the **Internal genlock** setting in the **General** dialog box. If the video output from DigiSuite is fine, then you know there is probably something wrong with the external genlock setup.

4 Try clearing the **Source has built-in TBC** option in the **DigiMix Input** dialog box of the DigiSuite Configuration program.

5 Monitor the live video directly from the VTR to determine its stability before using it as a DigiSuite genlock source.

6 If the source video is fine, but the video output from DigiSuite is still jumpy, check your genlock setup.

DigiSuite output colors seem incorrect

Possible cause 1 **Improper cable connections**   Your input/output cables could be improperly connected. For instance, if you mix up the three analog component connections, your video monitor will display the wrong color information.

Solution **Check cabling**   You need to check your cable connections as follows:

1 Close all other applications and run the DigiSuite Configuration program.

2 Click the **DigiMix** tab and then the **Output** tab.

3 Load a test pattern such as the 75% color bars. You should verify the following aspects of your video output:

Try all the different output connections. If there's a problem on only one of the outputs, then there could be something wrong with the cable. If the color is bad on all of the output connections, then there could be something wrong with your DigiMix card.

Important   Refer to your manual for information on certain limitations to switch combinations on your video breakout box.

Possible cause 2 **Proc amps not correctly adjusted**   These settings are used to adjust the incoming video signal and may thus need some adjustment.

Solution **Check live video input**   If the video output from DigiSuite is fine, then you need to troubleshoot your live video input.

1 Set the **Proc Amp** controls in the **DigiMix Input** dialog box (of the DigiSuite Configuration program) to default.

2 Make sure that the video source signal type selected in the **DigiMix Input** dialog box matches that of the actual physical input connections to DigiMix.

3 Monitor the output of the video source directly to ensure its integrity before feeding it to DigiMix.

4 If the source output is fine, try all the different input connections, remembering to change the video input settings in the DigiSuite Configuration program each time as well.

Possible cause 3 **Bad genlock source**   Sometimes a bad sync source will corrupt the color information. You'll need to check this.

Solution **Try a different genlock setting**   Switch between **Internal** and **External Broadcast Quality** genlock in the **General** dialog box of the DigiSuite Configuration program. Don't forget to make changes to your physical connections to match the changes you made in the DigiSuite Configuration program.

Possible cause 4 **Overheating**   It's vitally important to provide adequate ventilation in your computer system because DigiSuite cards generate a great deal of heat.

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 a 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).

If the problem persists, one or more of your DigiSuite cards may be faulty. Contact Matrox DigiSuite Customer Support.

No audio output

Possible cause 1 **Audio driver not installed**   The audio driver has to be installed to use audio input and output.

Solution **Check audio driver**   You'll need to check that the audio driver is installed. Choose **Start | Settings | Control Panel | Multimedia | Devices**. Click on the plus sign to the left of the **Audio Devices** category to expand the device driver list. Make sure the **Audio for DigiSuite Wave** driver is installed. If it isn't installed, you'll need to uninstall and re-install the DigiSuite software.

Possible cause 2 **Audio settings**   There might be something wrong with your audio settings.

Solution 1 **Check settings**   Make sure your audio software settings in the DigiSuite Configuration program match your physical connections and ensure that **Input Pair 1 Gain** is set to default.

Solution 2 **Turn on source**   Make sure your audio source is turned on.

Some or all functions are not operating properly

Possible cause 1 **Faulty hardware installation**   Your DigiSuite hardware may not be installed properly.

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

Solution 2 **Check card assembly**   Make sure that all module boards are firmly attached to the base board, and that your Movie-2 bus is properly installed.

Possible cause 2 **Drivers may not be running**   One or more of the DigiSuite software drivers may not be running. To verify this, 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.

Solution **Check version of NT**   Make sure you're running Windows NT version 4.0 with at least Service Pack 4 installed. Service Pack 5 is recommended.

Pink or green video when playing back Motion-JPEG files

Note   Make sure that DMA is enabled on your IDE Drive.

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 **Defective Movie-2 connections**   The connections between your Movie-2 bus and each DigiSuite card are fragile and easily damaged if improperly handled.

Solution **Check Movie-2 bus connectors**   Carefully examine the connectors and pins as follows:

1 Shut off your system.

2 Remove the Movie-2 bus connector and check for bent or broken pins in connectors CON 1 and/or CON 2 located on all your installed DigiSuite cards.

Possible cause 3 **IDE data transfer rate not fast enough** Data on an IDE drive is not being accessed fast enough.

Solution 1 **Move paging file** Move your Windows NT paging (swap) file from your IDE drive to a SCSI drive.

Solution 2 **Use dedicated SCSI drive** Use dedicated SCSI drives for your media files: save all audio and graphic files on one SCSI drive and all video files on another.

Note If you're capturing or playing back *.avi* files while accessing other media from the same SCSI drive, your system performance will be reduced. This may result in jerky playback or premature termination on capture.

Possible cause 4 **Out of date drivers** You may be using a hardware key (dongle) with an out-of-date driver.

Solution **Get a newer driver** Contact the hardware company and acquire a newer version of this driver.

Possible cause 5 **Conflicts with network card** You may be getting conflicts from a network card.

Solution **Check system operation without card** Try removing the card. If the problem goes away, get updated drivers for the network card or try another network card.

Possible cause 6 **Low-quality sync** Your sync signal may not be stable or may have a faulty connection.

Solution **Check sync source** If you're using an external sync source, make sure that it's properly connected and that you have a good-quality sync signal (stable with no noise).

You get error messages during playback or 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 **Defective Movie-2 connections**   The connections between your Movie-2 bus and each DigiSuite card are fragile and easily damaged if improperly handled.

Solution **Check Movie-2 bus connectors**   Carefully examine the connectors and pins as follows:

1   Shut off your system.

2   Remove the Movie-2 bus connector and check for bent or broken pins in connectors CON 1 and/or CON 2 located on all your installed DigiSuite cards.

Possible cause 3 **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 now outdated.

Possible cause 4 **Error 0x42**   Local system clock of the JPEG stream does not match the main system clock.

Error 0x43   An interrupt was expected, but none happened.

Solution 1 **Reference clock**   If you are using an external reference, make sure that it is stable.

Solution 2   **Kernal debugger attached**   Make sure that no debugger is connected to your system via a NULL modem cable.

Genlock

Can't genlock with DigiLinx-DigiMix-DigiMotion card set

Possible cause   **Genlocking to wrong DigiSuite card**   You may have your external genlock source connected to the wrong card.

Solution 1   **Connect external genlock to DigiLinx**   When you have this type of card set, you must connect the external genlock source to the DigiLinx card. Disconnect any genlock signal connected to the DigiMix card.

Then, connect the REF IN of your DigiLinx to an external blackburst generator and select **Blackburst (REF IN)** in the **General** dialog box of the DigiSuite Configuration program.

Solution 2   **Genlock to digital source**   Alternatively, you can genlock to one of your digital video input sources. For example, select **4:2:2 (SDI) 1** to genlock to your source connected to 4:2:2 IN 1 on DigiLinx. Use this option for minimum jitter.

Video signal is out of sync when using DigiLinx

Possible cause 1   **Incompatible version of DigiLinx**   Connecting your genlock or digital video sources to an early-model DigiLinx (version 3 or earlier), after starting your computer, could cause problems with the sync signal.

Solution   **Restart your system**   If you have an early-model DigiLinx (version 3 or earlier), and you connect your genlock or digital video sources after starting your computer, you may need to restart your system to properly use the new connections. Make sure you have turned on your digital source.

Possible cause 2   **Digital source not turned on**   To ensure a strong, stable genlock signal, your digital source must be turned on.

Solution   **Turn on digital source**   Make sure the power on your digital source is turned on.

All video files are corrupted

Possible cause **Unstable genlock source**   VFW may generate a corrupt or a bad file header if the genlock source is not stable. For example, using a PAL signal as a sync source but capturing NTSC video will cause the file to be unreadable or adversely affected.

Solution **Check genlock source**   Make sure you're genlocking to a proper sync source and that the sync source is stable during the process of capturing live video. It's important that no glitches in the sync source occur during capture.

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.

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.

Possible cause 2 **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.

❑ If your DigiMotion is equipped with the High-Voltage Differential module (HVD), you can attach up to 15 HVD SCSI devices to a cable 75 feet in length.

❑ Finally, if you're using a separate Low-Voltage Differential (LVD) Ultra2 SCSI adapter, you can connect a single LVD SCSI device to a cable up to 75 feet in length, or you can connect 15 LVD SCSI devices to a cable up to 36 feet long.

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 3 **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.

Possible cause 4 **Defective Movie-2 connections** The connections between your Movie-2 bus and each DigiSuite card are fragile and easily damaged if improperly handled.

Solution **Check Movie-2 bus connectors** Carefully examine the connectors and pins as follows:

1 Shut off your system.

2 Remove the Movie-2 bus connector and check for bent or broken pins in connectors CON 1 and/or CON 2 located on all your installed DigiSuite cards.

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

Possible cause **Stripe set configuration**   DigiTools stops capturing or playing back 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 or play back the data stream moving across 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 101, 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 errors may 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 Host Adapter Settings**. Press the **ENTER** key. Highlight **Advanced Configuration Options** and verify that **Support for Ultra SCSI Speed** is enabled. Then press the **ESC** key.

4 Highlight **SCSI Device Configuration** 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 DigiMotion Adaptec 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 101, the following solutions may be of help with this problem:

Solution 1 **Connect devices properly**   Make sure single-ended SCSI devices are connected to a DigiMotion equipped with a single-ended module and that differential SCSI devices are connected to a DigiMotion with a differential module.

Keep in mind that Ultra2 SCSI devices can emulate single-ended but **not** differential devices.

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

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.

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 and available from the **Information** dialog box of the DigiSuite Configuration program).

❑ 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.

Special Installation Instructions

This appendix explains how to install multiple DigiSuite card sets or change your hardware installation by adding or removing cards.

Special situations

DigiSuite is designed to be a modular system, so it's possible to modify your system hardware combinations to meet your changing needs. This flexibility is an important feature, but it also means that in some cases you have to install DigiSuite hardware and software in very specific sequences.

The following situations require the special instructions in this appendix.

- ❑ Installing more than one card set in a system.
- ❑ Changing an existing card set by adding or removing one or more cards.
- ❑ Removing an entire card set.

Before going any further, it's important for you to understand what the DigiSuite software considers a *card set*.

What's a card set?

In DigiSuite systems, a card set is considered to be one or more DigiSuite cards recognized as a single functional unit by DigiSuite software.

Let's say you have a single DigiMix installed by itself in your system. DigiSuite software considers this to be Card Set 1. Perhaps you're using Inscriber/CG Supreme with DigiMix for a character generation system. After some time, you upgrade your system to three DigiMix cards in order to take advantage of Inscriber's ability to work with multiple DigiMix cards. The software would recognize them as:

First DigiMix..Card Set 1

Second DigiMix...Card Set 2

Third DigiMix..Card Set 3

One of the most common situations occurs with people who have a DigiMix-DigiMotion card set installed for nonlinear video editing. They decide to add a Miranda DigiLinx for D1 input/output capability. The three cards still constitute one card set, but the software must be reinstalled in order to recognize the new set.

DigiMix-DigiMotion.. Old Card Set 1

DigiLinx-DigiMix-DigiMotion ....New Card Set 1

Another example would be a system with a DigiMix-DigiMotion card set installed for nonlinear video editing, and another DigiMix installed exclusively for character generation. In this case, the software would recognize them as:

DigiMix-DigiMotion ....Card Set 1

DigiMix...Card Set 2

How DigiSuite software looks at your system

The first time you run DigiUtils Setup, the program looks at the DigiSuite hardware installed in your system and stores this information in the Windows NT Registry. Because Setup must identify valid card sets **one at a time,** it's important that you run Setup after installing each card set. This way, the most recent information about the card sets present on your system is stored in the Registry.

Setup identifies additional valid card sets installed in your system by looking at what's been added to or removed from the previous stored settings. This process must start with one card set to work properly.

Installing more than one card set in a system

When installing two or more card sets in a single computer system, it's important to physically install each card set **one at a time** and run the software setup program **before** installing the next one.

Important   If one of your card sets consists of DigiMix and DigiMotion, install this first as Card Set 1. Most of the DigiSuite software, such as DigiTools and the DigiSuite Video for Windows drivers, require that DigiMix and DigiMotion be present as Card Set 1.

1 Install the hardware for Card Set 1 as explained in Chapter 2, "Installing the DigiSuite Hardware," on page 13.

2 Install the software for Card Set 1 by running the DigiUtils Setup program as explained in Chapter 4, "Installing the DigiSuite Software," on page 53.

3 Install the hardware for Card Set 2.

4 Install the software for Card Set 2 by running the DigiUtils Setup program again.

Note   If you previously installed optional software components such as DigiTools and the DigiSuite Effects plug-in for Adobe Premiere RT, make sure you select those options again.

5 If you're installing more card sets, repeat the same procedures.

Installing two card sets that share one Movie-2 bus

Some DigiSuite card sets share a single Movie-2 bus connector. In this case, each card set must also be installed **one at a time**, but this involves removing the first card set to add the second one.

1 Install the hardware for Card Set 1 as explained in Chapter 2, "Installing the DigiSuite Hardware," on page 13. You can attach the Movie-2 bus connector with only two cards attached.

2 Install the software for Card Set 1 by running the DigiUtils Setup program as explained in Chapter 4, "Installing the DigiSuite Software," on page 53.

3 Remove the hardware for Card Set 1 and add Card Set 2 to the Movie-2 bus.

4 Install the assembled hardware consisting of Card Sets 1 and 2 attached to their shared Movie-2 bus.

Note   Make sure Card Set 1 is reinstalled in the **same** slots as in step 1 above.

5 Install the software for Card Set 2 by running the DigiUtils Setup program again.

Changing an existing card set

Before changing a card set by adding or removing cards, it's important to save your card configuration settings to a *.cfg* file as explained on page 61. After completing the hardware and software installation, you can load the *.cfg* file to restore your settings.

If you have only one card set

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

2 Remove the card set hardware from your computer system paying careful attention to the information in "Take care of your Movie-2 bus—Important!" on page 28.

3 Install the new hardware combination for the card set as explained in Chapter 2, "Installing the DigiSuite Hardware," on page 13.

4 Install the software for the new card set by running the DigiUtils Setup program again. See "Running DigiUtils Setup" on page 56.

If you have more than one card set

1 Remove the hardware for the card set you wish to change from your computer system paying careful attention to the information in "Take care of your Movie-2 bus—Important!" on page 28.

2 Run DigiUtils Setup and choose **Update the current installation** to update settings stored in the NT Registry.

3 Install the new hardware combination for the card set as explained in Chapter 2, "Installing the DigiSuite Hardware," on page 13.

4 Install the software for the new card set by running the DigiUtils Setup program again.

Removing an entire card set

When removing a card set, you have to completely remove the set and then run DigiUtils Setup to update the NT Registry entries to reflect only the remaining cards.

Note If you're removing all DigiSuite hardware and no longer wish to use your computer system for DigiSuite, uninstall the DigiUtils software by choosing **UnInstall DigiUtils** from the Matrox DigiSuite Utilities folder.

Notes

Upgrading DigiMotion Onboard Memory

This appendix provides you with instructions for upgrading DigiMotion's onboard DRAM memory buffer.

Upgrading the DRAM memory buffer

DigiMotion contains an onboard DRAM memory buffer that serves as a temporary storage buffer for compressed data. This buffer is either 32 or 64 MB in size. It uses commercial, 72-pin, tin-plated, low-profile SIMM modules (70 nsec or faster access time), accessed in fast-page mode to accelerate data transfers. DigiMotion is also available without SIMM modules.
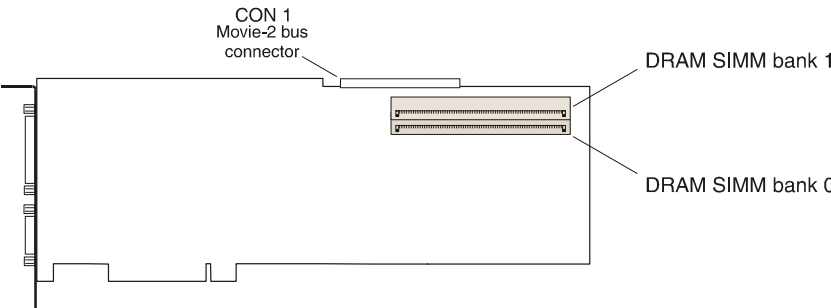
Installing more DRAM memory

Should you wish to install more memory in your DigiMotion, please be sure to use two identical SIMM modules that meet the following requirements:

- □ Single-sided
- □ Tin-plated
- □ Low-profile
- □ 70 nsec or faster access time
- □ FPM (Fast-Page Mode)
- □ ×32 or ×36

To upgrade the DRAM memory buffer on DigiMotion, remove the present SIMM modules and replace them with two new modules identical to each other in type and capacity.

There are two possible SIMM combinations:

Buffer Size (MB)	DRAM Buffer Bank 0	DRAM Buffer Bank 1
32	4 Mbits $\times$ 32/36 (16 MB)	4 Mbits $\times$ 32/36 (16 MB)
64	8 Mbits $\times$ 32/36 (32 MB)	8 Mbits $\times$ 32/36 (32 MB)

DigiSuite Specifications

This appendix provides DigiSuite hardware specifications.

Note   For DigiDesktop specifications and connector information, refer to the *DigiDesktop Installation Manual & User's Guide*, 10556-MO.

DigiMix specifications

Electrical

Operating voltages and currents

Voltage: +5 V, +12 V, –12 V

Currents: 3.6 A, 600 mA, 100 mA

Analog input/output
- ❑ Video Standards
  - – NTSC: M
  - – Component NTSC: Betacam
  - – PAL: B, G
  - – Component PAL: SMPTE/EBU N10

Input signals

Signal Type	Quantity	Voltage	Impedance
Composite Video	3	$1.0 \text{ V}_{\text{p-p}}$	75 Ω
S-Video	3		
Luminance signal		$1.0 \text{ V}_{\text{p-p}}$	75 Ω
Chrominance signal		PAL: $0.300 \text{ V}_{\text{p-p}}$, burst	75 Ω
		NTSC: $0.285 \text{ V}_{\text{p-p}}$, burst	75 Ω
Component Video (Y, (B-Y), (R-Y))	2	$1.0 \text{ V}_{\text{p-p}}$	75 Ω
Reference In	1	$1.0 \text{ V}_{\text{p-p}}$	*ON=75 Ω OFF= 200 K Ω

[*] hardware selectable via DIP switch. See "Connect DigiConnect/Video to your computer" on page 34.

Signal Type	Quantity	Voltage	Impedance
Preview Out			
Composite Video	1	$1.0\ V_{p\text{-}p}$	75 Ω
S-Video	1		
Luminance signal		$1.0\ V_{p\text{-}p}$	75 Ω
Chrominance signal		PAL: $0.300\ V_{p\text{-}p}$, burst	75 Ω
		NTSC: $0.286\ V_{p\text{-}p}$, burst	75 Ω
Program Out			
Composite Video	1	$1.0\ V_{p\text{-}p}$	75 Ω
S-Video	1		negative sync
Luminance signal		$1.0\ V_{p\text{-}p}$	75 Ω negative sync
Chrominance signal		PAL: $0.300\ V_{p\text{-}p}$, burst	75 Ω
		NTSC: $0.285\ V_{p\text{-}p}$, burst	75 Ω
Component Video (Y, (B-Y), (R-Y))	1	$1.0\ V_{p\text{-}p}$	75 Ω negative sync
Linear Key Out	1	$1.0\ V_{p\text{-}p}$	75 Ω negative sync no colorburst

Movie-2 bus input/output
Digital I/O levels: TTL compatible, driven by 74ABTxxx-type registers

Mechanical
Dimensions
Physical dimensions: 12.28" long x 4.10" high x 0.63" wide

Connector types
Analog input/output: EDAC 634-044-563-042

Movie-2 bus
    CON 1:   BERG 87402-145 (90 pins)
    CON 2:   BERG 87402-135 (70 pins)

DigiMotion specifications

Electrical

Operating voltages and currents
Voltage   +5 V, +12 V, –12 V

Current   3.6 A, 400 mA, 100 mA

Analog input/output
Balanced signal
Input impedance   20 k Ω*

Input level   0 VU = +4 dBu, 17 dB headroom
                             0 dBu = 0.775 V_{rms}

Output load impedance   600 Ω min.

Output impedance   50 Ω max. short-circuit protected

Output level   mean: +4 dBu maximum: +20.5 dBu

*should be impedance-matched to 600 Ω in order to accept a standard XLR audio input.

Unbalanced signal
Input impedance   15 kΩ*

Input level   0 VU = –10 dBV

Output load impedance   2 kΩ min.

Output impedance   50 Ω max.short-circuit protected

Output level   mean: –10 dBV maximum: +6 dBV

Digital input/output
AES/EBU signal   110 Ω balanced

S/PDIF signal   75 Ω unbalanced

Movie-2 bus input/output
Digital I/O levels   TTL compatible
                         driven by 74ABTxxx-type registers

Audio

Frequency response	20 Hz to 20 kHz ± 0.5 dB
Wow and flutter	unmeasurable
Signal-to-noise ratio	90 dB A-weighted
THD + noise	0.008%
Sampling frequency	16-bit, 44.1 and 48 kHz (synchronized to video or digital audio input)
Quantization	up to 16 bits/sample
Analog VU meter range	–20 to +5 VU
Digital VU meter range	–25 to 0 dBF

Mechanical

Dimensions

Physical dimensions	12.28" long x 3.9" high x 0.79" wide

Connector types

Fast-20 SCSI Connector	Honda PCS-68LFD
Analog Audio input/output	EDAC 633-044-563-032 or KYCON K66-B44P-ND
Digital Audio input/output	JETMAN JMDF 15R-H
Movie-2 bus CON 1	BERG 87402-145

Environmental specifications

Operating temperature:	0° C to 40° C
Storage Temperature:	–40° C to 75° C
Maximum altitude	
for operation:	3000 m
for transport:	12,000 m
Humidity:	
operation:	20 to 80% of relative humidity*
storage:	5 to 95% of relative humidity*
	*non-condensing

Notes

DigiSuite Glossary

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

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 com-pression 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* interframe 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.

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

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Telephone (UK, Middle East, and Africa) .... +44 (0) 1753 665 679

Fax .... +44 (0) 1753 665 599

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.

Notes

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