Matrox DigiSuite LE

Installation Manual

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matrox
Digital Video Solutions

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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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Procedure for Returning Goods

No returned goods, for service or otherwise, will be accepted without prior authorization from Matrox Electronic Systems, Ltd. To obtain return authorization, contact Matrox Video Products Group DigiSuite Customer Support (see page 121). Once approved, Matrox will contact you with your Returned Merchandise Authorization (RMA) number. Matrox cannot be responsible for units returned without an RMA number. Matrox will advise you of the shipping address. The packaging must indicate the RMA number on the outside. It is strongly recommended that a copy of the original packing slip which states the serial number of the items you're returning be included with the returned merchandise. This will speed up processing.

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

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

FCC compliance statement

Warning

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

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

Note

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

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

Grounding information

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

Industry Canada compliance statement

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

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

Grounding information

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

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

EC declaration of conformity

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

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

Table of Contents

Notes

Introducing DigiSuite LE

This chapter outlines some of the powerful features of your DigiSuite LE and associated optional digital module. It also specifies the computer system requirements for your DigiSuite LE and explains the available documentation.

CHAPTER

1

DigiSuite LE – state of the art

Welcome to DigiSuite LE! This advanced card features state-of-the-art effects processors, a digital video mixer, digital video Motion-JPEG codecs, along with multitrack digital audio mixing. The optional digital module provides serial digital video and AES/EBU audio inputs and outputs. DigiSuite LE is designed to meet a wide variety of professional video/audio needs.

DigiSuite LE features

The following summarizes some of DigiSuite LE's main features:

System

- Internal PCI bus with bridge-to-system PCI bus.
- Onboard 32-megabyte (MB) DRAM memory buffer.
- Advanced, over-the-top, Movie-2 expansion bus (optional).

Video

- Two Motion-JPEG video codec modules.
- ITU-R 601 digital video compression and decompression.
- 60 fields/sec for NTSC, 50 fields/sec for PAL.
- Multilayer digital mixing, keying, effects, and switching.
- Two digital video effects processors featuring high-quality scaling, sub-pixel motion, and transparent shadows.
- 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.
- Analog component, Y/C, and composite input and program output.
- Y/C and composite preview output.
- Linear key output.

Audio

- Analog input/output.
  - Four mono XLR/line inputs.
  - Four mono XLR/line outputs.
- Sampling.
  - 16-bit, 44.1- and 48-kHz sampling rates.
  - Audio sampling clock genlocked to video.

  - Analog input and output level adjustment.
  - 18 dB headroom.
- 32-bit DSP for digital audio processing.
  - Capture of four audio streams to disk.
  - Playback of eight streams with the capability of mixing down to one, two, or four outputs.
  - Panning and mixing among eight audio streams.
  - Soft cuts.

Optional digital module features

The digital module for DigiSuite LE adds serial digital video and AES/EBU audio input/output capabilities to your system.

Digital video

- SMPTE 259M serial 4:2:2 at 270 Mb/sec.
- One 10-bit 4:2:2 serial digital input.
- One 10-bit 4:2:2 serial digital program output.
- One 8-bit 4:2:2 serial digital key output.
- Automatic 525/625 input detection.
- Automatic cable equalization.
- Upscale from ITU-R 601 quantization levels to 256 quantization levels for input key channel, and downscale to ITU-R 601 quantization levels for output key channel.
- Genlockable to an external master sync source (blackburst), the internal reference signal, or the digital input.

Digital audio

- Two stereo AES/EBU digital audio inputs.
- Two stereo AES/EBU digital audio outputs.
- Channel status, auxiliary data, and user data support.
- Audio sampling clock genlocked to video reference.
- Programmable sampling rates from 11 to 48 kHz.

DigiSuite system requirements

Note The following recommendations provide good performance when using DigiSuite hardware and software in most situations. Some software packages may have additional or different requirements.

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

- An Intel Pentium II CPU, 266 MHz or higher.
- 128 MB or more of physical RAM.
- Windows NT 4.0 operating system with at least Service Pack 4. Service Pack 5 is recommended[1].

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 LE documentation

Most of the information you'll require to install DigiSuite LE is included in this manual. However, for explanations on how to use your DigiSuite software and any other additional information, you should consult the following documentation:

- The *Getting the Most from DigiSuite* manual explains how to use the software included with DigiSuite so that you can take full advantage of your system's powerful features.
- 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.

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

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

About this manual

This manual provides you with specific reference information about installing DigiSuite LE and its optional digital module in your computer system.

- Chapter 1, “Introducing DigiSuite LE,” outlines the features for both DigiSuite LE and its associated digital module, system requirements, and the available documentation.
- Chapter 2, “Installing Your DigiSuite Hardware,”describes how to install all types of DigiSuite LE (and associated digital module) card sets.
- Chapter 3, “Connecting Your External Devices and Configuring Your BIOS Settings,” shows you how to connect external devices to DigiSuite LE and its associated digital module, and how to configure your system BIOS settings.
- Chapter 4, “Installing the DigiSuite Software,” explains how to install the drivers required to use your DigiSuite LE and optional software that’s provided with DigiSuite.
- Chapter 5, “Configuring Your DigiSuite LE and VTR Settings,” explains how to configure your DigiSuite LE 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.
- Chapter 6, “DigiSuite LE Troubleshooting,” provides some possible answers if you have trouble installing or operating your DigiSuite LE and associated digital module.
- Appendix A, “DigiSuite LE Specifications,” provides hardware specifications for DigiSuite LE and its associated digital module.
- Appendix B, “DigiSuite Glossary,” serves as a reference for the terminology used in the DigiSuite manuals.
- Appendix C, “Customer Support,” tells you how to contact us for customer support.

Style conventions

The following style conventions are used in this manual:

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

Installing Your DigiSuite Hardware

This chapter describes how to install all types of DigiSuite LE (and associated optional digital module) card sets.

CHAPTER

2

Important!

The instructions in this chapter cover installing DigiSuite LE, along with its associated digital module, as a stand-alone component as well as with other DigiSuite cards. You will be guided through the sections that are relevant to your type of installation.

Before you begin

Antistatic and safety precautions

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

Static electricity from your body can damage your DigiSuite cards, Movie-2 bus, 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 lifespan.

To avoid damage, please observe the following precautions:

- Do not remove 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 synthetic clothing. These fabrics tend to generate more static electricity than cotton, which is best for this kind of work.
- Turn off the power switches on your computer and its connected components.
- Once you've opened your computer, drain static electricity from your body by touching a bare metal surface on your computer chassis before you install or remove any parts of your system. If you have a grounding wrist strap, use it while handling and installing any components in your computer.

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

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.

Installation overview

The following steps summarize the installation procedure for all types of DigiSuite LE card sets.

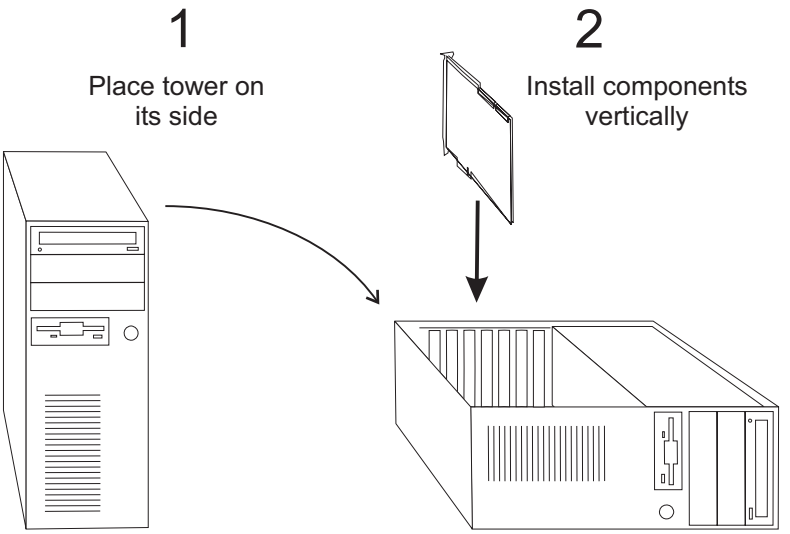
Important Please do not attempt to install your DigiSuite cards without reading the detailed instructions on the following pages. Failure to do so may result in broken parts and/or system malfunctions. Do it right the first time!

1. Prepare your computer and DigiSuite LE, along with the optional digital module and any other DigiSuite cards, for installation.
2. Open your computer and identify the expansion slots in which you'll install your DigiSuite LE or combination of DigiSuite cards.
3. If you're upgrading to the digital module for DigiSuite LE, assemble the card and module outside of your computer.
4. If you're installing several DigiSuite cards, carefully assemble the cards and Movie-2 bus connector as a unit outside of your computer.
5. Insert your DigiSuite LE (and associated digital module) or assembled Movie-2 bus-card unit in your computer.
6. Connect your external devices and configure your system BIOS.

7 Install your software and configure your DigiSuite system.

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:



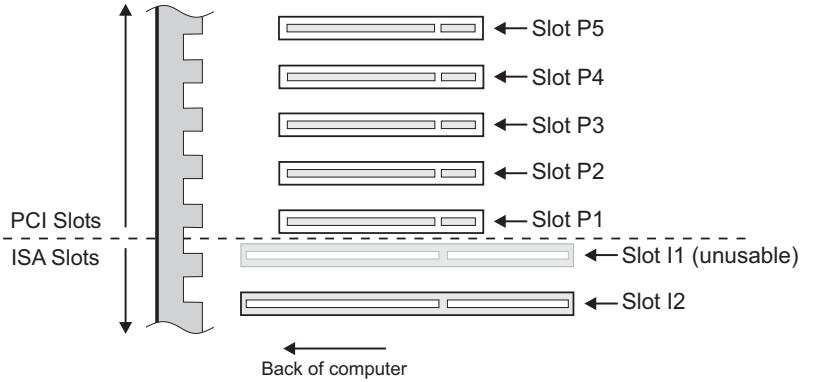
Identify your expansion slots

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

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

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

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



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

If you are installing DigiSuite LE as a stand-alone component, we recommend that you insert it in slot P1. This will ensure easier installation should you wish to add other DigiSuite cards in the future. If you already have another PCI card in P1, such as a video display card, you should try to move it to another free PCI slot. If you have an ISA card installed in the shared slot I1, you'll have to move it to another free ISA slot in order to use slot P1.

If you'll be using DigiSuite LE with other DigiSuite cards, refer to the diagrams in "Determine your DigiSuite card set order" on page 17 to identify the proper slot positions for the combination of cards you'll be installing.

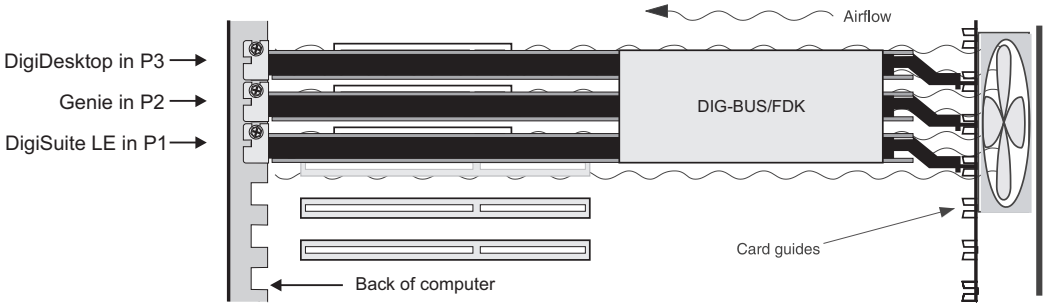
Important Make sure you are using a validated computer system or motherboard. For more details, refer to "Make sure your computer is compatible" on page 9.

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 if you plan to install DigiSuite LE with its associated digital module or more than one DigiSuite card. Inadequate ventilation may result in erratic operating behavior.

The best solution is to provide as much airflow as possible between the cards; especially between the base and module boards of the card sandwich. We recommend that you install a fan, as explained below:

- 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.

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.

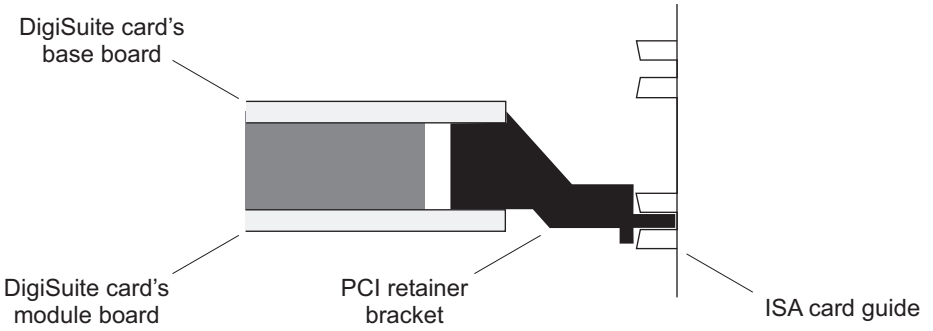
Monitoring your DigiSuite LE operating temperature

We recommend that you monitor your DigiSuite LE operating temperature periodically to ensure that the average temperature of your card does not exceed 75°C, and that the maximum temperature does not exceed 100°C. The current operating temperature of your DigiSuite LE card, as well as the average and maximum temperatures achieved, are displayed in the **DigiSuite LE Information** dialog box of the DigiSuite Configuration program, as illustrated in “Displaying DigiSuite LE information” on page 73.

Important A warning will be displayed whenever the card’s maximum operating temperature exceeds the recommended limit.

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, some of the PCI-based DigiSuite cards are equipped with a PCI retainer bracket. The following diagram depicts the retainer bracket’s use:



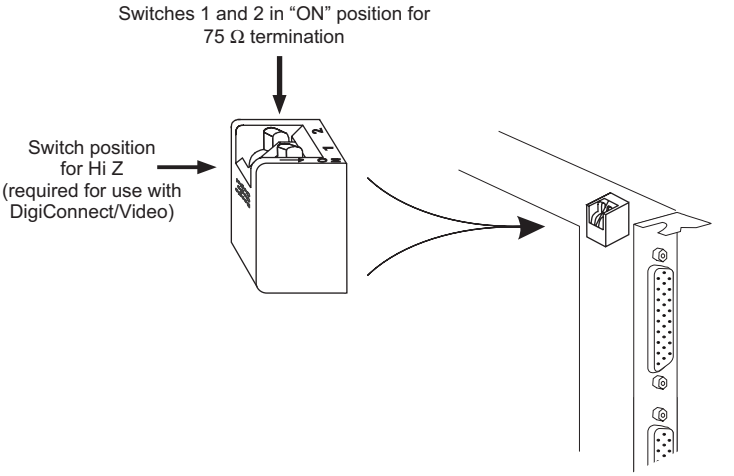
Removing the PCI retainer bracket

With some computer models, you may have to remove the PCI retainer bracket. In such a case, once you’ve drained static electricity from your body and removed DigiSuite LE from its antistatic bag (see “Antistatic and safety precautions” on page 8), simply remove the screws holding the bracket in place and then carefully remove the bracket.

Set the termination switch on DigiSuite LE

Important Make sure you've read the "Antistatic and safety precautions" on page 8 before handling your DigiSuite LE card.

DigiSuite LE provides a DIP switch for 75 ohm blackburst termination for the REF IN connection. This is located at the top of the module board near the connection end of the card.



Normally, you should set both switches to the position marked "ON" before installing DigiSuite LE in your system. If you're using the DigiConnect/Video breakout box or another device for termination, however, set both termination switches to Hi Z.

Assemble DigiSuite LE and the optional digital module

Important Make sure you've read the "Antistatic and safety precautions" on page 8 before handling your digital module.

If you're upgrading to the DigiSuite LE digital module (that is, if you already have DigiSuite LE installed in your system and wish to add the digital module), refer to the *Digital Module Upgrade for DigiSuite LE Quick Installation* for complete installation procedures. This sheet is supplied with the digital module.

1 Lay DigiSuite LE on a flat surface so that the module board is facing up.

2 Refer to the label on DigiSuite LE to locate the digital module connector (SDI connector). Then carefully align the SDI connector on the digital module with the female connector on the DigiSuite LE card. The four plastic pins on the digital module should be aligned with the four holes in the DigiSuite LE card. Snap the module in place as indicated on the label. To ensure that all pins on the SDI connector are firmly seated in the female connector on DigiSuite LE, hold the digital module-DigiSuite LE unit between your thumb and fingers and apply pressure evenly along the SDI connector.

Warning The digital module internal cable should remain connected to the module at all times. **Do not** try to remove the internal cable from the digital module or tamper with the audio and video connectors on the module.

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 12.

Adding DigiSuite cards to your system

If you’re installing multiple DigiSuite cards, skip ahead to “Determine your DigiSuite card set order” on page 17.

If, in the future, you add additional DigiSuite cards to your system, you'll be installing an appropriate Movie-2 bus connector. Please read carefully the section entitled “Take care of your Movie-2 bus—Important!” on page 18.

Install your DigiSuite LE and optional digital module

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

1. If slot P1 already contains another PCI card, either move it to an unused PCI slot or remove it completely.
2. Remove the metal plate located at the back of the PCI slot in which you'll be installing DigiSuite LE (generally slot P1). Don't lose the screw as you'll need it to fasten DigiSuite LE later on.
3. Make sure the termination switch is set to the proper position, as explained in "Set the termination switch on DigiSuite LE" on page 14. Also, make sure you've removed the PCI retainer bracket, as indicated in "Removing the PCI retainer bracket" on page 13, if necessary.
4. Install DigiSuite LE (and optional digital module) in the following manner:
   a. Carefully align the card with its expansion slot.
   b. Slide the card towards the slot until it touches. Make sure that the metal plate at the back of the card slips into the opening left by the blank metal plate you removed in step 2. In addition, if you are using the card retainer bracket, be sure it is aligned with and inserted into the card guide inside the front of the computer chassis.
   c. Once the card touches its slot, make sure it's perfectly aligned and then press it into the slot connector until it's firmly in place.
   d. Secure the card by fastening its metal bracket to the computer chassis using the screw you removed in step 2.
   e. If you've installed the digital module for DigiSuite LE, connect the internal cable, as indicated in "Connect the digital module internal cable" on page 21.
5. Once everything is in place, close your computer's cover.
6. Proceed to "Connecting Your External Devices and Configuring Your BIOS Settings" on page 23.

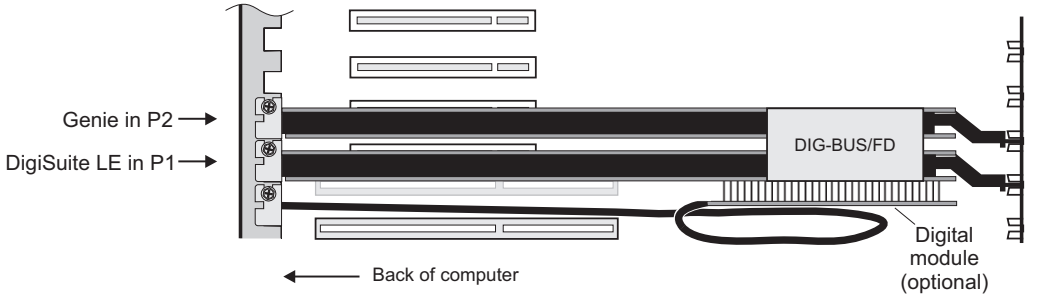
Determine your DigiSuite card set order

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

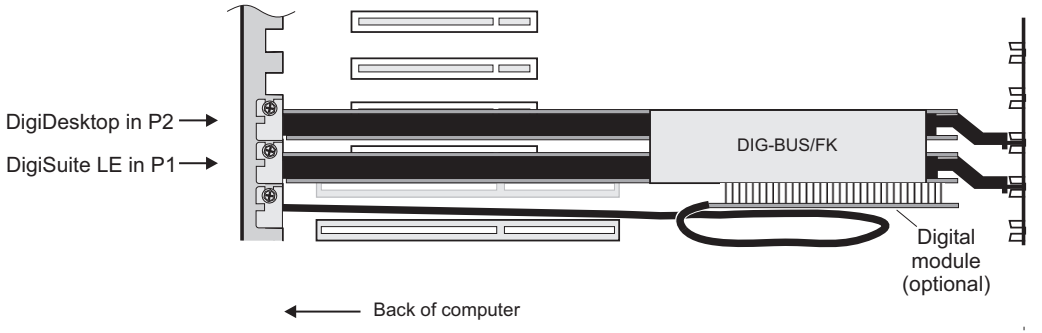
1. DigiSuite LE (with the optional digital module) and Genie.
2. DigiSuite LE (with the optional digital module) and DigiDesktop.
3. DigiSuite LE, (with the optional digital module) Genie, and DigiDesktop.

Important Because DigiSuite systems only support one TriMedia processor, make sure that your DigiDesktop does **not** have a TriMedia Module if you are installing it with DigiSuite LE.

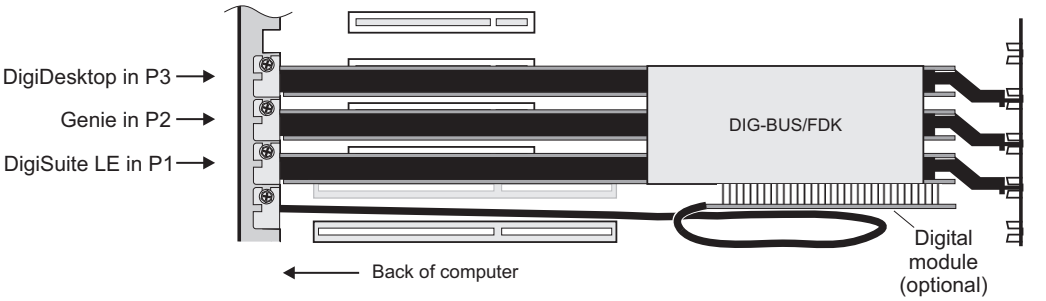
DigiSuite LE and Genie



DigiSuite LE and DigiDesktop



DigiSuite LE, Genie, and DigiDesktop



Note If you're using the digital module for DigiSuite LE, you may want to shift your DigiSuite cards over by one or more PCI slots to take full advantage of your motherboard configuration. For example, if your system requires a SCSI controller, you may want to install DigiSuite LE in P2 (and any other DigiSuite cards in subsequent PCI slots). This frees up slot P1, in which you can install your SCSI controller. You can then connect the digital internal cable to any unused back plate slot.

Take care of your Movie-2 bus—Important!

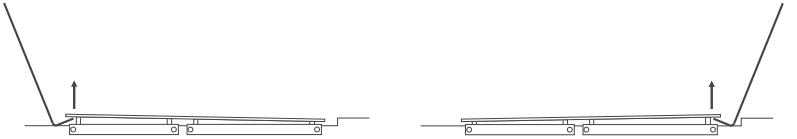
The Movie-2 bus is one of the most important parts in a multi-card DigiSuite system because it allows for the high-speed audio-video data transfer between different cards. This speed is required for high-performance digital media systems where professional quality is a must.

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.

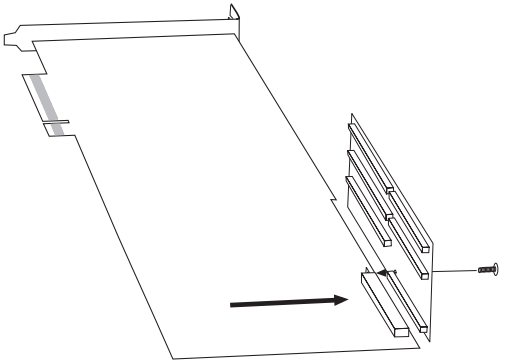


Install your DigiSuite cards

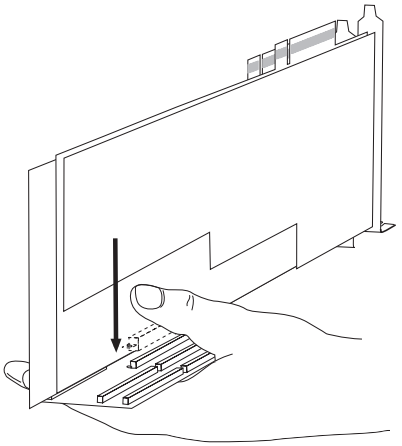
Note Before proceeding, you should review the antistatic and safety precautions described earlier on page 8.

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 your termination switch is set to the proper position, as explained in "Set the termination switch on DigiSuite LE" on page 14. Also, make sure you've removed the PCI retainer bracket, as indicated in "Removing the PCI retainer bracket" on page 13, if necessary.

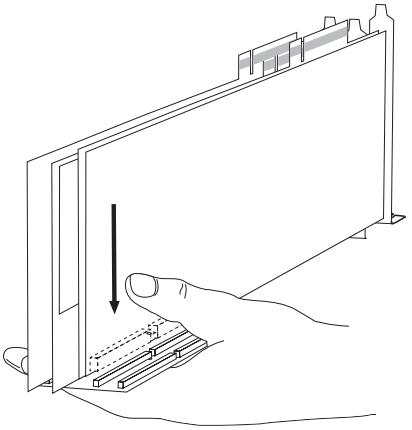
5 Lay the first card to be installed on its side and carefully install the Movie-2 bus as shown below. Insert the mounting screw through the top of the Movie-2 bus and secure it to the card.



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 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.

9 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.

10 If you've installed the digital module for DigiSuite LE, you must connect the internal cable, as indicated in "Connect the digital module internal cable" on page 21.

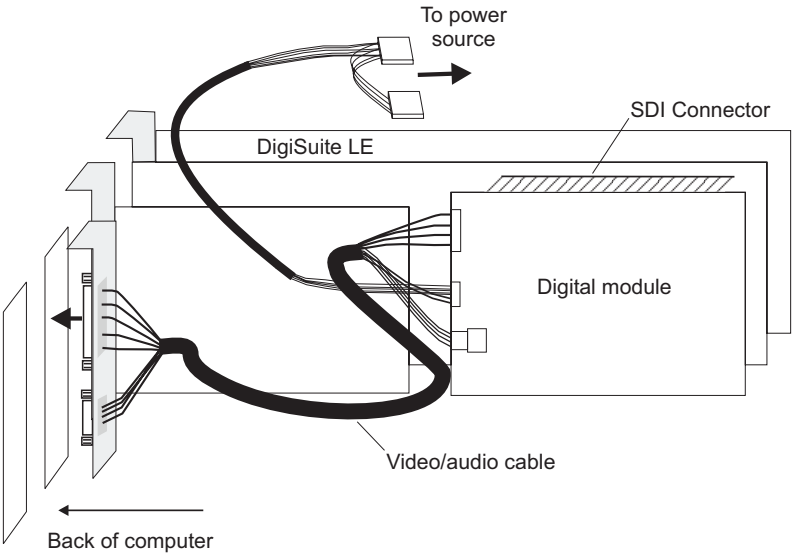
11 Once everything is in place, close your computer's cover.

12 Proceed to Chapter 3, "Connecting Your External Devices and Configuring Your BIOS Settings," on page 23.

Connect the digital module internal cable

The digital module internal cable is made up of a large cable with video and audio connectors and a smaller cable with standard internal device power connectors (similar to the ones you would use to power an internal CD unit or hard drive).

Important Remember that the digital module internal cable should remain connected to the module at all times. Do not try to remove the internal cable from the digital module or tamper with the audio and video connectors on the module.



13 Connect the internal video/audio cable to one of the free slots at the back of your computer. Make sure that there are no sharp, right-angle bends in the cable. Secure the cable's back plate to the computer.

a Connect the appropriate power connector to your power source.

Important Make sure you connect the power connector **before** starting-up your system for the first time.

After you've connected the internal cable, close your computer's cover and proceed to Chapter 3, "Connecting Your External Devices and Configuring Your BIOS Settings," on page 23.

Note on removing the digital module

If you wish to remove the digital module from DigiSuite LE, keep in mind that the male SDI connector should remain connected to the digital module at all times. If the male SDI connector gets disconnected from the digital module when you remove the module from DigiSuite LE, carefully remove the connector from DigiSuite LE, then make sure you align the pins properly before snapping it back onto the digital module. To ensure that the pins are inserted properly, we have blocked off pin positions 24 and 54 with a key plug on the digital module female connector; the corresponding pins on the male connector are missing.

Connecting Your External Devices and Configuring Your BIOS Settings

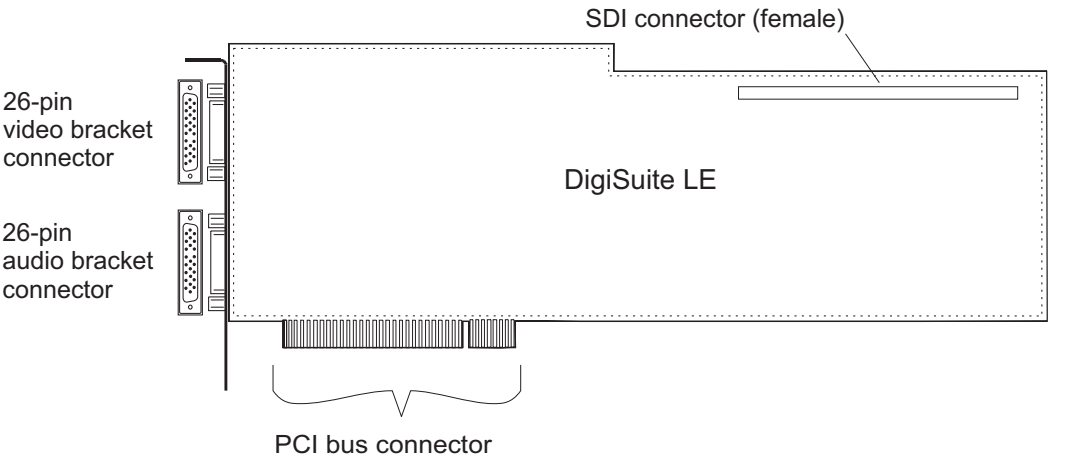
This chapter shows you how to connect external devices to DigiSuite LE and its associated optional digital module. It also explains how to configure your system BIOS settings.

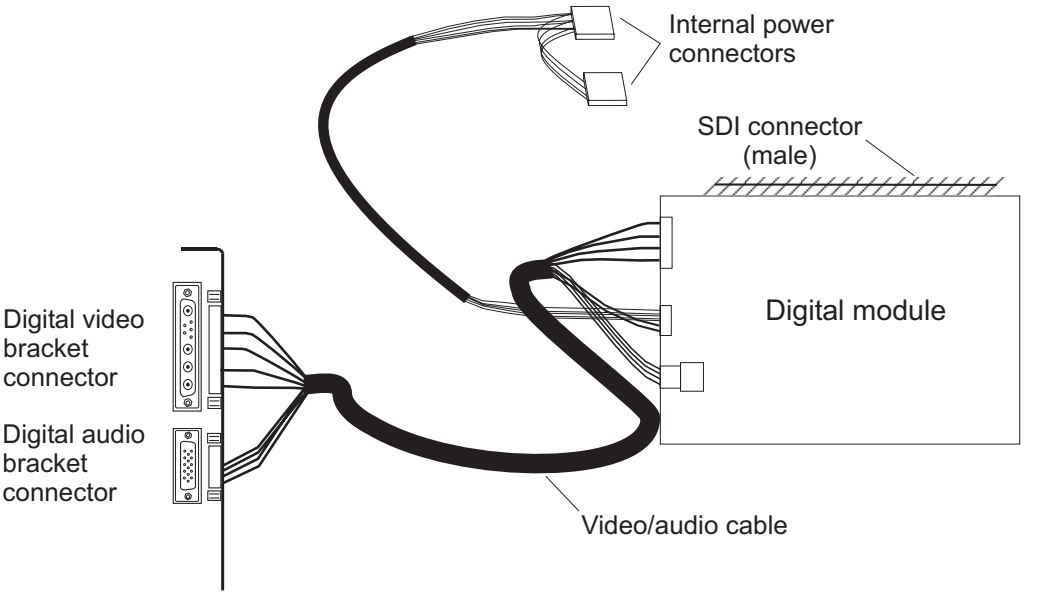
CHAPTER

3

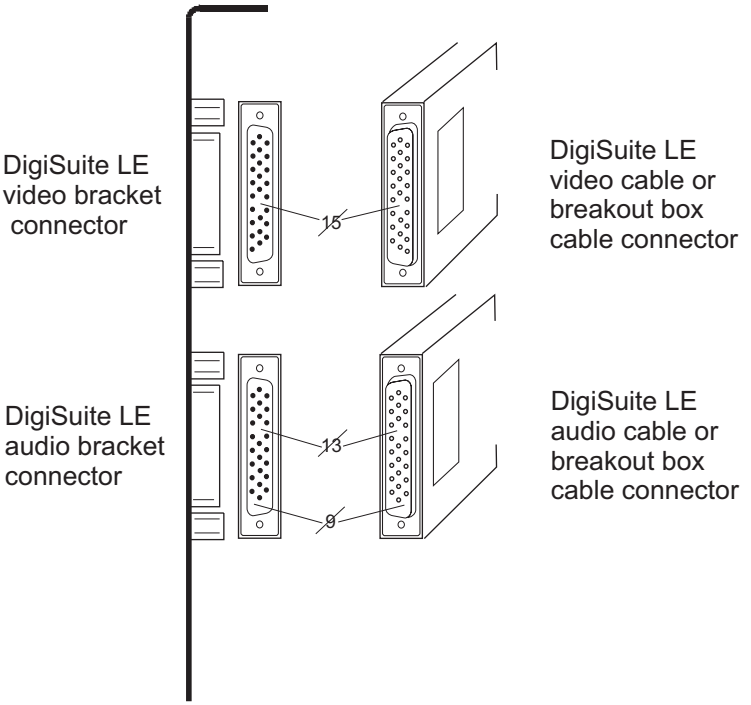
Identifying your connectors

The following diagrams show the location of the connectors on DigiSuite LE and its associated optional digital module:

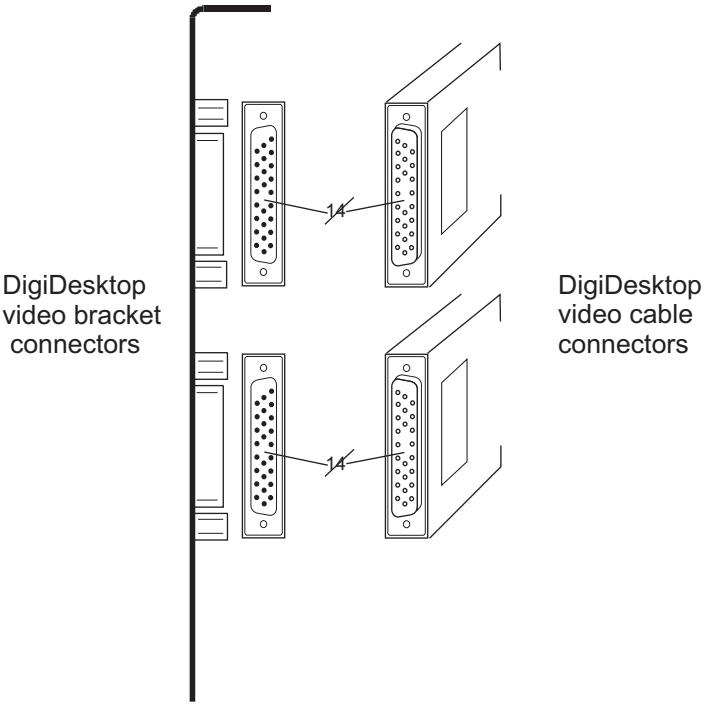




Important Make sure you insert the connectors on your DigiSuite LE analog cables or breakout box cables into the proper bracket connectors. As shown in the following diagram, pin position 15 has been blocked off with a key plug on the DigiSuite LE video bracket connector; the corresponding pin on the video cable connector and breakout box cable connector is missing. Similarly, pin positions 9 and 13 have been blocked off on the DigiSuite LE audio bracket connector; the corresponding pins on the audio cable connector and breakout box connector are missing.



If you're installing DigiSuite LE with DigiDesktop, pay special attention when connecting your DigiSuite hardware, as the bracket connectors on both cards are of the same type. As shown below, pin position 14 has been blocked off with a key plug on both DigiDesktop bracket connectors. Consequently, pin 14 is missing on both DigiDesktop video cables.



DigiSuite LE input/output audio connections

There are various audio connection possibilities available for DigiSuite LE and its associated digital module.

DigiConnect/Audio breakout box

The DigiSuite LE DigiConnect/Audio breakout box (DLE/DCT/AUD) supports four balanced inputs and outputs, and four unbalanced inputs (use the supplied XLR-to-RCA adapters for unbalanced outputs). Two stereo AES/EBU inputs and outputs are also available for use with the optional digital module.

Available DigiSuite LE audio cables

- The analog XLR input/output audio cable (DLITE/XLR/CBL) and the analog RCA input/output audio cable (DLITE/RCA/CBL) both provide four input and output connections.
- The digital input/output audio cable for use with the optional digital module (DLE/DIG/AUD/CBL) provides two stereo AES/EBU inputs and outputs.

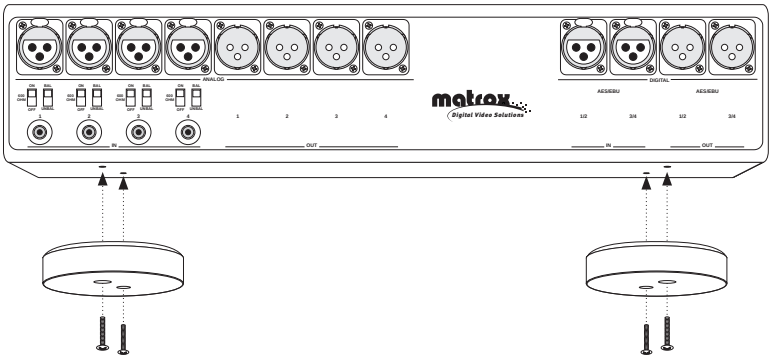
DigiSuite LE DigiConnect/Audio breakout box

Prepare for mounting

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

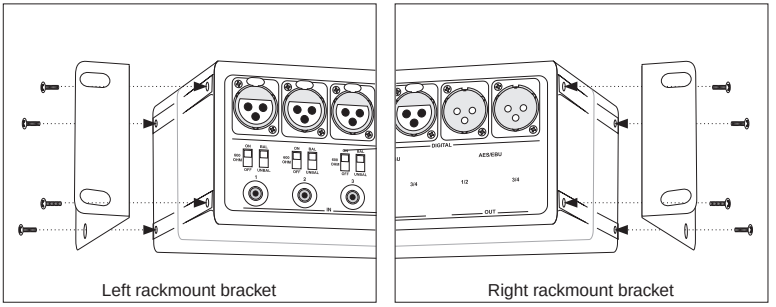
Important Make sure you use the correct screws for each mounting method. If you use the wrong ones, you can damage your equipment. Compare the length of the supplied screws. Use the four **long** screws only with the desktop-mount pedestals.

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

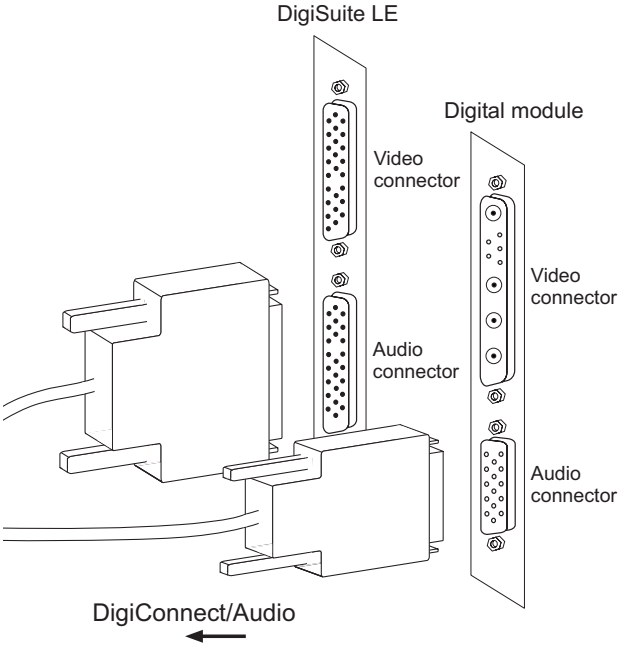


1. Unpack the two rackmount brackets and their eight short mounting screws. **Do not use the long screws!**
2. Line up each bracket with its respective screw holes on the side of the breakout box.
3. Using a hand screw driver only (**no power screwdrivers**), carefully tighten each screw until snug. **Do not overtighten**!

Connect DigiConnect/Audio to your computer

Attach the two connectors on your breakout box cable to the correct jacks on the backplate of your installed DigiSuite LE and digital module (if applicable). 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.



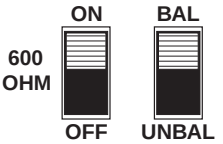
Choosing your connection signal options

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.

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

DigiConnect/Audio supports balanced output signals only. If you're using unbalanced equipment, you'll need to insert the supplied XLR-to-RCA adapters in the analog output jacks of your breakout box before connecting your unbalanced cables.

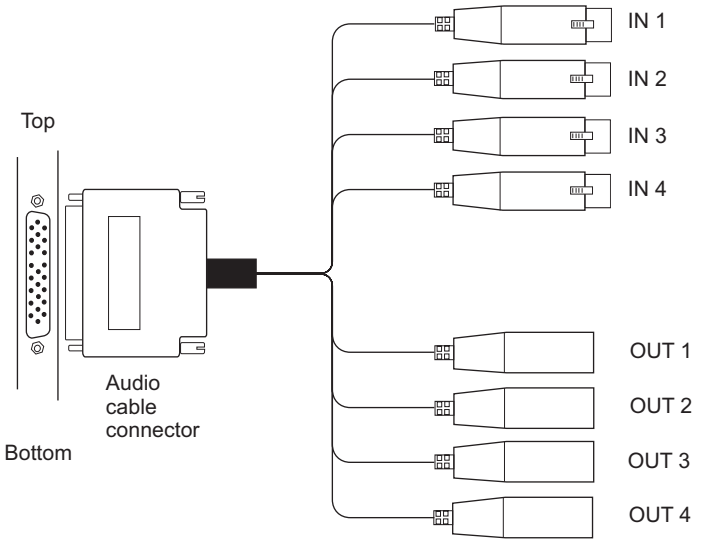
Digital audio input/output

The DigiConnect/Audio breakout box provides two stereo AES/EBU input and output connections for use with the optional digital module.

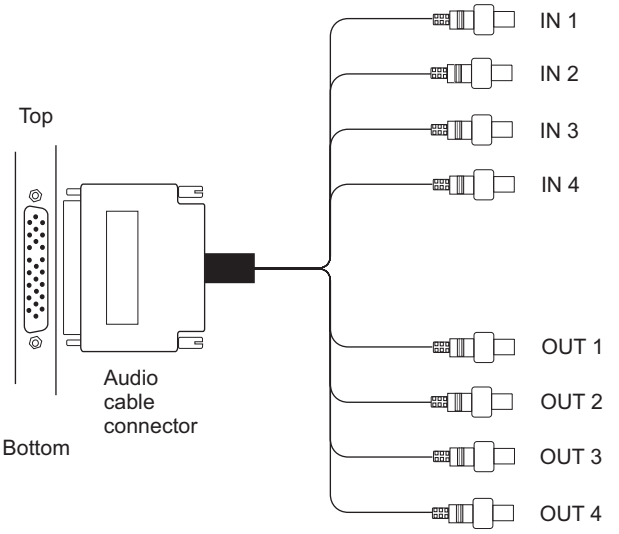
DigiSuite LE audio cables

The following illustrations show the DigiSuite LE XLR, RCA, and digital audio cables.

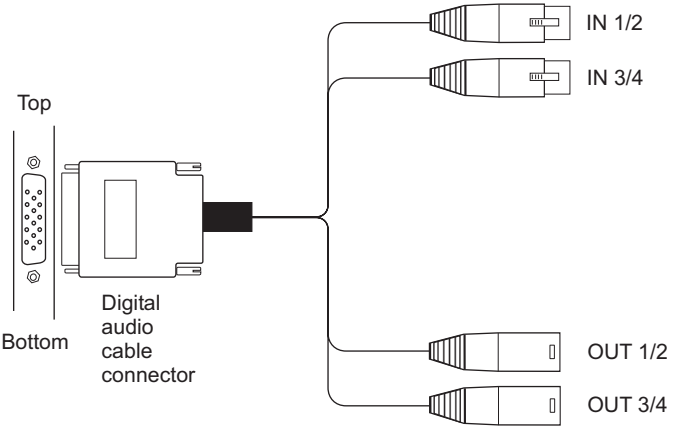
XLR audio cable



RCA audio cable



Digital audio cable



Avoiding audio connection problems

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, DigiSuite LE 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 DigiSuite LE 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.

Important If you're using the DigiSuite LE DigiConnect/Audio breakout box and wish to output to unbalanced equipment, make sure to use the provided XLR-to-RCA adapters to avoid any potential degradation of your audio signal. Remember that your audio outputs must be set to **RCA (unbalanced analog)** in the DigiSuite Configuration program, as explained in "Configuring your audio settings" on page 68.

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 the 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.

DigiSuite LE input/output video connections

There are several video connection possibilities for DigiSuite LE.

DigiConnect/Video breakout box

The DigiConnect/Video breakout box for use with DigiSuite LE (DLE/DCT/VID) provides you with the maximum flexibility possible for connecting external devices to your computer.

Available DigiSuite LE video cables

- The analog video input/output cable (DLITE/VIDEO/CBL) supports analog component, composite, and Y/C video.
- The digital cable for use with the optional digital module (DLE/DIG/VID/CBL) supports one 10-bit 4:2:2 serial digital input as well as one 10-bit 4:2:2 serial digital main output and one 8-bit 4:2:2 serial digital key output.

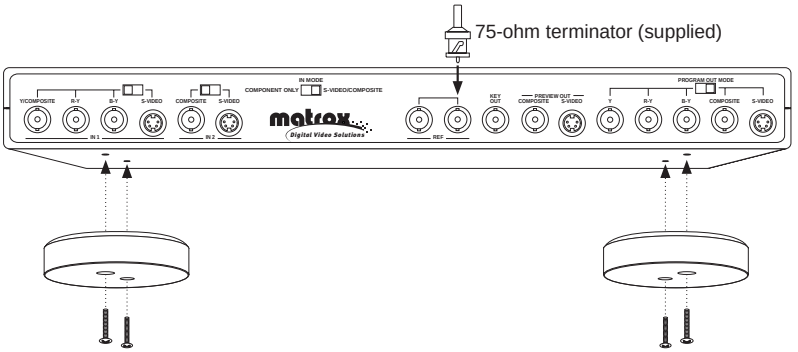
DigiSuite LE DigiConnect/Video breakout box

Prepare for mounting

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

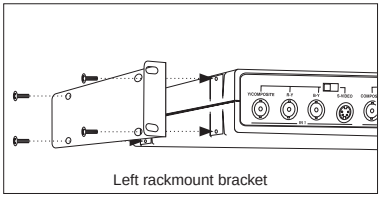
Important Make sure you use the correct screws for each mounting method. If you use the wrong ones, you can damage your equipment. Compare the length of the supplied screws. Use the four **long** screws only with the desktop-mount pedestals.

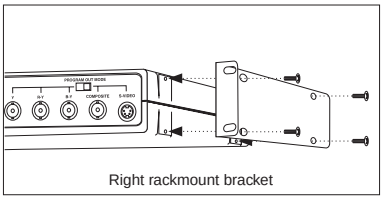
Attaching the desktop pedestals



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

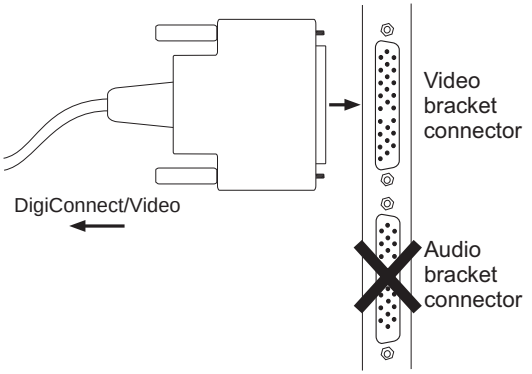

Right rackmount bracket

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 breakout box cable to the **video** bracket connector on the backplate of your installed DigiSuite LE. 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.



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.

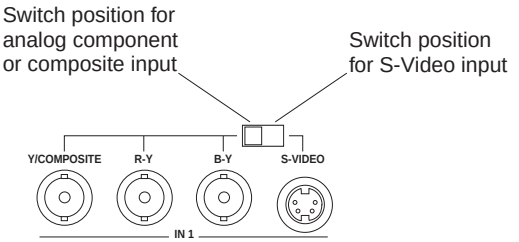
Video input

The DigiConnect/Video breakout box supports any of the following combinations of video connections:

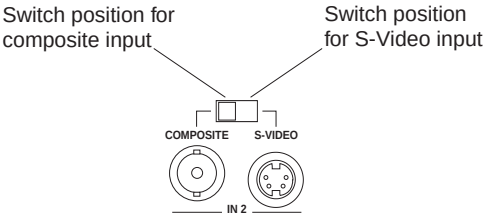
- 2 S-Video (Y/C) connections.
- 2 composite connections.
- 1 S-Video and 1 composite connection.
- 1 analog component and 1 composite connection (for this combination, you'll have to change the IN MODE setting on the breakout box to switch from one signal to the other, as explained in the following section).

➢ **To choose your connection signal options:**

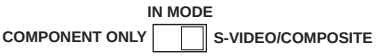
1 Set the IN 1 switch to the desired position. If you have an analog component input source, you must connect it to IN 1, as IN 2 only supports composite and S-Video inputs.



2 If you have two input sources, set the IN 2 switch.



3 Set the IN MODE switch. The switch position determines which jacks are available for your input connections (IN 1 and IN 2 on the breakout box). If you have an analog component input, set the switch to the COMPONENT ONLY position. Otherwise, set it to S-VIDEO/COMPOSITE.

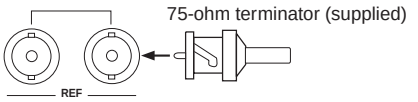


Important If you're using IN 1 for analog component and IN 2 for composite, you'll need to change the IN MODE setting to switch from one signal to the other.Remember that you'll also need to change your video source in the DigiSuite Configuration program as explained in "Configuring your video settings" on page 61.

75-ohm termination

The jacks labelled REF on DigiConnect/Video enable you to terminate the sync signal (with the provided 75-ohm terminator) or have it loop through. When using DigiConnect/Video or another device for termination, make

sure the termination switch on DigiSuite LE is set to Hi Z (see “Set the termination switch on DigiSuite LE” on page 14).



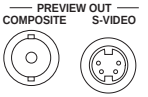
Video outputs

The DigiConnect/Video breakout box for use with DigiSuite LE supports any of the following combinations of video output connections:

- 1 S-Video and 1 composite connection (Preview).
- 1 S-Video and 1 composite connection (Program).
- 1 analog component connection (Program).

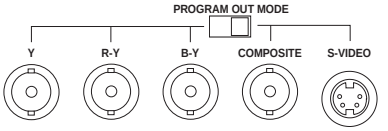
Preview output

The preview output signal is always present at both video preview output jacks.



Program output

The PROGRAM OUT switch allows you to choose analog component or S-Video and composite for your output connections.



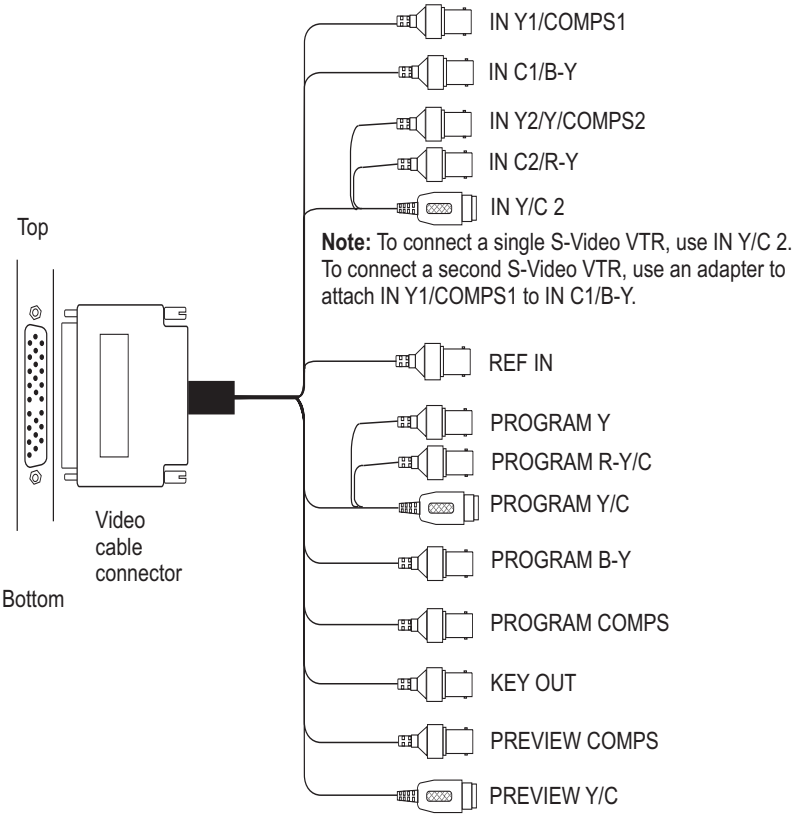
DigiSuite LE cables

Analog video cable

The DigiSuite LE analog video cable, shown below, supports any of the following combinations of video connections:

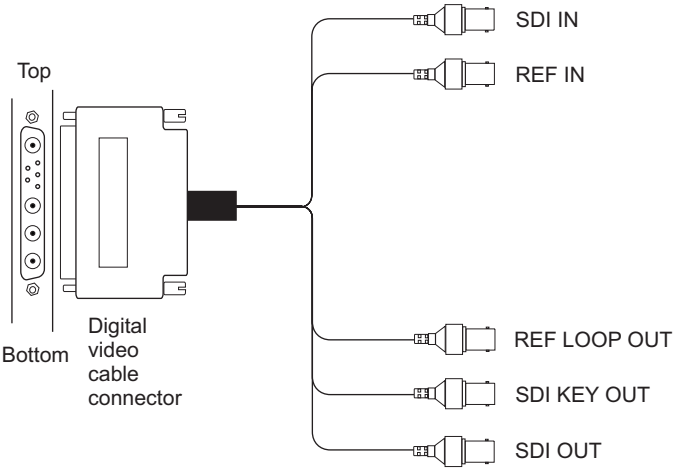
- 2 Y/C (S-Video) connections.
- 2 composite connections.

- 1 Y/C and 1 composite connection.
- 1 analog component and 1 composite connection.



Warning Simultaneous Y/C (S-Video) and analog component input and output connections are not supported on DigiSuite LE. IN Y/C2 should **never** be connected at the same time as IN Y2/Y/COMPS2 and/or IN C2/R-Y, as this will short-circuit your hardware and damage your equipment. Similarly, do **not** attempt to connect PROGRAM Y/C at the same time as PROGRAM Y and/or PROGRAM R-Y/C, as this will lead to the double termination of your signals. If you wish to use Y/C and analog component equipment simultaneously, you must disconnect the Y/C connector before you connect the BNC connectors, and vice versa. Remember that you must also change your settings in the DigiSuite Configuration program as explained in "Configuring your video settings" on page 61.

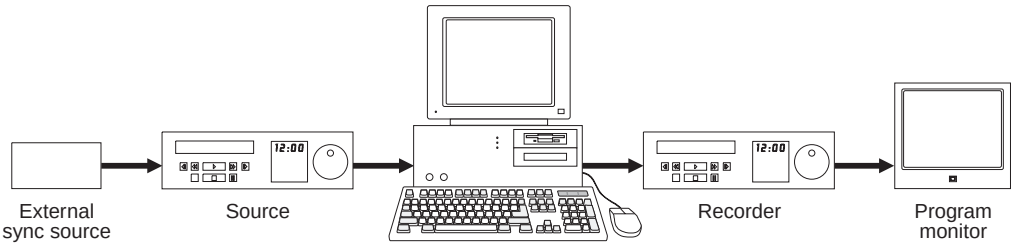
Digital video cable



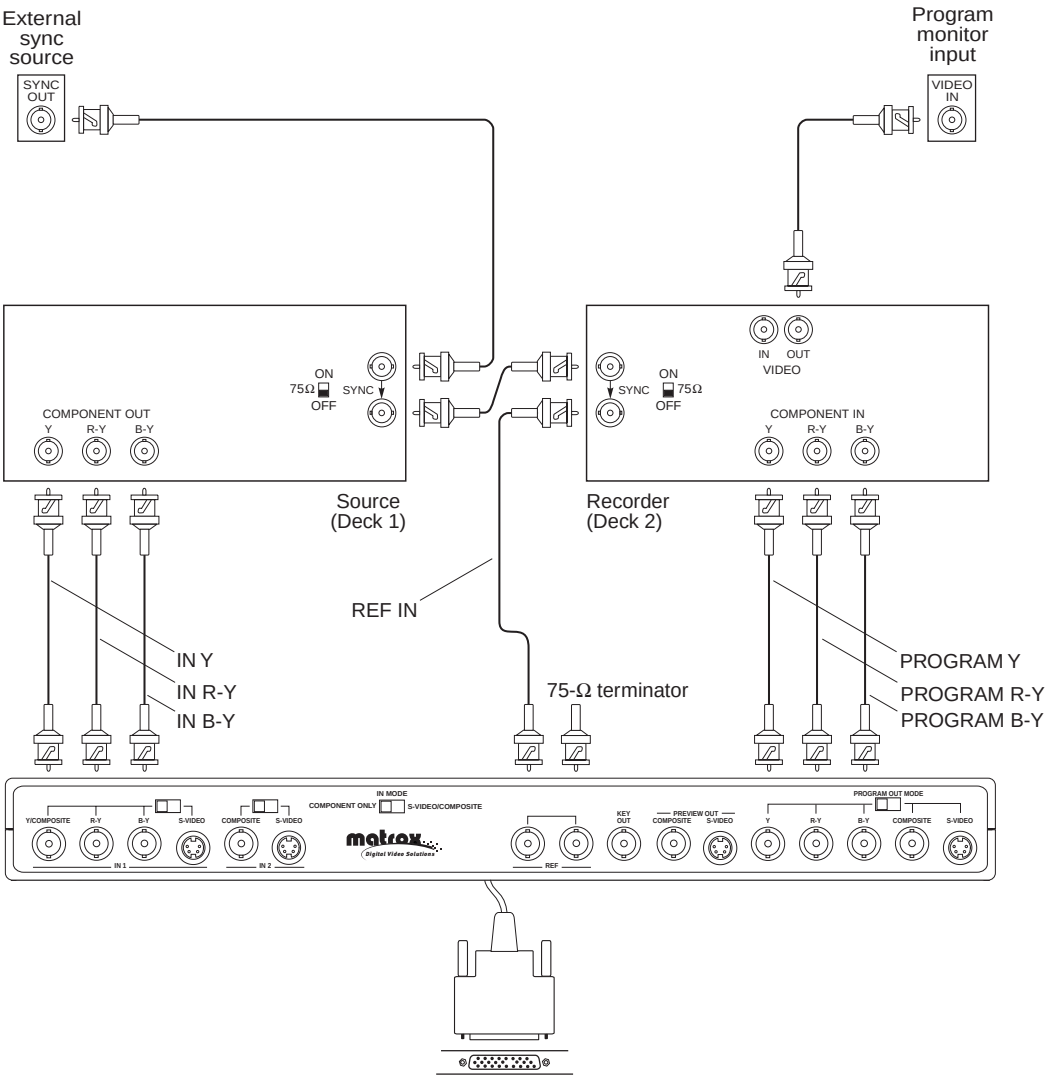
Typical DigiSuite LE video connections

Important Make sure that you insert your DigiSuite LE analog video cable or video breakout box cable into the proper bracket connector. Refer to "Identifying your connectors" on page 24 to locate the video bracket connector on DigiSuite LE.

Illustrations in the following section show some typical video connections. In these illustrations we've connected a Program monitor (NTSC, PAL or digital) to view the signal that will be recorded, as well as 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.

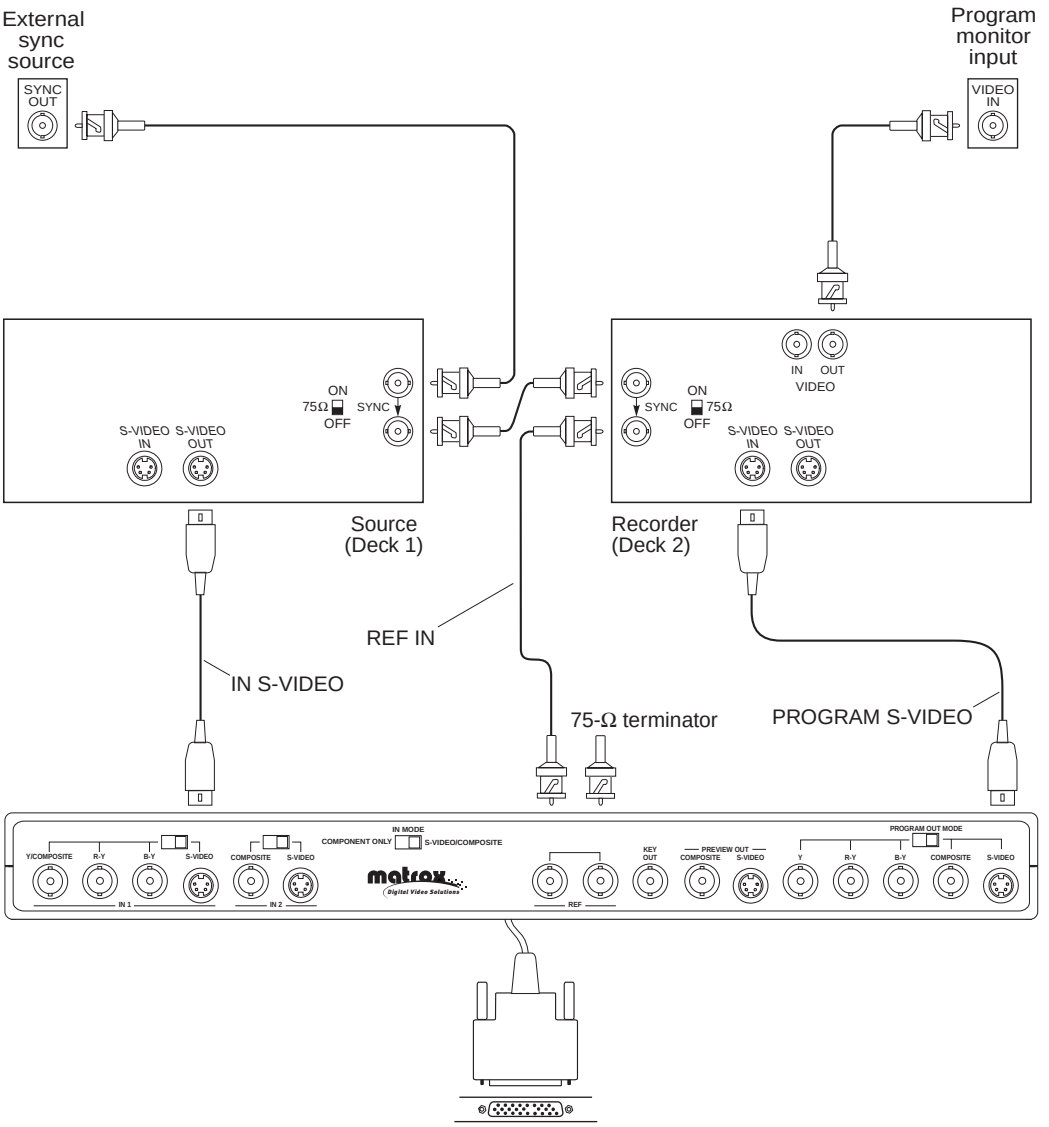


Analog component connections with DigiConnect/ Video



DigiSuite LE video connector

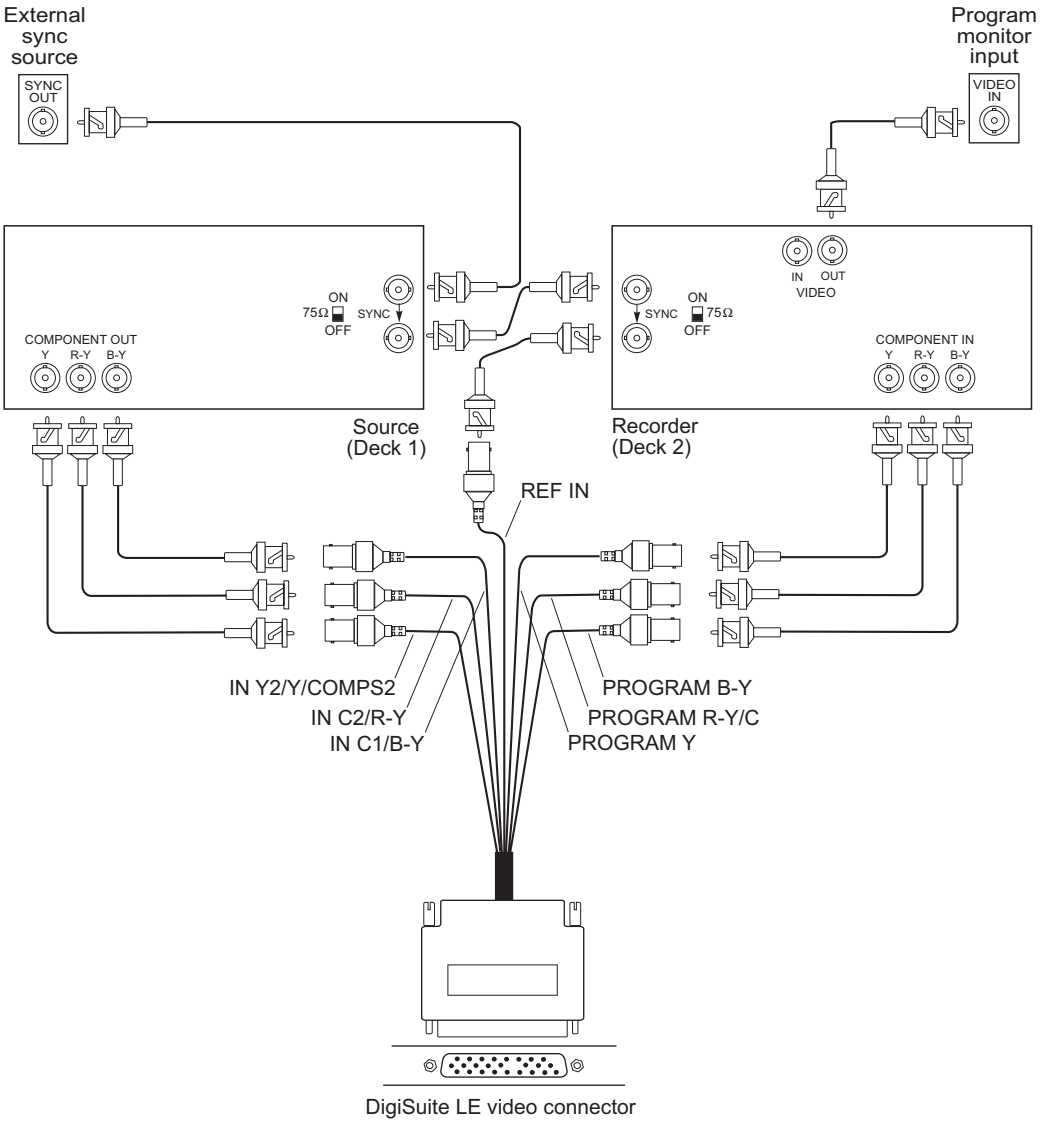
S-Video connections with DigiConnect/Video



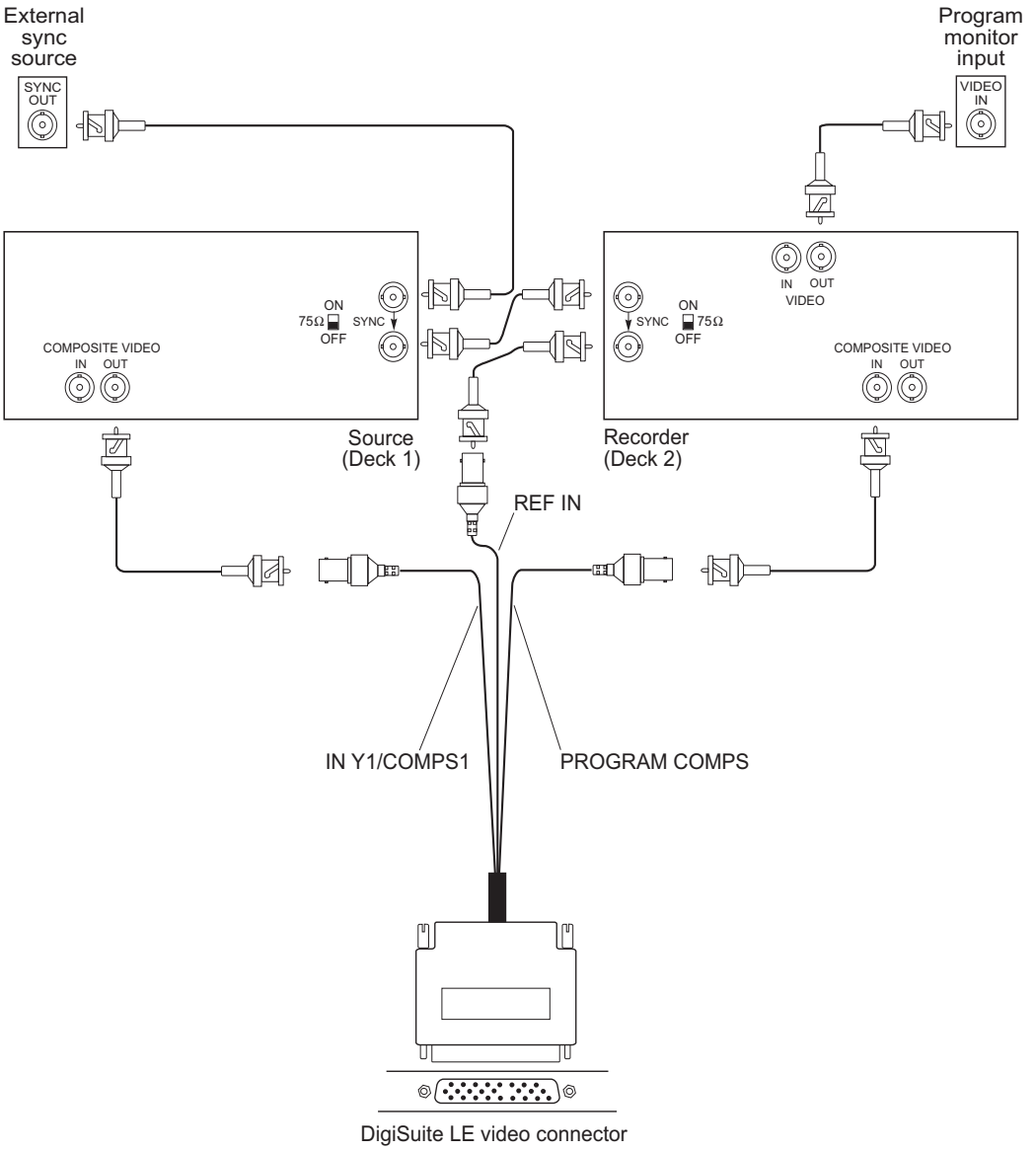
DigiSuite LE video connector

Typical DigiSuite LE video connections

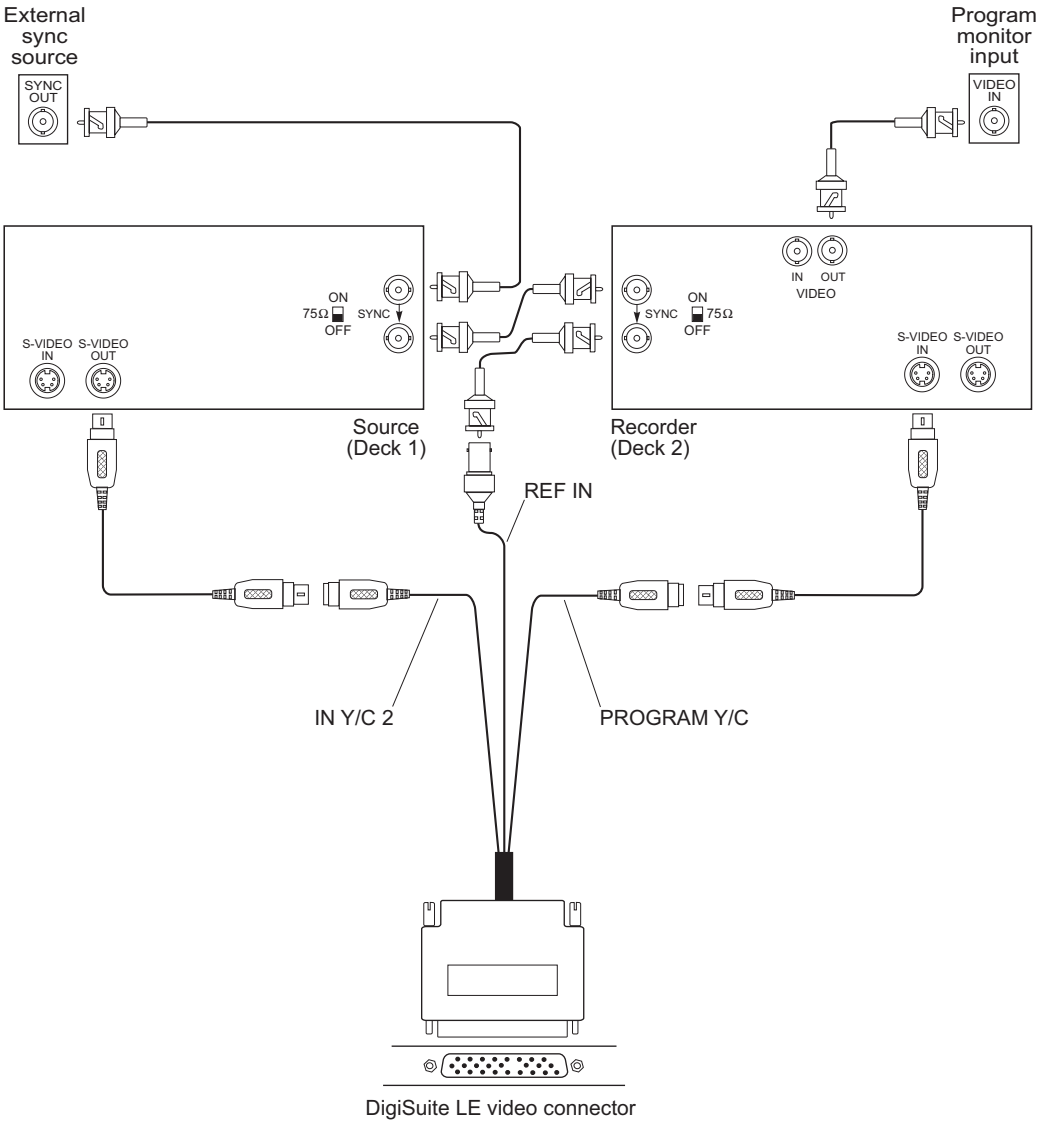
Analog component video cable connections



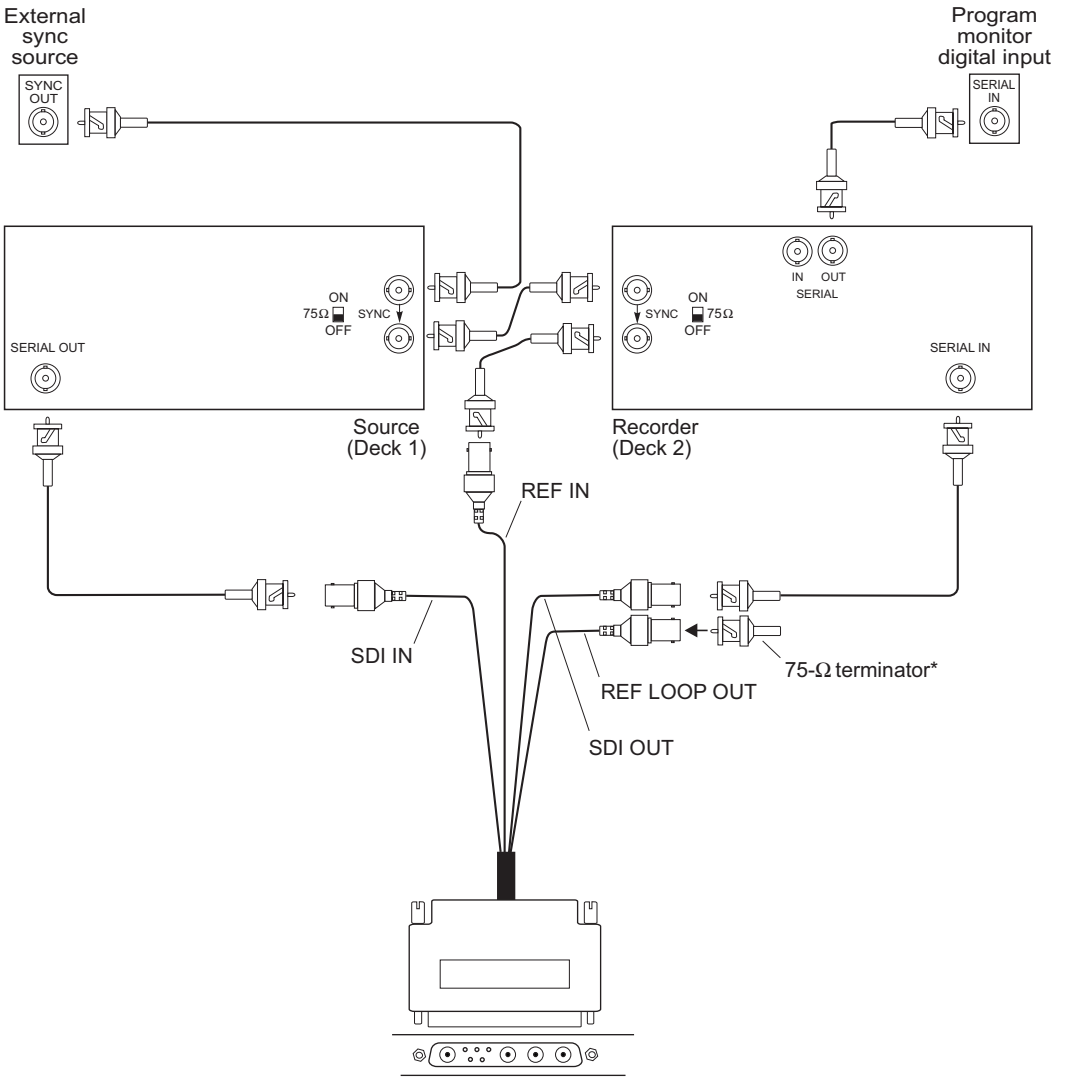
Composite video cable connections



S-Video video cable connections



Digital video cable connections



Digital module video connector

* To have the sync signal loop through to your DigiSuite LE card, connect REF LOOP OUT to the REF IN connection on DigiSuite LE.

Configuring your DigiSuite LE

Once you've installed the DigiSuite software as explained in Chapter 4, you must use the DigiSuite Configuration program to customize your input and output settings. Remember that if you've connected several inputs to your DigiSuite LE, you'll have to change the settings in the Configuration program every time you want to switch from one connection to another. Refer to "Configuring the video input signal" on page 61 for more details.

Notes on using A/V drives with DigiSuite LE

Recommended storage devices

Hard disks play an important role in the overall functionality of any DigiSuite LE system. Although your DigiSuite LE 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/)[1]. The amount of footage you capture to your A/V drives determines how often you should use your defragmentation utility. On average, however, you should defragment your A/V drives once a month. Remember to quit your defragmentation program after each use, that is, do not leave it running in the background.

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

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

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 **DigiSuite LE Storage** dialog box of the DigiSuite Configuration program.

Testing the performance of your A/V drives

The **DigiSuite LE 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 71 for complete step-by-step instructions.

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 may have to configure your computer 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 system's manuals for the correct procedure.

BIOS settings

PCI Interrupts..... Enabled

PCI Interrupt number .....Any available

Bus mastering .....Enabled (for DigiSuite LE slot)

PCI burst mode ..... Enabled

Plug 'n Play .....Disabled

To complete your installation, proceed to Chapter 4, "Installing the DigiSuite Software," on page 49, and Chapter 5, "Configuring Your DigiSuite LE and VTR Settings," on page 55.

Installing the DigiSuite Software

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

CHAPTER

4

What does DigiUtils Setup install?

The DigiUtils Setup program that's provided on your DigiSuite CD-ROM installs the drivers needed to use DigiSuite LE with Video for Windows and DirectShow programs, and the DigiSuite Configuration program that lets you configure DigiSuite LE to meet specific requirements.

If you have DigiDesktop or any other Matrox display card (such as Millennium, G400, etc.), 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.)

For instructions on how to use the DigiSuite software, refer to your *Getting the Most from DigiSuite* manual. To install this software, you must have DigiSuite LE installed in your computer. If you'd like to create and play back DigiSuite-compatible *.avi* files **without** having the DigiSuite hardware installed in your computer, see "Installing the VFW software codecs for use on a system without the DigiSuite hardware" on page 53.

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.

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 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 "Configuring your VTR settings" on page 74).

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 DigiSuite LE from any application that supports the shared Windows Clipboard. You'll see the copied images on your Program monitor when DigiSuite LE is configured to display the graphic frame buffer (for details, see "Configuring the video and key output signals" on page 63).

➢ 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 DigiSuite LE or other 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.

Configuring Your DigiSuite LE and VTR Settings

This chapter explains how to configure DigiSuite LE 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.

CHAPTER

5

Using the DigiSuite Configuration program

When you ran DigiUtils Setup to install the DigiSuite software, your DigiSuite LE was 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.

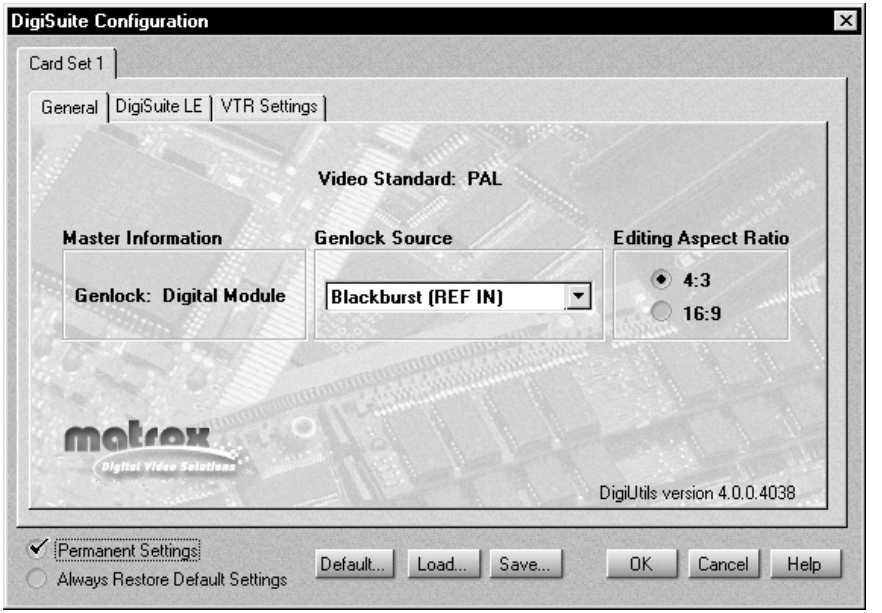
If you chose to install the VTR driver for DigiTools or you installed the DigiSuite Effects plug-in for Adobe Premiere RT, you must use the DigiSuite Configuration program to configure your VTR for RS-422 device control with these programs. This is required to perform frame-accurate capture and recording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



In most cases, all your DigiSuite cards are grouped into a single card set. Under the **Card Set 1** tab, tabs are provided for each card you can configure in the set. To configure a card, click its 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.

Default button

To restore the factory default settings for your card set, click the **Default** button. You can choose which settings you want to restore, such as your DigiSuite LE or VTR settings.

Save and Load buttons

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

Note Once you've configured all your cards, it's a good idea to save the settings for your 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 audio, storage, or VTR settings) will be cleared the next time you start your system. This lets you assign temporary settings to DigiSuite LE.

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

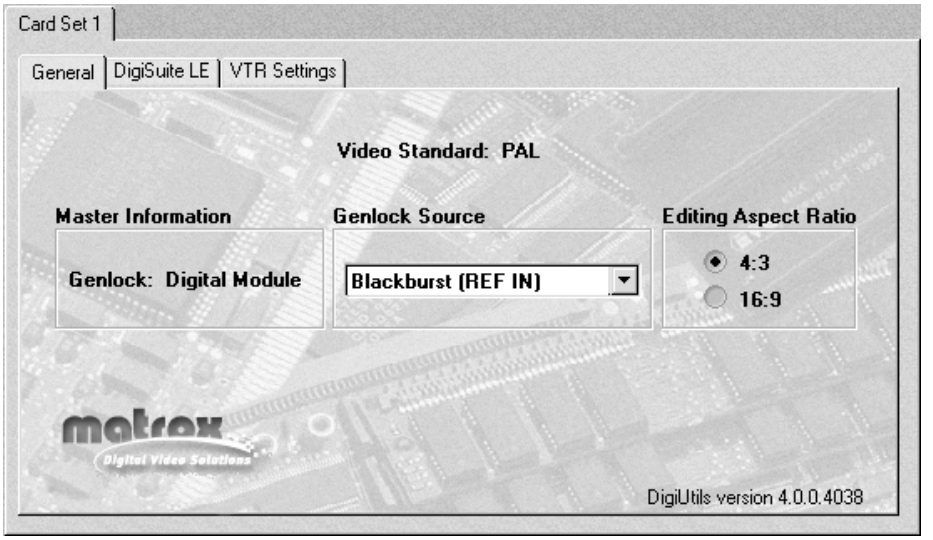
Changing default proc amp settings

If you'd like your default proc amp settings for DigiSuite LE 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 connected to DigiSuite LE, click the **General** tab.



Different genlock options are available depending on whether DigiSuite LE or the optional digital module is the genlock master, as indicated in the **Master Information** box. When the optional digital module is installed, it is automatically set as the genlock master. You **cannot** change the genlock master using the DigiSuite Configuration program.

Important When using an external video genlock source, you must genlock DigiSuite LE 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 **DigiSuite LE Audio Genlock** dialog box as explained on page 68.

Genlock options for DigiSuite LE without the digital module

When DigiSuite LE is the genlock master (that is, you don't have the optional digital module), you can select one of the following genlock options:

- **External Broadcast Quality** Genlock to an external sync generator connected to REF IN on DigiSuite LE. This is the only genlock option that ensures frame-accurate editing.
- **External VTR Quality** Genlock to your source VTR connected to REF IN on DigiSuite LE, such as your composite VTR. This option is preferable to using the internal reference signal on DigiSuite LE if you don't have an external sync generator.
- **Internal** Genlock to DigiSuite LE's internal reference signal. Select this option only if you don't have an external sync generator or other external video sync source.

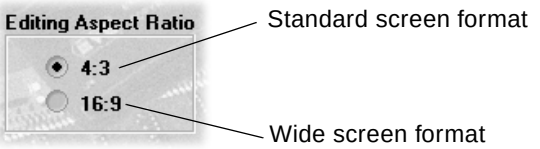
Genlock options for DigiSuite LE with the digital module

When the optional digital module is installed for DigiSuite LE, you can select one of the following genlock options:

- **Blackburst (REF IN)** Genlock to an external analog sync source connected to REF IN on the digital module, such as an external sync generator.
- **4:2:2 (SDI)** Genlock to your digital input source. Use this option only if your digital input source is very stable (that is, it has a built-in TBC).
- **Internal** Genlock to the digital module's internal reference signal. Select this option only if you don't have an external sync generator or other reliable external video sync source.

Selecting your editing aspect ratio

To specify the aspect ratio of the material you're editing on DigiSuite LE, click the **General** tab.



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 LE 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.

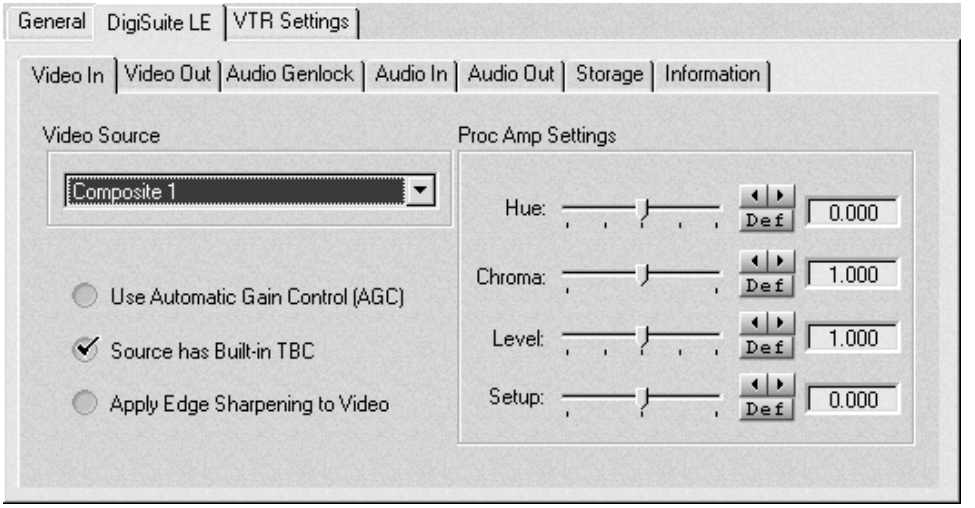
Important Your new aspect ratio will take effect only after you restart your computer.

Configuring your video settings

You can customize your DigiSuite LE to 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 **DigiSuite LE** tab, then the **Video In** 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. If you have the optional digital module, select **4:4:2 (SDI)** to use your digital input source.
- **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. This control won't be available if you've selected an analog component video source.
  - **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 automatically be adjusted 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 DigiSuite LE to reproduce the input signal as-is, without degradation.

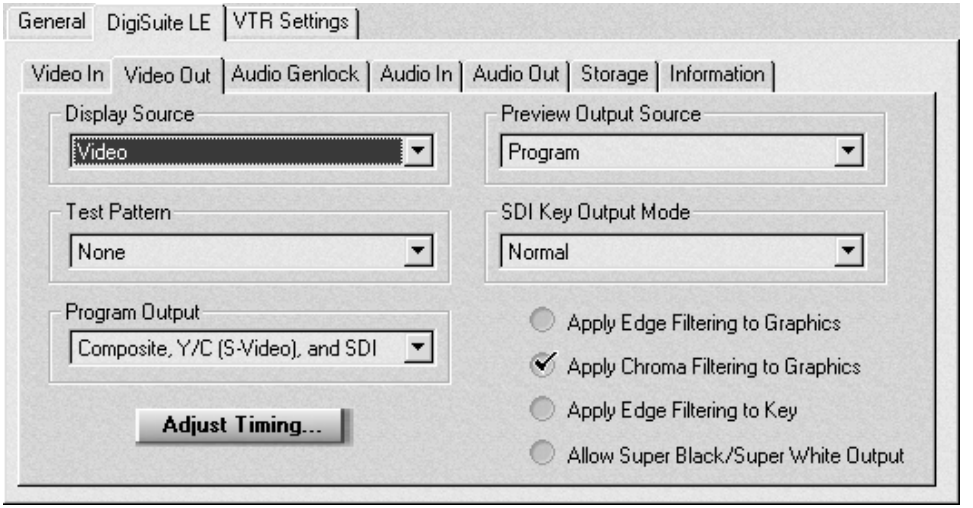
  If your source device **doesn't** have a time base corrector or meet broadcast-quality standards, make sure this option isn't selected. DigiSuite LE will then filter the signal to increase the tolerance for sync pulse instability.

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

- **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 video output signals from DigiSuite LE, click the **DigiSuite LE** tab, then the **Video Out** 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 DigiSuite LE (or the optional digital module) 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 **DigiSuite LE Video In** dialog box, select **Video**. To display the graphic in the DigiSuite LE graphic frame buffer without the internal key signal, select **Graphic (external key)**.
- **Test Pattern** To check the effect of making adjustments to your output signals, select a test pattern from this list. Your selected pattern will be displayed on your NTSC or PAL monitor **only** while the **DigiSuite LE Video Out** 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.

- **Program Output** Use this list to select the type of program output you want to use. For example, to use your composite and S-Video recorders, select **Composite and Y/C (S-Video)**. To use your analog component recorder, select **Analog Component**. If you have the optional digital module, your digital video (SDI) output will always be available.
- **Preview Output Source** From this list, select the signal type you want for the preview output from DigiSuite LE. For most applications, the preview output should be set to **Program**. Set the preview output to **Preview** only if you're using a program that's configured to use the preview output signal.
- **Adjust Timing** Click this button to adjust the timing settings for your system. For details, see "Timing settings for DigiSuite LE without the digital module" on page 66 or "Timing settings for DigiSuite LE with the digital module" on page 67.
- **SDI Key Output Mode** If you have the optional digital module, use this list to select the type of digital key output you want:
  - **Normal** Outputs the digital key signal as-is. The signal will not be inverted or compressed (see below).
  - **Inverted** Inverts the digital key output signal so that transparent areas of the keyed image become opaque, and opaque areas become transparent.
  - **Compressed** Compresses the digital key output signal so that it uses 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 turning the compression feature off.
  - **Inverted and Compressed** Simultaneously inverts and compresses the digital key output signal.

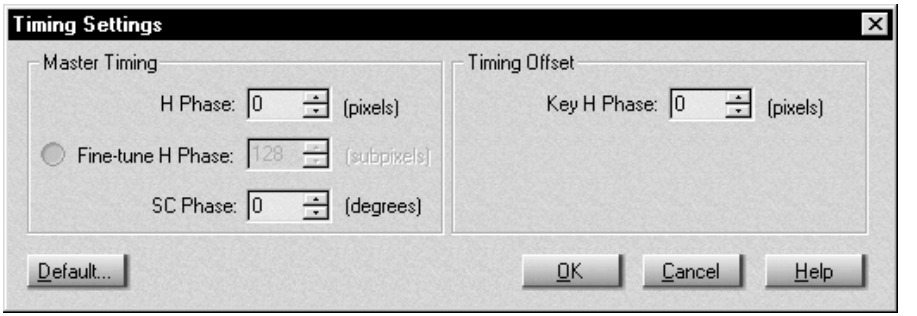
Important Unless your mixer supports key signals having 0 to 255 luminance levels, using a non-compressed digital key output may cause your video to be displayed erratically.

- **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.

Timing settings for DigiSuite LE without the digital module

If you don't have the optional digital module, the following timing controls are provided when you click the **Adjust Timing** button in the **DigiSuite LE Video Out** dialog box:



- **H Phase** and **Fine-tune H Phase** Use these controls to advance or delay the horizontal timing of the DigiSuite LE video and key outputs 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.

Important After adjusting the **H Phase**, 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.

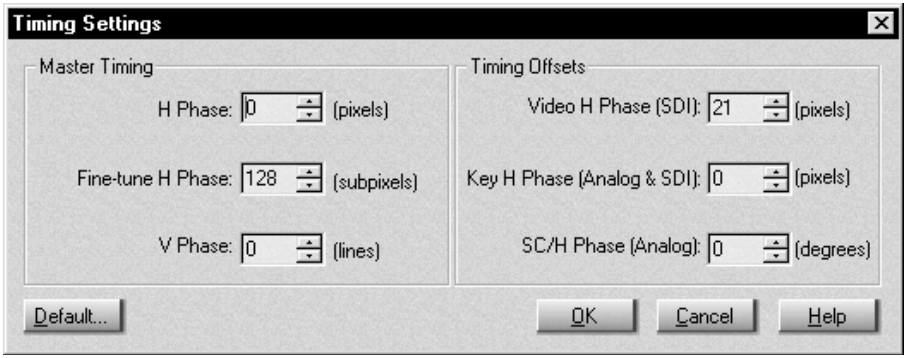
  Because of the method used to perform the SC Phase adjustment, not all values between –180 and 180 degrees are supported. If needed, the value you enter will be clipped to the nearest supported value.

- **Key H Phase** Use this control to advance or delay the horizontal timing of the DigiSuite LE key output and sync signals 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 in the **DigiSuite LE Video Out** dialog box to **Graphic (external key)**, then select **Graphic for Key H Phase Adjustment** from the **Test Pattern** list.

Timing settings for DigiSuite LE with the digital module

If you have the optional digital module, the following timing controls are provided when you click the **Adjust Timing** button in the **DigiSuite LE Video Out** dialog box:



- **Master Timing** Use these controls to advance or delay the video and key outputs from both DigiSuite LE and the digital module with respect to your video genlock source (your analog and digital signals are adjusted **simultaneously**). This lets you compensate for cable delays within your system.
  - **H Phase** and **Fine-tune H Phase** Adjusts the horizontal timing of the video and key outputs. Use the **Fine-tune H Phase** control only if you need to fine-tune the **H Phase** adjustment by subpixels.
  - **V Phase** Adjusts the vertical timing of the video and key outputs.
- **Timing Offsets** Use these controls to make additional timing adjustments to your analog and/or digital outputs.
  - **Video H Phase (SDI)** Adjusts the horizontal timing of only the digital video output with respect to your video genlock source.
  - **Key H Phase (Analog & SDI)** Adjusts the horizontal timing of the analog and digital key outputs and sync signals 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 in the **DigiSuite LE Video Out** dialog box to **Graphic (external key)**, then select **Graphic for Key H Phase Adjustment** from the **Test Pattern** list.
  - **SC/H Phase (Analog)** Aligns your analog video output's subcarrier phase with its horizontal sync pulse. This simultaneously affects all hues in the picture.

Because of the method used to perform the SC/H 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.

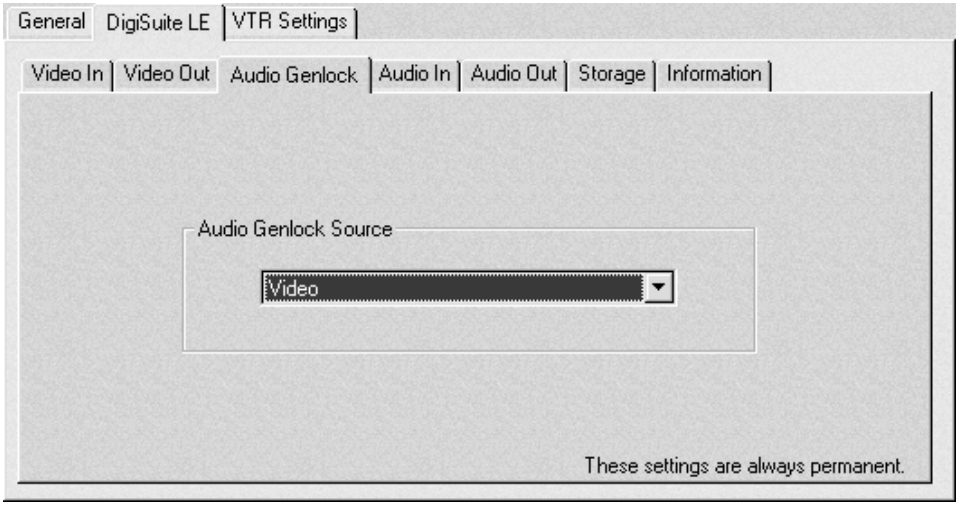
Configuring your audio settings

You can select the default DigiSuite LE 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. If you have the optional digital module, you can select a genlock source for your audio.

Note DigiTools uses only audio Input and Output Pair 1.

Selecting your audio genlock source (digital module only)

To select the source to which you want to genlock your audio, click the **DigiSuite LE** tab, then the **Audio Genlock** tab.

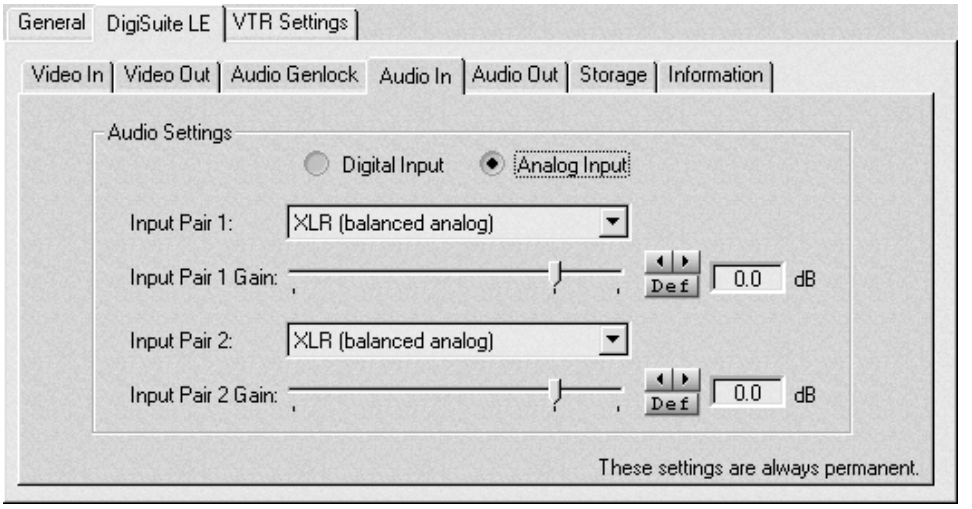


You can select one of the following audio genlock options:

- **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 **DigiSuite LE** tab, then the **Audio In** tab.

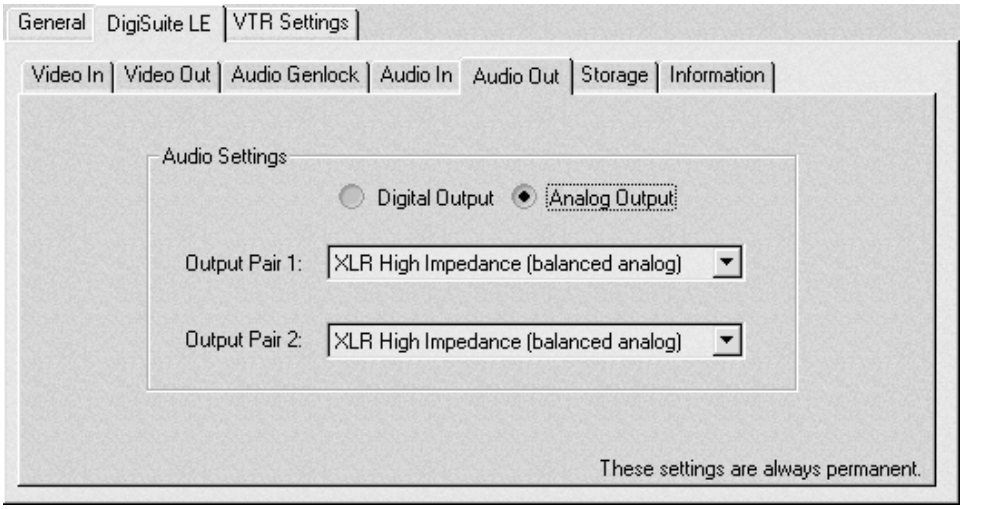


Important Both audio input pairs must be either analog or digital. Digital audio is available only with the optional digital module.

- **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 **DigiSuite LE** tab, then the **Audio Out** tab.



Important Both audio output pairs must be either analog or digital. Digital audio is available only with the optional digital module.

- **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. For example, to use the recorder connected to your unbalanced analog OUT 1 and OUT 2 outputs, set **Output Pair 1** to **RCA (unbalanced analog)**.

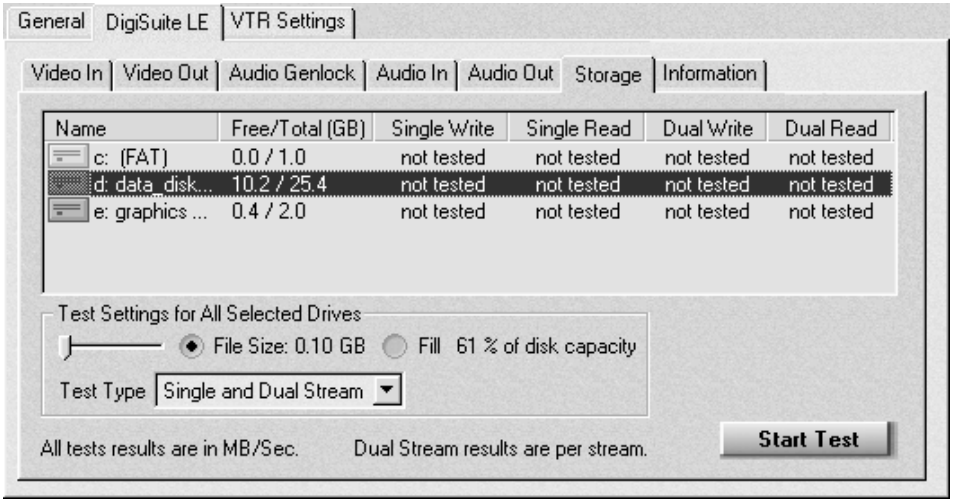
  To ensure that your balanced analog output is properly calibrated for your recorder, make sure you select the option that matches your recorder's audio input impedance. For example, if the audio input impedance of your recorder is set to 600 Ω, select **XLR 600 Ohms (balanced analog)**. If your recorder has a high-impedance audio input load, select **XLR High Impedance (balanced analog)**.

Note Refer to your VTR's documentation for instructions on how to set its audio input impedance. If you're unsure of your VTR's setting, select **XLR High Impedance (balanced analog)**.

Testing the performance of your A/V drives

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

1 Click the **DigiSuite LE** 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:

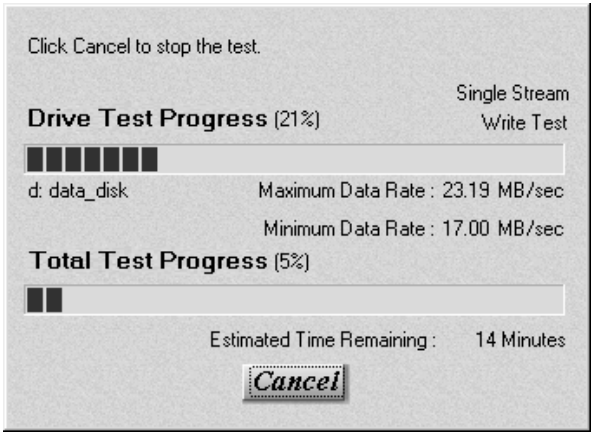
- **Single Stream Only** Tests drive performance for writing and then reading (playing back) a single video file.
- **Dual Stream Only** Tests drive performance for writing and then reading two video files simultaneously (this technique is used to support A/B roll edits in your projects).

– **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.



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 LE to be sure you won't exceed the data rate your A/V drive is capable of achieving.

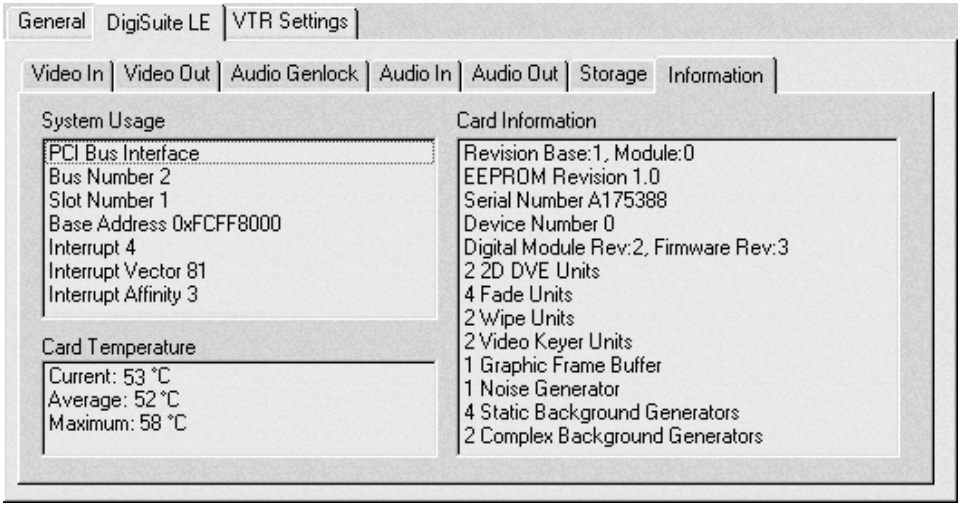
8 Click **OK** to save the results of the test and quit the DigiSuite Configuration program.

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

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

Displaying DigiSuite LE information

To display system usage and other information about your DigiSuite LE, click the **DigiSuite LE** 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 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.

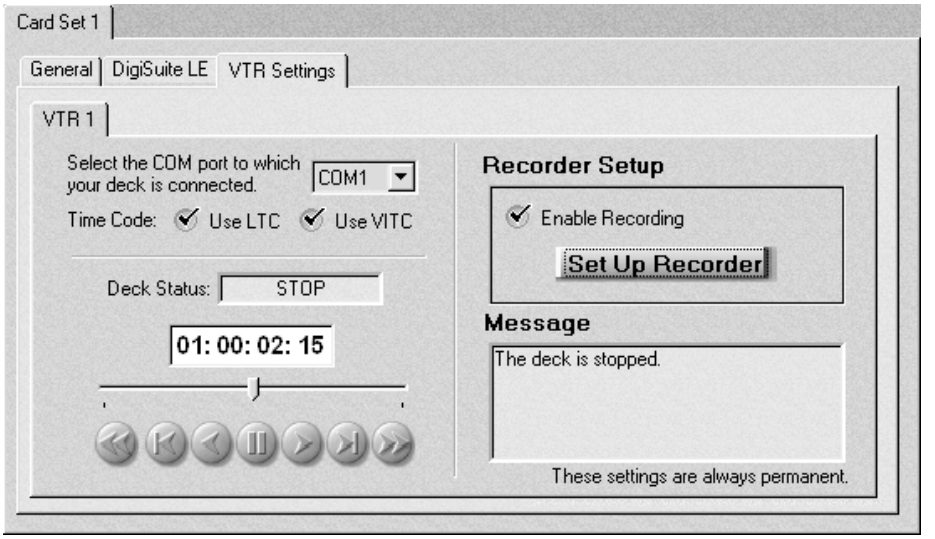
The DigiSuite Configuration program lets you configure your VTR for RS-422 device control with DigiTools and many nonlinear editing programs, such as Adobe Premiere RT, IMC Incite, and United Media On-Line Express.

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).

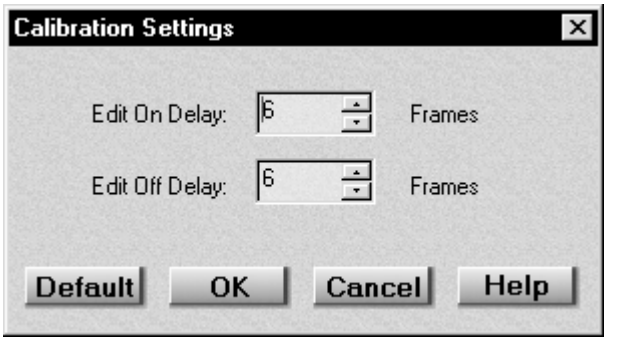
   For details on how to manually adjust your recorder's calibration settings, see the next section.

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 77). 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.

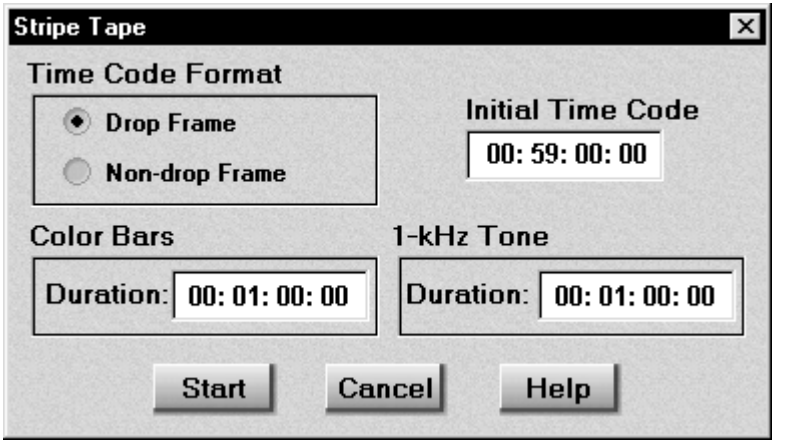
Striping your tapes

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

DigiSuite LE Troubleshooting

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

CHAPTER

6

Problems, possible causes, and solutions

Up-to-date information

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

Multiple solutions

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

Note In this chapter, references to shutting off and/or restarting your system mean to actually use the physical On/Off switch. Simple software restart (from **Start | Shut Down**) or logging off the system and the logging back on 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 1 **Incompatible system** If your DigiSuite hardware is installed in a computer system we haven't tested and validated, the hardware may not run correctly.

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

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

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

Can't install DigiUtils software

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

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

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 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 with this motherboard. In addition, the support we can offer will be limited.

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

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 Administrator, 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. Click the **DigiSuite LE** tab and then **Video Out** tab, then 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 **DigiSuite LE Video In** 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 cards not initializing or drivers not loading" on page 84.

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 **DigiSuite LE Video In** 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 **DigiSuite LE** tab and then the **Video Out** 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 DigiSuite LE 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 **DigiSuite LE Video In** dialog box (of the DigiSuite Configuration program) to default.
2. Make sure that the video source signal type selected in the **DigiSuite LE Video In** dialog box matches that of the actual physical input connections to DigiSuite LE.
3. Monitor the output of the video source directly to ensure its integrity before feeding it to DigiSuite LE.
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 LE Audio In** section of 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.

DigiSuite LE cable output signal is attenuated

Possible cause **Double-termination** The DigiSuite LE cable does not support simultaneous outputs for analog component and Y/C signals. Double-termination will result if you connect the analog component and Y/C video output signals at the same time.

Solution **Connect outputs one at a time** You should **never** connect the **Program Y/C** output connector at the same time as the **Program Y** and/or **Program R–Y/C** outputs of the DigiSuite LE cable.

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 drives** 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 **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.

Possible cause 5 **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.

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 **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.
- You can attach up to 15 High-Voltage Differential module (HVD) SCSI devices to a cable 75 feet in length.
- Finally, if you're using a 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 96, 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 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 96, 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 single-ended SCSI controller and that differential SCSI devices are connected to a differential SCSI controller.

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 single-ended controller, you'll need to use active single-ended termination at the end of the SCSI chain to be backward compatible with the single-ended controller.

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

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.

Notes

DigiSuite LE Specifications

This appendix provides hardware specifications for DigiSuite LE and its associated optional digital module.

APPENDIX

A

Electrical specifications

Typical operating voltages and current consumption

DigiSuite LE

	+5 V	+12 V	–12 V
Current	4.5 A	680 mA	175 mA

Total power consumption: <33 Watts

Optional digital module

	+5 V	+12 V
Current	523 mA	366 mA

Total power consumption: <7 Watts

Video input/output

- Video Standards

– NTSC – PAL

Analog video input signals

Signal Type	Quantity	Voltage	Impedance
Composite Video	2	1.0 V_{p-p}	75 Ω
Y/C Video Luminance signal	2	1.0 V_{p-p}	75 Ω
Chrominance signal		PAL: 0.300 V_{p-p}, burst	75 Ω
		NTSC: 0.286 V_{p-p}, burst	75 Ω
Component Video (Y, (B-Y), (R-Y))	1	1.0 V_{p-p}	75 Ω
Reference In	1	1.0 V_{p-p}	*ON=75 Ω OFF= 200 K Ω

* hardware selectable via DIP switch. See “Set the termination switch on DigiSuite LE” on page 14.

Analog video output signals

Signal Type	Quantity	Voltage	Impedance
Preview Out			
Composite Video	1	1.0 V_{p-p}	75 Ω
Y/C Video	1		
Luminance signal		1.0 V_{p-p}	75 Ω
Chrominance signal		PAL: 0.300 V_{p-p}, burst	75 Ω
		NTSC: 0.286 V_{p-p}, burst	75 Ω
Program Out			
Composite Video	1	1.0 V_{p-p}	75Ω
Y/C Video	1		
Luminance signal		1.0 V_{p-p}	75Ω
Chrominance signal		PAL: 0.300 V_{p-p}, burst	75 Ω
		NTSC: 0.286 V_{p-p}, burst	75 Ω
Component Video (Y, (B-Y), (R-Y))	1	1.0 V_{p-p}	75Ω
Linear Key Out	1	1.0 V_{p-p}	75Ω no burst

Serial digital video input/output

Signal Type	Quantity	Voltage	Impedance
Reference In	1	2.0 V_{p-p}	Hi Z
Reference Loop Out	1	1.0 V_{p-p}	75 Ω (terminated) Hi Z (looped through)

Audio input/output

Analog input/output

Balanced signal

Input impedance	20 kΩ
Input level	0 VU = +4 dBu, 18 dB headroom 0 dBu = 0.775 V_{rms}
Output impedance	50 Ω short-circuit protected
Output level	+4 dBu: +18 dB headroom

Unbalanced signal

Input impedance	10 kΩ
Input level	0 VU = –10 dBV
Output load impedance	600 Ω min.
Output impedance	50 Ω short-circuit protected
Output level	–10 dBV maximum: +8 dBV

Digital input/output

AES/EBU signal	110 Ω balanced

Movie-2 bus input/output

Digital I/O levels:TTL compatible, driven by 74LVTxxx-type registers

Audio specifications

Frequency response	20 Hz to 20 kHz ± 1.4 dB
Signal-to-noise ratio	>80 dB
THD + noise	0.015 %
Sampling frequency	48 kHz
Quantization	16 bits/sample

Mechanical specifications

Physical Dimensions

DigiSuite LE: 12.135" long × 4.2" high × 0.71" wide

Optional digital module: 4.62" long × 3.72" high × 0.475" wide

Connector types

- DigiSuite LE
  - Analog video and audio input/output: EDAC 134-026-263-032
- Optional digital module
  - Digital video input/output: AMPHENOL 717TWB9W4P4R
  - Digital audio input/output: HD-15 male connector
- Movie-2 bus CON 2: BERG 87402-135

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.

APPENDIX

B

Glossary of terms

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

Numerics

1394 *See* IEEE-1394.

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

A

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

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

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

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

analog component video *See* component video.

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

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

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

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

attenuation A decrease in an electrical signal's amplitude.

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

B

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

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

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

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

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

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

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

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

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

C

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

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

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

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

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

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

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

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

compile *See* render.

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

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

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

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

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

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

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

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

D

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

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

Digital Video *See* DV.

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

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

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

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

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

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

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

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

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

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

E

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

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

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

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

F

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

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

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

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

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

G

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

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

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

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

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

H

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

hardware-accelerated effect *See* realtime effect.

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

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

I

IBP compression *See* MPEG-2 IBP.

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

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

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

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

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

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

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

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

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

J

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

K

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

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

L

lossless compression *See* mathematically lossless compression.

lossless video *See* uncompressed-quality video.

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

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

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

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

M

mark in To select the first frame of a clip.

mark out To select the last frame of a clip.

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

M-JPEG *See* Motion-JPEG.

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

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

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

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

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

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

MPEG-1 *See* MPEG.

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

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

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

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

N

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

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

P

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

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

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

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

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

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

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

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

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

R

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

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

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

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

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

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

S

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

scroll *See* roll (1).

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

SDTI Serial Digital Transport Interface.

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

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

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

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

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

spatial redundancy reduction *See* intra-frame compression.

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

S-Video *See* Y/C video.

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

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

synchronize video equipment and keep pictures stable on the screen.

T

TBC *See* time base corrector.

temporal redundancy reduction *See* inter-frame compression.

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

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

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

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

U

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

V

Video window *See* DVE.

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

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

W

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

Y

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

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

Customer Support

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

APPENDIX

C

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

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

Fax 1 514 685-2853

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

World Wide Web

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

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

DigiForum

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

```
listproc@matrox.com
```

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

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

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

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

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