



DVD Playback Card

C-1.2D

User's Guide

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Preface

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Rev. 1.0 September, 1997
P/N 100845

FCC Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

DECLARATION OF CONFORMITY

Application of Council Directive(s):

Standard(s) to which Conformity is Declared

USA CFR 47 Part 15 Requirements

Manufacturer's Name: Quadram International, Inc.

Manufacturer's Address: 169 Great Valley Parkway
Malvern, PA 19355

Importer's Name:

Importer's Address:

Type of Equipment: DVD Playback Card

Model Number: CineMaster C 1.1

Serial Number: Range

Year of Manufacture: 1997

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

Place: Quadram International, Inc.



(Signature)

Date: June 15, 1997

Robert Russell
(Full Name)

Director of Engineering
(Title)

Quadram International, Inc.
CineMaster C 1.1

CE Statement

This equipment has been designed to comply with the requirements for CE Mark Certification, pertaining to products intended for sale within the European Union.

DECLARATION OF CONFORMITY

Application of Council Directive(s):

89/313/EEC

Standard(s) to which Conformity is Declared:

EN55022, EN55022-1

Manufacturer's Name: Quadram International, Inc.

Manufacturer's Address: 269 Great Valley Parkway
Malvern, PA 19355

Importer's Name:

Importer's Address:

Type of Equipment: DVD Playback Card

Model Number: Cinemaster C 1.2

Serial Number: Range

Year of Manufacture: 1997

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

Place: Quadram International, Inc.


(Signature)

Date: September 12, 1997

Robert E. Regal
(Full Name)

Director of Engineering
(Title)

*Quadram International, Inc.
Cinemaster C 1.2*

VCCI Statement

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Introduction

CineMaster Overview

This User's Guide covers the **CineMaster C-1.2D** DVD Decoder board and DVD Player software.

Features

MPEG-2 video decoding in hardware — MPEG-2 is the compression standard used with DVD. This compression method allows over two hours of crisp, clear video to be stored on the first DVD discs.

Dolby® Digital Sound (AC-3) decoding in hardware — **CineMaster** delivers full 5.1 channel digital audio out to the S/PDIF connector.

Multi-Language Support — **CineMaster** supports software selection of up to 8 different languages from any DVD source containing multilingual audio channel information.

Sub-Picture Decoding / Sub-Title — Up to 32 sub-picture streams, as well as sub-titles, text, and closed-captioning, can be decoded by **CineMaster** and presented to the user.

Parental Control — Playback of DVD discs that feature Parental Management can be selectively disabled, so discs containing material inappropriate for children cannot be viewed without parental consent. In addition, if there are multiple versions with different ratings, you can select the rating you wish to view.

Wide-Screen/Pan-Scan — **CineMaster** supports all of the DVD formats for video presentation and aspect ratio.

Multi-Angle and Special Sequences — **CineMaster** provides for playback of movies filmed with multiple cameras, allowing the user to choose the angle, and to include special sequences that have been specified by the film director (“Director’s Cut”).

Navigation Commands — Users can interact with and customize the presentation of the DVD video material because **CineMaster** supports DVD Navigation Commands issued by the DVD playback application.

Windows 95 Plug-and-Play Installation — **CineMaster** is a Plug-n-Play card and is Windows 95 compatible. Just insert the card into a PCI slot, install the driver software, and enjoy the powerful new digital video features. There are no installation hassles, no IRQ conflicts, and no I/O Port settings to adjust!

VMI 1.4 — VMI is a method for connecting a VGA card directly to a source of digital video such as **CineMaster** using an internal ribbon cable. This direct connection allows **CineMaster** to send its video data directly to the VGA card in a way that allows the VGA card to perform filtering and other functions on the video.

CineMaster C-1.2D Specifications

Hardware Interface

PCI 2.1 compliant Bus Master, 32-bit host interface
Intel / Microsoft Plug-and-Play compliant
VMI compliant

Copy Protection Support

Formats: CSS (Content Scrambling System)
Regional coding lockout

Video Support

Content Standards NTSC or PAL
Content Aspect Ratios 4:3, 16:9
Video Port Interface Support VPE (DirectX 5)

Audio Support

Output Formats: Dolby Digital — S/PDIF
Stereo — 2 channel to sound card
Audio Pass-Through for playing CD/DVD audio through sound card

Getting Started

General Installation Instructions

PCI Bus Compatibility Guidelines

CineMaster must be installed in an open 32-bit PCI slot with PCI bus mastering. Refer to the manual shipped with your computer or motherboard to make sure that the open PCI slot that you select has bus mastering capabilities. For example, the manual should contain a statement similar to: “Each 32-bit PCI slot supports PCI mastering”.

Video Port Compatibility Guidelines

VMI Interface

CineMaster uses a VMI 1.4 compliant interface to deliver high-quality digital video data to the VGA card using a direct-connect cable. The software interface for the VMI port on **CineMaster** is **VPE**, which is a part of Microsoft’s DirectX 5.

NOTE: You must have DirectX 5.0 installed in your system for **CineMaster** to play DVD Video over a VIP/VPE connection. Dell has already factory-installed DirectX 5.0 for you.



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Hardware Installation

Before you begin installing the **CineMaster** card, check your computer's reference manual to locate the internal PCI expansion slots with bus mastering. Read any instructions in the manual describing how to use the expansion slots before installation.

WARNING: To install the **CineMaster** card, you must open your computer and handle some of the internal components. **Exercise caution at all times when working with AC powered equipment. Turn off and unplug your computer before you begin this procedure.**

1. Turn the computer and all peripheral devices off.
2. Unplug the computer from the AC power outlet.
3. Remove the cover from the computer. (Refer to the computer manual for instructions.)

Note: Check the manual for your computer or motherboard to select an open PCI slot that is capable of bus mastering. Always discharge static electricity before handling the **CineMaster** card or inserting the card into a slot. To discharge static electricity from your body, touch any grounded metal surface. Always handle the card only by the metal bracket, avoiding contact with any components.

-
4. Remove the slot cover for an open PCI slot designed for bus mastering on the computer's motherboard. A single screw is generally used to secure the cover. Save the screw for installing the **CineMaster** card later. Refer to Figure 1.

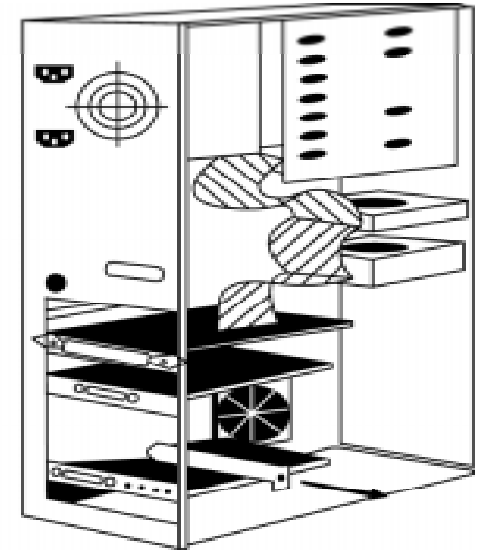


Figure 1: Removing the slot cover from an open PCI slot.

5. Carefully remove the **CineMaster** card from its anti-static envelope.

-
6. Hold the **CineMaster** card by its edges and insert it into the open PCI slot. Press the card firmly into the slot connector applying even pressure until the card is completely seated in the connector. You may have to gently rock the card from end-to-end in order to seat it properly. Refer to Figure 2.

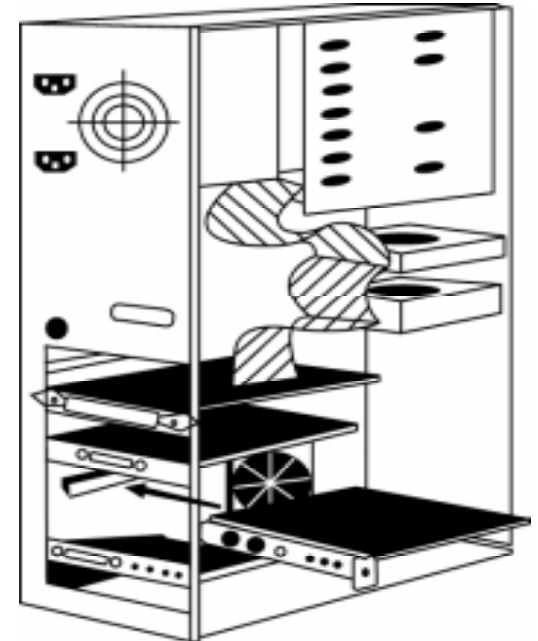


Figure 2 : Inserting the **CineMaster** card into the open PCI slot.

Note: The **CineMaster** card must be seated properly and should not touch any other card or components on the motherboard in your system. A short circuit or system damage may occur if the **CineMaster** card is in contact with other components, or if any card is ever inserted or removed with the power on.

7. Insert and tighten the screw to attach the card to the support bracket or the computer's case.

-
8. Connect one end of the long audio cable to CineMaster's MPC-3 Audio Input connector, and the other end to the DVD-ROM drive's Audio Out connector. Then connect **CineMaster** to the sound card's connector that formerly went to the DVD drive, by connecting one end of the supplied short audio cable to **CineMaster**'s MPC-3 Audio Output connector, and the other end to the sound card connector. Refer to Figure 3.

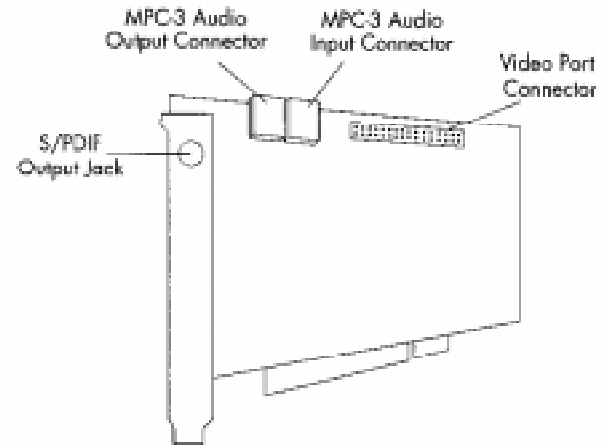


Figure 3: *CineMaster cable connections*

9. Connect the supplied ribbon cable from the 26-pin VMI Video Port Connector on **CineMaster** to the matching Video Port Connector on your VGA Card.

Note: Be sure to align the connector properly with the pins. Typically, the ribbon cable will have a red stripe running along one edge. This edge should be nearest to Pin 1 on the Video Port Connector, located nearest to the metal bracket.

10. Replace the computer cover and plug in the computer.
11. At this point you can connect an AC-3 Decoder/Amplifier to the S/PDIF output connector on the rear bracket.

Note: Inferior quality signal cables or excessive cable length can degrade your sound and video quality.

12. Power on the computer and proceed to the **Software Driver Installation** section.



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Software Driver Installation

CineMaster is a Plug and Play device, and Windows 95 will recognize the card the first time you boot after the card is installed. Once Windows 95 recognizes the card, it will look for CineMaster device drivers and if it does not find any, it will ask you to insert the disc containing the device drivers.

These device drivers are contained on an installation CD-ROM. The CD-ROM contains multiple copies of the CineMaster files in different directories, with each directory containing exactly one copy in a specific language. The following procedure describes the process for installing this software.

Note: The driver installation disc may contain a ReadMe file. It is highly recommended that you read this file for last-minute changes and notes that may not be included in this User's Guide. Windows 95's WordPad (in the Accessories folder) can be used to read this file.

1. When you boot Windows 95 for the first time, it will detect the CineMaster DVD Decoder card and ask you to allow it to search for device drivers for it. Select **Next** to proceed.



Figure 4: Request to search for drivers

- Windows 95 will examine the floppy drive (A:\) for drivers, and when it doesn't find any, it will display the following window. Insert the installation CD-ROM into the DVD-ROM drive and click on the **Other Location** button.



Figure 5: Unable to locate drivers

- In the new window that opens, select **Browse**, and then the DVD-ROM drive, and then the language directory that you wish to use for the installation (e.g. D:\English\) and then click on **OK**.

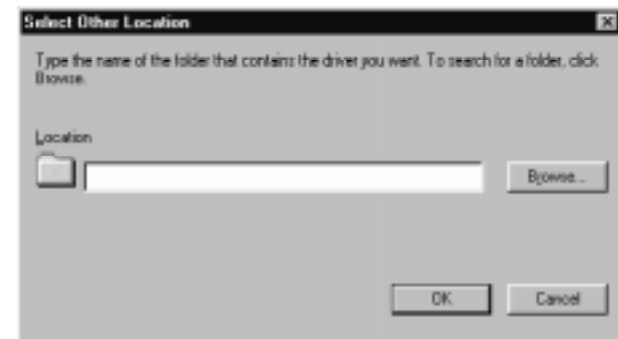


Figure 6: Search other locations

- Windows 95 will detect the drivers and present the window below. Click on **Finish** and the drivers will be copied to your hard disk.



Figure 7: Finish the installation

- When the installation is complete, you will be prompted to reboot your computer. Click on **OK** to do so. When Windows 95 restarts, the CineMaster drivers will be installed and ready for use.



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DVD Player Software Installation

Installation

Note: The installation procedure described in this section assumes the application is supplied on floppy disks.

If the application is provided on a single CD-ROM, the following procedure still applies — wherever references are made to individual floppy disks, simply insert the single CD-ROM disc and reference the appropriate drive letter for your DVD-ROM drive (e.g. D:\ or E:\).

The **DVD Player** is supplied on a set of two floppy disks labeled “*DVD PLAYER DISK 1 OF 2*” and “*DVD PLAYER DISK 2 OF 2*”. The following procedure describes the installation process.

Note: It is strongly recommended that you exit all Windows programs before you begin this installation procedure.

1. Insert the “*DVD PLAYER DISK 1 OF 2*” disk into the 3.5” drive slot on your computer.
2. Click on the **Start** button in the bottom left corner of the Windows 95 screen, then select **Run** from the list of options that appears.
3. Type **a:\setup** or **b:\setup** depending on the ID of the drive in which you’ve inserted the installation disk.
4. Just follow the simple on-screen instructions to complete the installation process. The installation program will copy files to the hard disk and create a Windows program group or folder with an icon for starting the **DVD Player**.

That’s it; you can now play DVD titles on your computer!

Note: The installer will not ask for Disk 2 if it is not needed for installation in your system; this is not abnormal.

Starting DVD Player

To start the software, Click on the **Start** button in the bottom left corner of the Windows 95 screen, then select **Programs**, then **DVD Player** and then **DVD Player**.

DVD Player opens a playback window that is the same size as the playback window when you last exited **DVD Player**, and opens the Panel Control window in the same location as it was when you exited **DVD Player**. *(If you have not used **DVD Player** yet, it will use internal defaults.)*

<p>Note: If you did not have the Panel Control window open when you last exited DVD Player, it will not open the next time it is run. You will need to use the menu to open the Panel Control window. <i>Refer to the instructions on page 19 to access this menu.</i></p>
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Proper DVD Disc in Drive

If you have a DVD Disc in your DVD-ROM drive when the **DVD Player** is started — and the region code on the disc matches the region code of your **CineMaster** board — the title will begin playing immediately.

Improper DVD Disc in Drive

If you have a DVD Disc in your DVD-ROM drive when the **DVD Player** is started — and the region code does not match the region code of your **CineMaster** board — the title will not play and an error message (shown in figure 8) will be displayed.



Figure 8: Error message displayed when attempting to play content with a region code that does not match the region code of the CineMaster hardware.

Note: If a DVD disc is detected to be an illegal region, the Eject button on the drive can be used to eject the disc. The Eject button in the **DVD Player** software always works. If content is playing, confirmation to eject the disc is requested. To prevent Windows 95 synchronization problems, the Eject button on the DVD-ROM drive itself is *disabled* at all times except when the disc is stopped.

No DVD Disc in Drive

If you do not have a DVD Disc in your DVD-ROM drive when the **DVD Player** is started the window on the VGA display will display the default DVD logo (shown in Figure 9).



Figure 9: DVD Player's Idle Screen (no title playing)

Using DVD Player

Once you have opened the **DVD Player**, you can access **DVD Player** functions by moving the mouse pointer over the DVD video viewing area (window or full screen mode) and single-clicking the **right** mouse button. The following menu items will appear. Each are described in detail following this summary.



1. **Panel Control** — This is the main Control window for playing DVD titles.
2. **Angle Control** — Opens a window to change the viewing angle to any angle supported by the current DVD title.
3. **Time Search** — Opens a window to change your playback position within a DVD title based on total time.
4. **Chapter/Title Search** — Opens a window to change your playback position within a DVD title based on chapter positions.
5. **Numerical Keypad** — Opens a window to enter numerical values for DVD navigation (e.g. selecting a chapter, when this feature is supported by content).
6. **Settings** — Opens a multi-tabbed window that provides access to various settings and controls for **CineMaster**.
7. **Video Window Size** — Opens a sub-window to select various window sizes for video playback on the VGA display.
 - **Default Size** - This menu item restores the video window to its default size based on the video standard and aspect ratio in the DVD title.

-
- **Full Screen** - This menu item resizes the video window to Full Screen using DirectDraw Overlay capabilities. Any other DVD Player windows that are open will remain open (e.g. Chapter/Title Search, Settings, etc.)
 - **Window** - This menu item resizes the video window to a non-full screen window with a title bar; mostly used when in Full-Screen mode.
 - **Cinema** - This menu item resizes the video window to Full Screen using DirectDraw Overlay capabilities, and closes all other open DVD Player windows to provide a TV-like display.
8. **Exit** - This menu item stops the DVD title playing and exits the **DVD Player**.

Panel Control



The Panel Control provides the main Control window for playing DVD titles. There are two rows of buttons, described below (in order from left to right):

Top Row (from left to right):

- Close Panel Control
- Eject the current DVD disc
- Resume playback after viewing a Root or Title menu
- Navigate UP when in a Root or Title menu
- Select the current item in a Root or Title menu
- Jump to the Title menu
- Play or Pause the current DVD Video
- Stop playback of the current DVD Video
- Rewind the current DVD Video
- FastForward the current DVD Video – if the current DVD Video is paused; this button will act as a Single Frame Advance until the DVD Video returns to normal speed playback
- Slow Motion playback; multiple clicks on this button will cycle through multiple speeds of slow motion playback
- Access the Angle Control window

Bottom Row:

- Adjust the volume of the DVD Playback
- Toggle the LED display between the Time Elapsed, Time Remaining, and Total Time
- Navigate LEFT when in a Root or Title menu
- Navigate DOWN when in a Root or Title menu
- Navigate RIGHT when in a Root or Title menu
- Jump to the Root menu
- Rewind the DVD Video to the beginning of the current chapter
- Back up one level from within a Root or Title menu
- Jump back one Chapter in the current DVD Video title
- Jump forward one Chapter in the current DVD Video title
- Access the SubTitle settings window
- Access the Spoken Language settings window

Angle Control



The Angle Control has two buttons:

- Display previous angle
- Display next angle

The LED display indicates the current requested angle – this may or may not be the currently playing angle depending on whether or not that angle is available in the current chapter.

The number of angles displayed in the drop-down list in the Angle Control is the maximum number of angles encoded on the entire current DVD disc. This number does not indicate how many angles are available in each chapter, only the total maximum in all chapters.

When you select an angle, a request is sent to play that angle. If that angle does **not** exist in the current chapter, the current angle will continue playing until a new chapter is reached that **does** have the requested angle. When that chapter is reached, the new angle will be played. When that chapter finishes, the selected angle will continue playing if the new chapter also contains that angle; otherwise it will return to angle 1.

For example: *You select Angle 3*

	Chapter 1	Chapter 2	Chapter 3	Chapter 4
Angles Available:	1	3	4	2
Angle Played:	1	3	3	1

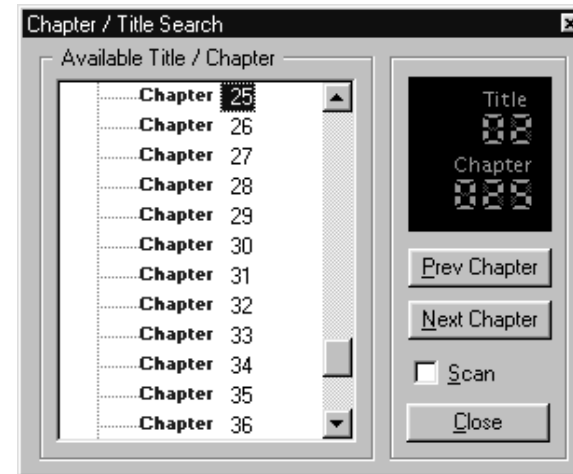
Time Search



Time Search has a slider to display and control the current playback location of the current DVD title.

The slider can be dragged to any position in the title.

Chapter/Title Search



Chapter/Title Search displays a list of chapters available in the current DVD title, and provides three options:

- Go to the Previous Chapter of the current DVD disc
- Go to the Next Chapter of the current DVD disc
- If **Scan** is checked when you **Close** this window, the Scan process will begin.

Scan will play the beginning of each chapter for a specified duration, and then jump to the next chapter until the end of the title is reached, or you deselect the **Scan** checkbox.

Numerical Keypad

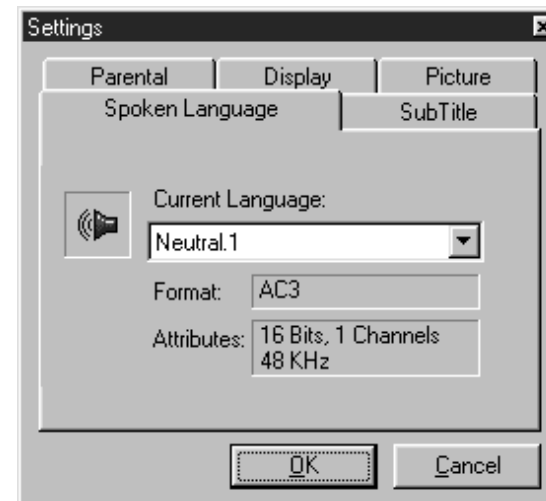


The Numerical Keypad allows you to enter numerical information for DVD menu selections, such as Root or Title menus. The most common example of this would be to select a specific scene to jump to. However, these numeric sequences are "requests" and they may or may not be used by the DVD title.

For example, the DVD title *GoldenEye* allows the user to enter a numeric sequence to select a specific scene to jump to for playback, but *Lethal Weapon* and *Glimmer Man* do not respond to these numeric sequences.

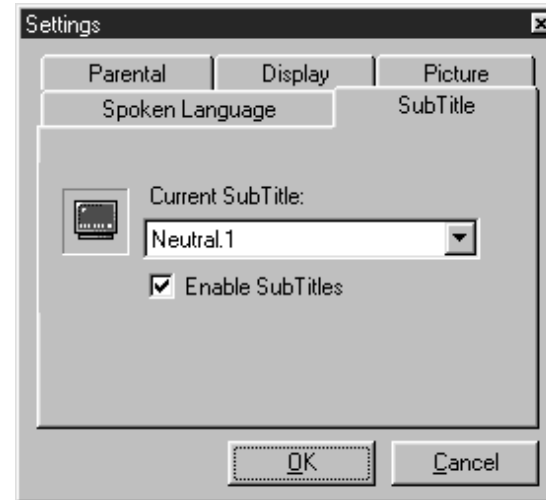
In cases where numeric sequences are ignored, you can use either **CineMaster's** exclusive direct on-screen mouse click capability or the Navigator Control window's buttons (up/down/left/right/enter) to make selections.

Spoken Language



This allows you to choose a language to listen to from any of the language available in the current title. Pull down the listbox to see your choices.

SubTitle



This allows you to select which of the languages available on the current DVD title you want the subtitles to appear in.

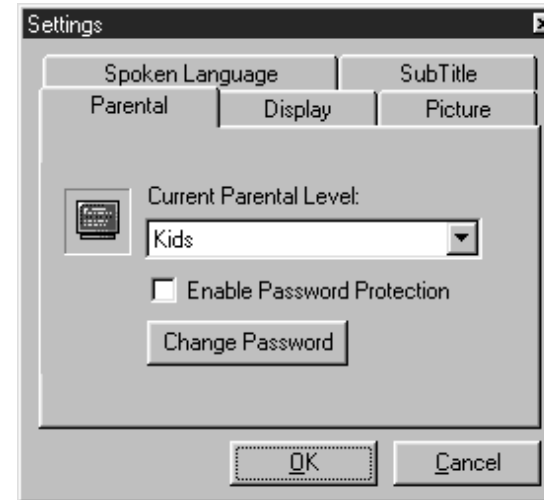
Check the **Enable SubTitles** box to display subtitles.

Uncheck the **Enable SubTitles** box to not display subtitles. When this box is unchecked, the language selection is not used.

Note: DVD titles have the ability to execute software on the playback system. Occasionally, a DVD title will instruct **DVD Player** to do something that will override a setting that was in force.

A good example of this is the disabling of subtitles or other subpicture content. This usually occurs at the beginning of a chapter or at some other transition point. If you have the **Enable Subtitles** box checked, and they are being displayed as requested, then occasionally, after navigating to a specific place or choosing a selection from the root menu, subtitles will stop being displayed. This is because **DVD Player** was instructed by the disc to stop displaying them. You need to bring up the Subtitle Settings, uncheck the **Enable Subtitles** box, then re-check it to turn them back on.

Parental



This allows you to request which rating level of the current DVD title you wish to view.

Note: If the rating you select is not available in the current DVD title, the default rating level will be played! This setting should not be relied on to prohibit playback of sensitive material!

If you want to prevent unauthorized users from

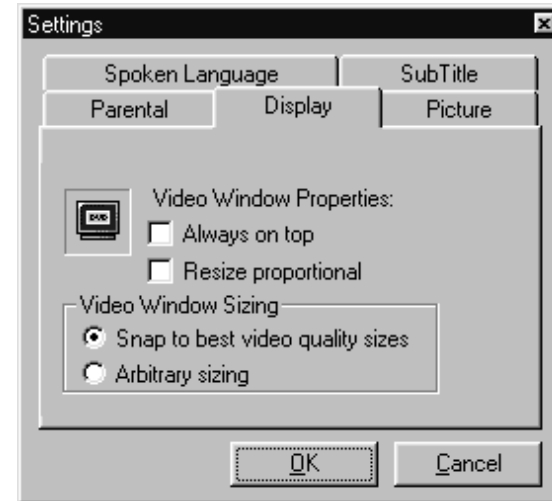
changing rating levels, click on the **Enable Password Protection** box.

The first time you change a rating level you will be prompted for a password. After you enter this password, any future attempts to switch to this rating will require the same password. After a password has been entered, you will need to re-enter a valid password to uncheck the **Enable Password Protection** setting.

These passwords are stored in the **DVD Database** for all titles.

In order to change a password, click on the **Change Password** button to bring up the Change Password window. You must first enter the current password to confirm that you have permission to change the password. You will also be asked to enter the new password twice to prevent mis-spellings and typing errors. Passwords are case-sensitive, meaning that lower-case letters are **not** the same as upper-case letters. "Password", "password", and "PASSword" are all different passwords.

Display

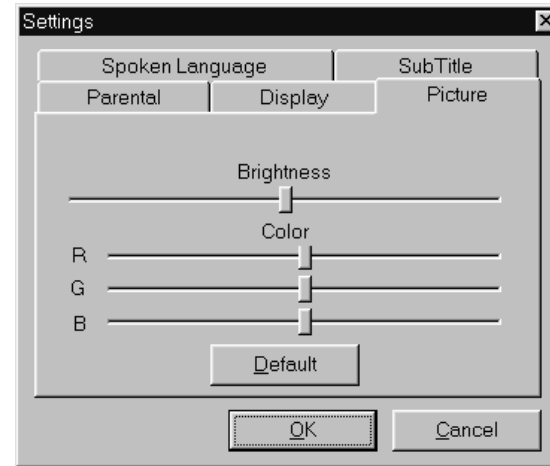


This allows you to control the DVD playback window on your VGA screen.

- **Always on Top** will make the DVD video window stay on top of windows from other applications, even when they are active.
- **Resize Proportional** will restrict window sizes to proportional sizes only.

- **Snap to best video quality sizes** will restrict the video playback window to scale to only those sizes that exhibit minimal downscaling artifacts.
- **Arbitrary sizing** will allow the video playback window to be scaled to any size, though certain sizes will show more scaling artifacts than others.

Picture



This allows you to adjust the brightness and color temperature of the video displayed on your VGA monitor.

The Brightness slider adjusts the brightness of the video; left is darker, right is brighter.

The R, G, and B sliders adjust the individual values of the Red, Green, and Blue components of the

video. Moving these sliders left reduces the amount of that color in the video, and moving these sliders right increases the amount of that color in the video.

These settings are adjusted immediately when you move the slider, and saved in the DVD Player preferences. If you want to restore the settings to the default settings, press the **Default** button.



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Advanced Settings and Troubleshooting

Determining Driver Versions

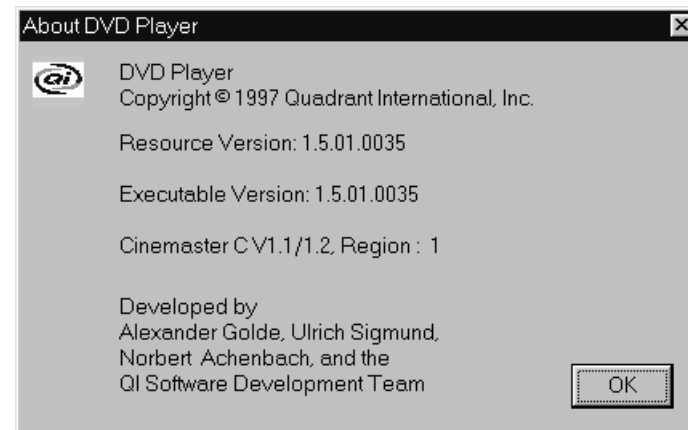
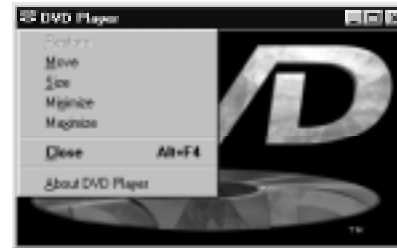
When trying to determine the cause of a potential problem, it is important to know the versions of various drivers and applications that are in use in your system. The **CineMaster** driver version is displayed in the **Version** tab of the **CineMaster Properties** driver dialog box.

To access this tab, open Windows Explorer, single-click with the right mouse button on the file **C:\WINDOWS\SYSTEM\CINEMST2.DLL**, then select **Properties** from the pop-up menu, and then single-click with the left mouse button on the **Version** tab. The version is displayed near the top of the dialog box.



Determining DVD Player Versions

The **DVD Player** version is displayed in the **About DVD Player...** dialog box for the application. To access this box, single-click with the left mouse button on the DVD icon in the upper left corner of the video playback window, select the **About DVD Player...** menu item, and the version will be displayed in the dialog box that appears.





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General Troubleshooting: Questions, and Answers

Installation Questions

Q: When I re-installed Windows 95 in my system, CineMaster would no longer play back DVD titles. How do I get it to play again?

A: When Windows 95 is re-installed on a system that previously had CineMaster installed, it resets some important system settings that CineMaster needs to be able to playback DVD content. When CineMaster is installed AFTER Windows 95, then these settings are adjusted properly and CineMaster can playback DVD content.

The solution is to re-install CineMaster, which can be done by following the procedure below:

1. Move the mouse pointer over the **My Computer** icon on your Windows 95 desktop, and click once on the right mouse button.
2. Click on the **Properties** menu item with the left mouse button, and when the **System Properties** window opens, click once more on the **Device Manager** tab.
3. Click on the small **+** sign to the left of the **Other Devices** entry to expand the list to see the entry for **CineMaster** (**CineMaster** will be listed here as an **PCI Multimedia Device**, because Windows 95 reset the system settings.) Click once on the CineMaster entry and then click on the **Remove** button.
4. A new window will open asking you to confirm the removal; answer **Yes**, and the incorrectly installed CineMaster will be removed.
5. You can now reboot your system, and follow the procedure listed in the **Software Driver Installation** section.

Playback Questions

Q: Why does my AC-3 audio sometimes pause or pop when I'm playing movies?

A: Windows 95 supports background processes, which are small software programs designed to improve performance of certain applications or perform other functions without requiring you to manually launch them. These background processes can sometimes interfere with continuous processes such as playing audio and/or video which have specific requirements for sustained data rates. These applications should be disabled whenever possible. Examples include screen-savers, anti-virus software, fax receive and answering machine software, Microsoft's Office95 Fast Find, etc.

Q: When using Windows 95 MediaPlayer to play standard MPEG-1 or MPEG-2 video files, I sometimes get thin, hazy lines along the left and bottom edges of the video display; why?

A: Most MPEG-1 and standard MPEG-2 content is not as carefully produced as DVD titles, and it is possible for these thin, hazy areas to appear at the extreme edges of the video content when played back. This effect should never be visible on professionally mastered DVD content.

Q: Why can't I play encrypted (*.vob) files with MediaPlayer?

A: Media Player does not initiate the Authentication process necessary for an encrypted DVD stream to be decrypted. Attempts to play these encrypted files (with .VOB extensions) will result in no video played. The authentication process is initiated in **DVD Player**, which should be used to play all encrypted content.

Q: Why can't I play certain unencrypted (*.vob) files with MediaPlayer?

A: Attempts to play unencrypted .VOB files works properly with most DVD-ROM drives, although some newer drives do not allow the playback of unencrypted .VOB files without at least basic authentication functionality.

If you experience problems playing unencrypted content with Media Player, try using **DVD Player** to play the same content. If it plays, the drive does not completely support the playback of unencrypted DVD data.

Media Player will typically play unencrypted .VOB files if you can see a directory listing of the files on the disc from Explorer, which works, for example, on a Toshiba DVD ROM drive.

Q: When I try to Suspend my computer, why do I get an error message indicating that I cannot suspend while playing video?

A: To decode a DVD stream, the player needs to know some information about the previously decoded portions of the stream. Suspending the system and then re-starting it does not provide a way to "remember" the previously decoded stream and therefore cannot be done while DVD video is playing.

Q: I've inserted a DVD disc in the DVD-ROM drive with DVD Player running and it did not start playing. Why?

A: In the drivers for most DVD-ROM drives, there is an option that is commonly turned on by default called Auto-Insert Notification, which lets the operating system know when a DVD or CD disc is inserted into the DVD-ROM drive. The purpose of the feature is to begin running software or to begin playback of a disc when it is first inserted into the drive, without the need for running an application.

If this option is turned off, our DVD Player application is not notified that you inserted a DVD disc. To turn this option on, use the following procedure:

-
1. Select CONTROL PANEL from the SETTINGS list in the START menu.
 2. Double-click on the SYSTEM icon, then select the DEVICE MANAGER tab.
 3. Locate the CD-ROM listing, and single-click on the entry for your DVD-ROM drive.
 4. Click on the PROPERTIES button, and then the SETTINGS tab.
 5. Locate the checkbox labeled AUTO INSERT NOTIFICATION and click on the checkbox to select it.
 6. Click on OK to save the change. At this point, you may need to restart Windows 95 for the change to become active.

Q: When playing the DVD title “Species” the menu buttons in the Root Menu are not aligned with where I need to click to activate one of the menu items. Why?

A: The on-screen navigation buttons are mis-aligned with the actual "hot spots" for selecting those buttons. This is a confirmed problem with the content on this disc, and the end-user should use the up/down/left/right/enter buttons in the Navigator Control to make selection in this title. Often, using these buttons will move a "highlight" around, which can help locate the hot spots on Root Menus so the mouse can be used in the future.

Appendix A

Keyboard Shortcuts

DVD Player supports keyboard equivalents to allow more efficient operation. The chart below lists the keyboard equivalents and their functions. For more detail on the functions themselves, refer to the User's Guide. Note: no Function keys (F-keys) are defined except the standard Windows 95 ALT-F4 [Quit].

Keys available in all dialog boxes:

Key Combination	Function
PAUSE	Toggles video playback (Pause/Play)
CTRL + p	Opens the Panel Control
CTRL + t	Opens the Time Search Dialog Box
CTRL + a	Opens the Chapter / Title Search Dialog Box
CTRL + g	Opens the Angle Dialog Box
CTRL + s	Opens the Settings Dialog Box
CTRL + u	Opens the Numeric Keypad Window
CTRL + z	Changes the VGA display to "Default Size"
CTRL + f	Changes the VGA display to "Full Screen"
CTRL + w	Changes the VGA display to "Window"

Keys Available in all Controls:

Key Combination	Function
Left Arrow	Navigate left in a DVD menu
Right Arrow	Navigate right in a DVD menu
Up Arrow	Navigate up in a DVD menu
Down Arrow	Navigate down in a DVD menu
Return	Select the current item in a DVD menu

Keys Available in all Controls (continued):

Key Combination	Function
End	Navigate back to the previous DVD menu
Page Up	Jump to previous chapter
Page Down	Jump to next chapter
Home	Jump to start of current title
p	Depends on current player activity: <ul style="list-style-type: none">• Pause – if playing• Pause off – if paused• Load DVD – if DVD tray open• Stop Scanning – if scanning (forward or backward)• Start Presentation – if in a menu
r	Access Root Menu
g	Enable / Disable Bitstream data rate gauge
s	Stop video playback
t	Access Title Menu
b	Start Backward Scan (Rewind)
f	Start Forward Scan (FastForward)
e	Eject current DVD Disc
m	Mute audio
I	Change Time Indicator (Elapsed, Remaining, or Total Time)

Keys available in Chapter / Title Search:

Key Combination	Function
p	Go to Previous Chapter
n	Go to Next Chapter
z	Toggle Scan checkbox on/off
c	Close the Window
ESCape	Close the Window

Keys available in Numerical Keypad:

Key Combination	Function
0,1,2,3,4,5,6,7,8,9	Enter the corresponding numeric value
Delete	Clear all values
Backspace	Clear all values
Return	Select the current value
ESCape	Close the window

Keys available in Settings:

Key Combination	Function
o	Select the OK button
c	Select the CANCEL button
ESCape	Select the CANCEL button



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Appendix B

RIVA 128 Video Resolutions Supported

The **nVidia RIVA 128** VGA chip, used in the **STB Velocity 128** VGA card, is capable of displaying high resolutions in various color depths. Many of these displays also support the bandwidth necessary to display DVD video. The table below lists these display modes.

RIVA 128 Display Modes that support DVD Video

Resolution	Color Depth	Refresh Rate (Hz)
640 × 480	8-bit	85, 75, 60
	16-bit	85, 75, 60
	32-bit	85, 75, 60
800 × 600	8-bit	85, 75, 60
	16-bit	85, 75, 60
	32-bit	85, 75, 60
1024 × 768	8-bit	85, 75, 60
	16-bit	85, 75, 60
1152 × 832	8-bit	85, 75, 60
	16-bit	85, 75, 60
1280 × 1024	8-bit	85, 75, 60
	16-bit	85, 75, 60
1600 × 1200	8-bit	76, 75, 60



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Glossary

AC-3 (Dolby Digital) – A Dolby Laboratories specification for digital audio. An AC-3 stream contains 5.1 channels of digital audio (full 44.1 kHz, 16-bit digital channels for left, right, center, left surround, right surround, and an additional low bit rate channel for subwoofer information). AC-3 data is normally transferred digitally from a coaxial or optical S/PDIF output connector to an AC-3 decoder or amplifier for playback.

Angle Control – Angle control allows the user playing a DVD title to select which scene is displayed when the DVD content contains multiple angles. This multiple angle content is unique to DVD because previous compression standards did not support the simultaneous compression of more than one video sequence. Multiple angles are a result of filming the original production with more than one camera, and they can be used to assemble “different” versions of the same movie, such as a “Director’s Cut.”

Aspect Ratio – The relationship between the width and height of a video frame (or of a pixel making up a video frame). **4:3** is the standard for NTSC (and therefore televisions in the U.S., which are only somewhat wider than they are high). **16:9**, also called “letterbox” is the format used in movie theaters, where the screen is 16-ninths (178%) wider than it is high. Many non-U.S. televisions are built to display this format.

Bandwidth – The amount of data that can be transferred to or from a graphics card in a given length of time. Typically, when playing back digital video, the *write data bandwidth* of the VGA card is most important. The amount of bandwidth available is dependent on the type and speed of memory used on the VGA card, on the efficiency of the VGA controller's hardware, and on the current display mode (because high-end modes consume more memory *read* bandwidth due to display updating). A VGA card that does not simultaneously have sufficient read bandwidth to update the display and write bandwidth to accept live video data may not produce an acceptable quality image unless less video data is written or the display mode is changed to one that is less demanding. Available bandwidth is directly related to, and the best measure of, VGA card performance.

Chapter (in a DVD title) – Divisions of a DVD title that are defined by the content provider. Chapters normally begin at a particular scene in a movie, and break it down into smaller portions, analogous to tracks on an audio CD. DVD allows random access, and the “Jump to a scene” option in many root menus actually goes to the beginning of a chapter that contains that scene.

Chrominance – The portion of the analog video signal that carries all of the color information (hue and saturation). The chrominance signal (C) is carried as a separate channel on the S-video output, but is mixed with the luminance (Y) signal to create Composite video.

Color Depth – A representation of how much digital data will be used to encode (digitally represent) a pixel in the display memory. It relates directly to how many colors a pixel can be. An 8-bit color depth allows a pixel to be one of 256 colors. A 16-bit color depth allows a pixel to be one of 65,536 colors, but obviously requires twice as much memory to store. A 24-bit color depth allows a pixel to be one of 16.7 million colors. The 24-bit color depth is also called “true color”, because a pixel can be any color that the eye is capable of seeing. Together with resolution, color depth defines a display mode.

Composite video – A single video signal that contains all the information (sync, color, and intensity) necessary to form a complete image on a video display or recording machine. A composite signal contains a sync pulse, a color burst and modulated luminance and chrominance subcarriers. Composite video, like S-Video, is encoded according to one of the video standards (NTSC, PAL, or SECAM).

Compression – Reduction of the amount of data used to represent a signal. Uncompressed video data requires an enormous amount of digital data, making it impractical to store or transfer without processing. Compression algorithms were carefully developed to minimize the perceived quality loss; these are applied to reduce the data rate for storage and playback.

CVBS – Composite Video Baseband Signal. Often referred to as composite video signal or CVS.

Deinterlace – The process of combining or otherwise using interlaced odd and even fields in a video signal to create non-interlaced video frames. The actual method for accomplishing this can be as simple as discarding all of the even (or odd) fields, or as complex as using a hardware digital filter to combine the odd and even fields into full frames.

Dolby ProLogic – A method (created by Dolby Laboratories) for encoding Surround Sound information onto two-channel analog output. The information is phase-encoded, and can be decoded into the separate Surround channels by a ProLogic decoder or amplifier.

DirectX (DirectDraw) – Microsoft Corporation's standard interface for applications that provides software applications with a mechanism for accessing functions that relate to digital video, hardware scaling, and other useful functions that can be supported by a display controller. DirectDraw is a part of DirectX, and contains, for example, such functions as "Overlay", which is a hardware scaling capability. This interface is defined in explicit detail, and can be implemented into the display card (VGA) drivers. DirectX is additional functionality that can be added to Windows 95 by installing it. When DirectX is installed, and supported in the VGA drivers, its capabilities then become available to applications, eliminating the need for hardware-dependent code. Not all VGA cards that have Direct Draw drivers can do hardware scaling (Overlay).

Display Mode – The combination of color depth and resolution that defines how a computer display (and, typically, video played on it) appears.

DVD – A specification for storing digital data (usually high-quality video and audio) on a read-only disc that is the same physical size as a CD-ROM. DVD discs have much higher data capacity (4.7 GB per layer) than CD-ROMs (680 MB). This enhancement allows them to contain not only 2.5 hours of video, but also 5-channel 16-bit digital audio, multiple language playback, closed-captioning, and hypertext content. DVD is a standard that was developed by ten companies known as the Consortium.

Encryption – Part of the DVD specification that requires that the digital data on the DVD disc be encoded in such a way that it cannot be read or decoded except by authorized playback devices. This was necessary to protect the content from illegal copying.

Field – One complete vertical scan of an interlaced video frame, representing half of the data in the frame. A field consists of all of the scan lines (each made up of pixels) that are on odd rows of the screen (“odd field”) or all of the scan lines that are on even rows of the screen (“even field”). Each field, therefore, contains half of the information in an interlaced video frame. Conventional video technology that uses interlacing (such as televisions) first displays all of the odd fields by displaying the top line (line 1), skipping a line (line 2), displaying the next line (line 3), and so forth until all of the odd lines that make up the field have been scanned. Then, the skipped (even) lines are displayed (between the odd lines, where they belong), and this process of alternating odd and even fields is repeated. Persistence (i.e., the ability of phosphor dots on the screen to remain lit for a period of time) gives the appearance of a complete image. Computer monitors are generally not operated in this manner; rather, they are updated with all scan lines in sequence (line 1, line 2, line 3, etc.), because they have shorter persistence phosphor and appear to flicker unless every line is rescanned every frame.

Frame – A single complete video image consisting of two interlaced fields (one odd and one even).

Interlace – The process of repeatedly displaying (scanning) all the lines in an odd field followed by displaying all the lines in an even field. Interlacing became part of video technology because early video equipment and televisions could not operate at high enough frequencies to scan every line on the display fast enough to produce a good quality image. It became so common that it has been adopted as a standard part of the video industry. *See also:* Field, Frame, De-interlace.

Luminance – The portion of the video signal that contains information on the relative brightness content of the image. The luminance channel of any video signal is the primary waveform encoded on the carrier signal. Traditional black-and-white televisions uses only a luminance channel (as a variable phase subcarrier). In S-video, the luminance signal (Y) is maintained as a separate channel.

Macrovision – A method for copy-protecting analog video outputs, developed by Macrovision Corporation. The DVD specification requires that this anti-taping mechanism be implemented on the S-video and Composite video outputs to prevent piracy or videotaping of copyrighted material. The copy protection operates by modifying the sync signal in such a way that VCRs are adversely affected (causing them to record an unwatchable image) but that display monitors and televisions are not.

MCI – A Microsoft standard method for applications to use for accessing multimedia functions (such as video or audio playback, volume control, etc.). MCI Commands are fully supported in the **CineMaster** driver, allowing applications developers to take advantage of the board's capabilities without needing to write device drivers or other hardware-dependent code.

MPEG – The Moving Picture Experts Group. MPEG is a working group of ISO/IEC in charge of the development of international standards for compression, decompression, processing, and representation of moving pictures, audio and their combination.

MPEG-1 – A international standard of the Moving Picture Experts Group, describing a compression method for digital video and audio. By eliminating both temporal and spatial data redundancies, the MPEG-1 algorithm drastically reduces the data size of digital video. Up to 72 minutes of full motion video and audio can be compressed (up to 200:1) using the MPEG algorithm and stored on a single CD-ROM. MPEG-1 is an asymmetrical compression algorithm, so performing the computations required to compress a video sequence is much more demanding than decompressing a sequence. Because of this, pictures are not stored as individual images in the MPEG-1 stream, and fully encoded MPEG-1 is not suitable for video editing. Also the lower resolution (one-quarter broadcast quality) of a MPEG-1 stream will not provide the image quality of a JPEG encoded image with full resolution. A MPEG-1 stream includes video I, P, and B frames and an audio MPEG stream.

MPEG-2 – An broadcast-quality standard, also named after the Moving Picture Experts Group, for generic coding of moving pictures and associated audio information. This international standard for digital video compression and digital television, builds on the MPEG-1 standard to support larger image sizes and better image quality for use in professional and consumer applications. Due to this higher image quality, MPEG-2 was chosen as the compression method to be used for DVD. MPEG-2, like MPEG-1, is an asymmetrical compression algorithm, so performing the computations required to compress a video sequence is much more demanding than decompressing a sequence.

Navigation – The process of accessing the parts of a DVD data stream that are not video or audio. Navigation data and navigation commands are supported in the DVD specification, and are the mechanism that provides unique DVD features such as interactivity and direct random access.

NTSC – National Television Standards Committee of the Electronic Industries Association, or their standard for video. This United States committee, which determines technical and broadcasting standards for domestic television, created the definition for NTSC video — 720×480 at 30 frames per second. (The NTSC standard is also used for Japanese television.)

Overlay (DirectDraw Hardware Overlay) – One of the “capabilities” (functions) supported in DirectX. This particular capability, which may or may not be supported by a particular VGA chip (or its driver) provides the ability to scale video up to larger than its original size (as defined in the NTSC or PAL video standard). Overlay capability is necessary (but not sufficient) to do full-screen video playback on the VGA screen when the desktop display resolution is 800×600 or higher.

PAL - Phase Alternate Line. This is the video standard for most of the European television systems — 720×576 at 25 frames per second.

Pixel – Abbreviation for PICTURE ELEMENT, the smallest discrete unit of a video display that can be individually controlled. Video resolution is determined by the number of horizontal and vertical pixels that make up a display. The binary representation of a pixel is stored in the display memory on the graphics card.

Region Coding / Regionalization – A requirement in the DVD specification that prevents DVD content from being played in areas of the world for which it was not intended. DVD content contains (as part of the data stream), information about the region it was made for (this is usually written on the disc and on the package), and all DVD boards must play content from one (and only one) region. Regionalization supposedly will allow movies to be released on DVD in one area of the world while they are still in the theaters in other areas of the world, reducing the length of time it takes them to go from the theater to DVD.

RGB – Unlike composite, S-video or component video systems, computers normally use a color imaging model based on discrete channels of Red, Green and Blue light. These colors, when combined at full intensity, create white light. RGB provides the most flexible means for digital systems to represent virtually any color in the spectrum in terms of the absolute amounts of Red, Green and Blue light the color contains. Digital video is usually not stored as RGB; rather it is stored as YUV.

Resolution – In video terms, resolution is the relative density of information that can be displayed, expressed in terms of the total number of horizontal and vertical pixels. The higher the pixel count, the higher the resolution and the greater the amount of detail that is displayable. A display that is 1024×768 has 1024 pixels per line and 768 lines per frame. Together with Color Depth, it defines the **video mode**.

S-Video – A method for encoding video, or for transferring it from one device to another (such as from **CineMaster** to an S-video monitor), which achieves a significant improvement in quality over the standard composite video encoding method by preserving separate chrominance and luminance signals. S-Video is sometimes referred to as component video. Like Composite video, S-Video is encoded according to one of the video standards (NTSC, PAL, or SECAM).

Sync – The portion of the video signal that indicates to a monitor that it is at the end of a line or the end of a field or frame. When a sync pulse is detected, the monitor starts a trace at the beginning of the next line, or returns to the top of the screen. This signal is transferred to the monitor either as part of the video (encoded in the Y component of S-video, or mixed with all of the video signal components for composite video), or it is carried as separate horizontal sync (HS) and vertical sync (VS), such as is the case for a VGA monitor. As resolution and color depth increase, the frequencies of the horizontal and vertical sync pulses also increase.

VideoInlay – A new technique for displaying live video on a VGA display by sending the data over the PCI bus. This doesn't require a direct connection to the VGA card and provides greater flexibility in the choice of VGA card used. The digital video is scaled and converted (in hardware) to the computer's native RGB format (if needed), and the converted video is moved from the **CineMaster** card directly to the graphics card using advanced PCI Bus Mastering Burst DMA (Direct Memory Access). This technique bypasses the host processor to move video data as quickly as possible, leaving the computer free to perform other processing tasks.

Y/C – Abbreviation for Luminance and Chrominance, respectively; the two-channel video signal standard employed by so-called "Super" or S-video (S-VHS, Hi-8) equipment. The luminance channel carries information on the relative brightness levels carried in the video frame. The chrominance channel carries information describing the actual color content.

YUV - A format for representing digital video using a color coordinate system where Y provides brightness information and both U (also called Cr) and V (also called Cb) contain color information. Digital video is typically stored in this format. YUV data must be converted to RGB before it is displayed on a monitor.



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Technical Support

Quadrant International prepares specific releases of **CineMaster** for each integrator of our product into their overall DVD product (either a DVD-ROM Upgrade Kit, or as part of a DVD-ROM enabled computer system). For that reason, it is necessary for the end owner of this product to contact that manufacturer for technical support and service.

If you encounter any problems with the operation of your **CineMaster** DVD Decoder, Dell provides a number of tools to help you. For more information on these help tools and on obtaining technical assistance, see the chapter titled "*Getting Help*" in your *Diagnostics and Troubleshooting Guide*.

Quadrant International does not provide direct end-user support for each of the unique variations of **CineMaster** that are sold throughout the world.



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