Applications for Windows

# NVIDIA PureVideo Decoder User's Guide

**Version 1.02-177**

**NVIDIA Corporation**
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## Notice



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# 1

# ABOUT NVIDIA PUREVIDEO DECODER

NVIDIA® PureVideo™ Decoder is a plug-in for Microsoft® Windows® Media Player and Media Center Edition, enabling smooth and vibrant videos.

Featuring Dolby® Digital surround sound audio and hardware-accelerated video on all Microsoft DirectX® compatible graphics processors, the NVIDIA PureVideo Decoder delivers unmatched color fidelity and smooth DVD, video, and TV viewing.

This chapter further describes NVIDIA PureVideo Decoder in the following sections:

# Features

- Enables DVD viewing with Microsoft® Windows Media® Player or Microsoft Windows® Media Center Edition[1]
- High quality MPEG-2 decoder supports any third party software application based upon Microsoft DirectShow®
- Enables PureVideo technology on GeForce 6 and 7 series GPUs, for features such as spatial temporal de-interlacing, inverse telecine, and bad edit correction
- Dolby® Digital[2] surround sound decoding
- Minimizes CPU utilization by off-loading the MPEG-2 decoding onto the graphics processor
- Enables advanced de-interlacing
- Decodes high-definition MPEG-2 streams for ATSC tuners
- Supports Windows Mobile-based Portable Media Centers, allowing end users to transcode MPEG-2 content into Windows Media Video 9
- S/PDIF pass-through for external decoding of Dolby Digital and DTS (compatible hardware required)

1. The NVIDIA PureVideo Decoder works with Microsoft Windows Media Center, Windows Media Player, Interactual and NVIDIA ForceWare Multimedia applications only for DVD playback.
2. Downmixes Dolby Digital 5.1 audio into stereo playback

# Specifications and Support

## Technical Specifications

- Fully compliant ISO MPEG-1 and MPEG-2 video and audio decoder
- MPEG-2 acceleration for inverse quantization (IQ), inverse discrete cosine transform (IDCT), and motion compensation (mo comp)
- Microsoft DirectShow support
- Microsoft DirectX Video Acceleration support
- Microsoft Video Mixing Renderer 7 and 9
- Overlay support
- Sub-picture support
- Transport stream file reader for Windows Media Player and Windows Media Center

## Graphics Chips Supported

NVIDIA PureVideo Decoder supports all Microsoft DirectX 8.x compatible chips, including:

- NVIDIA GeForce 7 Series
- NVIDIA GeForce 6 Series
- NVIDIA GeForce4 family
- NVIDIA GeForce FX family
- NVIDIA Quadro® family
- NVIDIA Quadro2 family
- NVIDIA Quadro DCC family
- NVIDIA Quadro4 family
- NVIDIA Quadro FX family
- NVIDIA nForce family
- NVIDIA nForce2 family
- ATI® Radeon family

- Intel® i915
- Intel® i865
- Intel® i845G
- Intel i815G/i815EG

## Audio Chips Supported

- NVIDIA nForce Audio
- Creative Labs® Ensoniq Audio PCI
- Creative Labs Sound Blaster 16 PCI
- Creative Labs Sound Blaster 16 +WavEffects
- Creative Labs Sound Blaster 512 3D Audio PCI
- Creative Labs Sound Blaster Audigy MP3+
- Creative Labs Sound Blaster Audigy Platinum
- Creative Labs Sound Blaster Audigy X-Gamer
- Creative Labs Sound Blaster Audigy 2
- Creative Labs Sound Blaster Live! 5.1
- Creative Labs Sound Blaster Live! 5.1 MP3+
- Creative Labs Sound Blaster Live! 5.1 Platinum
- Creative Labs Sound Blaster Live! 5.1 X-Gamer
- Philips® Rhythmic Edge PCI
- Turtle Beach Santa Cruz
- SIIG® Soundwave Pro PCI 32-bit

# What's New in Version 1.02-177

Version 1.02-177 of the NVIDIA PureVideo Decoder includes the following changes and fixes since version 1.02-150:

## Windows Media Player and Media Center Edition

- Fixed playback of back-to-back files with NvMultiSource filter by moving PCR_PID selection outside of the program selection feature.
- Fixed a problem that occurred when continuously looping transport stream playback.
- Fixed jerky video delivery on Windows Media Center 2005 Update Rollup 2 TV/PVR.
- Improved MPEG-2 transport stream support.

## Post Processing

- Further improved bad edit detection for content such as "The Big Lebowski".
- Added new rate duration detection case for 60.00Hz progressive video.
- Improved "Smart" mode de-interlace handling in "Super Speedway" and "The Incredibles" DVDs.

# System Requirements

## Operating Systems and Software

- Windows XP Media Center Edition, Windows XP Professional, or Windows XP Home Edition
- DirectX 9.0 or higher
- Windows Media Center or Windows Media® Player 9.0 or higher for DVD Playback
- DirectShow compatible software for MPEG-2 file playback

## Hardware

- DVD-ROM drive required for DVD viewing
- DirectX Video Acceleration (DXVA) compatible graphics processor, such as the NVIDIA GeForce4™ , GeForce FX, GeForce 6, or GeForce 7 Series GPUs.
- TV tuner required for TV viewing, and must meet the **Designed for Windows XP Media Center Edition** logo requirements.

# Installation Instructions

If you have a previous version of NVIDIA PureVideo Decoder already installed, you can install the new version on top of your old one.

***From the Web***

1. Download the zip file, then unzip to a temporary folder.
2. Double-click **Setup** from your temporary folder.


***From the Installation CD***

From the installation CD, double-click **Setup**.

The InstallShield Wizard starts, and directs you through the rest of the installation process as described below.

1. At the Welcome window, click **Next**.
2. Read the license agreement, then click **Yes** if you agree to the terms.
3. At the Product Activation screen, step 1 of 2, enter the required information, then click **Next.**
4. At the Product Activation screen, step 2 of 2, enter the activation code, then click **Next**.
5. At the Choose Destination window, browse to locate the folder where you want the NVIDIA PureVideo Decoder files installed, or just use the default location and click **Next**.

   Setup proceeds to install the files.
6. At the InstallShield Wizard Complete window, click **Finish**.

CHAPTER

# 2

# CONFIGURING THE NVIDIA PUREVIDEO DECODER

The NVIDIA PureVideo Decoder lets you control various audio, video, and color settings for the media playback, and also includes karaoke control settings. You can access these controls using the NVIDIA Decoders Properties pages.

This section explains how to configure the NVIDIA PureVideo Decoder using the property pages, and contains the following sections:

# Overview of the Property Pages

When you begin playback of a DVD or MPEG-2 file, the NVIDIA Decoders icon appears in the Windows taskbar.


To open the property pages, double-click the icon, or right-click the icon and then click **Decoder Properties** from the pop-up menu.

The NVIDIA Decoders Properties window appears, with tabs for the following pages, depending on the video source:

- **Video Page**

  *This page is available when playing DVD and MPEG-2 video content.*

  Use the Video page to view the video format information of your DVD, to control de-interlacing and the display shape, turn on or off hardware acceleration, and to adjust the TV overscan. See "Using the Video Page" on page 11.

- **Color Page**

  *This page is available when playing DVD and MPEG-2 video content.*

  Use the Color page to adjust the brightness, contrast, NVIDIA Digital Vibrance, and other color qualities of the video playback. See "Using the Color Page" on page 16.

- **Audio Page**

  *This page is available when playing DVD content only.*

  Use the Audio page to view the audio format information of your media source, to set up the speaker configuration, calibrate the audio, and control bass management. See "Using the Audio Page" on page 17.

- **Karaoke Page**

  *This page is available when playing DVD content only.*

  Use the Karaoke page to adjust microphone settings and set up DVD channel volume and speaker positions when playing karaoke encoded DVDs. See "Using the Karaoke Page" on page 27.

# Using the Video Page

1 From the Windows taskbar, double-click the NVIDIA Decoders icon, or right-click the icon and then click **Decoder Properties** from the pop-up menu.

2 Click the **Video** tab.

After changing any settings, either click **OK** to save the settings and close the Property page, click **Cancel** to close the Property page without saving the settings, or click **Apply** to save the settings and leave the Property page open.

Changes that you make to the settings will apply even after closing this property page, but you must have Windows administrator status for changes to be saved when closing the application..

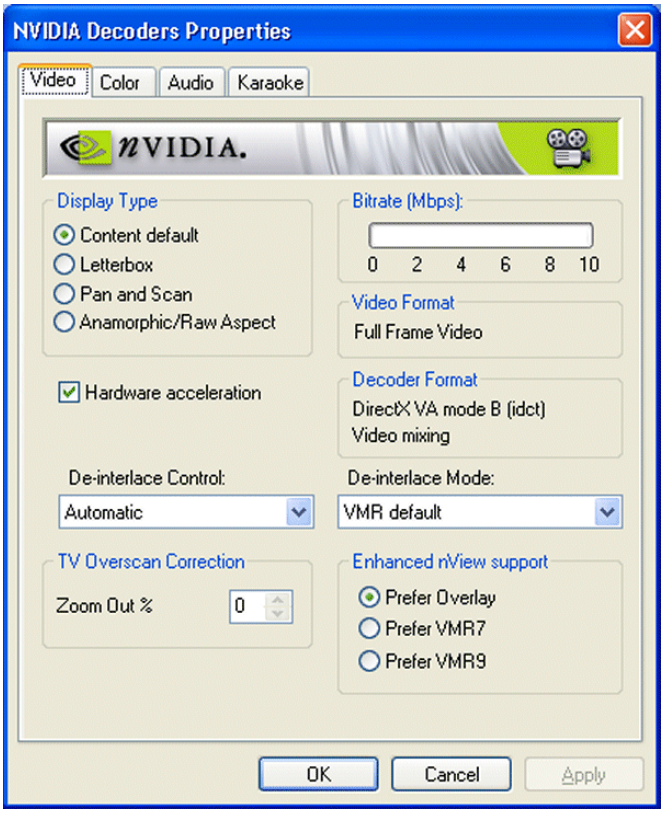



**Figure 2.1** NVIDIA Decoders Properties Video Page

# Display Type

**Note:** *The controls in the Display Type group box are not functional when using Windows Media Player 9 or higher, or Windows Media Center.*

This section allows you to select different display options, depending on how the video is formatted.

Movie DVDs are formatted as either "Full Frame" or "Anamorphic Widescreen". See "Anamorphic and Full Frame Formats" on page 29 for a more information.

- **Content Default**

  To play the video as it is designed to display, check the **Content Default** check box. This is the default setting, and provides the optimum display in most cases.

- **Letterbox**

  Some anamorphic widescreen DVDs can be played in either letterbox or fullscreen mode, and default to letterbox. If the default is fullscreen mode, check this box to play the DVD in letterbox mode.

- **PanScan**

  Some anamorphic widescreen DVDs can be played as fullscreen with minimal or no masking bars. To view these DVDs in fullscreen mode, check the **PanScan** check box.

- **Anamorphic/Raw Aspect**

  If you have a widescreen TV connected to the TV-Out on your computer, check the **Anamorphic/Raw Aspect** check box. Do not check this check box if you are viewing with a standard TV or computer monitor, otherwise the image will compress or stretch and appear unnatural.

# Bitrate

Dynamically displays the video data bit rate, in megabits per second.

# Video Format

Displays the video source and screen format of the video.

- **Full Frame Video** - Indicates content from a video camera, in standard screen format.

- **Full Frame Film** - Indicates content from a film camera, in standard screen format.
- **Anamorphic Widescreen Video** - Indicates content from a video camera, in enhanced widescreen format.
- **Anamorphic Widescreen Film** - Indicates content from a film camera, in enhanced widescreen format.

See "Anamorphic and Full Frame Formats" on page 29 for more information.

# Decoder Format

Indicates the video rendering API and format.

# Graphics Support Options

## Hardware Acceleration

To enable hardware acceleration (the default), check the **Hardware Acceleration** check box.

## Enhanced nView Support

**Note:** *The controls in the Enhanced nView Support group box are not functional when using Windows Media Player 9 or higher, or Windows Media Center.*

NVIDIA provides enhanced support for playing videos on multiple displays.

- Choose **Prefer Overlay** to use nView when working primarily in a multimonitor environment.
- Choose **Prefer VMR7** to use video mixing renderer 7 when working primarily in a multimonitor environment.
- Choose **Prefer VMR9** to use video mixing renderer 9 when working primarily in a multimonitor environment.

**Note:** Full screen video mirroring uses a different rendering process and does not require NVIDIA nView support. Do not choose this option if you want to use full screen video mirror.

If a non-NVIDIA graphics card is used, this option is labeled "Enhanced Multimonitor Support".

# De-Interlace Handling

You can control how to handle video content that is interlaced, using the De-Interlace Control and De-Interlace Mode options. Usually, you do not need to change the default settings, as they provide the best results in most setups.

## De-Interlace Control

- **Automatic** - NVIDIA PureVideo Decoder reads the source type and automatically selects video or film mode, depending on the source.
- **Smart** - (Default) This option lets NVIDIA PureVideo Decoder pick the best de-interlacing method to use, combining inverse telecine with a process for ensuring proper field sequence.
- **Film** - Forces film mode and does not apply de-interlacing.
- **Video** - Forces video mode and applies de-interlacing. Choose this option if you see combing or feathering artifacts in the video.

## De-Interlace Mode

Choose the de-interlacing mode to use.

- **Best Available** - (Default) Let the NVIDIA PureVideo Decoder read the source type to see if it is video or film. If it is video, the decoder applies the best de-interlacing method (see descriptions below), based on the graphics capabilities of your system.
- **Display Fields Separately** - This method creates a complete frame from each field. Playback is at field rates (60 Hz). For video that consists of fast movements or panning, this method avoids combing or feathered artifacts, but with some loss of image quality.

  Depending on system capabilities, the menu lists the equivalent VMR deinterlacing mode—**VMR Vertical Stretch**.
- **Combine Fields** - This method combines both fields into one frame. Playback is at frame rates (30 Hz). For video that consists of minimal movement, this method provides the best image quality.

- **Blend Fields** - *Not available on all systems.* This method combines sequential fields with a smoothing filter to generate de-interlaced frames. Playback is at frame rates (30 Hz).

  Depending on system capabilities, the menu lists the equivalent VMR deinterlacing mode—**VMR Median Filtering**.

- **Adaptive** - *Not available on all systems.* This method blends the moving sections of the image and combines the non-moving sections. Playback can be at field rate (60 Hz) or frame rate (30 Hz).

  Depending on system capabilities, the menu lists the equivalent VMR deinterlacing mode—**VMR Adaptive**.

# TV Overscan Correction

**Note:** *This control is not functional when using Windows Media Player 9 or higher, or Windows Media Center.*

In full-screen mode, if the media player controls are hidden off the edge of the screen because of TV overscan, you can adjust the overscan to bring the controls back into view.

Click the arrows or enter a value in the range of 0 to 30 as needed in the **Zoom Out %** box to compensate for TV overscan.

# Using the Color Page

Use the Color controls to adjust the video quality and compensate for variations in video color, ambient lighting, or monitor brightness.

1. From the Windows taskbar, double-click the NVIDIA Decoders icon, or right-click the icon and then click **Decoder Properties** from the pop-up menu.
2. Click the **Color** tab.
3. Either choose from the list of preconfigured color schemes, or move the slider controls to adjust each of the color qualities shown on the Color page.

After changing any settings, either click **OK** to save the settings and close the Property page, click **Cancel** to close the Property page without saving the settings, or click **Apply** to save the settings and leave the Property page open.

Changes that you make to the settings will apply even after closing this property page, but you must have Windows administrator status for changes to be saved when closing the application.

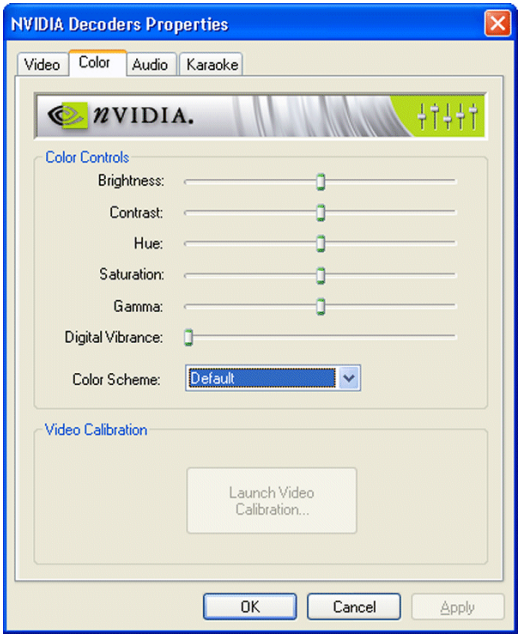



**Figure 2.2** NVIDIA Decoders Properties Color Page

# Using the Audio Page

1 From the Windows taskbar, double-click the NVIDIA Decoders icon, or right-click the icon and then click **Decoder Properties** from the pop-up menu.

2 Click the **Audio** tab.

After changing any settings, either click **OK** to save the settings and close the Property page, click **Cancel** to close the Property page without saving the settings, or click **Apply** to save the settings and leave the Property page open.

Changes that you make to the settings will apply even after closing this property page, but you must have Windows administrator status for changes to be saved when closing the application..

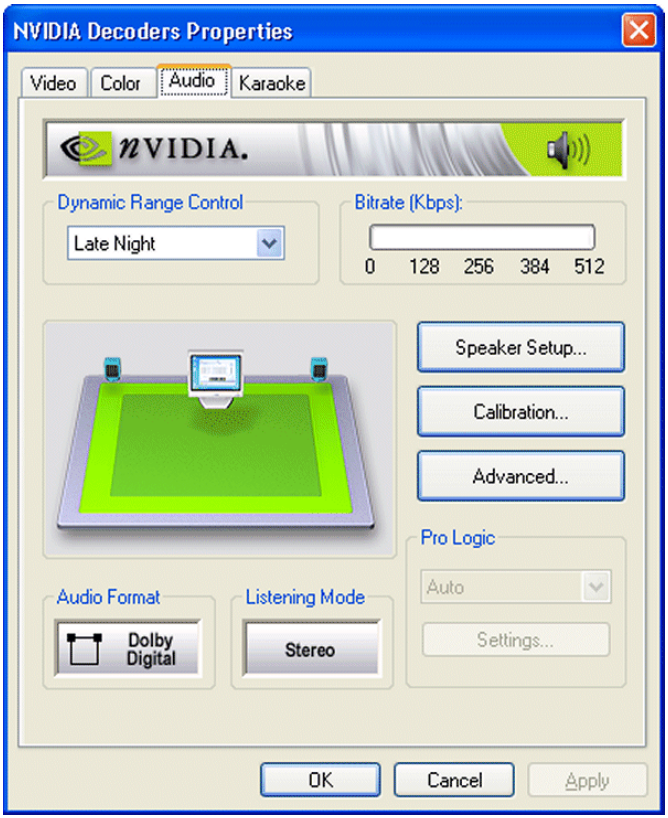





**Figure 2.3** NVIDIA Decoders Properties Audio Page

# Dynamic Range Control

You can apply range compression[1] to the audio, if desired. Click the Dynamic Range Control arrow and choose from the list, based on your listening environment.

- **Normal** provides moderate range compression suitable for most home environments.
- **Late Night** enables full range compression accommodating environments sensitive to loud audio. The master volume can be reduced without making the softest sounds inaudible.
- **Theatre** disables range compression, as is heard in a movie theatre. Suitable for noiseless environments that are tolerant of loud audio.

# Bitrate

Displays the real-time bit rate of the digital audio, in megabits per second.

# Speaker Setup

When you click **Speaker Setup**, the following window appears:

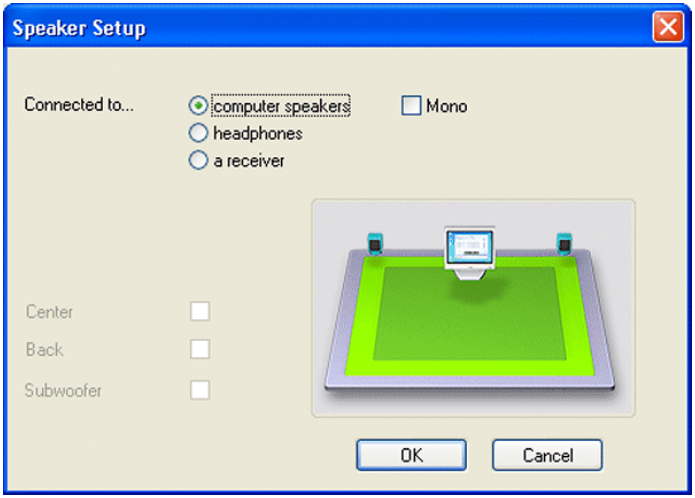



**Figure 2.4** Speaker Setup Dialog Box

1. Range compression reduces the difference in volume between the loudest and quietest sounds.

In the **Connected to** section, click the radio button corresponding to your audio connection:

- **Speakers**

  Choose **Mono** if you have a single speaker, otherwise specify whether your system has a Center, Back (surround), or Subwoofer speakers by checking the appropriate check boxes, then click **OK**.

- **Headphones**

  Choose **Mono** if you are using mono headphones, otherwise choose the Dolby Headphone mode to use. Dolby Headphone creates the illusion of a room with 6 speakers. Click one of the following radio buttons, then click **OK**.

  - **Off** Uses 2 channel stereo.
  - **DH1** Simulates a small, well damped room, such as a recording studio.
  - **DH2** Simulates a small, acoustically live room.
  - **DH3** Simulates a concert hall or movie theatre size room.

- **Receiver**

  If you indicate a connection to a receiver, NVIDIA PureVideo Decoder automatically engages Bass Management when appropriate.

  Specify **one** of the following receiver configurations, then click **OK**.

  - Check **via an SPDIF cable**, if your audio is connected to an external decoder, such as a home audio receiver, that is capable of decoding the particular audio source (LPCM, MPEG, Dolby Digital, or DTS®[2]). The decoder must be configured for digital input.
  - Check **in Pro Logic mode**, if you are sending the audio to a receiver that is performing Dolby Pro Logic decoding.
  - Under **Speaker Sizes**, specify the presence and size of your front, center, and surround (Back) speakers.

    Click the arrows and then choose the item that matches your speaker setup.

  **Note:**

  - **Large** indicates speakers capable of adequately reproducing bass sounds. Such speakers typically have a separate, good size woofer.
  - **Small** indicates speakers that are not capable of adequately reproducing bass sounds. Such speakers typically have small, or no, woofers. "Satellite" speakers usually fall into this category.

2. 'DTS' and 'DTS Digital Surround' are registered trademarks of Digital Theatre Systems, Inc.

# Calibration

Use the Calibration Dialog Box to adjust the output level for each speaker, and the time delay for center and surround speakers to obtain the best sound balance. By making the proper adjustments, you can create the illusion that all speakers are the same distance from your listening position regardless of the actual distance from the speakers.

When you click **Calibrate** from the Audio page, the following window appears:

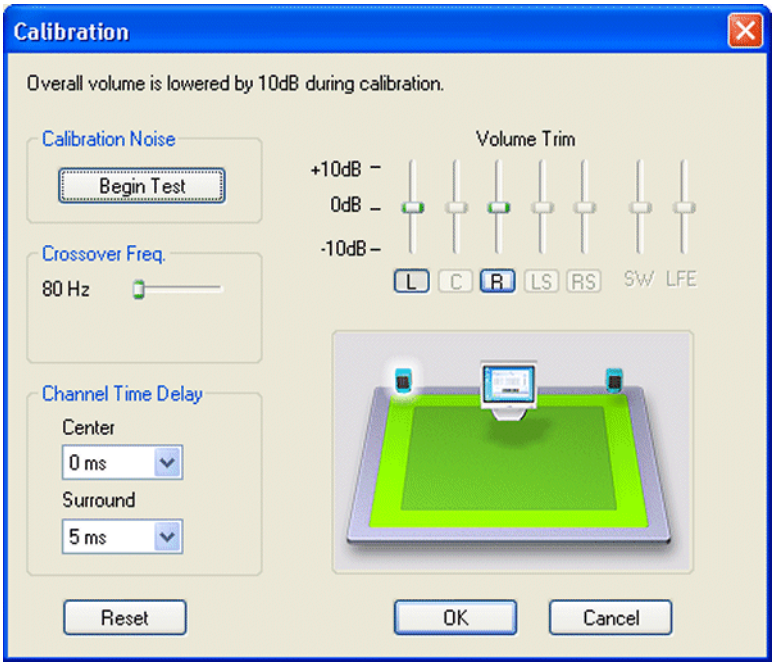



**Figure 2.5** Calibration Dialog Box

**If you are listening to audio while displaying the Calibrate page, you will notice a decrease in volume.** This provides enough volume headroom so that you can immediately hear adjustments to individual channels. When this page is closed, NVIDIA PureVideo Decoder maintains relative differences between individual channels by reducing volume on channels with the lowest settings. This prevents overload that would otherwise occur when the master volume approaches 100%.

Changes that you make to the settings will apply even after closing this property page, but you must have Windows administrator status for changes to be saved when closing the application.

## Adjusting Speaker Output Levels

- Using the illustration as a reference while listening to the audio, move each Volume Trim slider to obtain the best sound balance for your listening environment.
  - Move the slide bar up to increase volume, or move the slide bar down to decrease volume.
  - Move the **Crossover Frequency** slider to control the point at which Bass Management separates bass from other sound.
  - To understand the SW and LFE controls and how they are effected by Bass Management, see "Audio Processing and Bass Management" on page 31.
- To use a consistent sound source -
  1. Click **Begin Test** in the Calibration Noise section.

     A calibrated test signal is sent to one of the speakers in your system, and the corresponding speaker in the diagram is highlighted.
  2. In the Volume Trim section, click the label button for the speaker you want to test.
  3. Verify that the test signal is emitted from the speaker position highlighted in the diagram.
  4. Increase the output level by moving the corresponding slide bar up, or decrease it by moving the slide bar down.
  5. Repeat for the other speakers until you have achieved the best sound balance.
  6. When you are finished, click **End Test**.

## Adjusting the Time Delays

Depending on how far you sit from the center speaker or the surround speakers[3], you can improve your listening experience by adjusting the time delay for those speakers.

While listening to the audio, change the time delay as follows:

1. To adjust the time delay for the center speaker, click the **Center** list arrow and then click one of the times in the list, then click **Apply**.
2. To adjust the time delay for the surround speakers, click the **Surround** list arrow and then click one of the times in the list, then click **Apply**.
3. Experiment with different time delays until you find a combination that sounds the best, then click **OK** or **Apply**.

# Advanced

Click **Advanced** to use the Advanced Audio page for additional audio settings.

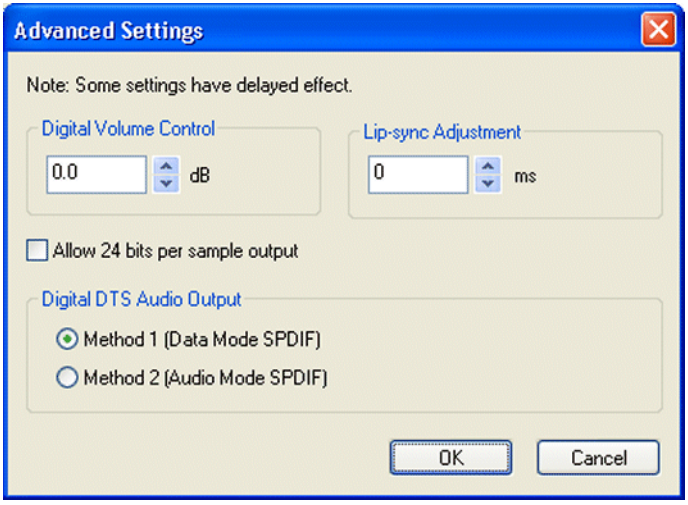



**Figure 2.6** Audio Page Advanced Settings

Changes that you make to the settings will apply even after closing this property page, but you must have Windows administrator status for changes to be saved when closing the application.

3. Using the speaker setup illustration as a reference, surround speakers refer to the speakers identified as 'LS' and 'RS'.

## Digital Volume Control

The digital volume control lets you adjust the volume digitally in order to minimize any audio distortion due to overload and clipping.

- Click the **Digital Volume Control** up and down arrows to adjust the digital volume to an acceptable level.
- The box shows the decrease in dB increments, where 0dB corresponds to 100 percent. You might notice a delay between the adjustment and the actual effect on the sound.

## Lip-Sync Adjustment

You can adjust the audio forward or backward in time relative to the video to compensate for delays introduced by audio or video content, or due to poorly encoded content.

- Click the **Lip-sync Adjustment** up and down arrows until the audio is synchronized with the video.
- The box shows the time, in milliseconds, that is added to or subtracted from the presentation of the audio stream. If the audio lags the video, then use the arrows to enter negative values. If the video lags the audio, then use the arrows to enter positive values.

## Enabling 24 Bits Per Sample Output

If your audio card supports 24-bit audio sampling, you can configure NVIDIA PureVideo Decoder to present the audio using 24 bits per sample instead of the 16-bit default, when applicable. This results in better quality audio.

- Click **Allow 24 bits per sample output** for improved audio quality if your card has native support for 24-bit audio sampling.
- Do not enable this option if your audio card does not have native support for 24-bit audio.

## Digital DTS Audio Output

*'DTS' and 'DTS Digital Surround' are registered trademarks of Digital Theatre Systems, Inc.*

When sending DTS music from a CD to an external decoder using SPDIF mode (see Speaker Setup), you can choose the output method that is the most compatible with your audio hardware.

- Click the **Method 1 (Data Mode SPDIF)** radio button if your audio hardware does not support "bit perfect" raw audio over SPDIF.
- Click the **Method 2 (Audio Mode SPDIF)** radio button if your audio hardware does not support passing a compressed audio bitstream over SPDIF.

If you hear noise or silence using any of these methods, try an alternate method.

# Dolby Pro Logic II

*Dolby Pro Logic II decoding is not available in this version of the PureVideo Decoder.*

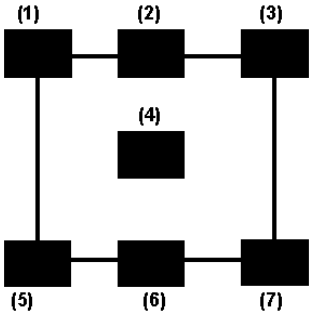
# Indicators

## Audio Format

Displays the channel and format of the audio source, described as follows:

### Channel

A pictogram indicates the audio channels that are active. The diagram below shows the possible channels, and how they relate to a typical speaker arrangement.




(1) Left channel
(2) Center channel
(3) Right channel
(4) Sub-woofer channel
(5) Left rear surround channel
(6) Single surround channel
(7) Right rear surround channel

Common Configurations

Stereo (Left and right channels)

Four channel Dolby[i] Surround

Five channel Dolby Digital

Six channel (5.1) Dolby Digital.

i. Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic", and the double-D symbol are trademarks of Dolby Laboratories. Confidential unpublished works. Copyright 1992-1999 Dolby Laboratories. All rights reserved.

## Format

- **MPEG** indicates MPEG encoded audio content.
- **LPCM** indicates LPCM (linear pulse code modulation) encoded audio content.
- **Dolby Surround** indicates content that has been surround encoded in a manner compatible with multi-channel Dolby Pro Logic playback. Dolby Surround sound tracks encode up to 4 virtual channels of audio on 2 physical channels.
- **Dolby Digital** indicates content that has been encoded for playback on equipment using Dolby Digital technology. Dolby Digital sound tracks contain up to 6 channels (5.1 configuration) of discrete audio.
- **DTS**[4] indicates content that has been encoded for playback on equipment using DTS Digital Surround technology.

4. 'DTS' and 'DTS Digital Surround' are registered trademarks of Digital Theatre Systems, Inc.

## Listening Mode

Displays the audio output mode corresponding to your audio output setup.

If no special decoding is performed, then this section displays the channel configuration of the audio output. This matches the speaker configuration that you set up in the Speaker Setup page.

- **Mono** or **Stereo** appears when outputting in either Mono or Stereo respectively.
- **Dolby Pro Logic** appears when Dolby Pro Logic decoding stereo sources into more than 2-channel output.
- **Dolby Pro Logic II** appears when Dolby Pro Logic II decoding stereo sources into more than 2-channel output.
- **Dolby Surround** appears when Dolby Surround encoding output (for example, when connected to a receiver in Pro Logic mode).
- **DH1, DH2, or DH3** appears when Dolby Headphone encoding output.

# Using the Karaoke Page

You can use the Karaoke page with audio content that includes karaoke encoded, Dolby Digital audio streams.

1 From the Windows taskbar, double-click the NVIDIA Decoders icon, or right-click the icon and then click **Decoder Properties** from the pop-up menu.

2 Click the **Karaoke** tab.

After changing any settings, either click **OK** to save the settings and close the Property page, click **Cancel** to close the Property page without saving the settings, or click **Apply** to save the settings and leave the Property page open.


**Figure 2.7** NVIDIA Decoders Karaoke Property Page

If your audio source is not encoded for karaoke, check the **Simulated Karaoke** check box to perform voice cancellation on any source.

# Controlling the Music

You can control the volume and speaker position for up to three sound channels - Vocal 1, Vocal 2, and Melody.

- To adjust the volume level for each channel, move the corresponding **Volume** slider as needed.
- To select the speaker position for each channel, move the corresponding **Position** slider to any position between **LEFT** and **RIGHT**.

# Controlling the Microphone

You can control the sound from the audio system microphone input.

- To adjust the microphone volume, move the **Mic.** slider to the desired volume level.
- To turn off the microphone input, click the **Mute** check box.
- If the microphone volume is too low, even with the volume at 100%, then click the **+20 dB Boost** check box.

  To avoid damage to speakers, or loud feedback, set the volume to 0% before choosing **+20 dB Boost**, then readjust the volume as needed..

# Preset Modes

You can select from a list of preset vocal modes and then adjust the volume and position.

- **no vocals** - All vocals are muted. Melody is set at 100%
- **Vocal 1 only** - Vocal 2 is muted. Vocal 1 and Melody are set at 100%
- **Vocal 2 only** - Vocal 1 is muted. Vocal 2 and Melody are set at 100%
- **Both vocals** - Vocal 1, Vocal 2, and Melody are set at 100%

# Song List

View the songs that are included in the DVD. If the DVD is encoded with a song list, the list appears in the Song List box.

APPENDIX

A

# ANAMORPHIC AND FULL FRAME FORMATS

Most movies are originally recorded in widescreen aspect ratio. The shape of the movie image is wider than a standard TV. There are basically three ways that such movies are presented on DVDs—full frame pan and scan, full frame letterbox, and anamorphic widescreen.

## Full Frame Pan and Scan

This method fills a standard TV shape.

The camera window is shaped like your TV screen, and "pans and scans" back and forth across the film image to keep the most important action centered on your TV screen. Some of the original image is lost using this method.

How to identify full frame pan and scan DVDs:

- Typically identified on DVDs as "Modified to fit your screen", "Standard version", or "4:3 ratio".
- Identified in the Video page Video Format section as Full Frame (Film or Video). When viewed in full-screen mode, the image fills the screen.

# Full Frame Letterbox

This method displays the entire original movie image.

The full image is displayed, but since the original image is wider than your TV or monitor screen, it does not fill the full height of your screen. To fill the screen, the DVD displays black "masking" bars above and below the movie image.

How to identify full frame letterbox DVDs:

- Typically identified on DVDs as "Widescreen version", or "Theatrical release format".
- Identified in the Video page Video Format section as Full Frame (Film or Video). When viewed in full-screen mode, the image is letterboxed, with black masking bars above and below the image.

# Anamorphic Widescreen

This method displays the entire original movie image, with enhancements for displaying on digital widescreen TVs.

On a digital widescreen TV, the image fills the screen as much as possible with no loss of image quality.

On a standard TV or monitor screen, the full image is displayed, but since the original image is wider than your TV or monitor screen, it does not fill the full height of your screen. To fill the screen, NVIDIA PureVideo Decoder generates black "masking" bars above and below the movie image.

Sometimes the DVD includes "pan and scan" information that allows you to view the image in full-screen mode as described under Full Frame Pan and Scan. To view DVDs this way, check the Pan and Scan checkbox in the Video page.

How to identify anamorphic widescreen DVDs:

- Typically identified on DVDs as "Enhanced for widescreen TVs", "Anamorphic widescreen", or "Enhanced for 16:9",
- Identified in the Video page Video Format section as Anamorphic Widescreen (film or video).

APPENDIX

# B

# AUDIO PROCESSING AND BASS MANAGEMENT

## Audio Processing

NVIDIA PureVideo Decoder takes audio from a multi-channel source and down mixes it to the speakers that are actually connected. This way no channels are lost and the full audio will be heard with the existing speakers. In order for this processing to work, the choices in the Speaker Setup page must match your actual speaker configuration.

# Bass Management

When you specify that the audio is connected to a receiver, NVIDIA PureVideo Decoder automatically engages Bass Management when appropriate. Bass management ensures that the bass sounds from the audio source are not lost.

With bass management:

- Bass from "small" (or non-existent) speakers is redirected to "large" speakers, or to the subwoofer if it is connected.
- Audio from the LFE channel is redirected to other speakers when no subwoofer is connected.

In order for bass management to work properly, the choices in the Speaker Setup page must match your actual speaker configuration.

## Example of Using Bass Management

A common PC configuration consists of two speakers: left and right. Under normal circumstances the LFE channel is simply dropped. With bass management enabled, the LFE channel is mixed into the left and right channel. The LFE trim allows the user to adjust the amount the LFE channel contributes to the left and right speakers. If you want to "pump the bass" with this configuration, enable Bass Management and then adjust the LFE trim to +10 dB

## Effect on the Calibration Page Volume Trim Controls

- The low frequency effects (LFE) volume trim adjusts the volume of the LFE *channel* encoded on the DVD.
  - Without bass management - this control is not available. Use the SW trim control.
  - With bass management - this adjusts the LFE channel, which is directed to the subwoofer (SW) or to other speakers, depending on the speaker setup.
- The subwoofer (SW) volume trim adjusts the volume of the subwoofer *speaker*.
  - Without bass management - this is the same as the LFE channel.
  - With bass management - this includes the LFE channel, and can include bass that was redirected from other speakers, depending on the speaker setup.