Contents

Color Controls

There are three dialogs included with TimeWarp for controlling picture color. The **General Color Controls** adjust the way that movie files are manipulated when being played on your computer monitor. The **Video Input Color Controls** affect the signal being received by your video capture board, and the **Video Output Color Controls** affect the signal being played back on a TV hooked up to your video output board.

General Color Controls

The Color, Brightness, Contrast, Tint of the TV display can be adjusted here according to the user's desire.

Other Buttons

The DEFAULT button will set the Color, Brightness , Contrast , and Tint controls to "factory" default values (0 degrees of Tint and 100% for the rest).

The OK button accepts the changes made for the current application.

The CANCEL button discards any changes that were made.

The HELP button gives you help from this file.

Video Input Color Controls

Video Quality & Control Settings

There is no "right" way for a picture to look. The controls such as color, brightness, tint, color temperature, sharpness and tracking are there to allow you to produce the best possible picture for a particular use. The best way to adjsut these controls is to make the picture you are capturing look the way you want. The **Default** button will always return you to a usable picture.

The Color, Brightness, Contrast, Tint of the TV display can be adjusted here according to the user's desire.   The Window and Position Sliders is used to adjust the position of the TV screen.   The Connector Controls modifies the current connector setting.

Other Buttons

The DEFAULT button will set the Color, Brightness , Contrast , and Tint controls to "factory" default values (0 degrees of Tint and 100% for the rest).

The SAVE button accepts the changes made and saves the settings in a ini file so that its change is permanant.

The OK button accepts the changes made for the current application.

The CANCEL button discards any changes that were made.

The ADVANCED button gives the user access to less frequently used controls, and select the video standard. These extra controls are similar to those placed behind a drop down panel on a VCR or TV.

The HELP button gives you help from this file.

See Also: Advanced Input Color Controls.

Advanced Input Color Controls

This dialog is used to set advanced options that control the way that the video input signal is handled.

Standard

The Standard control allows you to specify whether the format of the input video should be NTSC or PAL. Typically this should be set to NTSC for North America and PAL for Europe. The setting is determined by the television standard for your country.

A different standard may be selected for each connector on the board. Note that PAL does not need or support the adjusting of Tint.

Pattern

Sometimes it is useful to be able to adjust the color controls using a video test pattern rather than a live input. The Pattern check box can be used to temporarily replace the live image with a color bar pattern. After the changes have been made, click on the *Pattern* button again to return to the original signal.

Trim

Trim crops off unwanted information on top and bottom of the image at 320 x 240 and at 640x480.

Color Temperature

The normal setting is "Warm", which produces natural flesh tones and more saturated colors. This setting may look better by reducing the Color control to 75% from 100%.

The Cool setting will produce better results on saturated colors.

Tracking

This control is similar to the tracking control on a VCR - it helps the hardware capture signals from noisy antennas or difficult video tapes. The Standard setting will work for most inputs. If the picture appears torn or noisy the Alt1 and Alt2 settings should be tried.

Note that a VCR in pause, fast forward, or rewind produces a torn signal which cannot be fixed. The signal shown by a Video-IT! or Video Basic will look the same as shown on a TV.

Sharpness

This controls the amount of vertical and horizontal detail in a picture. The normal setting is "Sharp", but here are some guidelines:

   Use sharp for still images, especially at 640x480 size
   Use sharp for video containing graphics such as text

Use sharp if the image is going to stored live as uncompressed data, and then compressed later. This way more of the orginal signal is retained

Use smooth if the video source is noisy or snowy

Use smooth if the video is going to be compressed and stored to disk live. A smooth image will compress better in real time

Use smooth if a small output image is desired. A smooth image has fewer artifacts when downscaled, especially at a 160x120 size.

See Also: General Color Controls

Video Display

This dialog controls the destination of live video for your system. A Video signal being input to the system may be sent through the video output to an external monitor (if available). The video may also be sent to the Window's display. Sending the video to the output, or to the Window's display allows you to preview a signal that is being captured, but may result in lower performance on slower computers (because the system is trying to capture, save, and display all at the same time).

If you choose to display to an external monitor you may choose to drive the monitor from an internal frame buffer, or directly from the input video signal. When previewing from the frame buffer, the monitor will show each frame that is actually captured. If the video compressor gets behind and is forced to drop frames, then this will be reflected on the television monitor. When previewing directly from the input video signal the monitor shows exactly the signal being provided at the input connector.

Video Format

This dialog controls the image <u>dimensions</u> and video <u>compression</u> used for video capture. Certain capture <u>dimensions</u> may preclude the use of data compression.

The control on the top left allows you to choose between the various capture dimensions available to the hardware. The control beside it provides access to the various <u>compression</u> schemes that are supported.

The lower portion of the dialog is used to configure the particular <u>compression</u> technique being used. It allows you to select how often a <u>key frame</u> is stored. It also allows you to choose between small files, and high image quality. High image quality will look better during playback, while smaller files allow you to save longer movies on your hard drive, and often allows for faster playback

Color Compositing

Color Keying or Color Composition is a process by which two images are combined according to some criteria. For example when Luma Keying, the brightness of each pixel in the image is computed. If this brightness is above a certain value (the pixel is very light) then it is replaced in the final image with the corresponding pixel from the other image. Another way to perform luma keying is to select only those which are darker than a particular value. Chroma keying performs the same process but uses the color rather than the brightness to choose the final pixel.

The color composition dialog allows you to choose between various methods of combining multiple images based on color. This dialog supports keying based on Luminance, Chrominance, Color0, and Specific Colors. The composition dialog displays a different set of controls depending on what type of keying is being configured.

In general the dialog shows two source images, (the "source" and the "key with" images), and a destination image. The middle image is the "key with" image. It is this image which is used to perform the keying computations. The destination image on the far right interactively shows the results of the keying process.

Sometimes when compositing real world images it is difficult to see exactly what parts of the image are being keyed. To simplify this process select the "solid color" checkbox. This replaces the keyed values with the solid color shown in the small area to the left of the checkbox. To change the solor used (from the default yellow color), click on the yellow, a standard windows color dialog will allow you choose a different solid color. To go back to seeing the two images keyed together click on the "solid color" checkbox so that it is not selected.

At times it is might be convenient to reverse the order of keying, that is to change the "source" and "key with" images. Clicking on swap sources allows you to do this. Clicking on it again will swap the images back.

Read the sections on **Luma Keying**, **Chroma Keying**, Color 0 Keying, and Keying Specific Colors for more details on the various color composition options which are available.

Luma Keying

When configuring the luma keyer a gray scale bar is displayed which shows the range of values over which the luminance may be adjusted. Inside this scale a red box is drawn to show what part of the scale is being keyed with. By adjusting the slider (or by clicking directly on th gray scale) you may adjust the luminance threshold. The results are shown in the destination window. You may also click directly in the middle "key with" window to select the luminance with the eye dropper.

There are four different kinds of luma keying. "Lighter" selects colors which are lighter than the threshold luminance. "Darker" does the opposite, it selects colors which are darker than the threshold color. The "Close" setting keys which colors which have similar luminance to the threshold. By adjusting the tolerance slider you can adjust how close a color has to be to pass. The "Far" option performs the opposite action, selecting colors which are farther away from the threshold, once again the tolerance control selects how far away the color must be to key.

At all times the red box in the gray scale shows what values are being selected in the luma key.

See the section on **Color Composition** for a description of the rest of the controls in this dialog.

Chroma Keying

When configuring the chroma keyer a chroma scale is displayed which shows the range of values over which the chrominance may be adjusted (for a particular luminance). Inside this scale a circle is drawn to show what part of the scale is being keyed with. By adjusting the sliders to the right of the color scale (or by clicking directly on the scale) you may adjust the center color of the chroma key. The results are shown in the destination window. You may also click directly in the middle "key with" window to select the chroma value of a specific part of the image with the eye dropper.

By adjusting the tolerance slider you can adjust the size of the keying circle in the color scale. The larger the circle, the more colors are keyed with. The range selector can be used to set the center color to pure blue, pure red, or pure green.

Note: The luminance is taken to account in a small way in order to prevent very dark colors and very light colors from unintentionally be included at the same time.

See the section on **Color Composition** for a description of the rest of the controls in this dialog.

Window and Position Sliders

The TV display that appears above the color controls can be used to preview the effect of the changes your are making. The sliders around the window let you adjust the position of the picture.

Note that although computers "like" 640x480 size images, an NTSC television does not usually have more than 440 usuable lines. Beyond that range are other signals such as sync. If the top or bottom of the image looks noisy, use the Position Sliders or <u>Trim</u> control to reduce this effect.

Connector Controls

These allow selection of up to three different sources by clicking on one of the radio buttons beside the connector symbols. If your board has a different number of connectors this will show on the screen. Most home video equipment uses the <u>Composite</u> inputs, professional equipment may have an <u>S-Video</u> connector.

The software will remember different   <u>Color</u>, <u>Brightness</u> , <u>Contrast</u> , and <u>Tint</u> control settings for each of the inputs.

Color, Brightness, Contrast, Tint:

These dialogs allows control over color in the same manner as you adjust a television set. The Color, Brightness and Contrast controls can be adjusted over a range of 0% to 200% of the value. 100% is the normal "factory" setting, 0% is none, and 200% is as much as the hardware can provide.

The Tint control adjusts colors for NTSC video. It can be thought of as a circle. As the tint is adjusted around this circle, faces becomes more green or more purple. If you adjust the tint far enough, you end up back where you started. The negative values make faces more purple, and the positive values make them more green. This control allows a range of +/- 180 degrees. Values beyond +/- 40 can be used to create interesting special color effects.

The best way to adjust these controls is while viewing an image of a face.

Note, if you are capturing live video to disk, adjusting the color controls affects the video signal BEFORE it is written to disk. As a result, these changes affect the color of the recorded video signal. Adjusting the general color controls affects only the playback from disk to the windows display.

Tint: This allows adjustment of NTSC color decoding. Lower values will make faces more green, higher values more purple.

Color: This adjusts the amount of color in the video signal. When set low the picture will become very black and white. When set high, the color becomes very hot and saturated.

Contrast: This adjusts the difference between the light and dark portions of the picture. A low value produces a "light" image, while a high value makes the image look "heavy".

Brightness: This adjusts how light or dark the picture is. Set to lower values the picture will become darker, while higher values will tend to wash out the picture, making everything white.

Dimensions: Refers to the width and height of the image being manipulated.

Compression: Refers to techniques which can be used to reduce the size of a video image in memory and on disk. Certain compression techniques can produce very small frames at the expense of image quality, that is, higher compression results in lower image quality.

Key Frames: Certain compression schemes work by only storing small parts (often called deltas) of each successive image. Setting the key frame rate lower will produce larger files but may improve playback on slower computers.

Chrominance: Refers to the color component of the image. It is broken into two components called U and V. Chroma keying keys on values that are close to a particular color value (a particular value of U and V).

Luminance: Refers to the brightness of the image, that is the signal with no color parts. This is called the Y component of the signal. It is possible to key based on various properties of the luminance of a picture.

Color0: Is applicable to palettized images. When keying against color zero, the first palette entry (usually the background color) is replaced with   the overlay image.

Sharpness: This adjusts how sharp the edges in the picture appear. It can also affect compression.

NTSC: Refers to the television standard used in North America, and many other countries with 60Hz power.

PAL: Refers to the television standard used in most of Europe, and many other countries with 50Hz power.

Color Temperature: Describes how the red, green, and blue components of the orginal signal are mapped to the final captured image on the monitor.

Tracking: Refers to different settings available for capturing difficult video sources.

Pattern: Allows replacing the live video in the color control window with a fixed test pattern.

Trim: Unwanted information is often appeared on top and bottom of the video signals from Television boardcast or VCR outputs.   This is a useful way to trim off them.

Composite: A video signal in which the *luminance* and *chrominace* signals are combined on one wire. This is the standard RCA style jack marked "Video" on most video equipment. It has less resolution than an *S-Video* signal but is adeqaute for most uses.

S-Video: A video signal in which the *luminance* and *chrominace* signals are left on two separate wires. This is a small round 4 pin jack marked "S-Video" or "Y/C" on video equipment.   It has better picture quality resolution than a *Composite* video signal and is used in professional equipment.