

## **What is Dodcap™?**

Dodcap is a simple tool for performing stop-motion capture. It allows you to capture still frames from live video streams and store them in .avi files.

Dodcap can also perform the following functions:

- Can capture from any [Video-for-Windows®](#) or [DirectShow®](#) source
- Can use almost any video compression codec
- Can perform "[pulldown](#)" or frame padding during or after capture

*NOTE: Microsoft, Windows, Video-for-Windows, and DirectShow are registered trademarks of the Microsoft Corporation.*

*NOTE: Dodcap™ is a trademark of the AlternaWare™ Software Group.*

## **System Requirements**

### **Minimum System Requirements:**

300 MHz or faster Pentium II or equivalent  
64 MB RAM  
Windows® 98 SE, Windows® 2000 or Windows® XP  
DirectX® compatible graphics board  
Windows® desktop resolution of 800x600 or higher and 16M colors or higher  
Mouse  
210 MB of disk space to install software  
Hard disk drive must be capable of sustained throughput of at least 4MB/sec.  
DirectX® 8.1 or higher installed on system

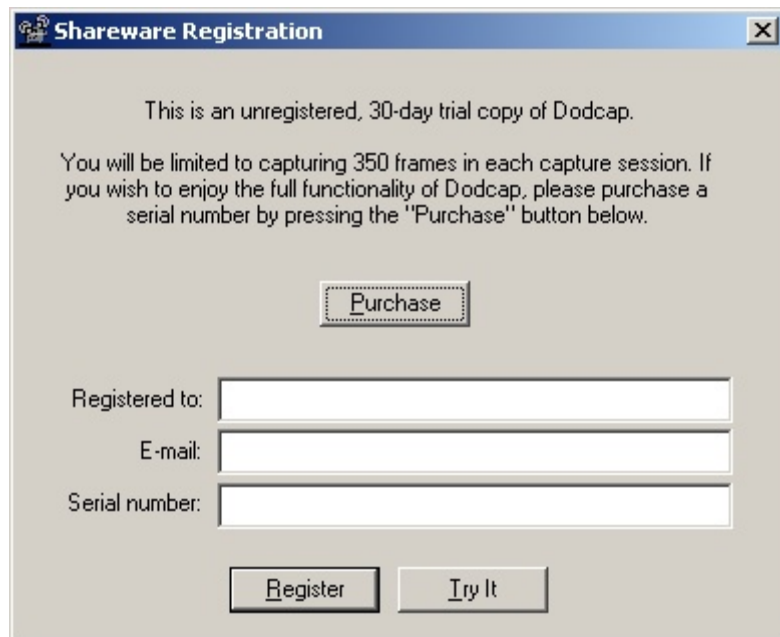
### **Recommended System Requirements:**

1 GHz or faster Pentium III or equivalent  
256 MB RAM or greater  
Windows® 2000 or Windows® XP  
DirectX® compatible graphics board  
Windows® desktop resolution of 800x600 or higher and 16M colors or higher  
Mouse  
210 MB of disk space to install software  
Dedicated RAID hard disk drive configured for speed and used only for video capture  
DirectX® 8.1 or higher installed on system

## Evaluation & Registration

AlternaWare wants you to be completely satisfied with Dodcap. For this reason, we allow you to use Dodcap for 30 days without making any commitment to purchase. This should allow sufficient time to determine if Dodcap meets your needs and works properly with your video capture hardware.

During this trial period, Dodcap will display a registration dialog each time you start the software. This dialog is shown below.



Note also that in the trial version of Dodcap, you are limited to capturing 350 frames in a single capture session. With the registered version of Dodcap, this limitation is removed.

If you decide that Dodcap meets your needs, you can purchase a serial number online at the AlternaWare web site 24 hours a day, 7 days a week. To reach this web site, just click the "Purchase" button on the registration dialog.

After receiving your Dodcap serial number by email, you can enter it, along with your name and email address, to activate the full functionality of Dodcap.

We hope you enjoy the program!

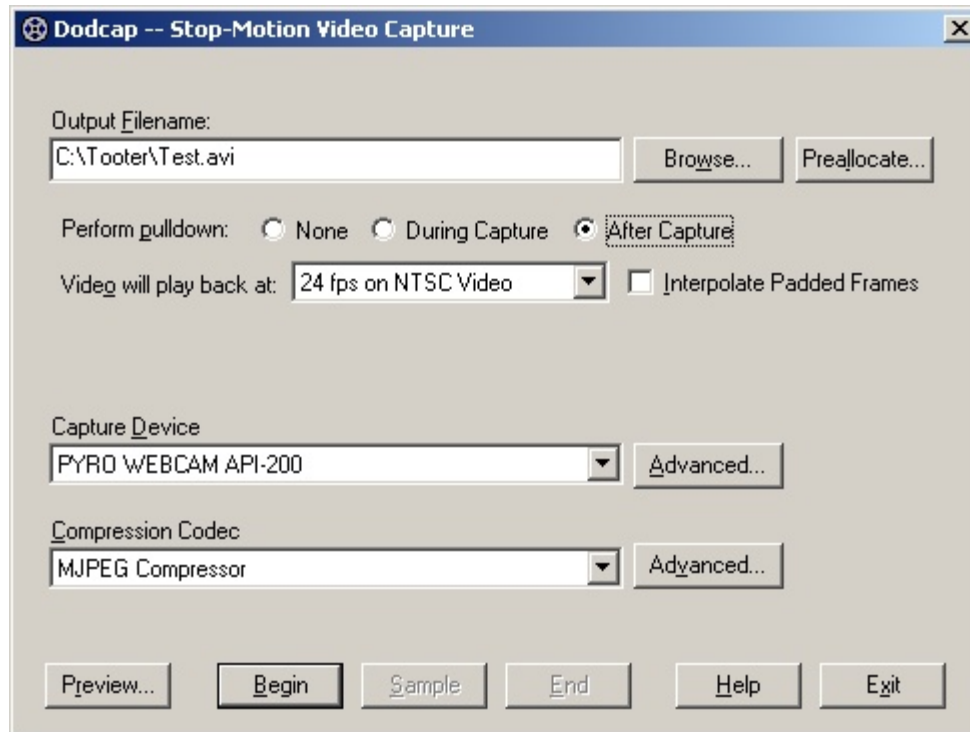
## **Return Policy**

At AlternaWare, we take a "try-before-you-buy" attitude toward all of our software products. This protects *you* by allowing you to determine whether Dodcap meets your needs *before* committing to a purchase. It also allows us to adopt a no-refund policy toward all our software.

For details about evaluating and registering Dodcap, please see "[Evaluation & Registration](#)."

## Quick Start Guide

It is very easy to begin using Dodcap. Refer to the diagram below and follow the simple steps to create your first capture file.



NOTE: If you are using Dodcap with a Video WorkPrinter (from MovieStuff) turn *off* all pulldown while you test your unit. After you have verified the functionality of your unit with your system, you can begin testing pulldown features.

### (1) Assign a file name

In the edit box labeled "Output Filename," type the full path and name of the file you want to capture. Be sure to remember the path on your hard drive where you place this file.

### (2) Select pulldown mode

In the "Perform pulldown" radio button sequence, select "None."

### (3) Preview your capture source

Press the button labeled "Preview..." to see a live video feed from your capture device. When you are finished viewing the live video feed, close its window by clicking the "X" button at the top right.

### (4) Begin a capture session

Press the button labeled "Begin" to prepare for capture. Note that no frames are captured yet.

### **(5) Take some samples**

Press the button labeled "Sample" a number of times to grab snapshots from the live video feed.

### **(6) End the capture session**

Press the button labeled "End" to stop capturing and finalize your capture .avi file.

### **(7) View your .avi file**

Dodcap will automatically play back your .avi file after your capture session is over. You can replay the file as many times as you wish. When you are finished viewing your capture file, close your media player to return to Dodcap.

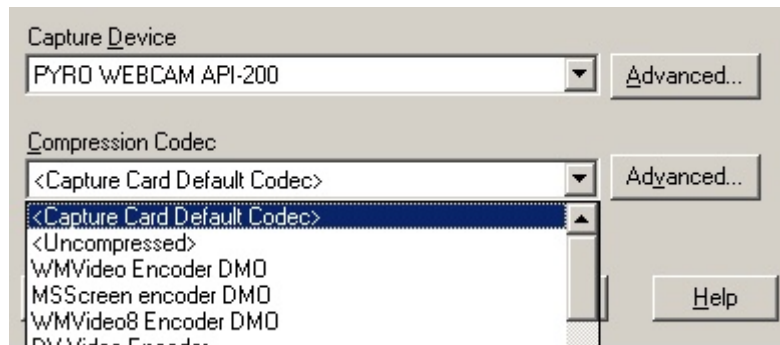
### **(8) Exit Dodcap**

Press the button labeled "Exit" to close Dodcap.

For further details and explanations of advanced features, see [Dodcap Controls](#).

## Choosing the Right Compression Codec

A bit of explanation is in order regarding how to select an appropriate video compression codec.



Dodcap allows you to select any Video-for-Windows or DirectShow-compatible codec on your system. In addition, there are two other options available: <Capture Card Default Codec> and <Uncompressed>.

You should be very careful in selecting which compression option you use. Some codecs, while available in the Compression Codec combo box, are not appropriate for stop-motion capture. Ideally, you should select a codec that is designed for high-speed capture. Examples include all DV codecs, MJPEG (Motion JPEG), and Huffiyuv. Examples of codecs that are *not* appropriate for stop-motion capture include Cinepak, Indeo, and MPEG. These codecs achieve higher compression ratios by compressing whole groups of frames instead of individual frames (inter-frame compression), while DV, MJPEG, etc., use *intra*-frame compression, where every frame is distinct, and all compression exists only within each frame. Intra-frame compression is desirable for stop-motion capture because not all frames coming from a video stream are passed through to the final .avi file. Most frames are actually thrown away, and only frames captured while the "Sample" button is pressed are kept.

The <Capture Card Default Codec> option is designed for capture cards that natively output compressed video frames. Most DV (firewire) capture cards are an example of this type of card. If your capture card natively outputs compressed video frames, choosing this option will give you the fastest capture speed and the best output quality. DV users should never need to select any option other than this. With this option selected, capture cards that natively output uncompressed video will produce an uncompressed .avi file.

One note regarding the <Capture Card Default Codec> option. This option is available only if you are performing capture with no pulldown, or capture with non-interpolated pulldown. Selecting this option disables the "Interpolate Padded Frames" check box. To make "Interpolate Padded Frames" available again, select a codec from the Compression Codec combo box. Note that users of capture cards that natively produce uncompressed video can select <Uncompressed> to use the "Interpolate Padded Frames" option. There is no performance or quality penalty for doing so.

There is also a compression option labeled "<Uncompressed>." Selecting this option disables the "Interpolate Padded Frames" check box. Choosing this option always

results in an uncompressed .avi file after capture, regardless of what capture device you use.

Choosing compression codecs other than <Capture Card Default Codec> and <Uncompressed> result in a compressed .avi file after capture. This gives you the option of creating an .avi file in a format other than what your capture card natively outputs at the cost of capture speed.

One other thing to note is that if PAL users specifically select a DV compression codec other than <Capture Card Default Codec>, they should enter the advanced configuration for the codec and verify that it is set up for PAL output. Some DV codecs, such as Microsoft's, default to NTSC output regardless of the capture card properties.

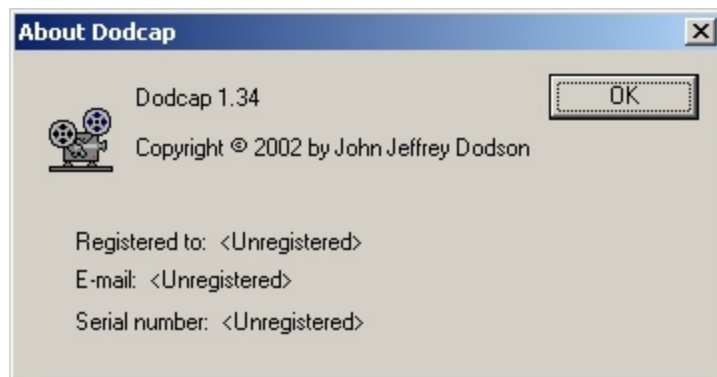


## System Menu

Dodcap has a system menu which allows you to access advanced functionality. The system menu looks like this:



From this system menu, you can view version and registration information for Dodcap. Select "About Dodcap..." to view the following dialog:



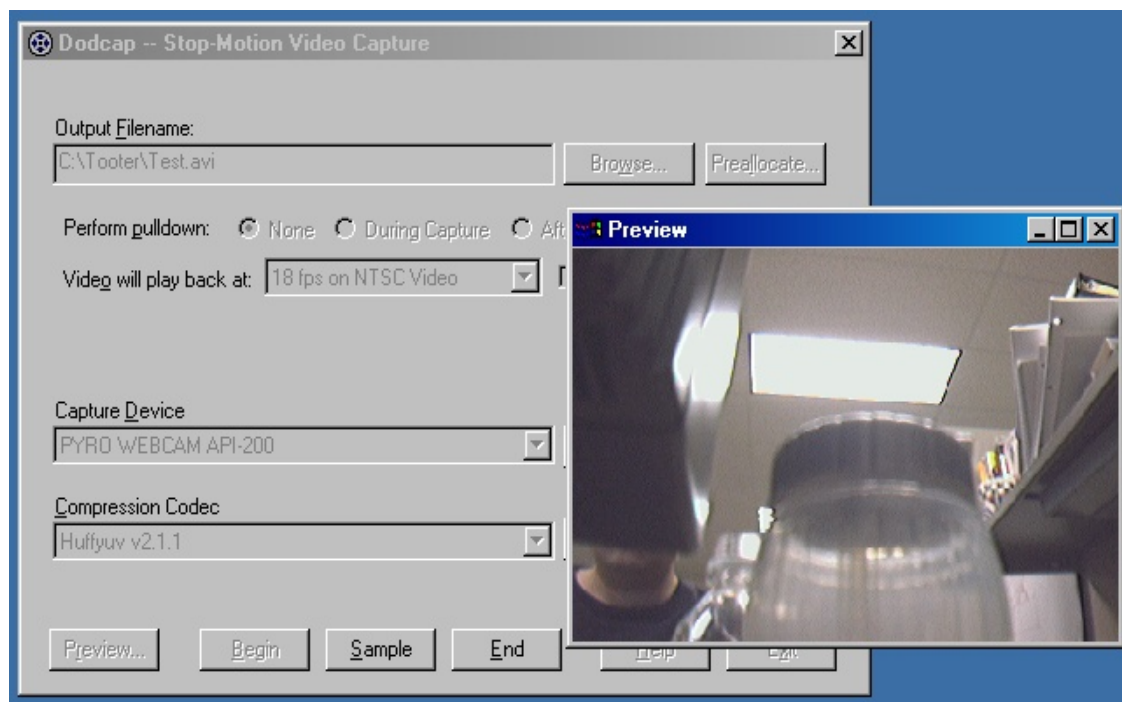
If you have registered Dodcap, your user name (i.e., "Registered to:"), email address, and serial number will appear here.

You can also launch Dodcap's post processing modules and custom media player from this menu. To perform pulldown on a single file you have already captured, choose "Single-File Pulldown..." from the menu. To perform pulldown on multiple files, or to add burn-in timecode to a file, choose "Batch Processing..." To play back a file, step through a file frame-by-frame, or play/record a file to a DV device, choose "Dodcap Media Player..." For more information about these options, please see [Using the Pulldown Module](#), [Batch Processing](#), and [Dodcap Media Player](#).

The "Lock Cursor During Capture" option available from this menu ensures that the mouse cursor does not move away from the Sample button during a capture session. When this option is selected, you must use the Alt-E keyboard sequence to end your capture session and save your capture file.

Dodcap now supports displaying a "modeless" overscan preview window during a capture session. You can configure whether Dodcap displays a live preview window

during capture by selecting or deselecting the "Preview During Capture" option in the system menu. This window is useful for monitoring the alignment of your camera during capture because it displays the entire area that your camera "sees," including the "overscan" area which would normally be hidden on a television set. Here is what your screen might look like while using this feature:



Because this window is "modeless," you can move it around your desktop and resize it independent of the main Dodcap window. During your capture session, the overscan preview window will display full-motion video, not the individual frames you are capturing.

Note that the brightness, contrast, color, etc., that you see in this window is not necessarily accurate. For this reason, you should always use a television monitor to correctly test your image quality during capture. Dodcap's overscan preview window is strictly for monitoring camera/film alignment!

## Using the Pulldown Module

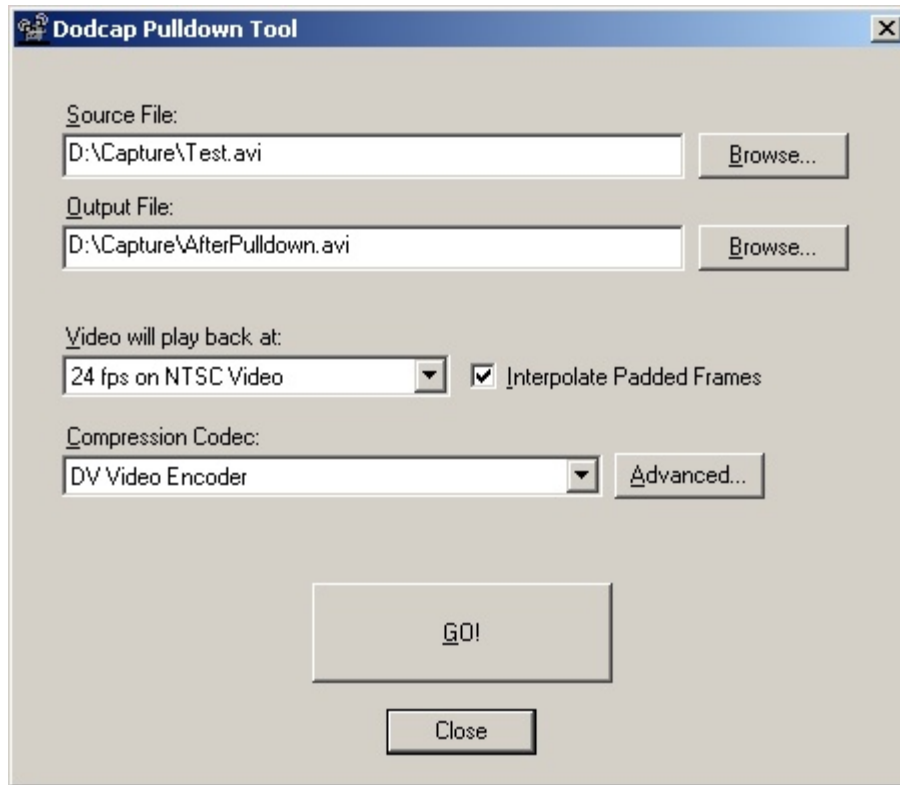
You can use Dodcap's Pulldown Module to perform pulldown on .avi files that you have already captured, or that you have captured with other software packages. You can invoke the Pulldown Module by selecting it from Dodcap's system menu, which looks like this:



Please note the following in regards to the Pulldown Module:

- 1) Your video camera does not have to be connected or turned on to perform pulldown on .avi files with the Pulldown Module.
- 2) The Pulldown Module available in the trial version of Dodcap will process only 350 frames before ending the pulldown session.
- 3) Dodcap's Pulldown Module creates new files which contain only a video stream. This means that any audio streams in the source file will not be copied over into the final output file.
- 4) The pulldown and compression options are the same that are available in Dodcap's main window, except that the <Capture Card Default Codec> option reads, "<Same As File>" in the pulldown module.

The Pulldown Module's user interface looks like this:



Here is a quick summary of how to use the Pulldown Module:

- 1) Enter (or browse to) the file name of your source capture file that contains your captured frames. A suggested name for the output file also appears in the "Output File" box.
- 2) Either use the suggested output file name or enter (or browse to) the file name that you want Dodcap to create. This is the file that will contain your original frames plus any padding frames used to convert your frame rate.
- 3) Select the rate at which your final video file will play back.
- 4) Choose the compression codec (usually, just accept the default of <Same As File>)
- 5) Press the "Go!" button to begin pulldown.

You will see a percentage progress message as pulldown proceeds. You may also press the "ESC" key at any time to halt pulldown.

When you are finished performing pulldown, press the "Close" button to return to the Dodcap main window.

## Batch Processing

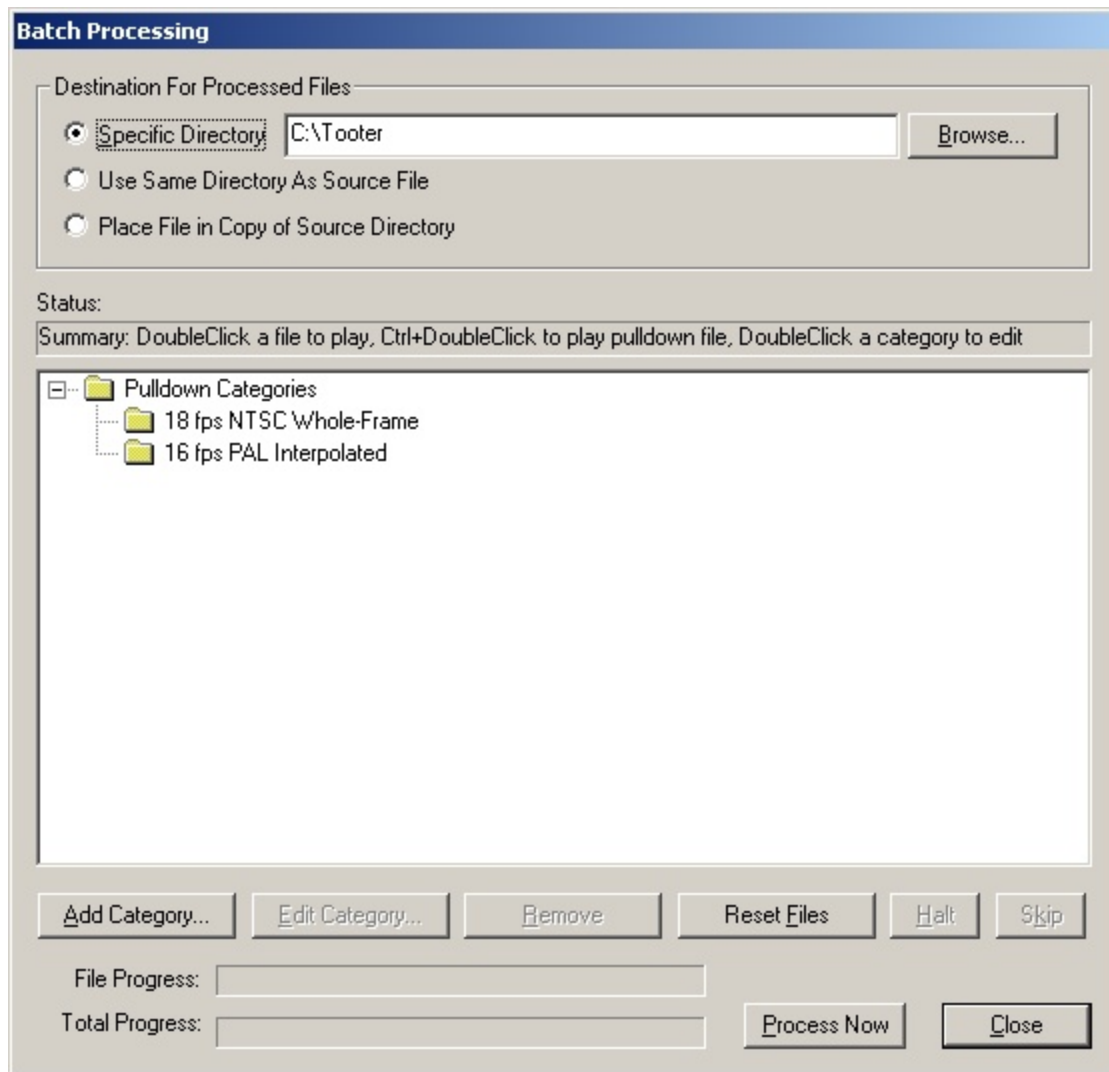
You can use Dodcap's Batch Processing Module to perform pulldown on (or add burn-in time code to) multiple .avi files that you have already captured, or that you have captured with other software packages. You can invoke the Batch Processing Module by selecting it from Dodcap's system menu, which looks like this:



Please note the following in regards to the Batch Processing Module:

- 1) Your video camera does not have to be connected or turned on to batch process .avi files with the Batch Processing Module.
- 2) The Batch Processing Module available in the trial version of Dodcap will process only 350 frames per file during the batch processing session.
- 3) Dodcap's Batch Processing Module creates new files which contain only a video stream. This means that any audio streams in the source file will not be copied over into the final output file.
- 4) The pulldown and compression options are the same that are available in Dodcap's main window, except that the <Capture Card Default Codec> option reads, "<Same As File>" in the Batch Processing Module.

The Batch Processing Module's user interface looks like this:



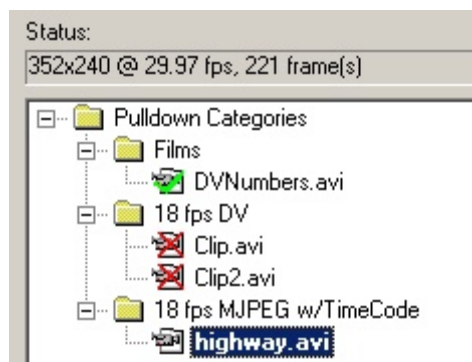
The general steps for using the Batch Processing Module are as follows:

- 1) **Create pulldown Categories** under the root folder named "Pulldown Categories." A Category is a placeholder for a particular set of compression, pulldown, and time code settings. Each Category can have different settings, as well as a unique name which you provide. Categories appear in the Batch Processing Module's user interface as folders one level underneath the "Pulldown Categories" root. For more information about Categories, see *Creating Batch Processing Categories* below.
- 2) **Select an output folder.** You can choose to place all processed files in a specific directory, to place them in the same directory as each source file, or to place them in copies of each file's source directory. Whenever the Batch Processing Module creates a new file or directory, it adds a prefix or suffix to the original file/directory name to make it unique. For more information about these prefixes/suffixes, see *Output Folder Options* below.
- 3) **Drag and drop files onto Category folders** using Windows Explorer or any other drag-and-drop capable program. The files will then appear in the Batch Processing Module's user interface under the Category folder you dropped them on. The

Category folder that a file resides in determines what compression, pulldown, and time code options are applied to that file. You can also drag/drop folders onto Categories. The folder and all .avi files inside it will then appear in the Batch Processing Module's user interface. Note however that folders-within-folders are not copied into the Category tree. If you wish to process the .avi files contained in a sub-folder, you should drag/drop the subfolder itself onto the Category folder.

4) **Press the "Process Now" button** to begin processing all files. Each file will be highlighted as it is processed, and its name and destination file name will appear in the status line above the Category tree. When a file has been processed, it will show a green check-mark over its icon. If there was a problem processing the file, it will appear with a red "X" over its icon. If you wish to stop processing the current file and continue with the next one, press the "Skip" button. If you wish to stop processing all files and end the processing session, press the "Halt" button. If your processing session has ended and you still have files to process (e.g., you pressed "Skip" on some files, some files had errors, you have added new files, etc.) you can press "Process Now" again and the new/remaining files will be processed. If you wish to reprocess all files, press "Reset Files" then "Process Now."

Below is an example of what the Batch Processing Module tree looks like after a processing session. Some files are processed (green check-mark), some were not processed successfully (red "X") and one was skipped.



In this case, the "Clip.avi" and "Clip2.avi" files were not processed properly because the source files' resolution (352x240) was not compatible with the compression codec used, which in this case was Microsoft's DV Video Encoder. If you encounter files that could not be processed, this is usually the cause. Note that if you pressed the "Process Now" button again, the Batch Processing Module would attempt to re-process "Clip.avi," "Clip2.avi," and "highway.avi." It would not try to process "DVNumbers.avi" again unless you first pressed the "Reset Files" button.

### **Creating Batch Processing Categories**

To set up a new Category, begin by pressing the "Add Category..." button. You will then see a dialog that looks like this:

**Pulldown Category Characteristics**

Descriptive Name For This Category:

Video will play back at:  
 ☒ Interpolate Padded Frames

Compression Codec:

Timecode Format:  Perform Timecode:

Image Flip:

As you can see, setting up a Category is very similar to setting up the Single-File Pulldown dialog.

The first thing you should do is decide what playback speed you want for files that will eventually be dropped into this Category. The options are the same as those found in the Dodcap main window and the Single-File Pulldown Module:

- 16 fps on PAL Video
- 18 fps on PAL Video
- 24 fps on PAL Video
- 15 fps on NTSC Video
- 18 fps on NTSC Video
- 24 fps on NTSC Video

You can also choose between whole-frame and interpolated pulldown patterns by checking or unchecking the "Interpolate Padded Frames" option. If you leave the box unchecked, the Batch Processing Module will adjust playback speed by occasionally duplicating whole video frames in the video stream. If you check the box, some "duplicated" frames will actually be hybrid frames created from two adjacent original frames. This produces smoother playback on NTSC and PAL television sets.

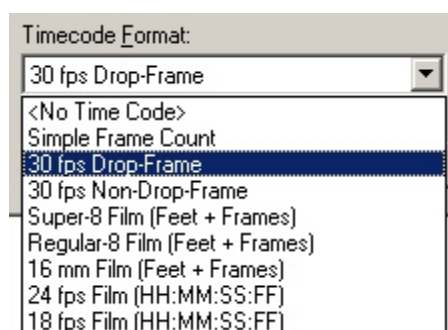
The "Compression Codec" options are the same as those appearing in the Single-File Pulldown Module. You can choose from <Same As File>, <Uncompressed>, as well as any other Vfw or DirectShow compression codec installed on your computer. If you are processing files captured with a firewire (IEEE-1394) card you should almost always choose <Same As File> as your compression option. The exception would be if you want to use the "Interpolate Padded Frames" option. In this case, you should choose the "DV Video Encoder" codec, or another suitable DV codec if there is one installed on your computer. Most analog capture cards will produce uncompressed output. In this case, you might want to choose the MJPEG compression codec. Uncompressed video frames are very large and it is time-consuming to store them to



the hard drive. In addition, uncompressed video streams take up large amounts of hard drive space, so you can save time and storage space by storing the video stream as MJPEG.

Note that there is a button labeled "Advanced..." next to the compression codec combo box. As in the Single-File Pulldown Module, you can use this button to configure advanced settings for the compression codec. The settings available depend on the implementation of the particular codec you select. Once you configure these settings, the Category "remembers" them exactly. This is true even if you close the Batch Processing Module, shut down Dodcap, or even shut down and restart your computer.

The "Timecode Format" and "Perform Pulldown" options are new and are unique to the Batch Processing Module. The available time code options are shown below.



The default is <No Time Code> which specifies that you do not want any time code burned into your output file. Here is an explanation of each format:

**Simple Frame Count** - Each frame is numbered consecutively starting with "1".

**30 fps Drop-Frame** - This is used for NTSC footage that must display very accurate time code. Every tenth minute a single frame count is dropped to correct for the difference between 30 fps and 29.97 fps. Note that no frames are actually dropped from the stream--all original frames will appear in the video. It is only the numbering of the frames that varies. For instance, if you have a frame with the time code 00:09:59;29 the next time code would normally be 00:10:00;00. However, with Drop-Frame time code, the next frame will instead be labeled 00:10:00;01. The 00:10:00;00 code is skipped. Note that the ";" before the frame count here indicates that drop-frame time code is in use, and the general format is HH:MM:SS;FF (hours, minutes, seconds, frames).

**30 fps Non-Drop-Frame** - This format also displays HH:MM:SS:FF. Note that a colon ":" is used to separate the seconds and frames. This indicates that non-drop-frame time code is in use (as opposed to drop-frame, which displays a semi-colon ";" between seconds and frames).

**Super-8 Film (Feet + Frames)** - This format assumes that there are 72 frames in each foot of Super8 film. The format looks like this: Feet XXX Frames YY, where XXX is the number of feet encountered so far, and YY is the number of frames within the current foot of film.

**Regular-8 Film (Feet + Frames)** - This format assumes that there are 80 frames

in each foot of Regular8 film. The format looks like this: Feet XXX Frames YY, where XXX is the number of feet encountered so far, and YY is the number of frames within the current foot of film.

**16 mm Film (Feet + Frames)** - This format is the same as Super-8 Film (Feet + Frames) and Regular-8 Film (Feet + Frames) except that there are assumed to be 40 frames per foot of film.

**24 fps Film (HH:MM:SS:FF)** - This format displays hours, minutes, seconds, and frames. The FF portion runs from 0 to 23. When every 24th frame is encountered, the minutes "MM" portion is incremented by one.

**18 fps Film (HH:MM:SS:FF)** - This format is identical to 24 fps Film (HH:MM:SS:FF) except that the FF portion runs from 0 to 17.

Note that when you choose any of the highlighted format above, time code burn-in can be considered to be "on." If you choose <No Time Code>, you can consider time code burn-in to be "off," and no time code will appear on your output files.

If you turn time code burn-in on, you can control whether it is applied to your footage before or after pulldown. Simply make the appropriate selection in the "Perform Timecode" combo box.

With the "Image Flip" option, you can also choose to flip the video image--either horizontally, vertically, or both. The available options are:

<No Flipping>  
Horizontal Flip  
Vertical Flip  
Horiz + Vert Flip

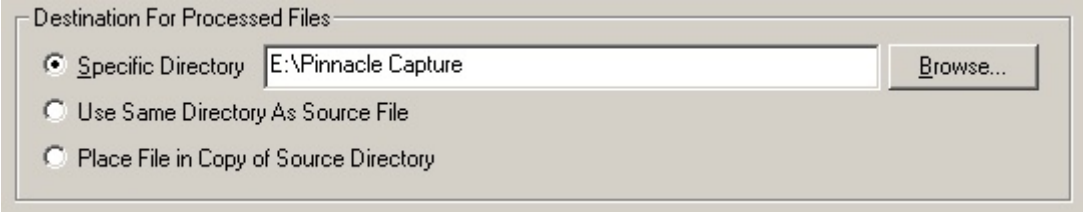
By default, <No Flipping> is selected.

Finally, you should give your Category a descriptive (and unique) name, which you can enter in the "Descriptive Name for this Category" edit box.

When you have finished editing the Category, press the "Add" button to save the Category. Note that you can come back later and make changes to the category by pressing the "Edit Category..." button on the Batch Processing Module's main window, or by double-clicking the Category folder with your mouse. In this case, the "Add" button will actually read "Accept."

### **Output Folder Options**

In the "Destination For Processed Files" section, shown below, you can select where you want your output files to go.



Destination For Processed Files

☒ Specific Directory

☐ Use Same Directory As Source File

☐ Place File in Copy of Source Directory

Here is an explanation of each method:

**Specific Directory** - You either type the name of an existing directory into the edit box, or browse to and select an existing directory using the Browse button. All processed files will be placed in this directory. The source files are untouched however, and will retain their original file names and locations. The Batch Processing Module never modifies or renames your original files.

**Use Same Directory As Source File** - This method places all new processed files in the same directory as each source file. The Batch Processing Module automatically gives all processed files new file names (regardless of the output folder option) so they can reside in the same directory as their source file.

**Place File in Copy of Source Directory** - If you choose this method, Dodcap will create new folders to store your processed files. The new folder names will be similar to the names of the source directories so as to be easily recognizable.

When the Batch Processing Module creates new files, it names them according to the source file name and a special prefix scheme. The prefix scheme is determined by how you set up your Category. The best way to demonstrate this is with an example:

The original source file named "E:\Scratch\Test.avi" is processed using the following Category settings:

24 fps on NTSC Video  
Interpolate Padded Frames  
DV Video Encoder  
Simple Frame Count after pulldown  
No image flipping

If the "Use Same Directory As Source File" method is chosen, the resulting file will be "E:\Scratch\N24\_I\_T1A\_NF\_Test.avi". In this case, "N24" means "24 fps on NTSC Video", "I" means "Interpolate Padded Frames", and "T1A" means "Timecode method #1 (Simple Frame Count) After pulldown," and "NF" means "No Elipping." A full listing of all prefix options looks like this:

**P16** - 16 fps on PAL Video  
**P18** - 18 fps on PAL Video  
**P24** - 24 fps on PAL Video  
**N15** - 15 fps on NTSC Video  
**N18** - 18 fps on NTSC Video  
**N24** - 24 fps on NTSC Video

**I** - Interpolate Padded Frames  
**W** - Use whole-frame pulldown

**NTC** - No time code  
**T1A, T1B** - Simple Frame Count (A = After Pulldown, B = Before Pulldown)  
**T2A, T2B** - 30 fps Drop-Frame  
**T3A, T3B** - 30 fps Non-Drop-Frame  
**T4A, T4B** - Super-8 Film (Feet + Frames)  
**T5A, T5B** - Regular-8 Film (Feet + Frames)

**T6A, T6B** - 16 mm Film (Feet + Frames)

**T7A, T7B** - 24 fps Film (HH:MM:SS:FF)

**T8A, T8B** - 18 fps Film (HH:MM:SS:FF)

**NF** - No flipping

**HF** - Horizontal flip

**VF** - Vertical flip

**BF** - Both horizontal and vertical flipping

Note also that if you use the "Place File in Copy of Source Directory" method, the Batch Processing Module will create copies of your source folders using a similar naming scheme. Any new directories created will be in the format: OriginalSourceDirName\_Suffix, where "OriginalSourceDirName" is the name of the original directory and "Suffix" is created using the scheme listed above. For instance, if your original folder was "E:\Scratch" and the category mentioned above was used, the resulting folder name would be "E:\Scratch\_N24\_I\_T1A\_NF."

### **Other Batch Processing Features**

There are a few other things to note about the Batch Processing Module:

#### **Right-Click Menus**

Right-clicking in the categories window will now activate pop-up menus that let you perform common batch processing operations. For instance, right-clicking on a category folder brings up a menu that allows you to edit the category, add files to the category, or remove the category. Note that adding files with this method is an alternative to dragging and dropping files from Windows Explorer. Right-clicking anywhere else in the categories window brings up a menu that allows you to add new categories or reset the file status for all files.

#### **Tracking Processing Progress**

Since some processing sessions could be very lengthy, it is helpful to know how far along the process is. There are two progress bars provided for this purpose, labeled "File Progress" and "Total Progress." The "File Progress" bar displays percentage complete for the current file being processed. Note also that the file currently being processed will be highlighted in the Category tree, and its source/destination file name will be displayed on the status line. The "Total Progress" bar shows percentage complete for the entire processing session.

#### **Playing Files from the Category Tree**

At times you may wish to play files that you have placed in the Category tree. To play a file in either Windows Media Player or Dodcap's Media Player, simply double-click the icon for the file in the Category tree. If a file has already been processed (i.e., it displays a green check-mark over the icon) you can additionally choose to play back the processed file. You do this by holding down the Ctrl key on the keyboard while you double-click on the file's icon in the Category tree.

#### **Status Line**

The "Status" line directly above the Category tree shows informational messages. These messages vary depending on whether a processing session is running, and

where you move the mouse cursor. If a processing session is running, the status line always displays the source and destination path for the file currently being processed. If a processing session is not running, the status line will display the following information:

**Mouse Cursor is Over:**

Blank area in Category tree  
Pulldown Categories root  
Category folder  
File folder  
File

**Status Line Displays:**

Summary of options  
Summary of options  
Summary of Category settings  
Summary of options  
File resolution, frame rate, and size

**Remove Button**

You can use the "Remove" button on the main Batch Processing Module window to remove Categories, folders, and files. The only thing you can't remove is the "Pulldown Categories" root folder. Note that multi-select remove is not supported at this time, but is targeted for the next release.

## Dodcap Media Player

Dodcap's new custom Media Player is designed to make close examination of your captures easy. To facilitate this, it provides the following functionality:

*Launches and loads your capture automatically after most capture sessions*

*Normal-speed, slow-motion, and looping playback of your capture*

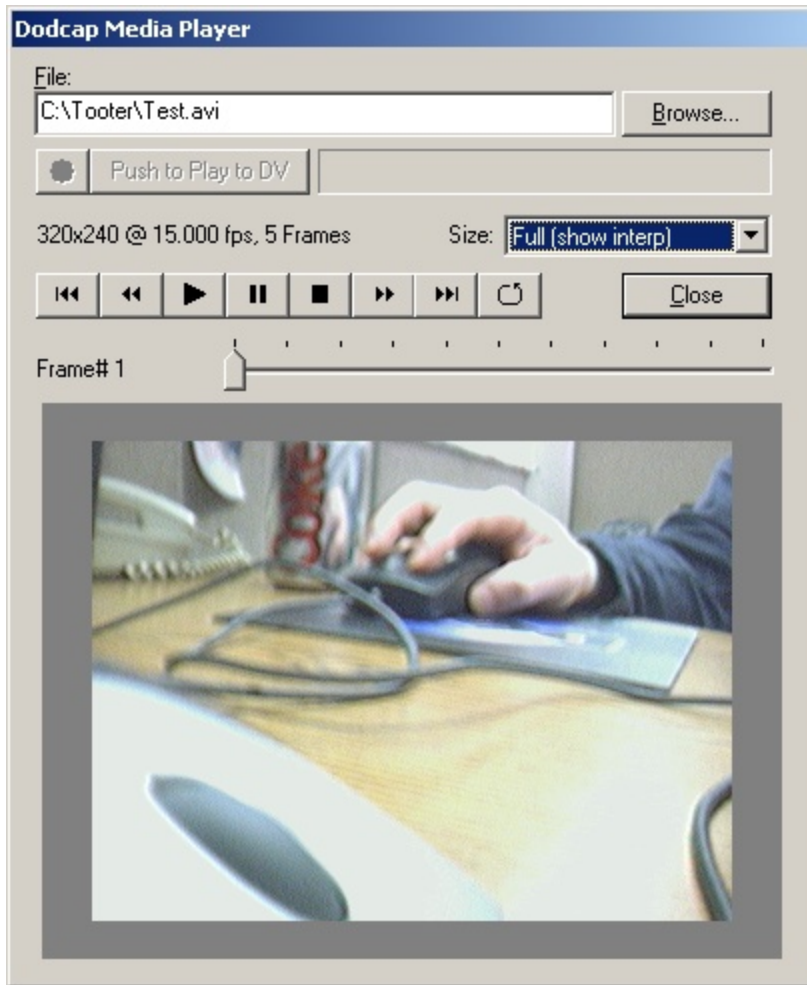
*Single-frame stepping capability, forward or backward*

*DV record or playback at the press of a button*

You can also manually launch the Dodcap Media Player from Dodcap's system menu, which looks like this:



The main window for Dodcap's Media Player is displayed below.



Dodcap's Media Player is divided into six different sections: File Selection, DV Playback, Statistics, On-Screen Playback, File Position, and the Video Window.

### **File Selection**

This section consists of an edit box, where you can enter the file name of a file you wish to play, and a button that allows you to navigate your hard drives to locate a file you wish to play. If Dodcap has launched the Media Player for you automatically (at the end of a capture session) these controls will be grayed out, the file name will already display the name of your file, and the first frame of the file will be displayed in the video window.

### **DV Playback**

The controls in this section allow you to play and record your file out to a DV camera or device.

NOTE: If the file you are viewing is not compatible with the DV format, the DV controls will be grayed out, as in the example shown above.

Assuming that your file is DV-compatible, you can press the small button (to the left of the "Push to Play to DV" button) to toggle between a red and green circle. The

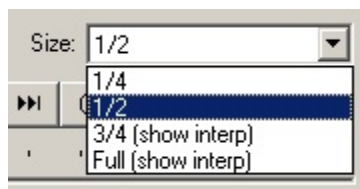
color of the circle in this button determines what will happen when you press the "Push to Play to DV" button. If the circle is green, the button text will read "Push to Play to DV," and pressing the button will send the video signal out over the firewire cable to any DV device that is connected to it. If the circle is red, the button text will read, "Push to Rec to DV," and pressing this button will play the video signal out through the firewire cable *and* switch the attached camera or deck into record mode.

As playback or recording begins, the text of the "Push to Play to DV" button changes to "Stop Playback to DV". Pressing this button at any time halts DV playback. As playback or recording proceeds, the progress of the operation is displayed in the progress bar to the right of the "Stop Playback to DV" button.

## Statistics

This section displays important information about the file you are viewing, including the file's dimensions, playback rate, and size in frames.

You can also change the display size of the video by changing the selection in the "Size" combo box, shown below.



The available options are:

1/4 - Displays the video at one quarter its normal size

1/2 - Displays the video at one-half its normal size

3/4 (show interp) - Displays video at three-quarter normal size and allows you to see interpolation

Full (show interp) - Displays video at full size and allows you to see interpolation

Note that there are only two options (3/4 and Full) that allows you to clearly see interpolation effects (if your footage used interpolated pulldown). The interpolation may or may not be visible with the 1/4 and 1/2 options.

Note that any changes you make to the "Size" combo box do not affect your actual video file. It only affects how it is displayed in the media player.

## On-Screen Playback

This section contains the controls you use to navigate around in your video file.



Starting from the left, the function of the control buttons is as follows:



This button seeks immediately to the first frame of the video



- ◀◀ This button advances backward by one frame, or in slow-motion if held down
- ▶ This button plays the video at normal speed
- ⏸ This button pauses the video if it is currently playing
- This button stops the video from playing, and returns to the first frame
- ▶▶ This button advances forward by one frame, or in slow-motion if held down
- ▶▶⏮ This button seeks immediately to the last frame of the video
- 🔄 This button toggles between normal and looping playback mode

Note that there is also a "Close" button here that allows you to close the Media Player and return to Dodcap.

### File Position

This section updates continuously so that you always know where you are in the video file.



The "Frame#" static text displays your position within the video with frame accuracy.

The slider control gives you a more general idea of what part of the file you are currently viewing. You can also drag the slider handle with the mouse to control what part of the video you are viewing. For instance, if you drag the handle to the middle of the slider line, the Video Window and Frame# counter will update to show you the middle of the video.

### Video Window

This window displays the current frame of the video. The size of this window, and the size of the entire Media Player interface, will change depending on the dimensions of your video file. Dodcap's Media Player always displays your videos at their full resolution.

## Matching Source and Capture Frame Rates

Which of the following situations apply to you?

A) You are only interested in ensuring that every single frame of your source material is captured to an .avi file. The playback rate of the .avi file does not matter to you at this point. This might be the case if you are going to load the captured frames into video editing software. If you are going to edit and re-render the footage anyway, you can specify the desired frame rate either when you first import the frames, or before the final render.

B) You want to capture every single frame of source material, and immediately make the .avi file available for viewing. In this case, you want the .avi file to play back your source material in a way that appears natural.

If the first situation applies to you, perform the following steps in Dodcap:

- 1) Enter a name for your capture file
- 2) In the "Perform pulldown" radio button sequence, select "None."
- 3) Begin a capture session
- 4) Take one or more samples
- 5) End the capture session

You can now import your .avi file into most video editing software packages for edits and re-rendering.

If the second situation applies to you, perform the following steps in Dodcap:

- 1) Determine the original frame playback rate of your source material
- 2) Determine the frame playback rate of your destination media (NTSC or PAL)
- 3) Enter a name for your capture file
- 4) Select "During capture" or "After capture" pulldown option
- 5) Select a pulldown play back rate that matches your source and final frame rates
- 6) Begin a capture session
- 7) Take one or more samples
- 8) End the capture session

You can now play back your .avi file and it should appear to play back at the proper rate.

Consider the following example:

You have an old film that was originally shot at 16 frames per second. You want to slowly project this film and capture each individual frame with your video camera. You will send the resulting .avi file, without any additional editing, to NTSC video tape for playback on a television. How should you configure Dodcap? First, you would need to select a video capture device that can capture at NTSC rates, i.e. approximately 30 fps. Make sure that the video capture device you select is configured properly for this rate. Then select a video compression codec that supports 30 fps files. If the compression codec you select does not support this frame rate, Dodcap will let you know before capture begins. Select pulldown "After Capture" and choose the "15 fps on NTSC Video" play back rate. In the resulting .avi file, your material should appear to play back at the correct speed. In fact, in

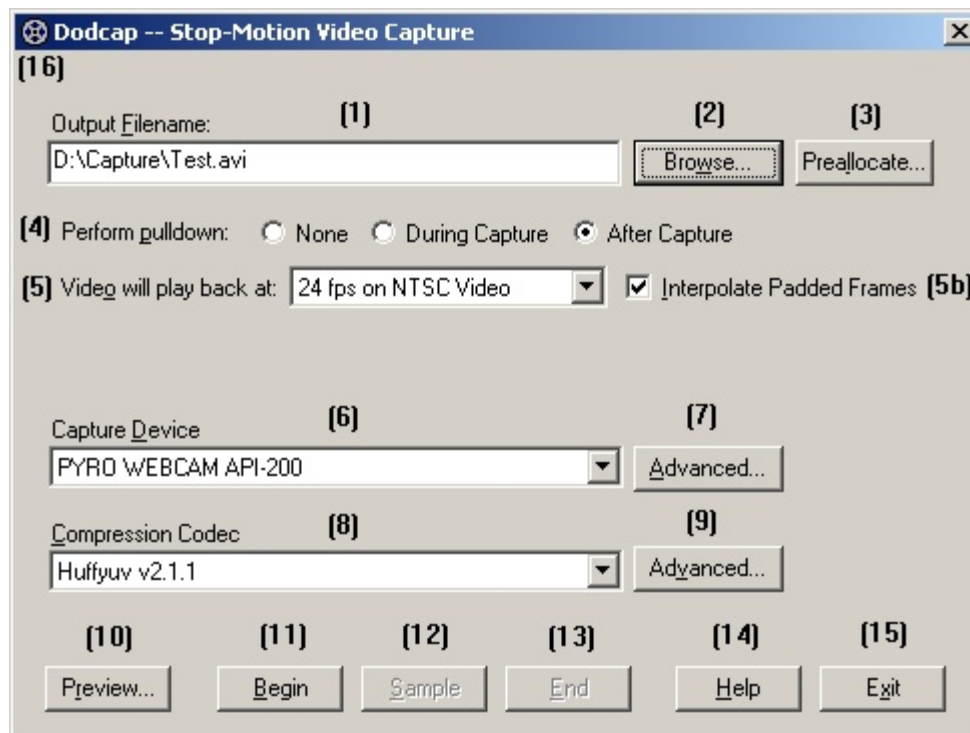
this case it would appear to play back at 1 frame per second less than normal, although this should not be very noticeable. This is because there is no easy conversion from 16 fps to 30 fps. Instead, your source material is slowed down by 1 fps and then every frame is doubled to convert to 30 fps.

Finally, remember the following rules of thumb regarding .avi files and frame rates:

- 1) An .avi file is nothing more than a simple container that holds a linear series of video frames, and a header that describes how fast to present these frames. Changing the frame rate in the header would not change the frames themselves or the number of frames in the file.
- 2) If you configure your video capture device for a particular frame rate, Dodcap will specify that frame rate in the header of your .avi capture file.
- 3) The playback duration of your .avi capture file will be the number of frames in the file divided by the frame rate specified in your .avi file header. For example, if your file contains 1000 frames and the file header specifies 29.97 frames per second, your playback duration will be  $1000 / 29.97 = 33.37$  seconds.
- 4) The number of frames in your .avi capture file is determined by how many times you press Dodcap's "Sample" button, and optionally by the pulldown options you select.

## Dodcap Controls

Here is an example of what Dodcap might look like during a capture session. This example shows Dodcap in Advanced Mode.



An explanation of each option/control follows:

### (1) Output Filename

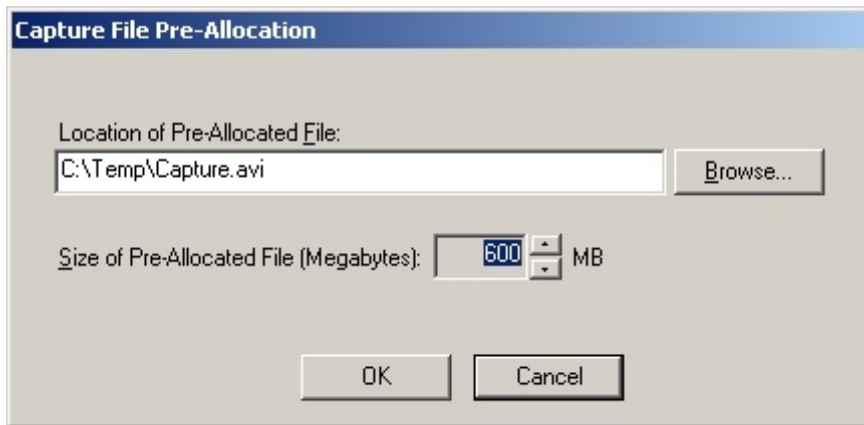
Enter a full path and file name in this edit box, and Dodcap will save your captured video to this file. You can also use the "Browse..." button (2) to navigate to a particular file or directory. You should always try to locate your capture file on a fast hard drive that has been recently defragmented.

### (2) Browse...

This button opens a Windows® Explorer-style dialog that allows you to navigate through the files and folders on your machine. After selecting a file with this dialog and pressing "OK," the full path and name of this file appears in the "Output Filename" edit box (1). You should always try to choose a file that is located on a fast hard drive that has been recently defragmented.

### (3) Preallocate...

This button opens the following dialog:



With this dialog you can "pre-allocate" a capture file, which greatly increases capture speed. Capturing to a pre-allocated file gives your system a "speed boost" because it does not have to worry about allocating hard drive space while video capture is in progress. After you finish capturing, the video frames are copied from the pre-allocated file to the final file name you chose in "Output Filename" (1) above.

In the "Location of Pre-Allocated File" edit box, enter a unique file name that you know will not be used for any other purpose, such as "Capture.avi" or "PreAllocCapFile.avi", etc. You can also choose the size in Megabytes (MB) for the file. Try to choose a size that is greater than what you will actually need. If the file is not large enough, your system will have to allocate additional hard drive space which degrades video capture performance.

If you enter a new file name in the "Location of Pre-Allocated File" edit box, Dodcap will create this file for you using the size in MB specified in "Size of Pre-Allocated File (Megabytes)." If you use the "Browse..." button to locate a file that already exists, Dodcap will give you two options when you press the "OK" button. You can tell Dodcap to either recreate the file with the specified size, or use the existing file as-is.

Note that you only have to configure your pre-allocated file once. After configuring the file, Dodcap will automatically use the file in all subsequent capture sessions. If you wish to stop using a pre-allocated file, erase the file name from the edit box and press the "OK" button. Subsequent Dodcap capture sessions will not use a pre-allocated file.

#### **(4) Perform pulldown**

Dodcap can perform [pulldown](#), or "padding" of frames to achieve a particular frame rate in your final capture file. To read an explanation of why you might do this, see ["Matching Source and Capture Frame Rates."](#) The three pulldown options are listed below.

<b>Option</b>	<b>Explanation</b>
None	Do not perform pulldown
During capture	Perform pulldown "on-the-fly" while you capture your video
After capture	Perform pulldown after capturing as a post-processing step

The "During capture" option should be used only when you plan to capture frames at a relatively slow rate, such as 3 frames per second or less. If you need pulldown and wish to capture at a faster rate, you should choose the "After capture" method.

The advantages and disadvantages of each method are summarized in this table.

	<b>None</b>	<b>During Capture</b>	<b>After Capture</b>
<b>Advantage</b>	Lower system requirements; 1-1 ratio of source frames to captured frames	No post-processing needed to apply pulldown; Final file looks "natural" when played back	Lower system requirements; Final file looks "natural" when played back
<b>Disadvantage</b>	Final file may look too fast or slow when played back	Requires a fast hard drive system and slow capture rate	After capture session ends, requires post-processing step, which takes time

If you wish to perform pulldown "During capture," please see also "Configuring Your Computer."

### **(5) Video playback rate after pulldown**

This "drop-list" combo box allows you to select the apparent playback speed of your video after pulldown. The available options and the pulldown conversions they perform are:

<b>Option</b>	<b>Explanation</b>
16 fps on PAL Video	Converts 16 frames to 24 & plays @ 25 fps
15 fps on NTSC Video	Doubles every frame & plays @ 30 fps
18 fps on PAL Video	Converts 18 frames to 24 & plays @ 25 fps
18 fps on NTSC Video	Converts 18 frames to 30 & plays @ 30 fps
24 fps on PAL Video	No conversion but plays @ 25 fps
24 fps on NTSC Video	Converts 24 frames to 30 & plays @ 30 fps

Note that for PAL users converting 24 fps film to video, the "24 fps on PAL Video" option has the same affect as selecting "None" for the "Perform Pulldown" option (4) above.

For more information on converting frame rates, see ["Matching Source and Capture Frame Rates."](#)

### **(5b) Interpolate Padded Frames**

This check box modifies the conversion schemes used by the "Video playback rate after pulldown" option (5) above. Generally, if you are capturing frames to display on your computer monitor, you should leave this option unchecked. If you are going to display your captured frames on a PAL or NTSC television set, you should place a check in the box.

The advantage of this option is that captured footage will play back more smoothly on a television set.

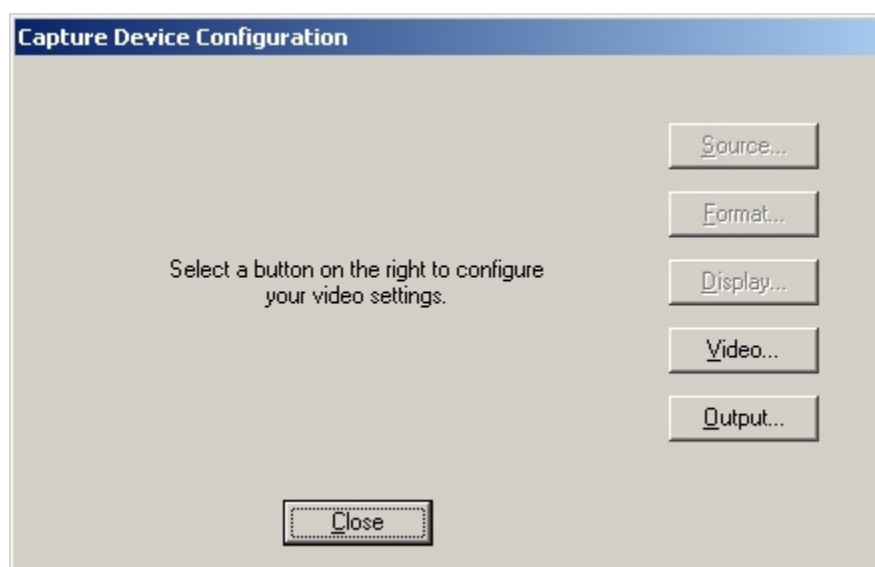
The disadvantage is that your captured footage may display interlacing artifacts if viewed on a computer monitor.

## (6) Capture Device

This "drop-list" combo box displays all of your [Video-for-Windows®](#) and [DirectShow®](#) compatible video capture devices. You must have a selection in this list before you can begin a capture session. Note that if a capture device connected to your system is powered down, it will not show up in this list. You must restore power to the device and restart Dodcap.

## (7) Advanced...

This button opens the dialog box shown below.



The dialog allows you to configure advanced settings for the video capture device selected in (6) above. The settings available depend on the particular capture device and the drivers for the device released by its manufacturer. The buttons on this dialog perform the following functions:

Button	Allows you to choose...
Source...	Which video hardware to use with this capture device driver
Format...	Video frame rate and dimensions
Display...	How the video image looks
Video...	How the video image looks (for DirectShow drivers)
Output...	Video frame rate and dimensions (for DirectShow drivers)

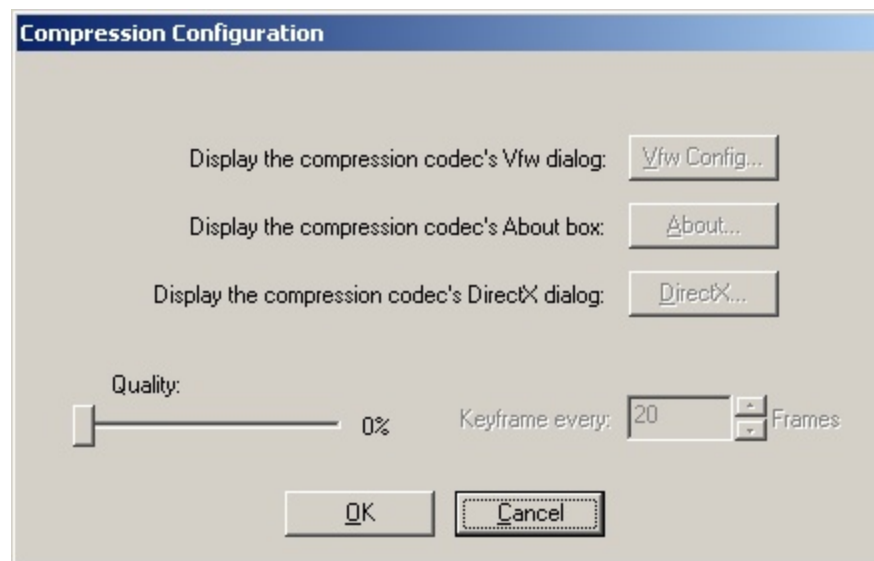
Note that some of these buttons may not be available, depending on how the manufacturer implemented their video capture device drivers.

## (8) Compression Codec

This "drop-list" combo box displays all of your [Video-for-Windows](#) and [DirectShow](#) compatible video compression codecs. You must have a selection in this list before you can begin a capture session. Note that most compression codecs only work properly with certain frame rates and sizes. This means that you should try to select a compression codec that matches the frame rate and size you have configured for your capture device. If you mismatch your capture device and compression codec, Dodcap will warn you before capture begins.

### (9) Advanced...

This button opens the dialog shown below.



The dialog allows you to configure advanced settings for the compression codec chosen in (8) above. The controls available on this page will depend on the compression codec drivers supplied by the codec's manufacturer. An explanation of each control follows.

#### Control

Vfw Config...  
compression settings  
About...  
DirectX...  
settings  
Quality slider  
Keyframe every

#### What it does

Allows you to configure [Video-for-Windows](#)®  
  
Displays the Video-for-Windows "About" box  
Allows you to configure [DirectShow](#)® compression  
  
Sets video quality  
Determines how often uncompressed frames occur

### (10) Preview...

Pressing this button opens a small window which displays a live video feed from the video capture device selected in (6) above. The window might look something like the following:





Note that this window is always displayed at the same size. It does not resize itself to match the configured dimensions of your capture device.

### **(11) Begin button**

Press this button to begin a Dodcap capture session.

### **(12) Sample button**

During a Dodcap capture session, you can press this button to grab a frame from your live video stream. This frame is then stored to your hard drive. Depending on the pulldown options you selected, some frames may be stored to your hard drive more than once.

### **(13) End button**

Press this button when you are finished with your capture session. Dodcap will immediately begin to play back the actual frames you captured using your default media player. Close your media player when you are finished viewing the frames. Depending on whether you captured to a pre-allocated file and/or you decided to perform pulldown after capture, Dodcap may ask you to accept or reject the capture.

### **(14) Help button**

Press this button to launch Dodcap help.

### **(15) Exit button**

Press this button to exit Dodcap.

### **(16) System Menu**

Press the image of the film reel to bring up the system pop-up menu. This menu allows you to launch the Dodcap "About" box and to toggle between simple and advanced modes.

## **Stop-Motion vs. Streaming Capture**

It is worth mentioning that *stop-motion capture is more demanding* on your system than is streaming (i.e., normal) video capture. This seems counter-intuitive since streaming capture usually takes place at 25 or 30 frames/second as opposed to stop-motion capture which is at most 5-7 frames/second. The reason for this is that stop-motion capture takes place as the result of placing the mouse cursor over a button and pressing the mouse. The operating system must process the mouse press, figure out where on the screen the mouse cursor was located, whether there was a valid button underneath the mouse cursor, and then call some chunk of code based on which button was pressed. This overhead occurs once for every frame of video captured. In the case of streaming capture, you give the command once to begin, and after that the system only has to worry about capturing each successive frame, with no additional overhead attached.

This only becomes an issue if you wish to perform very rapid (i.e., 3 frames/sec. or more) stop-motion capture. At slower rates, such as less than one frame per second, system requirements are low--you can use a slower computer with a slower hard drive setup. Just be aware that as you capture more frames/second with any stop-motion capture application, your system (and your hard disk drives in particular) must be able to perform at a faster rate.

If your application requires that you perform rapid stop-motion capture, you must be prepared to upgrade your hardware to meet the additional demands on your system.

## **Configuring Your Computer**

There are several things you can do to ensure that your system is configured for optimal video capture performance. If you experience problems while capturing any type of video, please try the following:

### **Network Connections**

Disable all network connections on your machine. This does *not* mean you should remove any network hardware from your system. You should disable the connections through the operating system software. After you are finished with a capture session, you can re-enable the connections.

### **Hard Drive Maintenance**

Begin to defragment your hard drive(s) on a regular basis. In particular, make sure your drive is defragmented before beginning each new capture session. Also, try to keep at least 30% of your hard drive space free. Filling up your hard drive completely can degrade capture speed.

### **Taskbar Clock**

Disable the taskbar clock that appears at the lower-right corner of your Windows® desktop before beginning a video capture session. Windows' real-time updates of this clock can slow video capture performance. You may re-enable the taskbar clock after completing your capture session.

### **Dedicated Capture Drive**

You should not try to capture video to the hard drive which contains your operating system software. Usually this is your "C:\\" drive. Optimally, you should have a separate physical hard drive which you use for video capture only.

### **RAID Systems**

RAID hard drive systems, both IDE and SCSI, work best for video capture. When configured for speed, they can run up to twice as fast as their non-RAID counterparts. You will need a RAID drive if you wish to perform fast stop-motion capture (i.e., approximately 5 frames/sec. or faster).

### **Disk Drive Hookup Configuration**

How you connect your disk drives to your disk drive controllers can affect drive speed and video capture performance. If you wish to use an hard drive for video capture, try to make sure that it is the only drive connected to its controller ribbon. If you are not able to do this, at least make sure that no drive slower than your capture drive is connected to the same controller ribbon. All drives perform to the lowest common performance denominator. For instance, if an ATA/100 hard drive and an ATA/66 hard drive are connected to the same controller ribbon, both drives will operate at ATA/66 speeds.

### **Video Compression Codec**

Compressing video frames before storing them to your hard drive takes time. Different compression codecs take differing amounts of time to do their work. Keep this in mind whenever you perform stop-motion capture. If possible, try to use a video compression codec that was designed to compress video frames in real-time, such as the DV (digital video) codec. If you are capturing frames infrequently, you may be able to use a slower compression codec. Always remember that not all compression codecs are equal in speed. For instance, DV codecs written by different manufacturers may not show the same performance characteristics. One final note: it is possible to create .avi files that contain uncompressed video frames. However, this does not typically give you any speed performance gain. The reason for this is that uncompressed video frames are so large that the time needed to store them to your hard drive usually exceeds the time it would take to compress and save the smaller frame. Dodcap now supports capturing uncompressed video streams, although it is recommended that you only use this feature with very slow (e.g., 1 fps) capture speeds.

### **Video Camera Power**

Never, ever, ever try to do video capture with your video camera running on battery power. Always use the AC power adapter with your camera while performing video capture if possible. Relying solely on battery power could cause skipped frames or delayed response time from your camera.

### **Compressed Hard Drives**

Some operating systems, such as Windows XP, allow you to format your hard drives for "compression." This means that when files are copied to the drive, some data is first compressed before being stored. When the files are read from the drive, they must first be decompressed. This process is "invisible" to you because it is handled automatically by the operating system. You should never format a hard drive used for video capture to allow real-time compression, because this can dramatically degrade capture performance.

### **Uninterruptable Power Supply (UPS) Systems**

If you use a UPS to provide backup power for your system, make sure its wattage rating equals or exceeds the wattage draw from your computer equipment. Using a very old or underpowered UPS can cause decreased power to your hard drives and other peripherals, which can degrade overall capture performance.

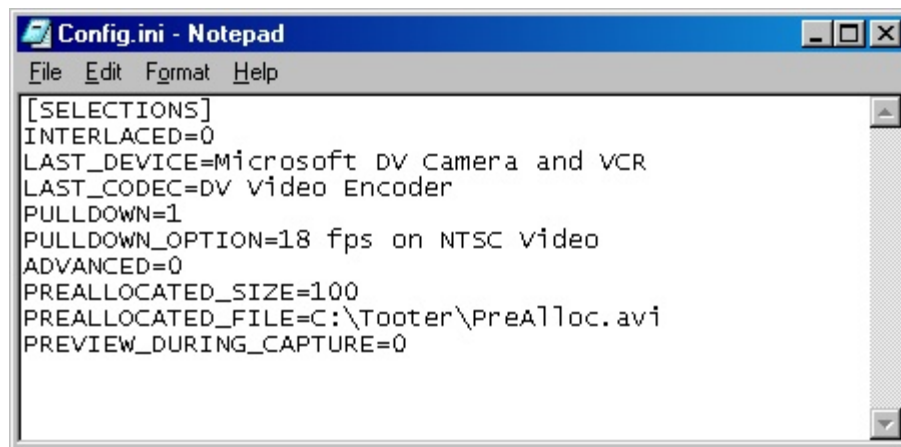
## Overriding Pulldown Schemes

Dodcap contains an advanced feature which allows you to override the default schemes used to convert frame rates during pulldown. Under normal circumstances, you should not need this feature. However, an advanced user might encounter a situation where they must use a scheme not available in Dodcap.

To enable this feature, you must locate the configuration file used by Dodcap. This file is called "Config.ini" and is located in the hard drive folder where Dodcap resides.

To locate this file, click the "Start" button at the lower-left corner of your Windows Desktop, choose "Programs," and then "AlternaWare," and "Dodcap." Now right-click on the line that reads "Dodcap." This should open the properties for your Dodcap executable. In the "Target" box, you will see the full path on your hard drive to the Dodcap installation folder. This is the folder that contains your "Config.ini" file.

Use Notepad or another text editor to open Config.ini and examine its contents. It might look something like this:



The settings listed here represent the last selections you made while using Dodcap. Each time you load Dodcap, it uses these settings to re-configure the user interface to match your last session.

You override pulldown schemes by adding lines at the end of this file. Do not ever attempt to remove or modify any of the other existing settings in this file, however.

Here is a list of the pulldown options available in Dodcap:

- 1) 16 fps on PAL Video
- 2) 15 fps on NTSC Video
- 3) 18 fps on PAL Video
- 4) 18 fps on NTSC Video
- 5) 24 fps on PAL Video
- 6) 24 fps on NTSC Video

The actual pulldown pattern used depends on which of these options you select, and whether you have the "Interpolate Padded Frames" check box selected or not. The following table shows the actual patterns used with each possible selection:

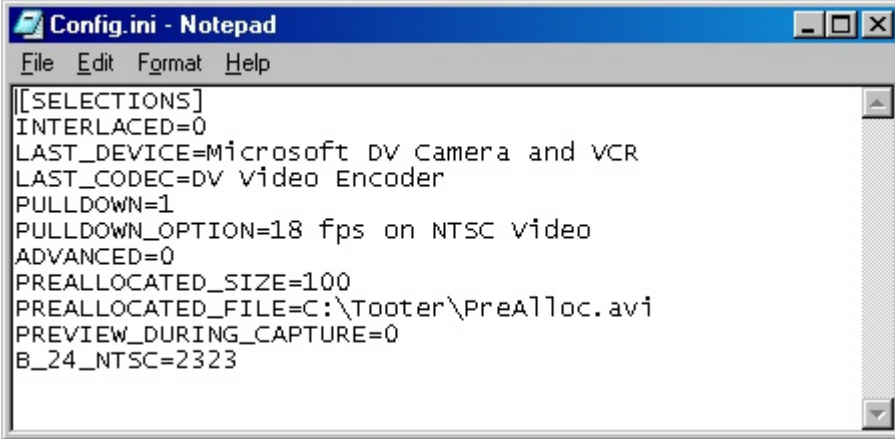
<b>Option</b>	<b>Interlaced Not Checked</b>	<b>Interlaced Checked</b>
16 fps on PAL Video	4:2	3:3
15 fps on NTSC Video	4	4
18 fps on PAL Video	4:2:2	3:3:2
18 fps on NTSC Video	4:4:2	4:3:3
24 fps on PAL Video	2	2
24 fps on NTSC Video	4:2:2:2	2:2:3:3

NOTE: In the patterns above, each place separated by a colon ":" represents an original captured frame. The numeric values themselves represent how many fields of this frame are output. For example, "3:3:2" above represents three original captured frames--let's call them A, B, and C. The numbers indicate that frame A is displayed (output) for 3 frames, B is displayed for 3 frames, and C is displayed for 2 frames. The total number of input frames was 3, and the total number of output frames are 4 (i.e.,  $3 + 3 + 2 = 8$  fields = 4 frames). In the output file, each frame of PAL or NTSC video consists of two fields: a top field and a bottom field. We will label these fields "t" and "b", respectively. In the 3:3:2 example just described, the input pattern, showing both top and bottom fields, was "AtAb BtBb CtCb." This represents 2 fields of A, 2 of B, and 2 of C, or three whole progressive frames. The output after the pattern is applied would be "AtAb AtBb BtBb CtCb."

To alter these patterns, you must add a key to the Config.ini file that names the new pattern you wish to use. To replace one or more of the patterns listed in the table above, use these keys:

<b>Option</b>	<b>Interpolate Not Checked</b>	<b>Interpolate Checked</b>
16 fps on PAL Video	W_16_PAL	B_16_PAL
15 fps on NTSC Video	W_15_NTSC	B_15_NTSC
18 fps on PAL Video	W_18_PAL	B_18_PAL
18 fps on NTSC Video	W_18_NTSC	B_18_NTSC
24 fps on PAL Video	W_24_PAL	B_24_PAL
24 fps on NTSC Video	W_24_NTSC	B_24_NTSC

Consider this example. An advanced user requires that his output file use true 2:3 pulldown for his 24 fps film to NTSC video conversion. Here is how the Config.ini file looks after making this override:



```

[[SELECTIONS]]
INTERLACED=0
LAST_DEVICE=Microsoft DV Camera and VCR
LAST_CODEC=DV video Encoder
PULLDOWN=1
PULLDOWN_OPTION=18 fps on NTSC video
ADVANCED=0
PREALLOCATED_SIZE=100
PREALLOCATED_FILE=C:\Tooter\PreAlloc.avi
PREVIEW_DURING_CAPTURE=0
B_24_NTSC=2323

```

Note that the pattern does not use the colon as a separator, and that it actually

reads "2323" instead of 2:3. Here are the rules for creating your own patterns:

- 1) Do not use the colon ":" or any separator in your patterns. They will cause your override to be ignored.
- 2) Use only the digits 2, 3, and 4 in your pattern.
- 3) Your pattern must be from 1 to 30 digits long.
- 4) The sum of all the digits in your pattern must be even.

Note that the pattern we originally wanted was described as 2:3, but was listed as "2323". This was done to satisfy rule #4 above. If the sum of the digits in your pattern is odd, simply repeat the pattern and your new sum will be even.

Note also that you can override none, some, or all of the pulldown schemes that Dodcap uses.

Here is another example: a PAL user wants to convert 24 fps film footage to true 25 fps PAL output. This requires a custom pulldown scheme, because the default does no pulldown conversion--it simply speeds up your 24 fps footage by 4% so that it plays at 25 fps. To truly convert to the PAL frame rate, you will need a scheme that adds one extra "padding" frame for every 24 original frames. What pulldown pattern do we need to accomplish this? We know that our pattern should be 24 digits in length since that is how many original frames we have. We must also decide where in the pattern we wish to place the extra padding frame. It can be anywhere within the pattern, but we will choose to place it near the end. Here is one possible pattern we could use:

2:3:3

This would translate into the following line in the Config.ini file:

[illegible]

This pattern would produce one extra padding frame between the 23rd and 24th original frames. The padding frame would be a hybrid of these two frames--the top field would come from the 23rd original frame, and the bottom from the 24th original frame.

If you wish to use "whole" frames instead of hybrid frames, you could add this line to Config.ini:

W\_24 PAL=22222222222222222222222224

This would cause the 24th original frame to be output twice, producing 25 output frames. This would not look as smooth as the hybrid case when displayed on a television set, but it would still produce a true 25 fps PAL output.

This might seem complicated, but hey, I said it was an advanced feature!

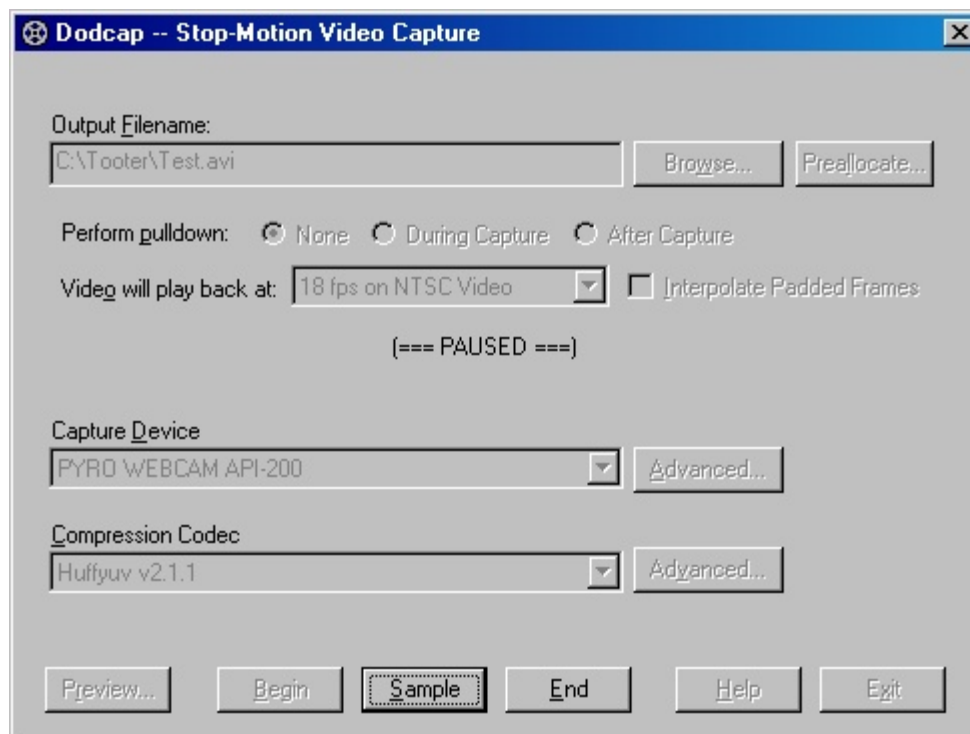
## Pause During Capture

Dodcap now allows you to pause frame capture while your WorkPrinter is still running. This is accomplished by pressing a special key combination during a capture session. In some cases, particularly if you cannot reach the pause switch on your WorkPrinter, this may allow you to have more control over the actual scenes you capture during a session.

At any time after pressing the "Begin" button to start a capture session, you can press this key combination:

Alt-Z

Your WorkPrinter may continue to run and to press Dodcap's "Sample" button. However, no frames will be captured while Dodcap is paused. Here is what Dodcap might look like while paused:



Note that the status line in the middle of Dodcap's window which normally displays the number of frames captured now reads: "(=== PAUSED ===)."

To bring Dodcap out of the paused state and resume capturing frames, press the "Alt-Z" key combination again. After leaving the paused state, the status line will once again display the number of frames you have captured in this session, and will no longer say, "(=== PAUSED ===)."



## Glossary

*DirectShow® - Newer technology that ships with the Microsoft® DirectX® runtime; Used to capture, edit, and display audio and video data.*

*Repeating or "padding" frames to change the frame rate (i.e. frames per second) of a video file.*

*Video for Windows® - an older Microsoft® Windows® technology for representing audio and video assets.*

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