ASTARTE M. PACK

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ASTARTE M. PACK

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INTRODUCTION

INTRODUCTION

Thank you for purchasing M. Pack. We have worked hard to make it a dependable, high quality tool. Please take a few minutes to read through this manual; it will reveal features and functions that may not be otherwise obvious.

What is M. Pack?

ASTARTE M. Pack is an application that converts QuickTime movies to industry-standard MPEG streams, playable on a wide variety of computer and video systems. It works with QuickTime movies in nearly any format and can encode them in standard formats like NTSC, PAL, or CD-Extra. In addition, you can create your own customized parameter sets for special applications; either way M.Pack makes it simple.

Note: If you are unfamiliar with MPEG, be sure to check out "MPEG Concepts" starting on page 15

Compatibility & System Requirements

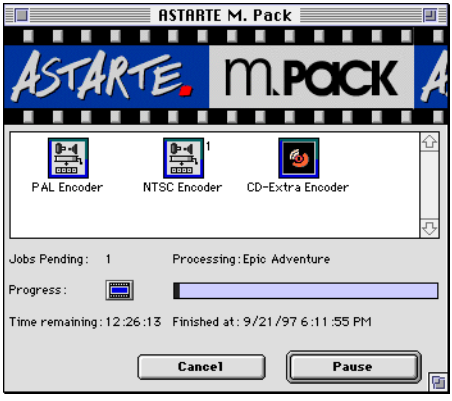
M. Pack requires a Power Macintosh or compatible with:

- at least **16 MB** of free memory.
- **System 7.5** or higher
- **QuickTime 2.5** or higher
- QuickTime **MPEG Playback extension** 1.0 or higher for playback using MoviePlayer
- **Thread Manager** extension 2.1 or higher (*only if using less than System 8.0*)
- **Adequate hard disk space** to hold your source movies and the encoded movies

What's New In Version 2.1

If you have used a previous version of ASTARTE M. Pack you will notice many changes in both operation and performance in this new version.

The new interface is easier to use and far more flexible.



The major changes are:

- Drag & Drop data selection
- Batch processing *(Covered on page 41)*
- Encoding is about 25% faster than M.Pack 1.x
- New lower data rates for low bandwidth delivery (*like the Web*)
- Option to create MPEG still frames for Enhanced CD production *(Covered on page 45)*
- Easy creation and saving of entry-point lists *(Covered on page 34)*
- Easy cropping of movies while encoding *(Covered on page 33)*
- A Plug-in version for use in Adobe Premiere 4.2.x or higher. *(Covered on page 47).*

Installation

To install M. Pack, simply insert the master floppy disk into your floppy drive and run the M. Pack installer by double-clicking its icon.

Note: The first time you run M. Pack it will present a dialog box requesting your serial number and personalization information. Enter the serial number printed on the master diskette label, along with your name and company and click OK.

If you want to be able to playback your MPEG movies using Apple's MoviePlayer application, you will have to install the QuickTime MPEG Playback extension, available from Apple's web site at **www.apple.com**. (*It is automatically installed on System 8 and higher.*)

Technical Support & Updates

Support for M. Pack is available directly from Astarte. If you are having difficulties using M. Pack, please review “Frequently Asked Questions” on page 55 before calling.

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Product Updates

Be sure to register your software by returning the registration card or registering on-line (www.astarte.de) so we can notify you of major upgrades as they become available.

Maintenance updates are posted on our web site.

Quickstart for Experts & Know-it-alls

It's really a good idea to read this manual to get the most out of M. Pack, but if you just can't wait to begin, at least read this.

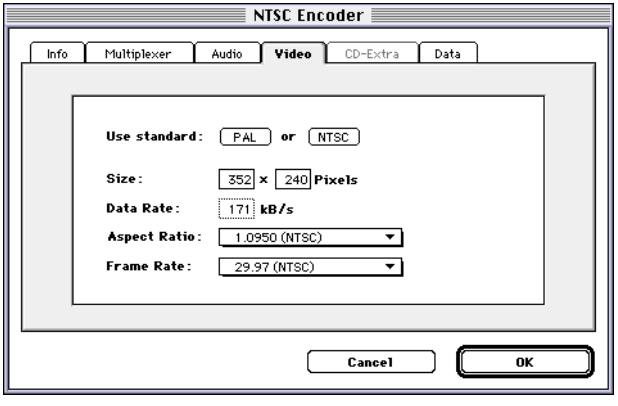
There are six basic steps to creating an MPEG movie using M. Pack:

1) Prepare your source movie(s) in QuickTime format. For best results, save your movie at the same resolution that you want for your finished MPEG movies.*(See "Preparing Your Source Movies" on page 40 for more information.)*

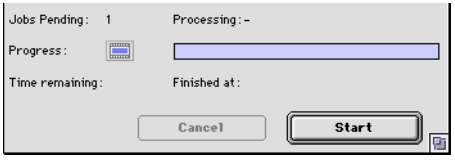
2) Launch M. Pack.

3) Drag the desired movie(s) onto a M. Pack encoder icon.

4) Make any desired changes to the encoding parameters by double-clicking the encoder icon and clicking on the appropriate settings tab. Click OK when done. *(See "Encoder Settings" on page 25 for more information.)*



5) Click the **Start** button.



6) Wait. Encoding takes a while. *(See "How Long Will This Take?" on page 44 for more information.)*

MPEG CONCEPTS

It's beyond the scope of this manual to completely explain MPEG encoding. What follows is a brief discussion of the major concepts that underlie MPEG as it relates to M. Pack. See "Getting More Information" on page 19 for sources of more detailed information.

What is MPEG?

MPEG is a compression standard for audio, video and data established by the **M**oving **P**ictures **E**xperts **G**roup, hence the name. It was created to solve the problem of delivering large amounts of video content from devices with limited bandwidth (like CDs, satellites, etc.)

There are currently four different types of MPEG, MPEG-1 through MPEG-4. Each was created to optimize a particular set of factors like data rate and resolution. M. Pack encodes in the MPEG-1 format. MPEG-1 is distinguished by its ability to produce remarkably high quality images and sound at low data rates. Video encoded with MPEG-1 is comparable in quality to VHS tape, but can play from a source as slow as a single-speed CD-ROM drive.

MPEG is able achieve these amazing results by combining standard data compression techniques (similar to JPEG) with sophisticated algorithms that actually detect changes in subject matter from one frame to the next and store only the information which has changed. It does this by utilizing three different types of frames, I-frames, P-frames and B-frames.

I-Frames, P-Frames & B-Frames

MPEG compresses video data so that every 12th frame is stored in it's entirety. These full frames are called **Intra-frames**, or I-frames. The I-frame is the basis for storing the subsequent 11 frames. Those intervening frames store only the differences between the

previous frame or the I-frame. Intervening frames which store only the difference between the last frame and the current frame are called **Predictive** or P-frames. Those which describe the relationship between previous and future are called **Bidirectional** or B-frames.

Each set of one I-frame and it's sibling B and P-frames is called a **Group of Pictures**, or GOP.

Entry Points

Because MPEG movies are played by first displaying a complete frame (I-frame) and then overlaying any changes in the subsequent frames, playback can only begin at an I-frame. If you want to be able to playback your movie from a point that would not naturally be an I-frame (*which are normally spaced 12 frames apart*), you can manually insert an **Entry Point**, which will cause the M. Pack encoder to insert a "forced" I-frame at that point. Typically you would insert Entry points at scene changes or other "breaks" in the movie.

About Data Rates

Data Rate is a measure of how many kilobits (Kbits) or kilobytes (KB)of information are delivered each second. (A Kilo Bit is 1000 bits, a Kilo Byte is 1024 bytes.)

Unlike most other video compression systems, MPEG-1 is a fixed-data-rate compression scheme. What this means is that each second of the finished MPEG stream contains the same amount of data. Typical data rates for MPEG are from 45 KB per second to 350 KB per second. Other compression schemes deliver variable data flow, depending on the "compressibility" of each frame of the video.

In order to produce a stream with a constant data rate, M. Pack has to adjust the degree of compression for each group of frames in order to make them the specified size. M. Pack adjusts the degree of compression by increasing or decreasing the quality setting. The quality setting is simply a measure of how much detail can be discarded to reach the target rate. What this means is that frames that are highly compressible (large

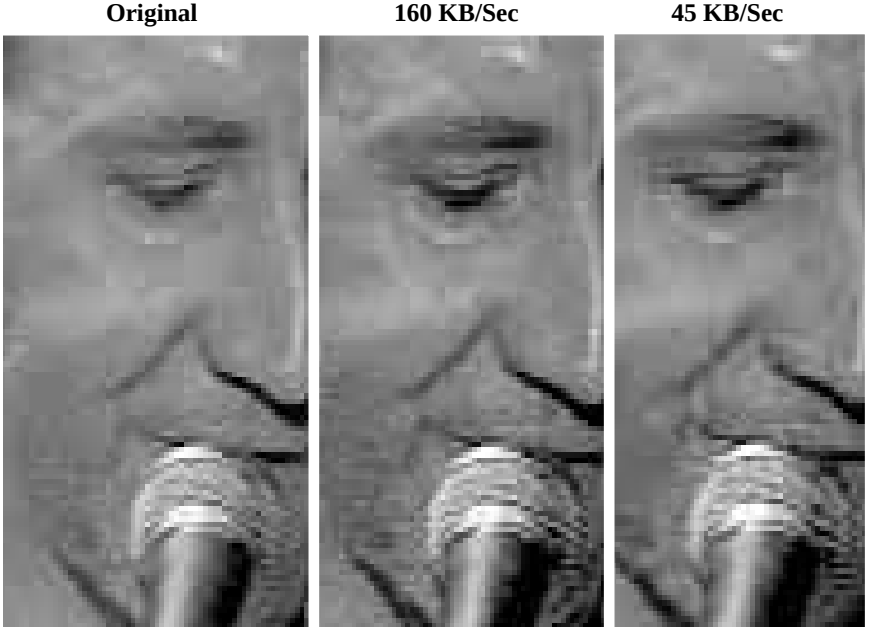
areas of similar colors and little or no motion) will be compressed with higher quality setting than frames that have a great deal of small details and movement.

Because the data rate is fixed, when you set a lower data rate in M. Pack, the finished movie will be lower quality than if you specify a higher data rate. This is not necessarily as bad as it sounds; in a lot of cases the difference is barely visible. *See "Multiplexer Settings" on page 27 for information on setting the data rate in M. Pack.*

*Note: In M. Pack, the overall data rate for an MPEG stream is referred to as the **System Steam** data rate or the **Multiplexing** data rate.*

Image Quality vs. Data Rate

The following graphic shows an enlarged section of a frame from the original, uncompressed video and the same frame from movies encoded at two different data rates. If you look closely, the differences are obvious; but if you pull back just a bit, they look nearly alike. This is the magic of MPEG.



Logic seems to dictate that you should simply choose the highest data rate to achieve best results. However, since some playback systems are optimized for "standard" data rates (160K/sec), the playback quality may be worse with higher data rates, because the decoder simply can't keep up. This problem is especially prevalent with software decoders (like the QuickTime MPEG playback extension).

Data Rates and Compatibility

Many MPEG playback systems will only play movies encoded at the standard, 1x CD-ROM rate of 160K per second. Before you decide to use a higher data rate, be sure it will play effectively on the playback systems you plan to use.

Playing MPEG Movies

Playing MPEG movies requires a decoding system. There are both hardware and software decoders available. Generally, hardware systems give better playback, but on fast computers, it's possible to achieve superb results with software only.

On Macintoshes

You can play MPEG movies on a Macintosh using the QuickTime MPEG playback extension, which is available from Apple. It gives very good performance on faster Power Macs, but may not be adequate if you are using an older Mac.

Note: If you need higher performanace playback for your Mac, there are hardware decoders available from several manufacturers. The most popular is made by Wired Inc. You can find more information on their website at: www.wiredinc.com.

On Windows Computers

Windows95 includes MPEG playback capabilities in the form of the **ActiveMovie** player application.

VideoCD Players

VideoCDs are based on MPEG-1. If you have a VideoCD player that can read recordable discs, you can make your own VideoCDs using M. Pack and a compatible CD recording package (like Adaptec Toast).

Can I make DVDs?

You may have heard that the new DVD systems use MPEG encoding to store movies. However, DVDs are made using the MPEG-2 standard, while M. Pack uses MPEG-1. Consequently, you cannot use movies from M. Pack to make DVDs.

Astarte is developing new tools for creating DVD titles; check our website (www.astarte.de) for announcements related to these new products.

Getting More Information

If you'd like to learn more about MPEG and its uses, check out this web site:

http://www.mpeg.org/

Also, there is a great article about MPEG on the *Digital Video* web site. The article can be found at:

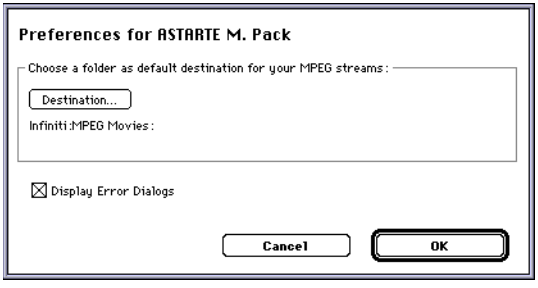
http://livedv.com/Mag/Dec96/Contents/mpeg/mpeg.html

WINDOWS & MENUS

WINDOWS & MENUS

Setting Your Preferences

The first time you launch M. Pack, you should set your preferences. To access the M. Pack preferences, select **Preferences** from the **File** menu.



Default Encoding Destination

Click this button to specify the default folder where M. Pack will save encoded movies.

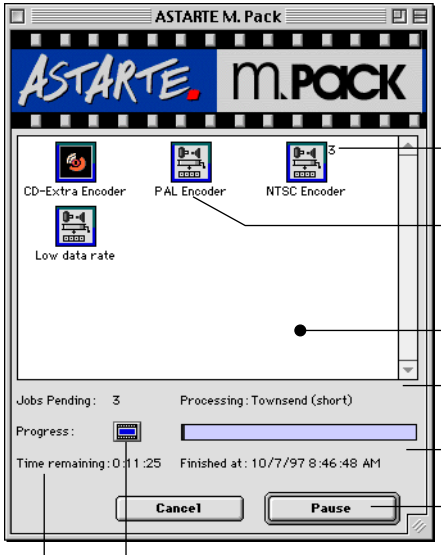
Note: You can override this setting in the Encoder settings window when preparing a batch for encoding.

Display Errors Dialogs?

If any errors occur while M. Pack is encoding, it is automatically recorded in the Log. M. Pack can also display an error dialog, if you check the **Display Error Dialogs** checkbox. However, since encoding will be interrupted until you respond to any error dialog, it's usually a good idea to leave the dialogs off while doing unattended batch encoding. *(See "The Log Window" on page 37 for more information.)*

The Main window

This is the main M. Pack window. The upper portion of the window is the Workspace where you can add Encoders, change their settings and add movies to be processed. The lower portion is the status area where you can see the progress of the current encoding job.



Number of movies waiting

Drag movies to an Encoder icon to add them to the encoding batch. Double-click to edit its settings.

Drag encoders here to add them to the workspace.

Encoding status of current movie.

Start/Pause button

Click here to show preview of current movie.

Time remaining and estimated completion time for movie.

What is an M. Pack Encoder?

One of the most significant changes in version 2.1 of M. Pack is the introduction of savable, configurable “Encoders”. Encoders contain all the settings that describe how you want your movies encoded, along with a list of movies to be encoded with those particular settings. Once you have chosen the settings you want, the Encoder can be saved for later use. By saving additional Encoders with different settings, you can prepare complex batches to be processed without further attention.

Note: When we talk about Encoders here, we are referring to a group of settings to be applied while encoding. M. Pack uses the same MPEG ***encoding algorithm*** *no matter what settings you choose.*

Encoder Icons

M. Pack Encoders will have one of several different icons depending on their function.


Standard Encoder (*audio, video & multiplexer*)


Audio Only Encoder


Video Only Encoder


Multiplex Only Encoder


CD Extra Encoder

As you change the settings of an Encoder its icon will change accordingly.

Encoder Workspace

The M. Pack Workspace contains all the currently active Encoders, and indicates how many jobs are pending for each.

M. Pack allows up to 45 Encoders in the workspace. Each Encoder can have up to 45 movies in its batch list.

- To add a movie to an Encoder's batch list, you can simply drag it from the Finder onto the Encoder's icon.
- To add an additional Encoder, drag an Encoder icon from the Finder into the workspace.
- To edit the properties of an Encoder, double-click its icon in the workspace.

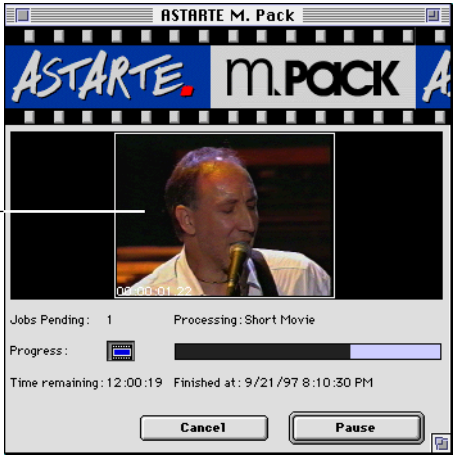
Status Area

The bottom portion of the Main window is the status area. Here you will see indications of how many movies are waiting in all Encoders, and while encoding, you will see a progress bar, estimates of the Time Remaining to encode, and completion time for the current movie.

Preview Button

While encoding, you can click the Preview button to display a frame preview.

Click Preview button to display movie preview window while encoding.



Start/Pause Button

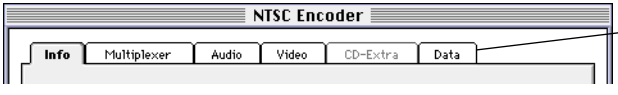
To start encoding, just click the Start button.

During encoding the button will change to a Pause button, which allows you to temporarily suspend encoding.

Encoder Settings

The Encoders are the heart of M. Pack.

Each Encoder has six settings panels, which are accessible using the “folder tabs” at the top of the Encoder window. To view or modify the settings for a particular Encoder, just double-click its icon in the M. Pack Workspace.



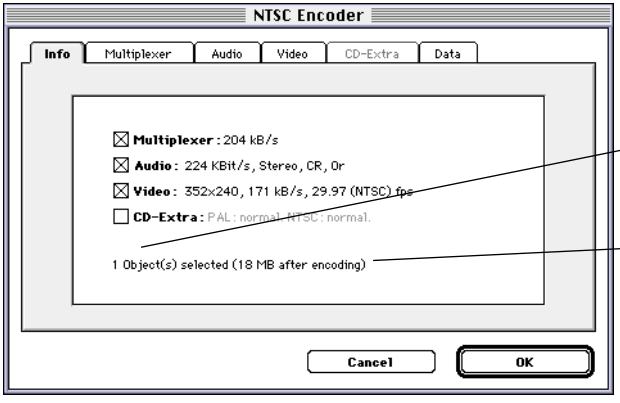
Click a tab to go to that settings panel.

Each of the settings panels is covered in detail in this section.

Note: If you make changes to the encoding settings, it's a good idea to save the Encoder under a new name so you can reuse both the original and edited settings anytime you want.

Info Panel

The Info panel shows a summary of the settings and allows you to specify which encoding components are active.



- Click on the **Audio** checkbox to enable audio encoding.
- Click on the **video** checkbox to enable video encoding.
- Click on the **multiplexer** checkbox to enable multiplexing of audio and video streams. You can use the multiplexer separately to combine audio and video streams that you've encoded earlier. *(See "Splitting Large Encoding Jobs" on page 58 for more information.)*

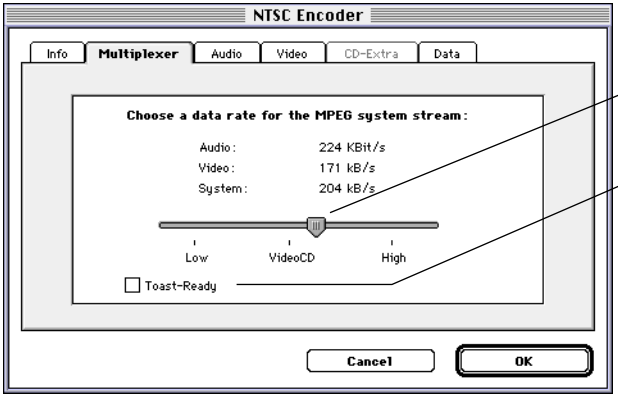
Note: If you disable multiplexing, M. Pack will generate separate files for the audio and video portions of the MPEG stream, which can be multiplexed at a later time.

- Choose **CD-Extra** to enable the compression from a PICT file to an MPEG still. Selecting CD-Extra disables all other encoding components.

Note: While it is possible to deactivate all encoding components, it serves no purpose.

Multiplexer Settings

The multiplexer panel lets you choose the System Stream data rate.



Set the overall data rate with this slider.

Check this box to make the MPEG movies compatible with **Toast** CD recording software for making VideoCDs.

• Data rate for System Stream

This slider sets the overall data rate for the MPEG streams.

The System Stream rate is the sum of audio data rate and video data rate plus an additional overhead of 3-4%.

Normally you would first choose an audio data rate, then when you adjust the System Stream data rate slider the video data rate is calculated. *(See "Calculating Data Rates" on page 57 for more information.)*

Note: For maximum compatibility, select the VideoCD rate (170 KB/sec). (See "Data Rates and Compatibility" on page 18 for more information.)s

Toast-Ready

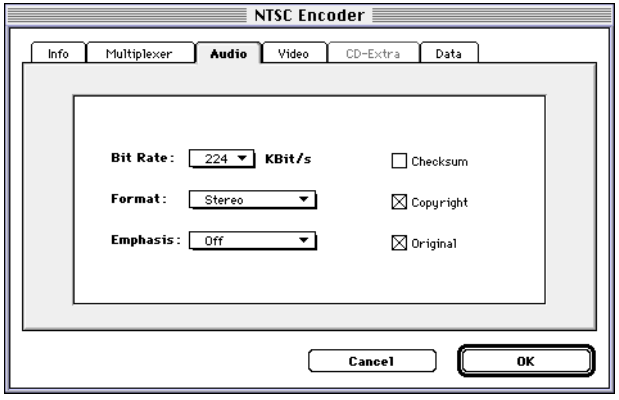
Normally M. Pack generates a standard ISO/IEC 11172-1 MPEG System stream which works cross-platform.

If the **Toast-Ready** check box is on M. Pack writes a stream which is altered to allow Toast to use it to create a VideoCD.

Note: A Toast-Ready stream is not a standard stream although Movie Player will be able to play it.

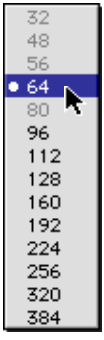
Audio Settings

The Audio settings panel allows you to adjust the sampling rate and format of the audio portion of the MPEG stream.



• Bit Rate

Use this pop-up menu to choose a bit rate for audio encoding.



The choices range from 32 to 384 KBits/sec. Higher bit rates mean better quality, but reduce the available data rate for the video portion of an MPEG stream. 224 KBits/sec is the standard for VideoCD.

• Format

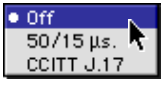
MPEG-1 allows one of four formats of audio. Choose the desired format from the pop-up menu.

- Stereo - Standard two-channel stereo
- Joint Stereo - alternate stereo encoding method where one channel carries the difference between the two original left & right signals and the other channel carries the sum of the two signals.

- Dual Stereo - Two mono channels; this option may be used for bi-lingual material, where audio for one language resides on one channel, audio in another language resides on the other channel.
- Mono - Standard one-channel audio.

• Emphasis

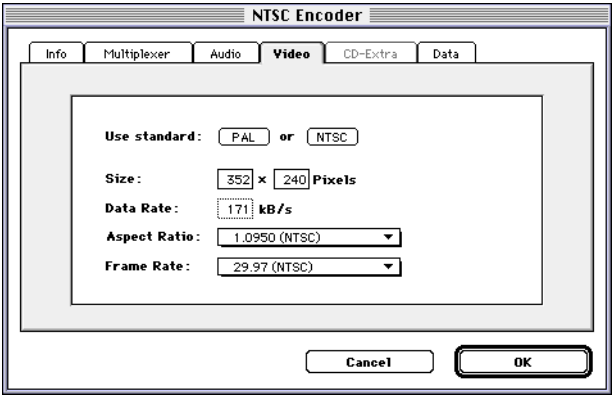
Choose one of the Emphasis options to have M. Pack boost the high-frequencies of the audio material.



Note: This setting is rarely used.

Video Settings

The Video settings panel allows you to adjust the frame rate, aspect ratio and (in some instances) the frame size of your video.



• PAL or NTSC buttons

The PAL or NTSC buttons are simply shortcuts to reset all values of this panel to the corresponding standard settings.

• Size

Size of the video frame, specified as Width * Height, in pixels. Due to the requirements of MPEG, each value must be a multiple of 16. This is adjusted automatically by the program if necessary.

If the resolution of the source movie does not match these settings, it will be scaled to fit.

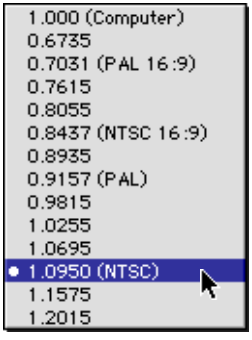
• Data Rate

The Data Rate field let's you specify the data rate for the video portion of the MPEG stream. The field is disabled if multiplexing is on (it is calculated automatically by subtracting the audio data rate from the overall System Stream data rate.)

If multiplexing is off be sure to enter the correct value. The maximum value is 226 kB/s.

• Aspect Ratio

This menu lets you specify the aspect ratio of a movie's pixels so they appear correctly on the target system.



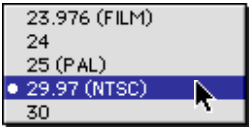
Only three of the available values are generally used:

- 1.0000 (Computer) - Use this if you want to play back the resulting stream on a computer.
- 0.9157 (PAL) - Use this if you want to view the stream on a PAL TV.
- 1.0950 (NTSC) - Use this if you want to look at the stream on a NTSC TV.

Note: Movie Player with the Quicktime MPEG Extension will display movies at incorrect sizes when you encode movies at aspect ratios other 1.0000 (Computer). You may have to manually readjust the size of the window in Movie Player for correct viewing.

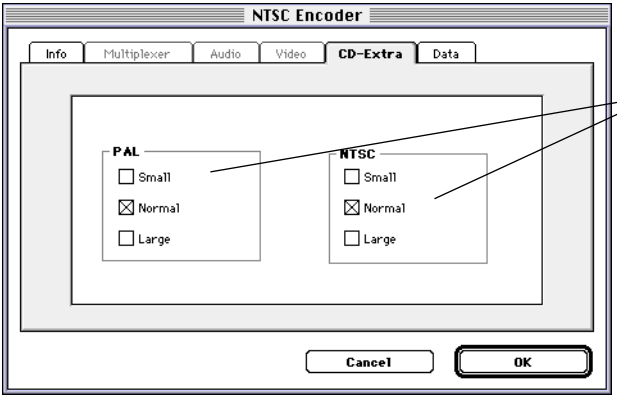
• Frame Rate

Select the appropriate frame rate from the menu based on your target playback system.



CD-Extra Settings

Creating Enhanced CDs (also known as CD-Extra) requires generation of MPEG Still frames. M. Pack can convert PICT format pictures into the correct format for use on Enhanced CDs.



Check the desired picture size(s) for the CD-Extra encoder.

• MPEG Still sizes

M. Pack can save the six standard MPEG still sizes:

PAL

- small..... 176 x 144
- normal..... 352 x 288
- large ..... 704 x 576

NTSC

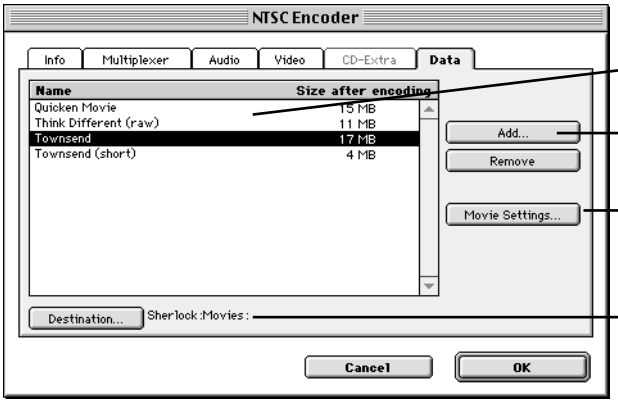
- small..... 176 x 112
- normal..... 352 x 240
- large ..... 704 x 480

Specify which sizes of MPEG stills you want to encode.

Note: For optimum results the source PICT should be the same size as the largest desired still.

Data Settings

The Data panel contains a list of source files that will be processed by this encoder.



• Add/Remove

Use these buttons to add or remove items to the batch list.

- If Audio or Video encoding is enabled, the input file must be a QuickTime movie.
- If only Multiplexing is choosen, you can add one audio stream and several video streams to this list (this will result in one MPEG stream.)
- If CD-Extra is chosen, the input file must be a PICT-file.

• Destination

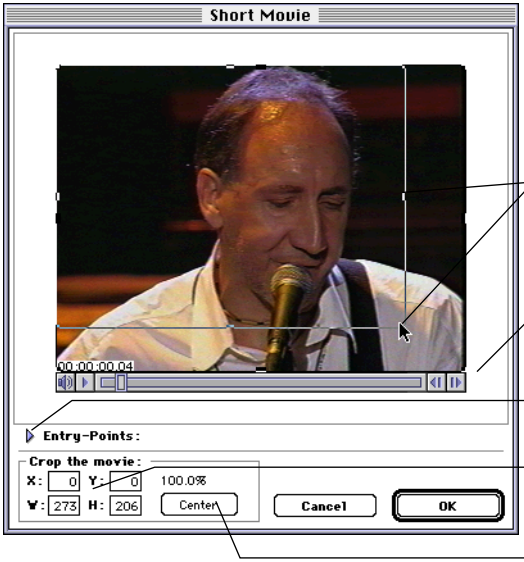
Select one or more items in the list and click on the **Destination** button to choose a folder where encoded items will be saved. You can specify different destinations for each source file if desired.

The currently selected destination is shown next to the button.

Note: You can change the default destination in the preferences dialog. See “Setting Your Preferences” on page 22.

Movie Settings Window

Select an item in the Data panel's batch list and click the **Movie Settings** button, to access the settings window where you can crop the source movie and specify Entry points.



Drag handles to crop the movie.

Use the Movie Player controls to preview the movie.

Click here to reveal Entry Point controls

Set cropping values here.

Click here to center the crop region.

Cropping

You can crop your movie by dragging the white "handles" at the edges of the frame, or by typing values in to the cropping dialog.

Click and drag within the cropped image to move the crop area, or click in the surrounding gray area to reset the cropping rectangle to the full image.

Click the **Center** button to center the cropping rectangle within the entire image.

During encoding the image within the cropping rectangle will be scaled to fit the frame size that you specified in the Video settings panel.

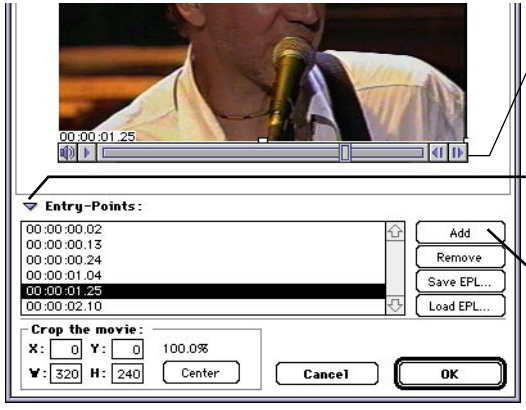
Note: The maximum size for MPEG-1 streams is 384x 288. It is possible to use larger input QT movies but they are scaled down and the quality is not improved by using larger input movies. A scale factor is displayed above the Center button.

Entry Points

MPEG movies can only begin playing from an I-Frame. The Entry Points option lets you manually insert I-Frames when needed.

Typically you would insert Entry points at scene changes or other “breaks” in the movie. This allows more efficient encoding and allows playback to start at that point. *(See “Buffer overflow” on page 55 for related information.)*

.



To add an Entry point, use the movie player controls to go to the desired frame and click the Add button

Double-click on a entry point to jump to that position in the movie.

Note: You can set as many Entry points as you like, but it is not possible to set entry points closer together than 8 frames.

If you want to set an entry point at the last frame move the movie slider to the right and step one frame backwards.

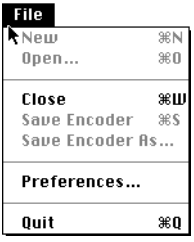
• Save EPL…

Writes out a text file that contains all the entry points in the current list.

• Load EPL…

Reads a text file and puts the entry points into the list.

File Menu



Close

Closes the front-most window. If the main window is front-most, Close will quit M. Pack.

Save Encoder

Saves the currently selected encoder and any changes made to that encoder's settings.

Save Encoder As...

Saves the currently selected encoder to a new file.

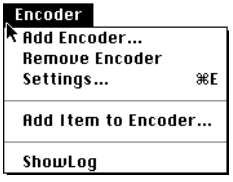
Preferences

Opens the Preferences dialog.

Quit

This command closes the M. Pack application.

Encoder Menu



Add Encoder...

Adds an encoder to the worksheet window. This has the same effect as dragging an encoder to the worksheet window.

Remove Encoder...

Selected encoder is removed from the worksheet window.

Add Item to Encoder...

Adds an item of the specific type to this encoder. This has the same effect as dragging an item from the Finder onto this encoder or adding an item to its data list.

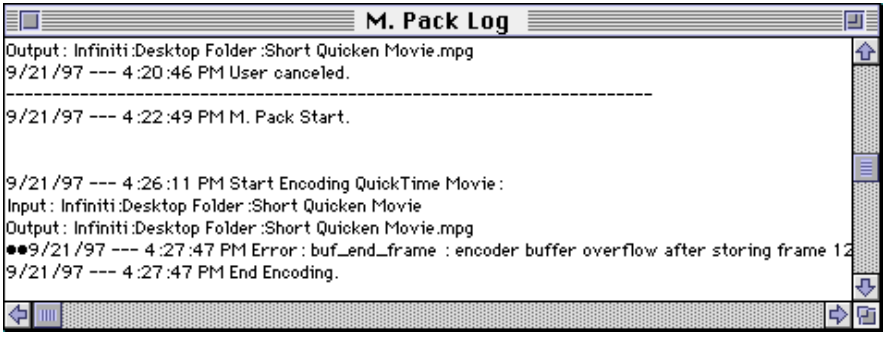
Show Log

Shows the log file. Choose Close from the file menu to hide it.

The Log Window

The M. Pack Log Window shows a chronological listing of every event related to the application.

The log shows the start and end time for any encoding jobs, as well as any errors that may have been generated during processing.



If you have **Show Error Dialogs** turned off in Preferences, you should check the Log Window after encoding in case there were any problems. *(See "Display Errors Dialogs?" on page 22 for more information.)*

USING M. PACK

USING M. PACK

This chapter discusses preparing your QuickTime movies for encoding and gives step-by-step instructions for using M. Pack for two typical tasks: encoding a batch of movies and encoding an MPEG still-frame. These examples highlight all the major features and controls of the application.

Note: Using the M. Pack plug-in module for Adobe Premiere is covered in a separate chapter. See "Premiere Plug-in" on page 47.

Preparing Your Source Movies

Preparing source movies for MPEG encoding differs in some important ways from preparing them for other types of compression. Because MPEG compression is based not just on the contents of a given frame of video, but also on the changes within a frame and between adjoining frames, there are some cases where reducing the "quality" of the source video will actually increase the finished quality.

When shooting original video sequences, try to avoid scenes that contain large amounts of detail or motion in the backgrounds.

If possible, do not compress your video when capturing. If this is not practical, due to disk space constraints, use the highest quality settings possible when capturing and saving the video.

When capturing your video to disk, use the same resolution that you want for your finished MPEG stream.

Note: There is no advantage to capturing at a resolution higher than you want for your finished MPEG stream; in fact, it just slows down the encoding process.

Encoding a Batch of Movies

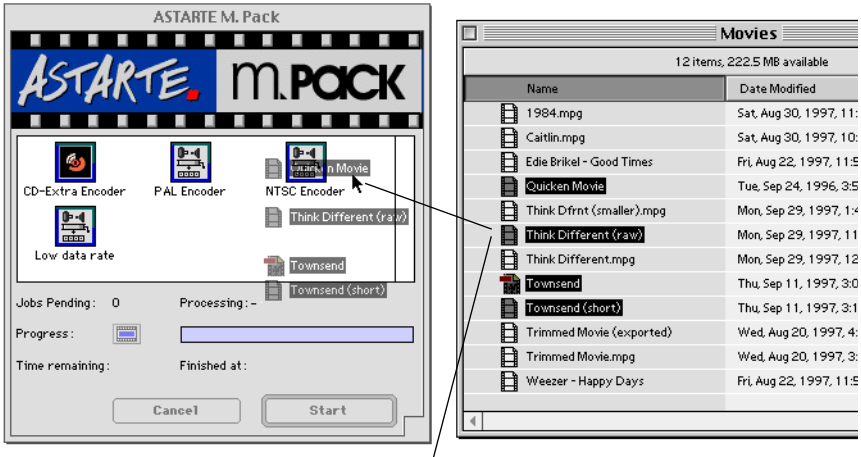
For this example we'll show you how to encode several movies in NTSC format.

1) Gather your source movie(s). They can be stored on any accessible storage device, including network volumes or removable media drives.

2) Launch M. Pack.

3) Decide which Encoder you want to use. If the desired Encoder is not in the Workspace, use the **Add Encoder** menu item to add it. *In this example we'll use the standard NTSC Encoder.*

4) Locate your movie files in the Finder.



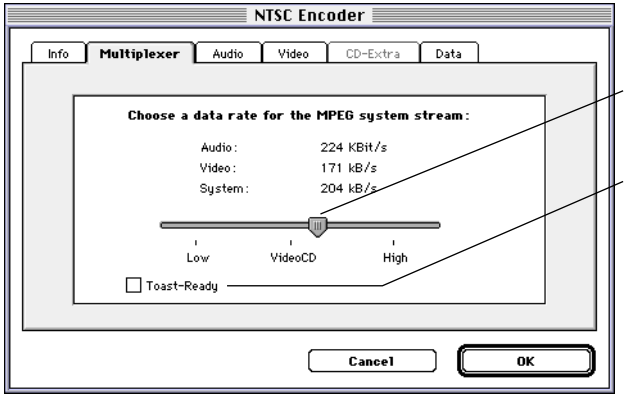
Drag your movies onto the Encoder icon

5) Select the movies and drag them onto the Encoder's icon. You can add movies individually or in groups, whatever works best for you.

A number next to the Encoder's icon will indicate how many movies are in its batch list.

Number of items in this Encoder's batch list.

6) Go back to M. Pack. Double-click the NTSC encoder icon to check its settings.



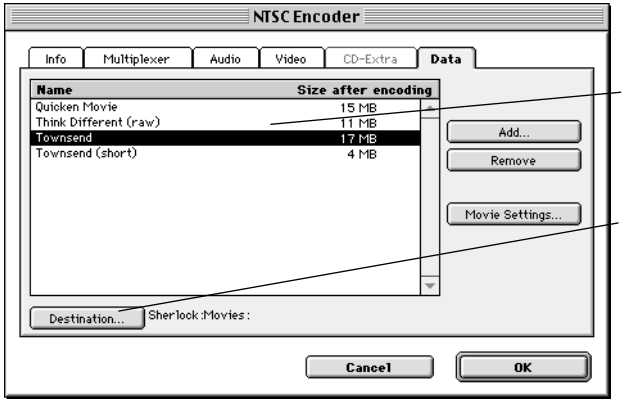
Set the overall data rate with this slider.

Check this box to make the MPEG movies compatible with **Toast** CD recording software for making VideoCDs.

7) Click the **Multiplexer** tab. Set the data rate to the VideoCD setting (170 KB/Sec.)

If you are planning to use these MPEG movies for creating a VideoCD with Toast, be sure the **Toast-Ready** checkbox is checked.

8) Now click the **Data** tab. You will see a list of all the movies you selected earlier.

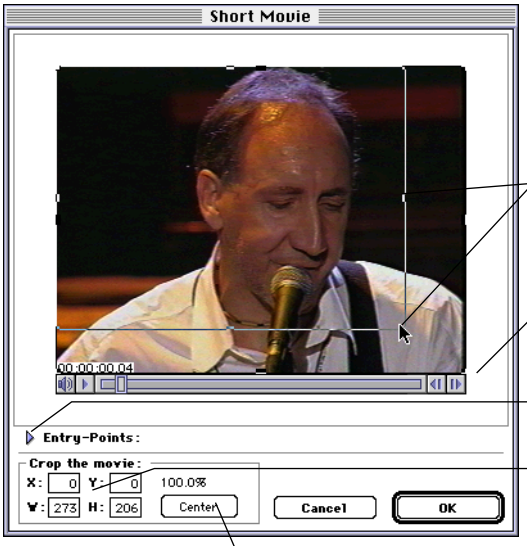


Select a one or more items in the list, then

click here to specify the encoding destination.

9) Use the Destination button to specify a location for the encoded movies. Each movie can be set individually; just select it in the list, then set the destination.

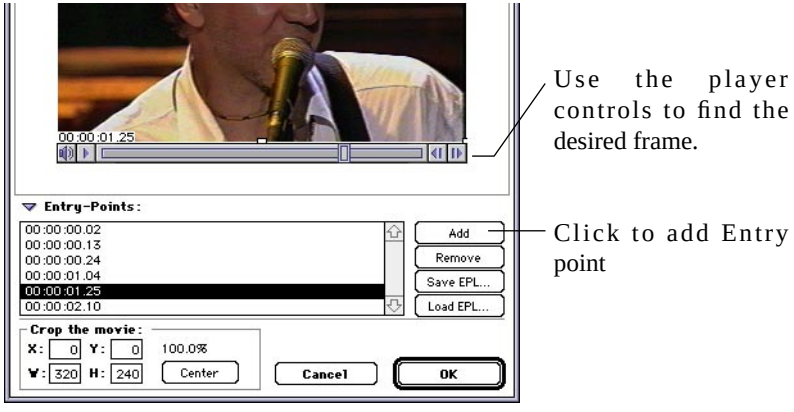
10) If you need to crop any of the movies, select each movie individually and click the Movie Settings button.



11) Drag the cropping handles to the desired positions or type values into the edit boxes.

When you specifying cropping of a movie, the area within the cropping rectangle will be scaled to the size specified in the Video Settings window.

12) To add Entry points, click the expansion triangle to reveal the Entry point controls, then use the movie player controls to go to the desired frame and click the Add button. *(Entry Points are typically added at scene changes or other "breaks" in the movie.)*



13) When you are satisfied with the settings for this movie, click **OK**.

14) Repeat for each movie that you want to adjust.

15) Click OK to dismiss the settings window.

16) When you are ready to encode this batch of movies, click the Start button in the main window.

The Encoding status information will appear after a moment.

To see a preview of the movie as it encodes, click the Preview button.

How Long Will This Take?

MPEG encoding takes a great deal of computing power. The speed of encoding is directly related to the speed of your Macintosh. Here are some examples:

- Tanzania-based clone with 604e processor running at 200 mHz- encoding takes approximately 25-30 times the length of the original movie.
- PowerMac 7500 with a 604e processor running at 132 mHz - encoding takes approximately 30-40 times the length of the original movie.
- PowerBook 2300 with a 603e running at 100 mHz - encoding takes about 60-70 times the program length.

Background Processing

M. Pack can work in the background if desired, although encoding speed will be greatly reduced.

For fastest encoding, make sure M. Pack is the foreground application and that no other applications are running.

Pausing the Encoding

You can temporarily suspend encoding at any time by clicking the **Pause** button. Click the **Continue** button to resume.

Creating an MPEG Still-frame

If you create Enhanced CDs, you need to generate MPEG still frames for inclusion on the disc. M. Pack makes it very easy to create these images.

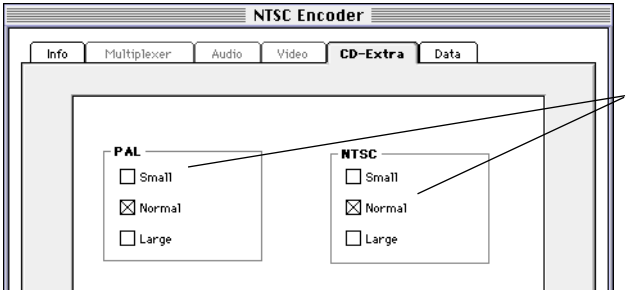
1) Prepare your original images and save them as PICT format files.

For best results, save the images at the same size as the largest MPEG still that you want. *(See "MPEG Still sizes" on page 31 for more information.)*

2) Launch M. Pack.

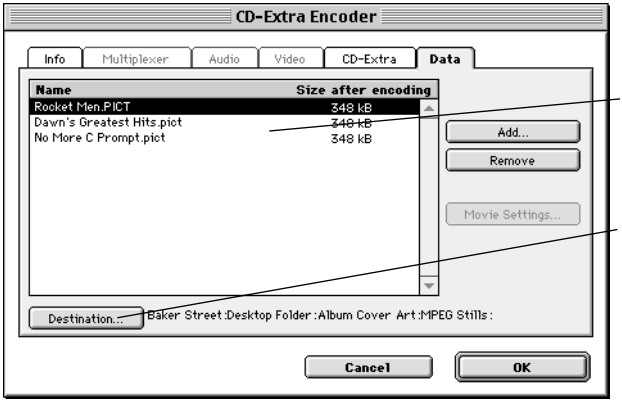
3) Drag your source PICT files onto the CD Extra encoder.

4) Go back to M. Pack. Double-click the CD Extra encoder icon to check its settings.



Check the desired picture size(s) for the CD-Extra encoder.

5) Click the **Data** tab. Specify the desired destination folder for the finished images.



Select a one or more items in the list, then

click here to specify the encoding destination.

6) Click **OK**.

7) Click **Start** to start the encoding.

That's all there is to it!

PREMIERE PLUG-IN

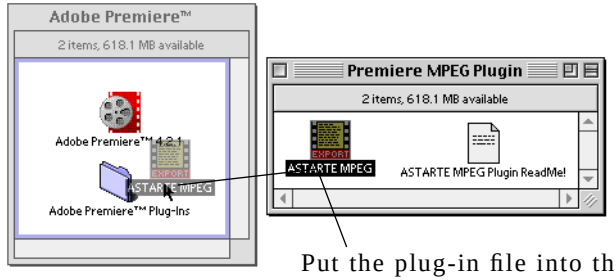
PREMIERE PLUG-IN

M. Pack includes a special plug-in version for use with Adobe Premiere. It allows you to export any project to an MPEG stream without leaving the Premiere application.

Note: The encoding "engine" of M. Pack and the Premiere Plug-in is the same. However, the plug-in architecture of Premiere does put some limitations on the type of settings that can be made. If you need complete control over the encoding process, you may want to use the M. Pack application instead.

Installation

• Drag the plug-in file ASTARTE MPEG to the Adobe Premiere Plug-Ins folder.



Put the plug-in file into the Premiere Plug-in folder.

• Launch Adobe Premiere.

• The ASTARTE MPEG Plug-in will now available be in the **Export** menu.

Premiere Settings

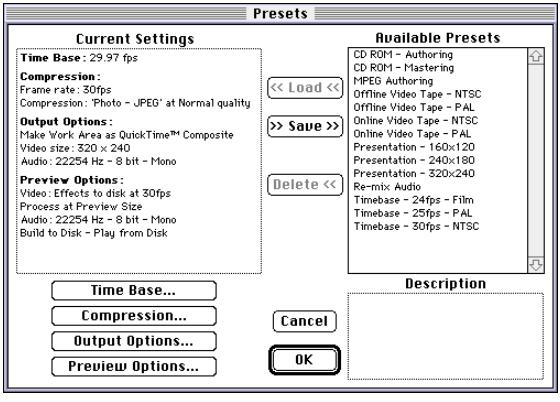
Follow these steps to create a Premiere Preset that can be used for MPEG encoding.

1) Launch Adobe Premiere

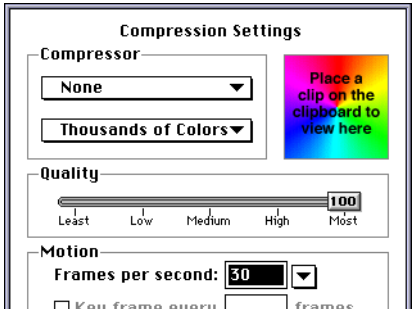
2) Generate a new Project

(A recommended starting point is **Offline Video Tape PAL/NTSC**)

3) Select **Presets** from the **Make** menu. You'll get the following dialog:



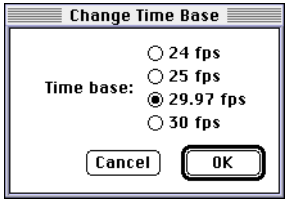
4) Turn off the currently selected compression by clicking the **Compression…** button and selecting **None** from the **Compressor** menu.



5) Select **Thousands of Colors**.

6) Set Frames per second to the desired rate (**it must match the setting you make in the next step**). Click OK.

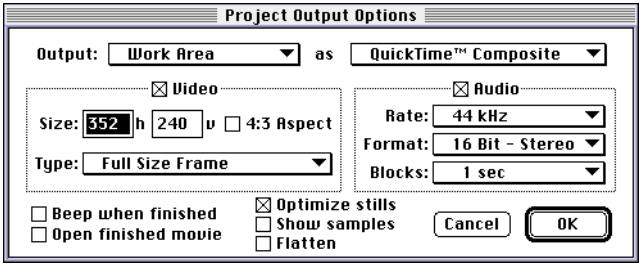
7) Click the **Time Base**… button and select the appropriate rate.



The Time base you choose here is exactly the frame rate that is written to the MPEG stream when you export.

8) Click OK.

9) Click the **Output options** button



10) Make the following settings:

Video

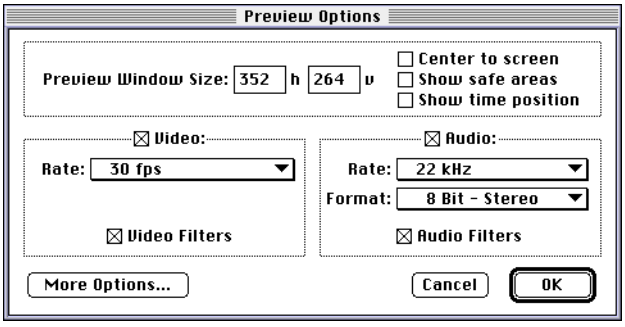
- 352x288 for PAL or 352x240 for NTSC
- full size frame

Audio

- 44.1 kHz
- 16 bit; stereo
- Blocks: 1 sec.

11) Click OK.

12) Click the **Preview options** button



13) Make these settings:

The preview window size should be set to the same size as the project. *When encoding the values are rounded up to the nearest value divisible by 16*

Minimum values: 96x96, Maximum: 384x288

Video

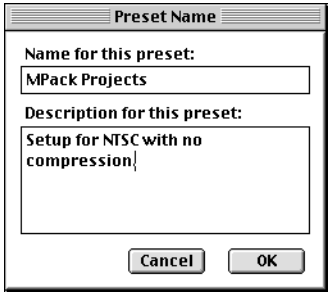
- 25 fps (30fps) - use whichever is closest to the rate you chose for the Time Base
- Effects to disk
- Full Size frame
- Video Filters ON

Audio

- 44.1 kHz
- 16 Bit stereo
- Audio Filters ON

14) Click OK

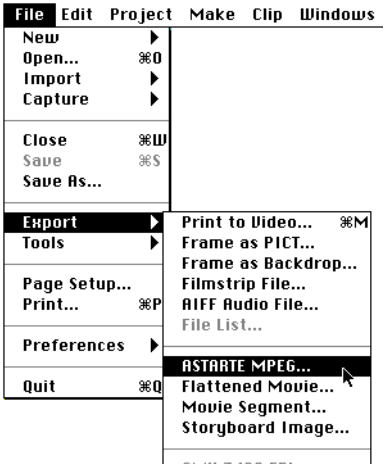
15) Click the SAVE button and specify a name for the Preset.



Exporting From Premiere

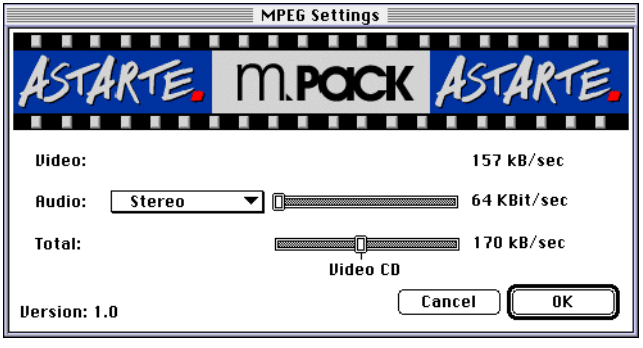
When you are ready to save your Project in MPEG format,

1) Select the **ASTARTE MPEG** option from the Premiere **Export** menu.



Plug-in Settings

2) Set the desired Audio format, Audio data rate and Total data rate:



3) Click OK.

4) Give your MPEG movie a name and click on SAVE.

5) Go to sleep - This will take a while. *(See “How Long Will This Take?” on page 44 for more information.)*

REFERENCE

REFERENCE

M. Pack Error Messages

Possible error messages

• buf_end_frame:encoder buffer overflow after storing frame (frame number)

The video bit rate is too low or input material is noisy.
Increase the bitrate or use a blur filter for this sequence.

• Internal malloc: Please assign more memory to M.Pack

There is not enough memory to do the video encoding. Increase the memory allocated to the M. Pack application.

• The command could not be completed, because the original item was not found.

M. Pack has encountered a reference to a file (encoder, QT movie, stream...) that can't be found.

• Error encoding MPEG still.

Memory related problem. Increase memory allocated to M. Pack.

• The maximum quantization parameter is reached.

The Standard for Video-CD says that a large MPEG still must be less than 128kB and a small or normal MPEG still must be less 46kB. Use a blur filter for the input pict.

• Can't add any more items to the list. Maximum number of items is 45

Each encoder can hold a maximum of 45 input files.
The maximum number of encoders inside the WorkSheet is also 45.

• Error Multiplexing.

Try again multiplexing with a higher data rate.

Frequently Asked Questions

Please refer to this information if you have any trouble when using M. Pack; you may find a solution here.

Maximum frame size

- *This version of M. Pack appears to be limited to a maximum data rate of 340kB/s and a maximum resolution of 384 x 288. Why can't I set the data rate and resolution any higher?*

  Based on customer feedback and industry requirements, M. Pack is designed to generate MPEG streams that comply with MPEG's Constrained Parameters Bitstream (CPB) standards (a series of restrictions that the MPEG-1 stream must meet, including bitrate and frame sizes), and with ISO/IEC 11171-4. By definition of these standards, movies encoded with resolutions and data rates which deviate too dramatically from these constraints risk losing universal compatibility with software and hardware MPEG decoders.

  For more information on the Constrained Parameters Bitstream, please refer to the following MPEG FAQ document:
  http://www.crs4.it/~luigi/MPEG/mpeg1-v.html

Buffer overflow

- *I continually get "buf_end_frame: encoder buffer overflow" errors when encoding certain movies. Why does that happen and what can I do about it?*

  The "buffer overflow" error indicates that the encoder is unable to compress the source movie to a data rate that complies with the encoder's settings. Usually, this occurs when the source movie is very high in quality (high quality video can have a data rate as high as 30 MB/sec; compressing this down to the requisite 340 kB/sec or lower can put quite a strain on the encoder), or when there is a great deal of action or scene changes in the source movie (MPEG compression works by saving changes from previous and future I-frames; when those changes are dramatic, the encoder may not be able to record changes from previous and future I-frames within the data rate parameters of the encoder). In the simplest terms, a buffer overflow error means that there's just too much stuff for the encoder to squeeze into the required MPEG data rates, while adhering to the MPEG standard.

  There are 3 ways to address this problem:

  1) Alter the constraints of the encoder: Change the encoder settings so that you encode your movie at a higher data rate. By doing so, the encoder does not have to compress the source movie as much.

2) Alter the source movie: Apply a filter of some sort to the source movie. Remember that the encoder 'sees' detail (such as noise and color variations that may be caused by imperfect video input) that may not be visible to the viewer; changes in apparently invisible details are recorded by the encoder, and may occupy unnecessary bandwidth. A very slight blur filter may go a long way in eliminating buffer overflows.
3) Tell the encoder when to anticipate action and scene changes: Try adding entry points in the source movie at which frames change significantly. By doing this, you force the encoder to record an I-frame, which may better enable the encoder to calculate predicted frames.

MPEG Exporter

- *What is the Astarte MPEG Exporter and how does it differ from M. Pack?*
  The Astarte MPEG Exporter is a shareware system extension that functions as an export component for QuickTime 2.5 which exports QuickTime movies at 25 or 30 fps, at a maximum resolution of 384x288, and at a fixed data rate of 176,400 bytes/second.

Using Toast to make Video CDs

- *I am using M. Pack to created MPEG movies that I want to write to CD-R using the Toast CD recording software. Toast will not allow me to select the MPEG movies that I just created with M. Pack.*
  In order for Toast to recognize your MPEG movie as a legitimate MPEG stream, it is necessary that you encode your movie with the "Toast-ready" check box checked. If this option is not checked, Toast will not be able to recognize the MPEG movies you create with M. Pack.

Calculating Data Rates

The multiplexing data rate is the sum of audio data rate and video data rate plus an additional overhead of 3-4%. Normally you first choose a audio data rate, then adjust the multiplexing slider to set the System data rate; from these two values, M. Pack then calculates a video data rate.

If you turn off multiplexing, you'll need to specify the video data rate manually.

Here is a formula to help determine an appropriate video data rate:

vb = (width/16) x (height/16) x fps x 14 (Bytes / second)

vb - video data rate in Byte/s (*divide result by 1024 to get KB/Sec*)
width - the video width of the resulting MPEG stream
height - the height of the resulting MPEG stream.
fps - frames per second

Note: Round up to the nearest whole number when dividing the resolution by 16.

Example: movie is 300 x 200 at 30 fps

width/16 = 300/16 = 18.75 (use 19)
height/16 = 200/16 = 12.5 (use 13)

So the rate is 19 * 13 * 30 * 14 = 103,740 bytes per second or 101 kB/s

Note: This formula is just a starting point. You should test samples of your own video footage at various rates to determine the optimum settings.

Splitting Large Encoding Jobs

To facilitate encoding large movies that may not fit on your hard drives all at once, M. Pack allows you to work with sections of the video, then multiplex them into a complete movie after encoding.

Here's how it works:

1) Prepare one QuickTime file which has the entire audio track from your movie, but no video (use your capture software or MoviePlayer to delete the video track.)

2) Encode this file using M. Pack, with only the Audio encoder enabled. *(See "Multiplexer Settings" on page 27 for more information.)* This will generate an audio MPEG file. Save this for later use.

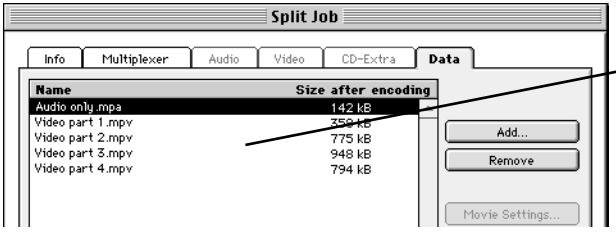
3) Divide your movie into as many pieces as necessary and save each piece as a Video-only QuickTime movie. *It's a good idea to name the pieces with numbers so you can put them back together in the correct order.*

4) Move each piece to your encoding machine and encode it with only the Video encoder enabled.

5) When you've encoded all the video sections, you are ready to put everything back together.

6) Open the Encoder and activate only the Multiplexer component.

7) Click the Data tab and add all of your encoded files to the list.



Add your audio-only file and all of the video sections, in order.

Be sure to add the video streams in the order they should occur in the finished movie.

8) Click OK

9) Click Start to begin the multiplexing. Since the movie is already encoded, the multiplexing step only takes a short time.

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