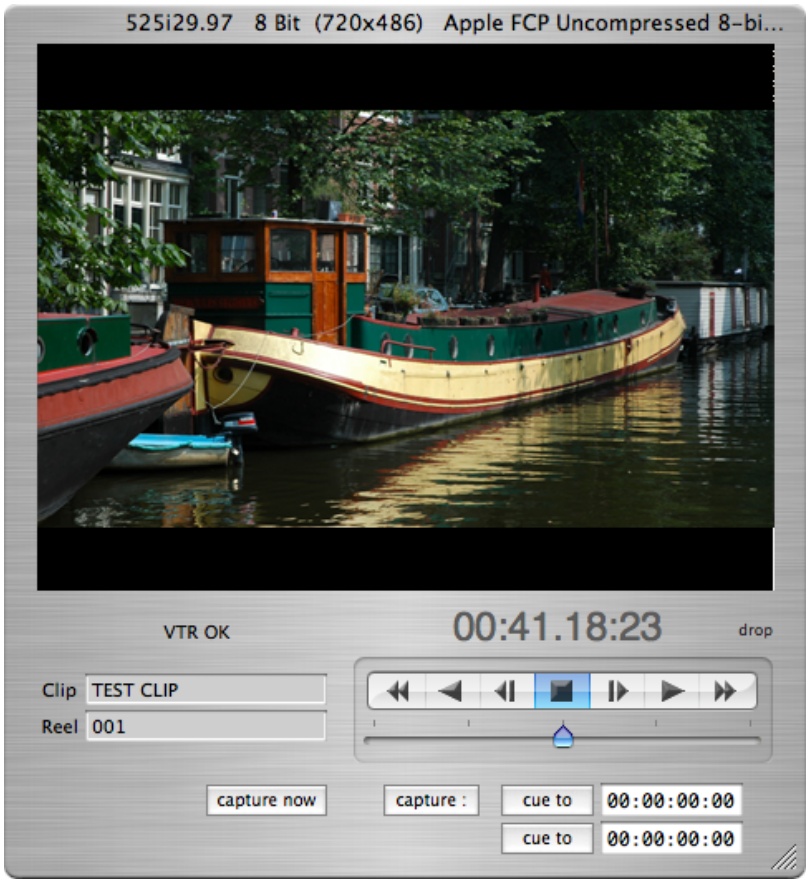
VTR Xchange
User Guide



AJA VIDEO SYSTEMS INC

June 1, 2006 P/N101659
Version 2 Software

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Contacting Support

To contact AJA Video for sales or support, use any of the following methods:

443 Crown Point Circle, Grass Valley, CA. 95945 USA

Telephone: 800.251.4224 or 530.274.2048
Fax: 530.274.9442

Web: http://www.aja.com
Support Email: support@aja.com
Sales Email: sales@aja.com

When calling for support, first read the Chapter on *Troubleshooting* at the back of this manual. You can often save time and effort by looking there first for simple remedies and information on how to get support from AJA and Apple Computer Inc.

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Introduction

Overview

AJA VTR Xchange is a Macintosh OSX software application that allows users to capture from and record to any deck that can be interfaced with supported AJA capture and playback devices.

The software consists of a main control/view window and several setup screens. Keyboard shortcuts are available for most functions.

Note: For deck control with VTR Xchange, an RS-422 cable must be connected between the RS422 9Pin ports on the AJA device (KONA or Io) and the deck.

System Requirements

AJA VTR Xchange works with the following AJA products:

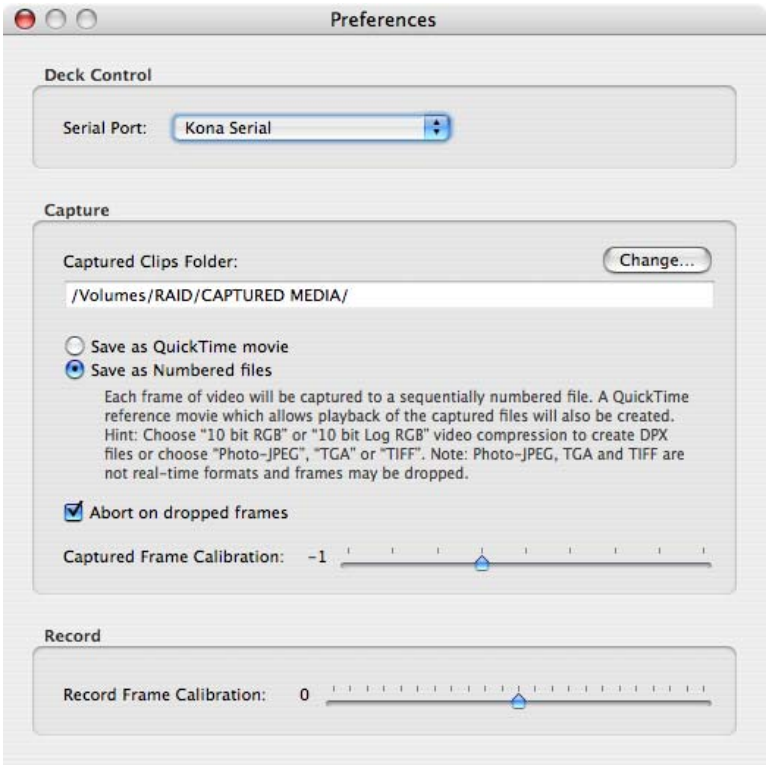
- KONA 3
- KONA 2
- KONA LSe and LS
- KONA LHe and LS
- AJA Io (limited functionality)
- AJA IoLA (limited functionality)
- AJA IoLD (limited functionality)

This software application will run on any Macintosh approved for use with those AJA products. For optimum operation, all of the aforementioned products should have their latest drivers and firmware installed. These can be obtained from the AJA website, www.aja.com

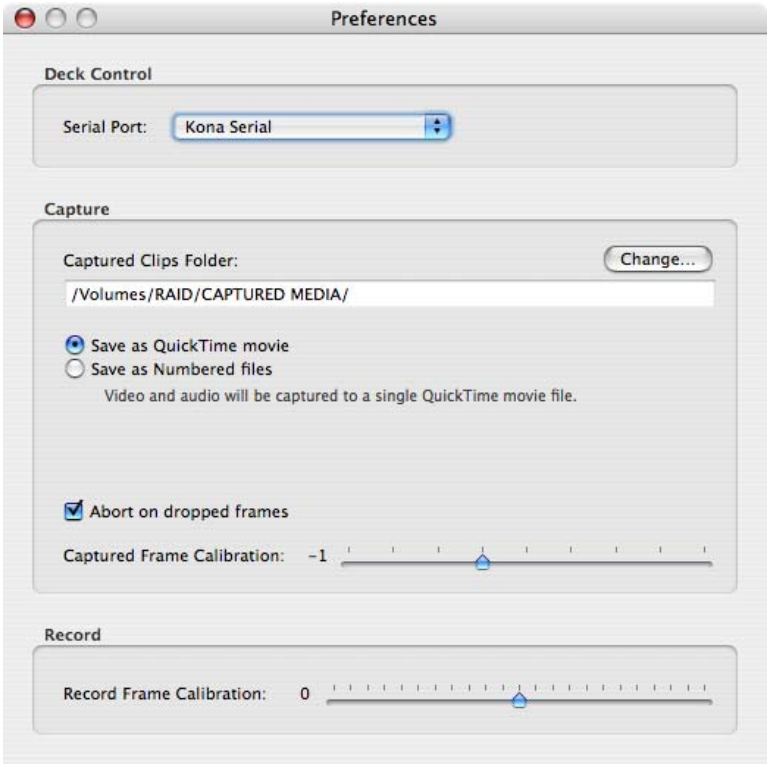
Initial Set Up

1. Launch AJA VTR Xchange
2. On the top menu bar, select Video … Capture Settings.
3. On the Compression page, select the desired codec from the drop-down box. In the Motion dialogue, select the desired frame rate for the destination files. The Best setting will match the destination frame rate to the source frame rate, but in some applications, such as 2K ingest, you must set this to the correct frame rate. As an example, you can use the Kona Control Panel application's Input tab to decide which codec and frame rate is best for your application.
4. On the Source page, select the KONA format in the drop-down box that best matches the format of the source video. (If you are using the AJA Io, the capture settings will say ProIo.)

   If desired, select one of the tools from the drop-down box in the Preview pane on the right to verify the legality of the source video.
5. On the top menu bar, select AJA VTR Xchange… Preferences



Preferences, "Save as Numbered Files" Set (for file-per-frame formats)



Preferences, "Save as QuickTime movie"

6. In the Deck Control area of the preferences screen, select the appropriate serial port from the drop-down box (Kona Serial for Kona cards and Firewire for AJA Io devices).
7. In the Capture area of the preferences screen, select the default destination drive and folder for the captured files by clicking Change… You may also use this Change button to later specify a different drive and/or folder. The Captured Clips Folder is initially blank so that you can specify exactly where you want your content placed after capture. If you make no selection, VTR Xchange will prompt you to set a destination for your media.
8. If the "Abort on dropped frames" checkbox is set, the capture will stop on the first dropped frame, a warning prompt will appear, and the captured movie file will be deleted. If "Abort on dropped frames" is not checked and dropped frames are detected during a capture, the capture will continue and a prompt will appear after completion making the user aware that dropped frames occurred.
9. When capturing from a deck being controlled by VTR Xchange, you begin by selecting a section of the tape you wish to capture by marking an in point and an out point. You then click the Capture button and wait while the deck pre-rolls the tape and captures the video to a QuickTime movie file. If the actual video clip that gets captured begins a frame or two before or after the frame selected as the inpoint, you can use the "Captured Frame Calibration" slider to compensate for this offset Since devices vary it is a good idea to proof an initial capture before capturing numerous clips.

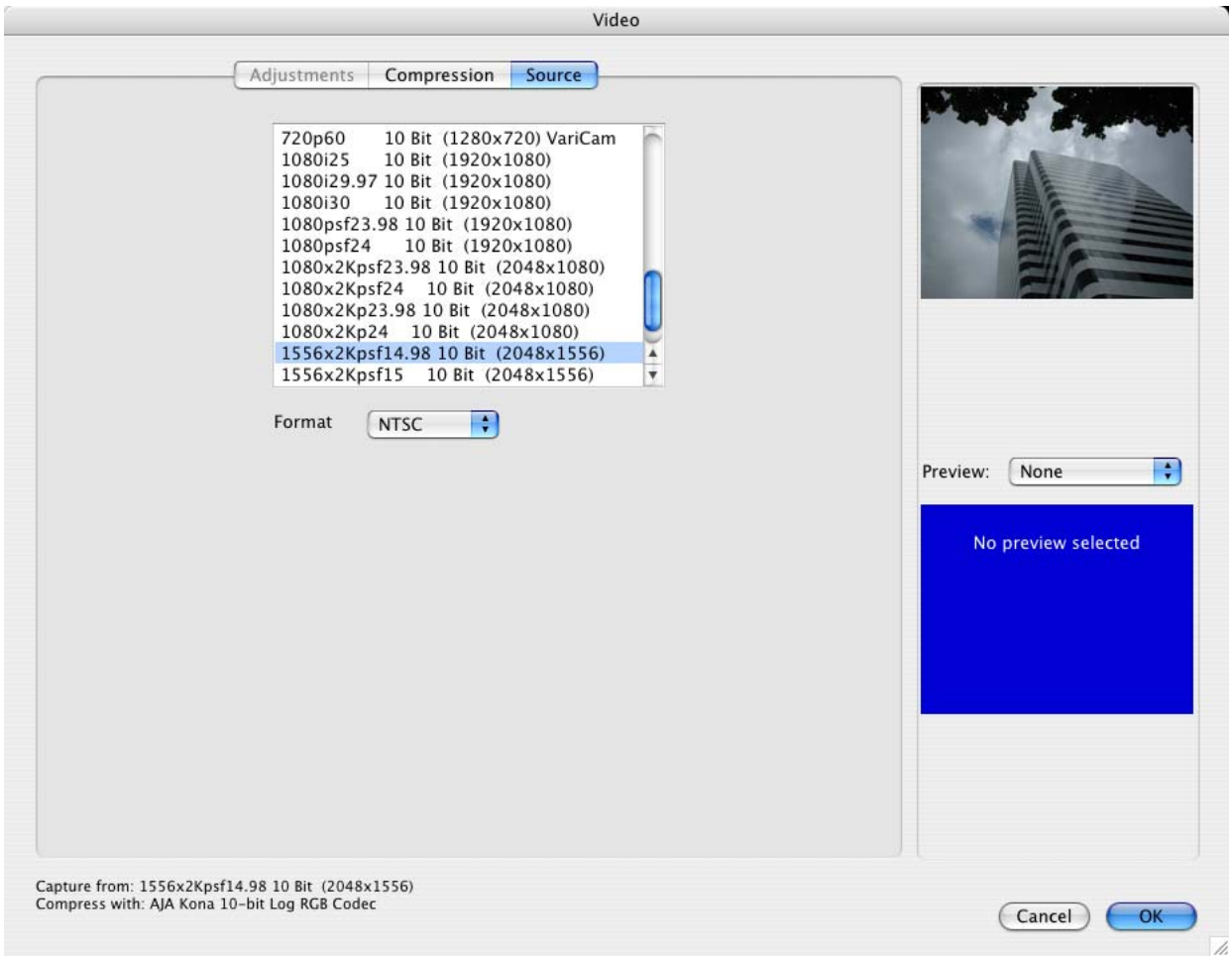
The easiest way to set the Captured Frame Calibration slider is to capture a short clip of video that has burn-in timecode. When the capture is complete, the clip will open up in a VTR Xchange player window. You should then see the burn-in timecode in the clip as well as the timecode displayed below the clip. If the timecode displayed below the clip is less than the burn-in timecode, decrease the "Captured Frame Calibration" number by moving the slider to the left. After adjustment, repeat the capture and compare operation again, repeating this process until the two timecodes agree. Once calibrated, capturing should remain frame-accurate. If you change video formats, decks or compression, be aware that you may have to re-calibrate.

10. The "Record Frame Calibration" slider calibrates "edit to tape" in a manner similar to the Captured Frame Calibration. To calibrate recording, open a short video clip with burn-in timecode in VTR Xchange's player window. Set an inpoint for the clip that ends in the same frame number as the burn-in timecode on the first frame of the clip. This will make it easier to compare timecodes. Press "edit to tape" and wait for the recording to complete. Shuttle the deck to the location just recorded to. You may have to shuttle the tape a few frames past the inpoint before the burned-in timecode begins to change. If the timecode displayed below the decks video is less than the burn-in timecode, decrease the "Captured Frame Calibration" number by moving the slider to the left. After adjustment, repeat the compare operation again, repeating this process until the two timecodes agree.

Ingesting 2K when using VTR Xchange with the AJA KONA 3

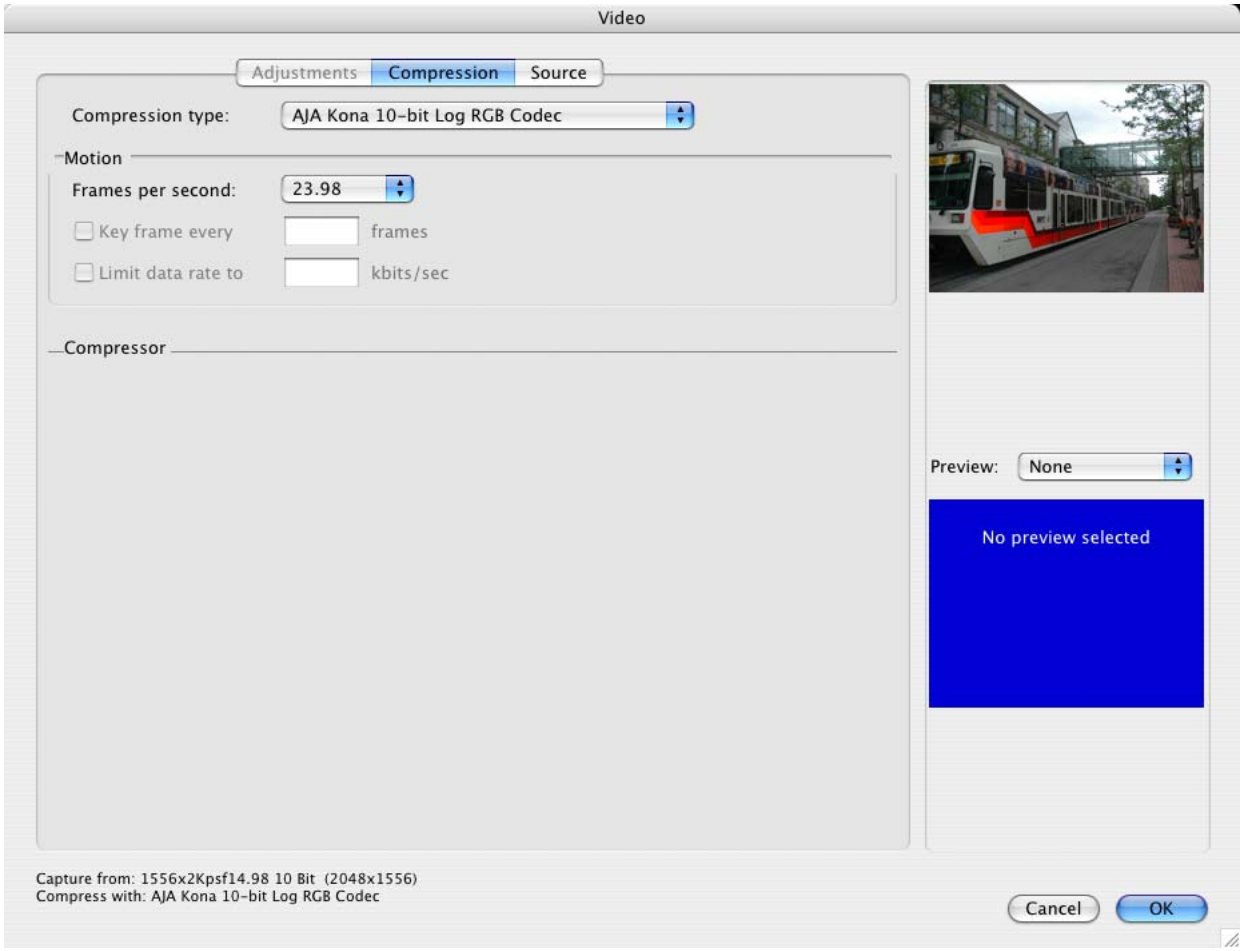
VTR Xchange is a powerful tool for ingesting sequential DPX files at 2K resolution along with the simultaneous creation of a 2K QuickTime Reference Movie. To set the KONA 3 up for 2K ingest, the source being fed to the KONA 3 must be from an HSDL (High Speed Data Link) device such as a DDR or a telecine with appropriate connections. If the device sends out 2K data via HSDL, you will be able to tell by looking at the video input on the AJA KONA Control Panel. Full size 2K will appear as 2048x1556 at 14.98 or 15fps. Alternatively, 2K data can be passed over HSDL as 2048x1080 at 23.98 or 24. The *Input* tab of the KONA Control Panel application must be configured correctly for VTR Xchange to operate properly. In the Input tab, if a 2K format is being detected by the card, you can then set the Video Input to *Dual Link*.

In the VTR Xchange application, from the *Video Settings* pulldown menu, both the Source and Compression tabs must be set correctly. In the Source tab, choose the appropriate setting that matches the signal that the KONA is receiving; i.e. 1556x2Kpsf14.98 10 Bit (2048x1556).



Video Settings, Source Tab

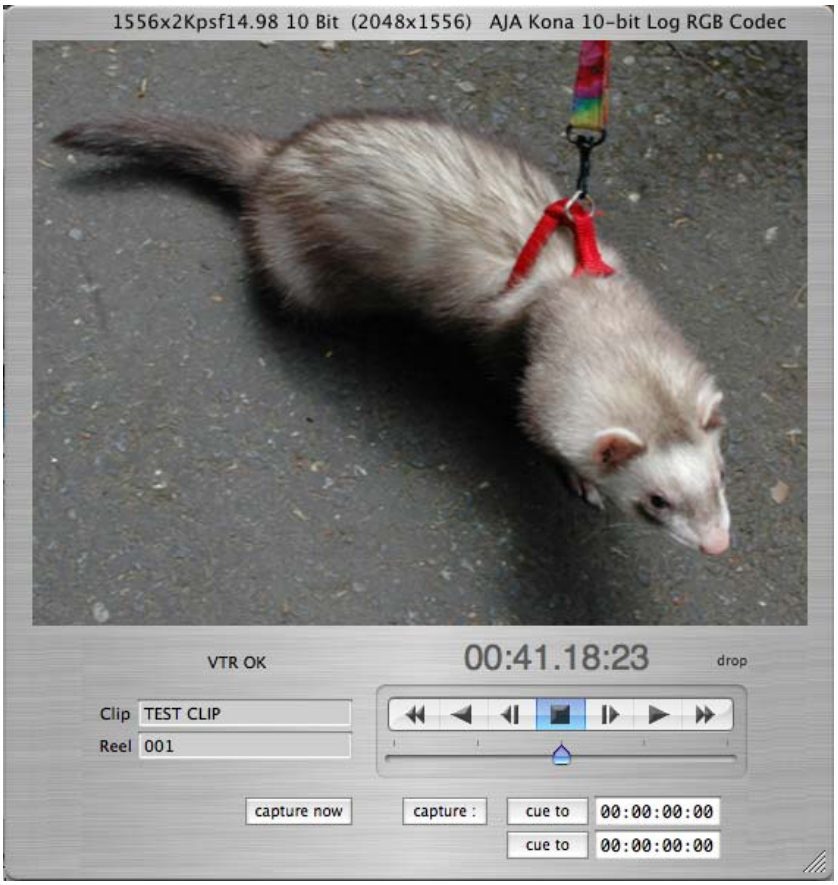
In the *Compression* tab, set the Compression type to either the *AJA KONA 10-Bit Log RGB* or the *AJA KONA 10-Bit RGB* codec.



Video Settings, Compression Tab

This selection is dependent upon your source. In the Motion section of Compression, be sure to set the Frames per second to 23.98; this sets the timebase of the QuickTime Reference Movie and this is what allows you to work with the material at full frame rate as opposed to the transport stream speed of 14.98fps being transmitted between the HSDL output device and the KONA 3. For 2048x1080psf 23.98 material, the transport speed of the data and the desired frame rate are the same. In order to capture sequential images (in the case of 2K as DPX files) you will need to make the appropriate change in the *Preferences* window of VTR Xchange. In the Preferences window, you will notice the *Save as Numbered files* button (see the Preferences screen shown earlier). This must be selected for you to write a simultaneous series of DPX files and a QuickTime Reference Movie.

If you are connected to a 2K device, such as a DDR that can be controlled, you may typically treat the device as if it were a deck that might be connected. If you are attached to a device that cannot be controlled (like most telecines) you will need to "crash record" to your disk array. You can do this by simply rolling the device's playback and hitting the "*capture now*" button in the VTR Xchange main window. You will need to hit the "stop" button in the Capturing prompt that appears in order to stop the "capture now" since there can be no out point timecode set to stop the recording.



VTR Xchange, Main Window

If you go to the destination folder that you set in the preferences, you will find two items; the media folder which contains the sequential DPX files and outside of this folder—the QuickTime Reference Movie.

Note: Because QuickTIme Reference Movies get their "reference" status from the source media which they refer to, you must maintain the relationship between the media and the movie file. For example, you cannot delete the DPX files and expect to have a QuickTime Reference Movie. Moving the files to disparate locations is also not recommended as the link between the two pieces of data can be severed.

The sequential DPX files may be used by applications that accept such files like FX applications and color correction applications. The QuickTime Reference Movies may be imported into applications that will accept the 2K raster such as Final Cut Pro, Motion, and Shake, just to name a few.

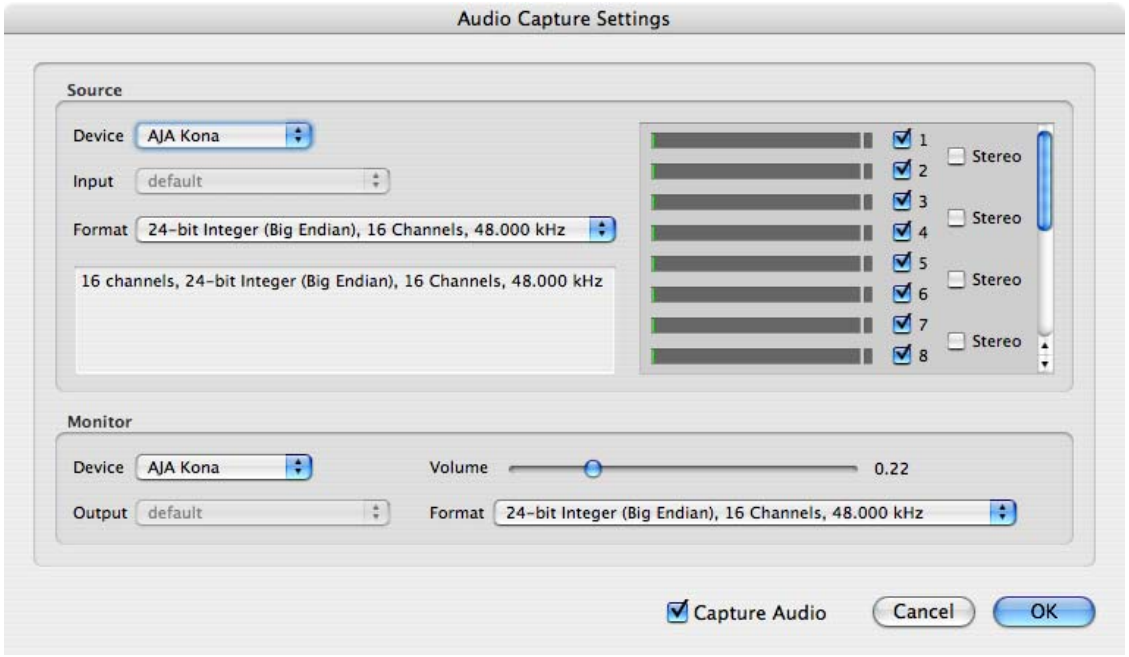
Other Sequential Image Captures

The rules for other sequential image captures such as JPEG, TGA and TIFF are outlined in the Preferences window of VTR Xchange after the “Save as Numbered files” option is selected.

Special Notes for Using the AJA Io, IoLA and IoLD

While the Io family line of products is supported by Version 2 and higher of the VTR Xchange application, certain functions are unique to the KONA cards and cannot be properly performed on the AJA Io products. First, since the AJA Io products are standard definition video (SD) only devices they cannot be used to capture HD signals with the VTR Xchange application. Furthermore, due to the robust PCIe hardware of the KONA 3, it alone is uniquely able to capture sequential DPX files; the AJA Io products are not intended for sequential image capture (though users may be able to capture some sequential frames in JPEG or TGA formats—they will likely not be able to do so without dropping frames).

The Audio Settings (under the *Capture* menu) for the AJA Io also differ from those of the KONA cards when using the VTR Xchange application. The AJA KONA cards can be selected as both the Source device and Monitor device, but the Io products are different. In the Audio Settings window, under Source and Device, the ProIO In setting may be selected but for the Monitor, the ProIo Out should not be selected while ingesting media. For output, this should be reversed so that ProIo is not selected for Source, and ProIo Out is selected in Monitor for Device.



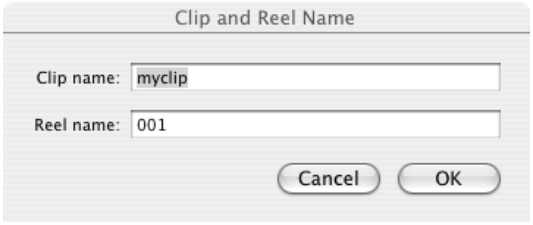
Audio Capture Settings (Capture -> Audio Settings), AJA Kona Shown

Menus and Usage

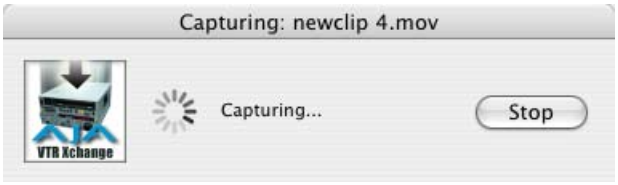
File…Open: (command + o) Open a clip for playback through VTR Xchange. Connect a deck to the KONA's outputs to print clips to tape. Open recently opened clips under File… Open Recent.

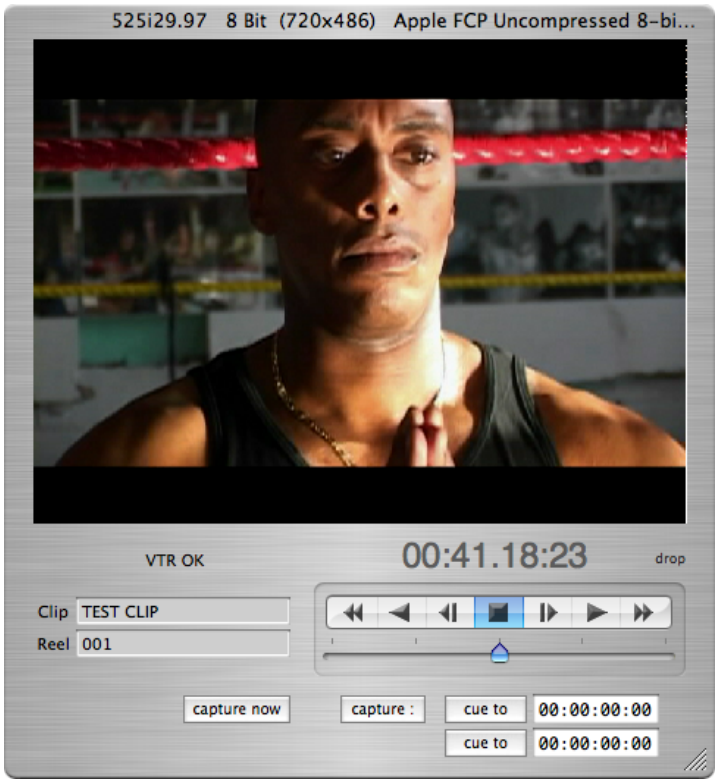
File…Eject Tape: (command + e) If an RS-422 cable is connected from the deck to the KONA, selecting eject tape or pressing command + e will eject the tape from your VTR.

Capture…Clip Name (command + N): This brings up a dialog that allows you to name the clip or group of clips. The text entered will be put in the file name of generated captured clips. If multiple clips are gathered, they will be named with the entered name and a numeral (i.e., "clipname1", "clipname2", etc.). A reel name can also be entered to associate the clip with a project (ideal for use with Final Cut Pro and performing offline/online or EDL creation).



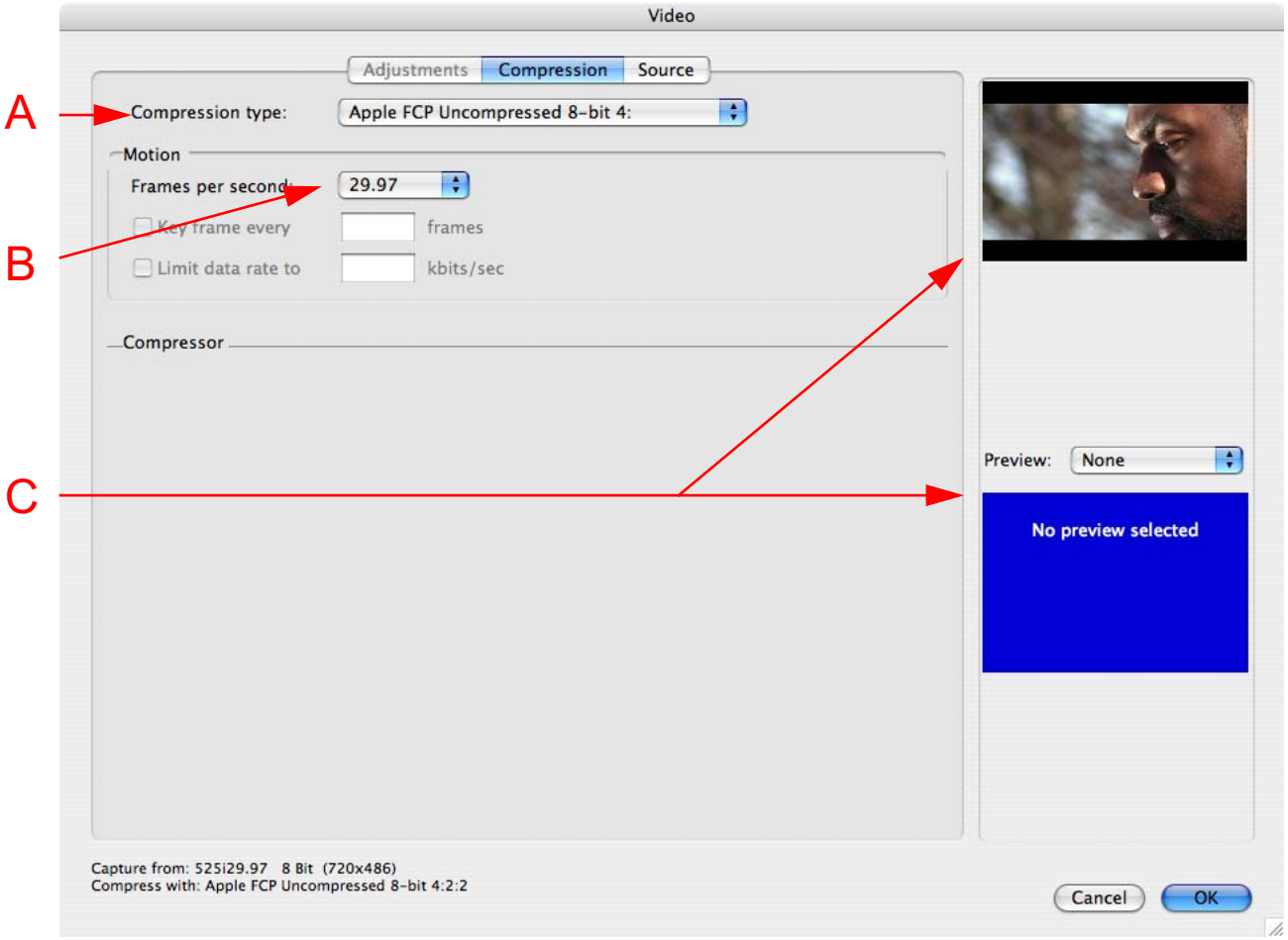
Capture…Capture Now (command + k) This will start a capture and save the clip to the location set under AJA VTR Xchange…Preferences. Press command + k again to stop the capture. As soon as you begin the capture, you'll see a status dialog telling you the capture is underway. When the capture concludes, the clip will be displayed in a window that allows you to review the clip. Capture Now clips do not contain a timecode number relevant to the information on a tape—even when RS422 is connected. The clip in this case, unlike when a standard capture is performed, will begin at 00:00:00:00.





VTR Xchange, Main Window

Changing Capture Settings



Capture Settings, Compression Tab

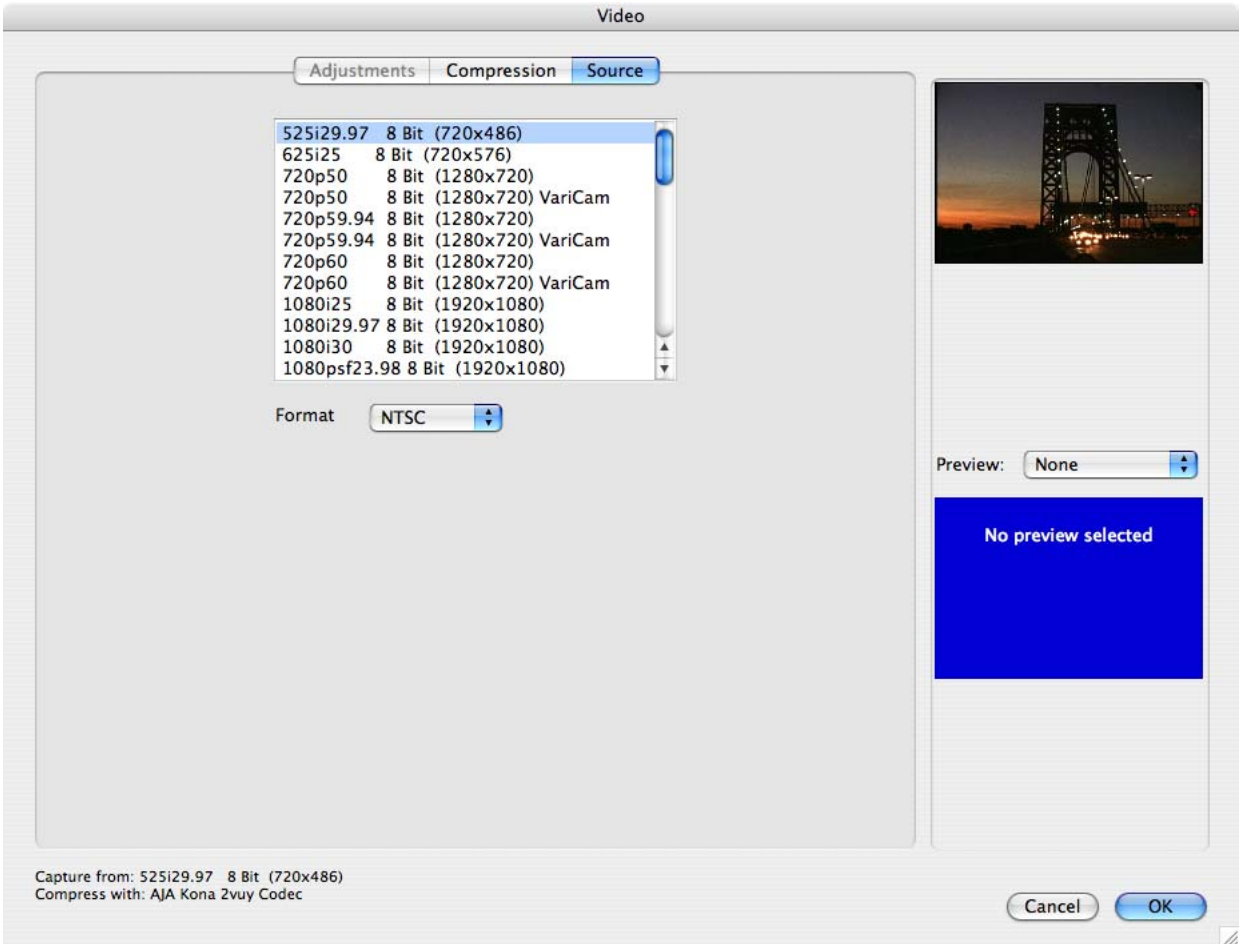
To configure capture settings, go to the top menu bar and under the *Capture* menu, select "**Capture Settings.**"

The first group of settings are the compression settings (Capture Settings, "A"). Codecs installed on the system can be selected from the Compression Type drop-down.The Motion settings (Capture Settings, "B") set the frame rate of the capture in Frames per Second. *Best* will capture as close to the incoming source's frame rate as your system (storage I/O) will allow. Other frame rates may be selected as appropriate to match the Compression Codec being used. The Preview pane (see Capture Settings "C") has two small display windows. The top window displays the input signal of the KONA card.

The Preview selection box is used to verify the legality of the source video and has the following options:

- None (displays blue box, no preview)
- Compressed (displays real-time preview of KONA's input with currently selected compressor applied)
- Vectorscope
- Waveform
- Histogram
- RGB Parade
- RGB Histogram

Use the drop-down box on the Source page to set the format of the source video.



Capture Settings, Source Tab

Click “OK” after making any changes to your capture settings.

Keyboard Shortcuts

The following shortcuts work while in the main capture window.

Key Pressed	Function
Spacebar	Starts and stops playback. When tape is moving, this stops tape.
i	Mark in
Shift + i (I)	Cue deck to inpoint
o	Mark out
Shift + o (O)	Cue deck to outpoint
right arrow	Step deck to next frame
left arrow	Step deck to previous frame
Shift + right arrow	Play
Shift + left arrow	Reverse play
J, K, L	Same as Final Cut Pro™: each press steps deck speed to the previous (J) or next (L) speed in this list: -35x, -5x, -2x, -1x, 1x, 2x, 5x, and 35x. Pressing the K key stops the deck. When pressing J while holding down K, deck steps back one frame; continuing to hold down J causes the deck to roll at half speed. The L key behaves similarly in the forward direction. Holding down K, while holding down J or L causes the deck to roll at half speed. JKL keys also work in the player window with speed steps of 1x, 2x, or 4x. Holding down K and J or L plays the movie at 1/3 speed. Hitting J or L with K down steps ahead or back one frame at a time.

Entering Timecode

This topic provides advice about entering timecode into VTR Xchange. You are not required to enter a timecode in strict HH:MM:SS:FF format. Acceptable formats and entry methods are listed below:

- Valid delimiter characters can be a space, period, colon, semicolon, comma or slash.
- Timecode entered can have multiple delimiters like Final Cut Pro. For example, entering "9.." gives 00:09:00:00 when you hit return.
- Leading zeros need not be typed: "1.2.3.4" becomes 01:02:03:04 when you hit return.

- You can type a large number for minutes, seconds, or frames: “200.0” is interpreted as 200 seconds and becomes 00:03:20:00 when you hit return (assuming 30 fps timecode).
- Hitting return while typing converts whatever you have typed into standard HH:MM:SS:FF format.
- Hitting the escape key while typing in timecode restores the previous timecode value.
- You can enter timecode without any delimiters at all—similar to Final Cut Pro. For example, if you enter 01221413, it will be interpreted as 01:22:14:13. This represents 1 hour, 22 minutes, 14 seconds, and 13 frames. When only a partial number is entered, VTR Xchange considers the rightmost pair of numbers frames and puts each successive pair of numbers to the left in the remaining seconds, minutes, and hours areas. Omitted numbers default to 00. For example, if you enter 1223, Final Cut Pro interprets it as 00:00:12:23. Note: when the rightmost pair of numbers is not a valid frame number, the entire number entered will be evaluated as absolute frames.

  Example: If your framerate is 25 fps and you enter 213, VTR Xchange interprets this as 02:13 (two seconds and 13 frames). However, if you enter 398, it will be interpreted as 398 frames. This happens because the frame counter cannot be higher than 24 when you use 25 fps timecode. A value of “03:98” is not a valid timecode number, so VTR Xchange interprets the value as absolute frames.