

FS-100 and P2 Workflow For Final Cut Pro 5 From Camera to Timeline

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Statement of Purpose

This document covers only the most basic set up and operation of the HVX200 with the FS-100, and the consequential ingesting of P2 data into Final Cut Pro, and it's Sequence set ups. There are other options that are available that allow this work flow to be very flexible and powerful. For more information about these other options, see your hardware and software manuals.

Introduction

The Focus Enhancements FS-100 is a powerful tool designed to interface with the Panasonic AG-HVX200, enabling the end user to capture DVCPRO HD and DVCPRO 50 video clips (as well as standard DV/ DVCPRO 25) in the Panasonic P2 media format. Equipped with an internal 100GB hard disk, the FS-100 offers long record times in a unique, portable enclosure.

When using the FS-100 to capture P2 Media from the Panasonic AG-HVX200, it is possible to capture a wide variety of Panasonic P2 formats generated by the AG-HVX200. Hence, it is important to properly set Final Cut Pro (v5) to the correct settings to handle the particular format to be edited.

Following is a list of the formats currently supported with Final Cut Pro v5.1.1 natively:

DVCPRO HD: 720/60P, 720/30P, 720/24, 1080/60i

DVCPRO 50: 60i, 30P, 24P and 24PA (Advanced Pull-down)

The P2 formats 720/30PN and 720/24PN are not yet supported for live capture over FireWire. As of this writing, the P2 format 1080/24P and 1080/30P is *not yet natively supported in Final Cut Pro v5.1.1, but can be generated as non-native Sequences. Non-native Sequences do not make any guarantee of any Real Time play back from the Timeline window. See the section of this guide devoted to this subject. Also note that some video cards include codecs for some formats that will expand Final Cut Pro's Real Time playback ability for 1080p24 and 1080p30.*

Outline:

- 1- HVX200 to FS-100 work flow
- 2- FS-100 to Final Cut Pro work flow
- 3- Utilizing and configuring Final Cut Pro

Section 1 HVX200 to FS-100 work flow

Necessary settings on the HVX200:

Menu > 9. OTHER FUNCTIONS

Set 1394 Control to EXT

Set 1394 CMD SEL to REC_P

Set PC MODE to 1394DEVICE

Menu > 5. RECORDING SETUP

REC FORMAT P2 > set this to the format you wish to record your footage in.

Alternative frame rates are only available in any of the 720p modes.

To set an alternative frame rate to get fast or slow motion effects frame accurate:

Menu > 1. SCENE FILE

OPERATION TYPE must be set to FILM CAM

FRAME RATE can be set to whatever speed you wish to use.

For an explanation on how alternative frame rates are used, please refer to:

www.dvxuser.com/articles/framerates/

Necessary settings on the FS-100:

Using the right arrow key to move through the menus, verify the following settings-

RECORD set to NORMAL

HDD MODE set to one of the following DVCPROHD modes

DVCPROHD REC (for all DVCPRO-HD formats)

DVCPRO50 REC (for DVCPRO-50 format)

DVCPRO/DV REC (for normal DV format)

DV FORMATS set to P2

SETUP menu should have the following options enabled by scrolling down the menu, highlighting the option, then pressing the *SELECT* button to place a hyphen in front of the option.

STOP NO VIDEO

EXT CTL OFF

TC EXT

TC NON-DROP

You may wish to set other options in the SETUP menu, such as LCDLIGHT, but these will have no effect on the FS-100 recording from your HVX200 camera.

CONTROL should be set to TAPELESS

Alternative Frame Rate Recording

On the FS-100 there is no need for any changes in settings to record using the HVX200's alternative frame rates. The HVX200 sends everything as 60fps through the Firewire connection. This allows for a more standardized signal that most any NLE can ingest and use. This type of information is stored as metadata in the P2 data recorded to the FS-100. It is up to the NLE to strip away the extra frames the HVX200 inserts between the original "flagged" frames after the footage has been ingested. To utilize this feature of the HVX200, refer to your NLE's user manual. If you are using Final Cut Pro, we will cover these specifics in a later section of this guide.

Connections and Recording

Connecting the HVX200 to the FS-100 is pretty straight forward. As a precaution when dealing with Firewire (IEEE 1394) devices, be sure the FS-100 is turned off when connecting the cable. Connect an appropriate Firewire cable from the DV I/O port on the FS-100 to the 4-pin Firewire connection on the HVX200. After connecting the Firewire cable, power the FS-100 on.

When you press the record button on the HVX200, the FS-100 should automatically begin recording. You can verify this on the HVX200's LCD screen. In the upper left, there will be the number "1394". When you are recording there will be a red dot (the Record symbol) to the right of this number. When

you stop recording, two red parallel lines (the Pause symbol) will show there in red, replacing the red dot.

You can also verify recording by looking at the main screen on the FS-100 and monitoring the time code read out. It should be counting as it records footage. Press the record button on the HVX200 again and the FS-100 should stop recording.

When recording in this manner, nothing will be recorded to the inserted P2 cards. If no P2 cards are inserted into the camera, Time Code will be sent to the FS-100, but it will be Free Run and may not be contiguous from clip to clip.

Alternative Recording Setups

If you want to record to the FS-100 and to a P2 card at the same time change the following: Menu > 9. OTHER FUNCTIONS > 1394 CONTROL set to BOTH. When you now record, you will see the word REC in red now in the upper right of your HVX200's LCD screen. Change this setting to OFF and you will only record to an inserted P2 card, even though the FS-100 may still be connected and powered on. The red REC word in the upper left of the HVX200's LCD means it is recording to P2 cards. The word 1394 (with the appropriate red symbol during operation) in the upper right means it is recording to the Firewire port. Either one or both will be visible indicating to you visually how your camera will be storing the footage it records.

After Recording

After recording, bring the FS-100 back to your editing bay, and prep the FS-100 to be connected to an appropriate Macintosh computer for use with Final Cut Pro 5. Use the left or right arrow keys on the FS-100 to navigate to the UTILITIES menu. Scroll down to ORGANIZE P2 and press the select button. The more footage you recorded, the longer this process will take. Once done, it will inform you of such, then press the user button labeled as BACK.

Be aware that once you run the ORGANIZE P2 command, you will have to re-format the FS-100's hard drive before you can begin recording to it again.

Second, connect the firewire cable from the Computer I/O port on the FS-100 to a Firewire port on your Macintosh. Power the FS-100 up only after connecting the Firewire cable. This is a precaution against static and the nature of Firewire ports. Using the left or right arrow keys on the FS-100, navigate to the HDD MODES menu. Scroll down to highlight the DD DRIVE option and press the left arrow key. This will bring up the CONNECT menu. Press the user button labeled ENABLE. The FS-100 screen will show the word success, and the FS-100 will mount on your OS X desktop with the standard OS X Firewire icon. It will have a name such as FS083004, or something similar. You should not change this name at all!

Playback from the FS-100 on the HVX200

You can actually play back the footage recorded to the FS-100 to the HVX200's LCD screen. First, you must press the Camera mode button on the very lower left back of the HVX200. Press this button once to put the camera in VCR mode. You will see the P2 card thumbnail screen on the LCD. If there is no footage on the P2 cards, or if there is no P2 card inserted, these thumbnails will be blank. Next, press the Audio/Dub Thumbnail button on the top of the camera body, below the handle. This will change the screen to playback from the Firewire port.

Next, on the FS-100, navigate to the PLAY menu and scroll down to highlight the playback method you prefer, then press the SELECT button. For more information on these playback modes, see the FS-100 User Guide.

Section 2

FS-100 to Final Cut Pro work flow

Transferring P2 (MXF) footage to your Mac

There are two methods of getting your footage off of the FS-100. The first, and recommended method is to simply copy the CONTENTS folder and the LASTCLIP.TXT document directly to a folder on one of your Mac's hard drives. Transfer times should be relatively short. This will give you a back up copy of your raw MXF data. Do not alter the contents of the CONTENTS folder or the LASTCLIP.TXT! Only alter these if instructed to do so by appropriate technical support.

The second method is to ingest the footage into Final Cut Pro from the FS-100 directly. This ingesting phase must be performed even if you have copied the P2 data to your hard drive as mentioned above. Be aware that ingesting footage directly from the FS-100 into Final Cut Pro will leave you with no back up copy of the original P2 (MXF) data, as you will need to re-format the FS-100 before recording to it again.

To un-mount the FS-100 from your Mac desktop, you have several options. You can right click (cnt+click for one button mice) and chose Eject "FS..." from the pop-up menu. You can highlight the drive and chose this same option from the File menu. Or you can simply drag it to the Trash can icon in your Dock.

Once the FS-100's icon has vanished from your desktop, press the user button on the FS-100 unit labeled EXIT. You will then see DISCONNECT COMPUTER NOW displayed on the FS-100's LCD screen. Unplug the Firewire cable from the FS-100 and press the user button labeled EXIT again. You will be returned to the HDD MODE menu.

Before Recording to your FS-100 again

Before you begin recording new footage to your FS-100 again, you need to erase the footage you already have run the ORGANIZE P2 function on. Using the left or right arrow key, navigate to the UTILITIES menu. Scroll down to highlight the FORMAT option and press the right arrow key. To erase the old data, press the user button labeled YES. After a few moments of formatting, you will be returned to the main screen on the FS-100's LCD. You are now ready to begin a new recording session with your HVX200 and FS-100.

Ingesting footage into Final Cut Pro

Before using the footage you copied from your FS-100, you may wish to use a P2 software utility such as P2 Genie or P2 Log to view, label, and customize some of your P2 metadata. You can find more information about these utilities on the Internet. For our purposes here, we will skip this phase and go directly into Final Cut Pro.

Once inside Final Cut Pro, a good workflow is to first create a new Bin in your Browser and name it something appropriate. Highlight that Bin and right click (cnt+click for one button mice), then from the pop-up menu select Set Logging Bin. This will cause all your ingested clips to be placed inside this Bin, thus leaving your Browser clutter free.

Also, be sure to save your Final Cut Pro project first with an appropriate name. Otherwise all P2 footage from the FS-100 or from P2 cards will be placed all together in a folder called "Untitled Project

1” in the Capture Scratch folder on your Scratch Drive. For more information about Final Cut Pro, refer to the user manuals or the Apple Pro Training Series of books for Final Cut Pro.

To ingest your footage, go to the File menu and select Import, then select “Panasonic P2...” This will bring up the Import Panasonic P2 window. Give your clips a Reel Name, located at the top of this window. Then click the plus sign to the right of the Volumes/Paths: drop down menu. Navigate to the folder that contains your LASTCLIP.TXT document and CONTENTS folder and click Open. A list of all the clips from your FS-100 will show up. To ingest select clips, hold the command key (Apple key) and click your mouse on the specific clips you want. Then click the Import button in the lower right of this window. If you want to ingest all the clips listed, simply click the Import All button.

This will convert your clips to QuickTime DVCPRO-HD movie files that retain all your P2 metadata. These files will be placed in a folder inside the Capture Scratch folder on your Scratch disk. When completed, all your clips will show up in your FCP Browser window.

You can perform this ingesting process directly from the FS-100 into Final Cut Pro if you wish. Once you open the Import Panasonic P2 window, the FS-100 should automatically show up listed in the Volumes/Paths field. Again, this method saves hard drive space because you aren’t copying the CONTENTS folder and the LASTCLIP.TXT document to your hard drive. But you also don’t retain a back up copy of that original P2 data. Which method you chose is up to you, just be sure to think your workflow through first.

Sequence Setups

The following are available as Easy Setups in the Final Cut Pro menu:

P2 FORMAT	EASY SETUP
720/60P	DVCPRO HD - 720p60
720/30P	DVCPRO HD - 720p30
720/24P	DVCPRO HD - 720p24
1080/60i	DVCPRO HD - 1080i60
DVCPRO 50: 60i	DV50 - NTSC
DVCPRO 50: 30P	DV50 - NTSC
DVCPRO 50: 24P	DV50 - NTSC (Edit and Output as 29.97 DV)
DVCPRO 50/24PA (23.98)	DV50 - NTSC 24P (23.98)

These are the formats that are registered into Final Cut Pro to give Real Time playback. Some third party cards come with additional codecs that will extend Final Cut’s Real Time playback abilities.

Here is a list of proper Audio/Video Settings for all the available P2 formats:

P2 FORMAT	SEQUENCE PRESET	CAPTURE PRESET	DEVICE CONTROL PRESET
720/60P	DVCPRO HD - 720P60	DVCPRO HD - 720P60 48kHz	DVCPRO HD FireWire
720/30P	DVCPRO HD - 720P30	DVCPRO HD - 720P30 48kHz	DVCPRO HD FireWire
720/24P	DVCPRO HD - 720P24	DVCPRO HD - 720P24 48kHz	DVCPRO HD FireWire
1080/60i	DVCPRO HD - 1080i60	DVCPRO HD - 1080i60 48kHz	DVCPRO HD FireWire
DVCPRO 50: 60i	DV50 - NTSC - 48kHz	DV50 - NTSC - 48kHz	FireWire NTSC
DVCPRO 50: 30P	DV50 - NTSC - 48kHz	DV50 - NTSC - 48kHz	FireWire NTSC
DVCPRO 50: 24P	DV50 - NTSC - 48kHz (Edit and Output as	DV50 - NTSC - 48kHz (Edit and Output as	FireWire NTSC

	29.97)	29.97)	
DVCPRO 50: 24PA (23.98)	DV50 - NTSC 24P (23.98)	DV50 - NTSC - 48kHz	FireWire NTSC

Section 3

Utilizing and Configuring Final Cut Pro

Pull-down/Frame Removal

The HVX200 records everything in a standard 60 frames per second format (except for 24p Native formats). It “flags” the original frames in the metadata. When we ingested footage as outlined previously, we left everything as is, in it’s 60 frames per second format. If we wanted to strip the extra frames the HVX200 added to our original format, we would use the Pull-down function.

In this example, let’s import DVCPRO-HD 720p24 footage. But we want our footage to be in it’s native 24 frames per second native format. We would want this in order to edit it in a 720p24 Sequence without the need to render. So when we get to the point of ingesting our P2 footage into our Final Cut Pro project, we can do what is called a Pull-down. More information on this process can be found on-line, in the HVX200 user guide, and in a variety of other resources.

When in the Import Panasonic P2 window in Final Cut Pro, notice there is a box you can check at the bottom of this window called “Remove duplicate/adv. pull-down frames”. This option tells Final Cut Pro to look at the DVCPRO metadata and strip away the extra frames, and retain only our original 24 frames per second. Once ingested, look at the clip in your Browser. You will see the Vid Rate column showing our clip at 23.98 frames per second, which is the NTSC version of 24 frames per second, to conform with NTSC standards. If we didn’t use the Pull-down, it would read as 59.94 frame per second, which is the NTSC version of 60 frames per second.

Alternative Frame Rates

What if you were going for a frame accurate slow motion effect and recorded another clip in the DVCPRO-HD 720p24 format, but used an alternative frame rate of 60 frames per second? Do NOT use the Pull-down function when ingesting that clip into Final Cut Pro. Why? Because this tool only works with DVCPRO-HD footage that is in the 59.94 frame rate.

Once you have that clip in your Browser, highlight it in the Browser, then from the Tools menu select “DVCPROHD Frame Rate Converter”. If you do not see this option, it is on the Final Cut Pro 5.1 installation DVD, inside the Extras folder. It is a plug-in that has a Read Me file to explain how to install it. You will be prompted for your desired frame rate. Choose the frame rate that is native to your format. For our example here, we’ll use 23.98, because we are going to be editing in a 24fps Sequence. Make sure Remove Duplicate Frames is checked. The option to Make Self Contained File makes a new QuickTime file of your clip on your hard drive. Use this if you think you may be using this clip in other projects, want a back up copy, or need to reduce the CPU overhead on your system. Otherwise Final Cut Pro will use a clip that is a reference to the original clip on the hard drive. Import Results into Final Cut Pro will place the resulting new clip into your Browser automatically.

Now, this stripped away all the extra frames the HVX200 placed in the original clip to conform it to the 60fps standard. What we are left with are our original 60 frames per second, as we specified in the Scene Settings on the camera when we shot. But it conforms those original frames to match 24

frames per second (23.98). The result is frame accurate, in-camera slow motion just like film. Since there are 60 frames for each second of real time action, we are spreading them out so that only 24 of them fit in each second of real time. Presto, super clean slow motion.

Using frame rates slower than what our target editing platform is, 24fps for example, gives us fast motion. Faster frame rates in the camera cause slow motion, slower frame rates cause fast motion.

Setting Up a non-native DVCPRO-HD Sequence

In Final Cut Pro, there is an Easy Setup option that you should run as the very first step to creating a new project. It will give you all the setups that have been “registered” and can run with significant Real Time playback performance.

But there are formats not listed in the Easy Setup that the HVX200 and FS-100 can record. You can still create Sequences to conform to those formats. The only down side is that you may lack a good deal of Real Time playback.

Let’s pretend we want to create a *DVCPRO-HD 1080i24p* Sequence preset:

To create this new Sequence set up, first, go to the Final Cut Pro menu and select Audio/Video Settings. In the Audio/Video Settings window, navigate to the Sequence Presets tab. Highlight the DVCPRO HD 1080i60 preset. Notice this preset is locked. Simply click the Duplicate... button to make a copy of it that you can alter. This will open up the Sequence Preset Editor. I will alter the Name to be “DVCPRO HD - 1080i24P. Then I’ll alter the Description to read “Use this preset when editing with 1080i DVCPRO HD 23.98p fps material with audio set to 48KHz (16bit for DV).”

Next Change the Field Dominance to None, as this will give us progressive frame performance instead of interlaced frames. Next Change the Editing Timebase to 23.98. The Timecode Rate should read “Same As Editing Timebase”.

Now, even though the QuickTime Video Settings section of this window says “DVCPRO HD 1080i60 for the Compressor, that’s because there’s no Real Time registered 1080i24p in Final Cut Pro. Again, this simply means there’s no guarantee of any Real Time playback performance. Click OK.

Now there’s a caveat here. This new Sequence Preset will not show up in the Easy Setup list. Remember that the Easy Setup is a list of format presets registered for Real Time playback by Apple. Where you will see it is if you go to the Audio/Video Settings window again, in the Summary tab, in the Sequence Preset drop down menu, our new set up will appear.

There’s a second way to set up odd format Sequences. With a Sequence open in the Timeline window, go to the Sequence menu and chose Settings (Timeline window must be the active window). Here we can set our odd Sequence configuration just like we did in the previous example. All you’re trying to do it set it for 1080 or 720, which ever you need. Then set the Editing Timebase to match your desired frame rate, and make sure Filed Dominance is set to None (if it is at all active). Remember that the QuickTime Video Settings section will only show the Compressor to be whatever is closest to your format. Again, Real Time playback is not guaranteed.

Be aware that some third party cards come with codecs that can give Final Cut Pro full Real Time playback with these non-native formats. Refer to the manufacture of such I/O cards for full details.

Mixing Formats in Final Cut Pro

There is a trick to mixing formats in a single Final Cut Pro Sequence. You can mix any format with any other format in a Final Cut Pro Sequence, but you may suffer a lose of Real Time playback

performance and/or may need to render clips. You will see a degradation of Real Time playback especially if you mix different frame rates. For example, if we drop a 60fps clip into a 24fps Sequence, we may have some Real Time playback if our system is enough to support it. But if we mix 60fps 1080i with 24fps 720p in a 720p24 Sequence, we may have to render the 1080i clip if our Macintosh is not powerful enough to handle it. So, you can actually mix any formats you may wish in a Final Cut Pro Sequence, but it will be up to your machine to dictate how much Real Time playback you may or may not get without rendering.

Custom Button Bars for P2 work

In Final Cut Pro 5 you now have very flexible and powerful customization tools. You can create custom window layouts and save them. As well as custom button bar layouts. There are two buttons you may wish to place in the Browser window's Button Bar (you can place buttons in any window's button bar, but the Browser is most logical for our purposes).

First, go to the Tools menu and select Button List. The Button List window will open. Click the disclosure triangle for the File Menu. Scroll down to the Import Panasonic P2... button. Simply drag this icon to your Browser's button bar. The button bar is the gray area in which the tabs reside. It begins on the right edge, placed the icon there. Close the File Menu disclosure triangle.

Next, click the disclosure triangle for the Tools Menu. If you have the DVCPROHD Frame Rate Converter installed on your system, it will be in the Tools Menu list. It does not yet have an icon, but you can still use it as a button anyway. Again, drag and drop this to your Browser's button bar, right next to the Import Panasonic P2 button. It will have no icon, only a tiny "x", but it is still functional. From now on all you have to do is click one of these buttons, rather than navigate through menus.

To save this button bar set up, simple go to the Tools menu and navigate down to Button Bars, then to Save. Give it a meaningful name and click Save. You can access this layout later by going back to the Button Bars menu under the Tools menu, where it will be listed.

Custom Browser Heading Display

Since working with DVCPRO-HD footage, variable frame rates, variable formats, well, we could use that info more now, than when we were doing straight DV. In Final Cut Pro there is a way to customize the Browser information headings, so that all that information is much closer.

To customize the columns in Final Cut Pro's Browser, simply right click (ctrl+click for one button mice) on a column's heading. From that pop-up menu, you can select to Hide that column. You can also select from the list to add a column from this same menu. There is also an option to Save your custom column layout for future recall. Rearranging the columns is a simple matter of clicking on a column heading and dragging it to the location you want it to be in.

Final Tip

Do not get confused when you do not see In and Out point information in the Browser's columns. What you should see is Media Start and Media End time code. Some times these two get confused and you may think your clips have no time code. Media Start and Media End are the time codes from the original recording. In and Out Points are assigned to a clip after you've imported it and opened it in the Viewer.

For More Information on FS-100, please visit <http://www.firestore.com>