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What is Native Mode Recording?

Panasonic's native (PN) mode is a standard feature in P2 HD camcorders. The PN mode records images at the same frame rate the camera's imager captures them. Shooting in the PN mode can more than double a P2 card's recording capacity; the actual increase depends on PN frame rate.

P2 file-based recording solves a legacy issue of tape-based recording. There's no tape recorder and therefore, no servo motor running at a frequency of 50Hz or 60Hz to control a spinning record head and insure that footage recorded on one recorder will play correctly on all format-compatible recorders. Panasonic's tape-based camcorders operate at a constant frequency and therefore, always records at 50, 59, 97, or 60 frames per second.

Changing the frame rate setting in a tape-based camcorder alters the capture rate of the camera's imager; it does not change the number of frames that must be recorded on tape. If you set the frame rate to 24 fps, the camera's imager captures 24 unique frames. These 24 images must be recorded in the 60 available slots using the industry-standard 2:3 pulldown or Panasonic's 2:3:3:2 advanced pulldown arrangement. When the frame rate is set to 25 fps, the imager captures 25 unique frames. The recorder, which operates at a constant frequency of 50Hz, must fill its 50 available slots with two copies of every frame the imager captures. The VariCam always records 60 frames so, it uses a 3:2:3:2:2 pulldown arrangement to record at 25 fps.

P2 camcorders, in PN mode, record just the unique frames. This saves a lot of space. If you shoot at 24fps, the P2 file only records 24 frames instead of the 60 frames recorded in the standard mode or with a tape-based camcorder. Switching from the P to the PN mode increases the record capacity of a P2 card by two and a half times (60 divided by 24 = 2.5X).

Metadata in the P2 file determines at what frame rate the footage plays. There are three possible frame rates, 24, 25, and 30, in the PN mode. If you shoot off-speed (under-cranked or over-cranked) footage in PN mode, the fast- or slow-motion effect will play correctly without any conversion.

The master frame rate used to play off-speed footage is determined by the setting (24P, 25P, or 30P) in CAMERA MODE, which is in the main camera menu. If it's set to 24P, the master frame rate will be 24 fps. Footage captured at any frame rate will playback at 24 frames per second. If FRAME RATE is set to 48 fps, the imager captures 48 frames per second and the P2 file records 48 frames. When you review the footage, it will playback at 24 fps.

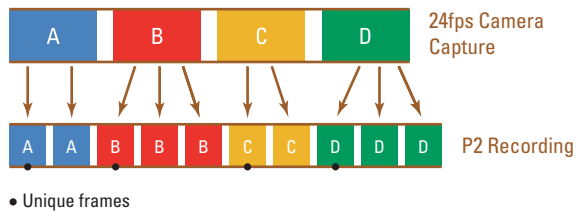
The Ground Rules

One second of action will become two seconds, thereby creating the slow motion effect. If CAMERA MODE was set to 30P, those same 48 frames would playback at 30 fps and the motion will be faster because the one second of action lasts 1.6 seconds instead of two seconds.

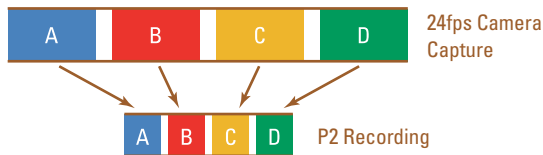
The PN mode has no impact on recording audio. Shooting off-speed footage, in any recording mode, standard or PN, will disable audio recording. If the camcorder is in a PN mode, the streaming output of the FireWire (IEEE-1394) port will be disabled. P2 camcorders are designed to only send SMPTE-compliant data over FireWire and the PN mode does not comply with the streaming protocol standards. P2 camcorders and devices automatically add, if necessary, industry-standard 2:3 pulldown so 24PN footage can be seen on HD displays without extra hardware.

To turn on native recording, open the camera menus and access the SYSTEM MODE submenu under the SYSTEM SETTING menu. Select REC MODE and set it to DVC HD (N), AVC-I 100, or AVC-I 50. The AVC-I formats will be available if an optional AVC-Intra (AJ-YBX200G) codec board is installed in the camcorder. Next, select CAMERA MODE and set it to 24P, 25P, or 30P. The camcorder will now record in the PN mode and the camera mode indicator, in the upper left corner of the viewfinder, will display 24PN, 25PN, or 30PN. When REC MODE is set to an AVC-Intra format and CAMERA MODE to 24P, 25P, or 30P, the camcorder automatically records in the PN mode. If the SYSTEM MODE is set to a 1080i format, the camcorder will record in 1080/24PN, 1080/25PN, or 1080/30PN. The 1080 PN modes are only available when recording in the AVC-Intra format.

24P Record Mode



24PN Record Mode



P2 Software

Managing P2 cards with P2 CMS

The property information for P2 cards connected to the system can be displayed in P2 CMS. To access the P2 card property information in the Mac version, press and hold the Shift and Command keys and touch the letter “F” to open the “P2 Card Property” window. In the Windows version, press and hold the Alt key and touch the letter “T” to open the “Tool” menu. Then press the letter “F” to open the P2 Card Property window.

Drive	Serial No.	Total Capacity	Free Disk Space	Maximum Recording Time
ROBERT1	ABD07B1963	7.25GB	1.19GB	5minute36second/2minute48second...

The P2 Card Property window lists the name of the P2 card, its serial number, total storage capacity, free space, and the maximum recording time in minutes and seconds for DVCPRO, DVCPRO50, and DVCPROHD. The Windows version lets you format the P2 card using a button on this screen. If you press the “Format”

Drive	Serial No.	Total Capacity	Remain	Max Recordable
G:	ABD07B1380	7427MB	285MB(0.38%)	00:07:00:03:00:02

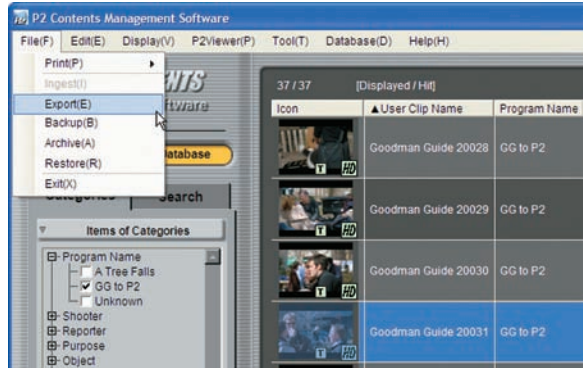
Drive	Serial No.	Total Capacity	Remain	Max Recordable
G:	ABD07B1380	7427MB	285MB(0.38%)	00:07:00:03:00:02

Total Capacity	7427MB
Volume Label	FILE
Start	Close

button, a confirmation screen will appear asking you to confirm your decision to format the selected P2 card. Formatting deletes all the files on the card; it is not possible to restore files after a P2 card has been formatted. To format P2 cards on a Mac, you’ll need to use the P2 Formatter application, which is included with Panasonic’s P2 drivers for the Mac. More information about this application appears on page 151.

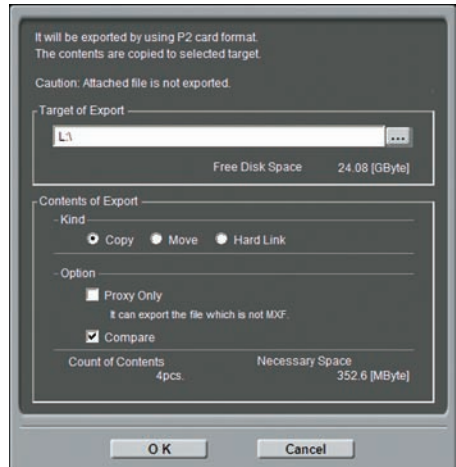
File Management/Output with P2 CMS

The options under the “File” menu in P2 CMS, except “exit the program,” will only be available if clips have been selected in the display window. To access the “File” menu in the Windows



version, press and hold the Alt key and touch the letter “F.” To access the “File” menu in the Mac Version use the mouse. If one or more clips have been selected, you can choose to print, export, backup, archive, or restore.

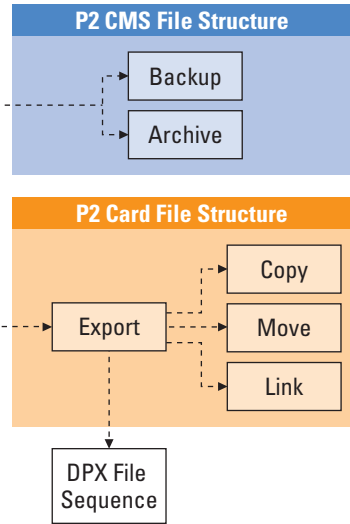
Clips in the P2 CMS database can be exported to a P2 card or a drive connected to the system. Three types of export — copy, move, and link (hard link in the Windows version) — appear on the export window along with the options to export only the proxy files and to compare the exported files to the original files. “Copy” will copy all the files associated with the selected clip or clips to the location you specify. “Move” copies the files to the location you specify and then deletes the files from the database. “Link” will create links to the MXF files associated with the selected clip or clips in the location you specify on the Mac version. If you open the folder with the Mac Finder, you will see a list of shortcuts to the files. In the Windows version, P2 CMS will only do a “Hard Link” export to the same drive that holds the database, which makes this option of minimal value.



P2 Software

Export re-creates the original P2 card file structure that P2 CMS had separated into a single clip structure. A P2 CMS database stores each clip in a separate “Contents” folder that has folders for the Audio, Clip, Icon, Proxy, Video, and Voice (memo) files. The export process copies the one clip per folder file into unified folders that hold multiple clips, which is how the files are stored on a P2 card. The export process in P2 CMS does not create a Lastclip.txt file.

There is, under export, in the Mac version only, an option to convert to DPX. This option only works with clips recorded in an AVC-Intra format. It was designed to convert clips shot in the Film Rec mode with a HPX2700,

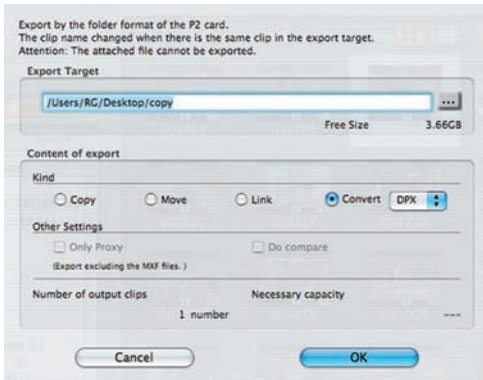


HPX3000, or HPX3700 camcorder into DPX image file sequences for output to film. Clips will be converted to DPX files with the same dimensions (1280x720 or 1920x1080) as the clip’s format.

“Backup” makes a copy of the P2 clips you selected onto a CD, DVD, or Blu-Ray DVD. “Archive” makes a copy of the clips and then

deletes those P2 clips from P2 CMS database. “Restore” copies the selected clips from a CD, DVD, or Blu-Ray DVD to your P2 CMS database.

The option to “Compare” the original files to the copies is available when doing an Export, Backup, Archive, or Restore. The compare process, which verifies the files, increases the time required for these procedures but does assure you that the operation was done correctly.



P2 System Accessories

Set up the P2 Mobile using these settings before following the instructions for editing news and sports packages.

P2 Mobile Menu Settings for Editing

Menu #	Name	Setting	Notes
25	SYSTEM FREQ	0-8	Match System Frequency to your preferred editing format.
020	SYS FORMAT	0 (1080i) 1 (720P) 2 (480i/576i)	Set the System Format to match your SD or HD standard.
024	REC FMT (SD)	0 (50M) 1 (25M) 2 (DV)	Selects the record format when SYS FORMAT is set to 576i or 480i.
025	REC FMT (HD)	0 (DVCPROHD) 1 (AVC-I 50) 2 (AVC-I 100)	Selects the record format when SYS FORMAT is set to 1080i or 720p.
026	PLY LST FMT	0 (SYS FMT)	Selects the format for the play list.
643	OUT MODE SEL	0 (AUTO)	Selects the video output signal.
792	A. DUB CH	0 (CH1) 1 (CH2)	Selects the channel used for the Voice Over track. Natural sound will be on the other channel.
793	A. DUB PB MIX	0 (OFF)	

P2 Mobile Switch/Button Settings

MONITOR SELECT M	Channel One on the Left	Channel Two on the Right
--------------------------------	--------------------------------	---------------------------------

Every time the monitor select button is pressed, the routing of the audio signals will change. The L/R lamps on the audio meter will indicate which channels are selected. First, set the METER SELECT **N** switch to CH1-4. Then, if MONITOR SELECT **M** is in the default position, press the MONITOR SELECT **M** once to send Channel One to the left side and Channel Two to the right side.

UNITY/VAR CHANNEL SELECT P	Set Left switch to 1	Set Right switch to 2
--	-----------------------------	------------------------------

This switch must be set to VAR. If it's set to unity you will not be able to adjust the audio levels.

SPEAKER LEVEL C

Turn the speaker level control knob, which is to the right of the LCD screen, up to a comfortable level for the ambient conditions.

Playlist Setup Menu

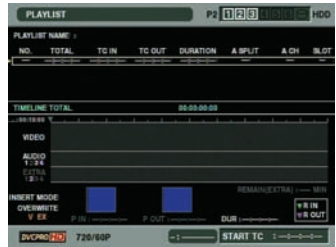
SETTING>>INSERT MODE: OVERWRITE

SETTING>>INPUT TRACK: VIDEO ONLY

Press the PLAYLIST Q button to switch to the playlist mode. Press the MENU D button to open the PLAYLIST setup menus. Scroll to the SETTING submenu and press the SET B button to open it. Scroll to INSERT MODE and press the SET B button. Select OVERWRITE and press the SET B button. Scroll to INPUT TRACK and press the SET B button. Select VIDEO ONLY and press the SET B button. Press the MENU D button to exit the setup menus.

Editing a Sports Highlight Package with Assemble Edits

1. Open a time line, by pressing the PLAYLIST Q button. You will see a list without events and a time line window without clips. If there is an existing playlist you can clear it by holding SHIFT V and pressing the RESET J button. Select “YES” on the confirmation window that appears and a new blank play list will open.
2. Set the SUPER A switch to ON.
3. Press the EVENT R button. The first clip, in record order, that matches the play list format, will open on the LCD display. The P2 Mobile will now behave like a tape deck. Use the Search Dial X to scan through the clips or hold SHIFT V and press FAST FORWARD G or REWIND E to move from clip to clip.



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- To begin editing, find your first in-point. Hold ENTRY **T** and press IN **S** to mark the in-point. Play or scan forward to find the out-point. Hold ENTRY **T** and press OUT **U** to mark the out-point.
- Press the EVENT **R** button. The playlist window will re-open. The event you created by marking an in- and out-point will be listed as event number 1.
- Repeat the process. Press the EVENT **R** button. Set in- and out-points. Press the EVENT **R** button. The event number will increment each time. However, it's not necessary to exit the Event mode and return to the Playlist mode every time you mark an in- and an out-point. You can set the points on all the clips and then press the EVENT **R** button. The P2 Mobile will remember them all and enter them into its playlist.



Editing a Basic News Package with Insert Edits

Use the assemble edit process explained above to create the A-roll for the news package.

Adjust Clip Audio Levels

The next step is to adjust the audio level of the clips on the time line. In Playlist mode:

- Scroll to a clip using the Search Dial **X** or arrow keys.
- Press the RECORD **J** button to select it. The color of that clip's event time code numbers will change from white to orange.
- Hold the SHIFT **V** button and press PLAY **H** to switch to the preview edit mode.
- In the preview edit mode, adjust the audio level using the faders. When the level is set correctly, press STOP **F** or wait until the clip finishes playing.



P2 in Postproduction

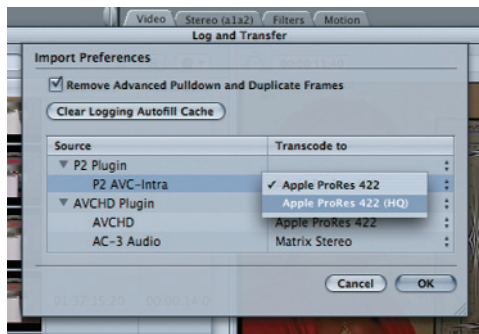
Ingesting AVC-Intra, 24PA, Variable-Frame Rates, and Spanned Clips

Footage in the AVC-Intra format is automatically transcoded to the Apple ProRes 422 or Apple ProRes 422 (HQ) codec. However, you can decide which codec to use — ProRes 422 is the default setting — under the Log and Transfer window's

preferences. To access these preference settings, click on the action icon in the upper-right corner of the Browse area and select the “Preferences” option.

The “Import Preferences” dialogue box will open.

Select the row on which “P2 AVC-Intra” appears, click on the “Transcode to” column and choose the codec.



“Remove Advanced Pulldown and Duplicate Frames” is an option on the “Import Preferences” dialogue box. If you check this option, upon ingest, the duplicate frames in 24PA footage will be removed. Thereby, converting it from 29.97 fps to 23.98 fps and reducing the space required to store it. FCP will also remove, upon ingest, duplicate frames from variable frame rate footage.

***Notes:** The Remove Advanced Pulldown and Duplicate Frames option only applies to footage recorded in a DVCPRO format. To remove duplicate frames from footage shot in 24P mode, which uses standard pulldown, you must use Cinema Tools.*

To ingest a spanned clip as a single clip, all the sections must be mounted prior to ingesting them. If there are sections missing, FCP will ingest each piece as a separate clip. To fix this, you can re-ingest the spanned clip or use time code to assemble the parts manually.

P2 Metadata in Final Cut

Reel names are used to organize clips in FCP. Unfortunately, there is no reel name field in the P2 metadata. FCP substitutes the name of the P2 card or the name of the folder that contains a copy of the P2 card for the reel name. If a clip is a spanned clip, FCP will enter “Spanned Reel” into the reel name rather than the name of the P2 card or folder.

This reliance on reel names presents an organizational challenge. P2 cards are designed to be reused and few people change the name of P2 cards. Even fewer change the name of the P2 card every time the card is reused. Consequently, direct ingest from P2 cards defeats FCP's reel name scheme.

A solution is to alter slightly your workflow. Rather than ingest P2 clips directly from the P2 cards, first copy the P2 cards to individual folders on a hard drive. To make a new folder, hold the Shift and Command keys and then press the letter "N." Create a descriptive name for the folder. To better organize these copies of P2 cards, create a top level folder, which could be called "P2 Footage" or "P2 Reels," and then create folders under this top level to store individual P2 cards.

FCP reads the DIF metadata for time code and audio and video format information. The Scene and Take metadata is disregarded; the information doesn't map to the Scene and Take fields in the Logging area of the "Log and Transfer" window or to those fields in the bin. The challenge is that FCP ignores the User Clip Name field in the DIF metadata. Instead it reads the Clip Name — the sequential name that forms the file name — and places that metadata into its name field. There's no way to change how FCP maps P2 metadata, so the editor must manually rename each clip or work with clips that have cryptic sequential names instead of descriptive names.

You can enter descriptive names in the Logging area, though doing so has detriments. The clip's new name and other information entered here is only accessible from within this project. More important, if you rename clips prior to ingesting them, the QuickTime files will have different names than the P2 files. If you need to re-ingest P2 clips, FCP can locate them because it reads the Global Clip ID (UMID) from the DIF metadata in the clip. To re-ingest clips, select them in the bin or time line, and then hold Control and

