Panasonic
ideas for life

P2HD

AJ-HPX3700
AJ-HPX2700

Memory Card Camera-Recorder

AVC-Intra DVCPRO HD

VariCam Creativity and P2 HD Workflow

The P2 HD VariCam Series Transforms the Moviemaking Workflow

The Panasonic VariCam is well known in the movie industry as a video camera that captures images with an appealing warm, film-like tone and texture. Now the superior image quality and creativity that characterize this ground-breaking camera have been passed on to two advanced new P2 HD camera-recorders. The AJ-HPX3700 outputs RGB 4:4:4 images with full-pixel resolution and P-10Log gamma, and the AJ-HPX2700 features a full-rate (1 to 60 fps) variable frame function. Adding P2's advanced file-based and tapeless recording to VariCam's world-recognized image quality and expressiveness, these powerful new camera-recorders facilitate the workflow while cutting costs.

AJ-HPX3700

High-Quality P2 HD VariCam for High-End Production, with RGB 4:4:4 Output in Full 1920 x 1080-Pixel Resolution and P-10Log Gamma

- 2.2-megapixel 2/3" CCD for full 1920 x 1080 HD images.
- Dual-link HD SDI output for camera-through RGB4:4:4/10-bit log gamma signals. Compatible with uncompressed, high-end cinema workflows.
- Recording formats: AVC-Intra 100/50 and DVCPRO HD. AVC-Intra 100 uses 10-bit 4:2:2 full raster sampling.
- HD SDI output of 23.98PsF/24PsF video signals.
- Variable frame rate function ranging from 1 fps to 30 fps.
- Selectable gamma modes, including Film-Rec.
- Scan-reverse function for film lens use.
- Chromatic Aberration Compensation (CAC) function compensates for registration error and minimizes lateral chromatic aberration in lenses.
- High F10 sensitivity at 2,000 lx. Minimum illumination of 0.042 lx (at 1 fps VFR and +30-dB gain-up).
- Reliability, speed, and IT compatibility with advanced P2 card recording.

AJ-HPX2700

Multifunctional P2 HD VariCam with a Variable Frame Rate from 1 to 60 fps: Superior Creativity and Outstanding Cost-Performance

- Variable frame rate of 1 fps to 60 fps in 720p, for creative over-cranked or under-cranked shooting.
- Progressive CCD for multi-format recording*1 in 1080/24p, 1080/30p, 1080/60i, and 720/60p.
- Recording formats: AVC-Intra 100/50 and DVCPRO HD. AVC-Intra 100 uses 10-bit 4:2:2 full raster sampling.
- HD SDI output of 23.98PsF/24PsF video signals.
- Selectable gamma modes, including Film-Rec.
- Scan-reverse function for film lens use.
- Chromatic Aberration Compensation (CAC) function compensates for registration error and minimizes lateral chromatic aberration in lenses.
- High F10 sensitivity at 2,000 lx. Minimum illumination of 0.021 lx (at 1 fps VFR and +30-dB gain-up).
- DVCPRO (IEEE 1394) output terminal*2 for back-up use.
- Reliability, speed, and IT compatibility with advanced P2 card recording.

*1:See the Input/Output Video Format table on page 6 for details. *2:Outputs DVCPRO HD codec recording only.

All-new, Next-generation, Premier Digital Cinematography Cameras Feature Native HD 2/3” Imagers with Premium-quality Optics

High Resolution 2.2-megapixel CCD (AJ-HPX3700)

For the AJ-HPX3700, Panasonic developed a high-density 2.2-megapixel 2/3-inch CCD that provides high-resolution full-pixel (1920 x 1080) HD images. The AJ-HPX3700 provides a choice of progressive/interlace HD video formats, supporting native 1080 23.98p/24p/25p/29.97p, as well as 1080 50i and 1080 59.94i. The camera offers a high F10 sensitivity at 2000 lux when operating in 1080i.

1-Megapixel Progressive CCD (AJ-HPX2700)

The AJ-HPX2700's 1-megapixel 2/3-inch progressive CCD combines with a digital signal processing (DSP) circuit to output high-quality 1080/720 HD images.*1 In 720p mode, it provides variable frame rate recording over the full 1 to 60 fps range. The camera's high F10 sensitivity allows shooting in light as low as 0.021 lx.*2

***1: See the Input/Output Video Format table on page 6 for details.**
***2: Shooting at F1.4 in variable frame rate mode at 1 fps, with +30dB gain up.**

Chromatic Aberration Compensation (CAC)

This exclusive technology works between lens and camera, allowing for a highly sophisticated algorithm to be deployed that automatically compensates the registration error that is caused mainly by lens chromatic aberration, and minimizes the neighboring blur. By using a CAC-compatible zoom lens, the P2 VariCam Series can obtain images similar to those captured with a prime lens.

Full screen image **CAC OFF** **CAC ON**

14-Bit Digital Processing with 12-Axis Color Correction

We offer a 14-bit A/D conversion system along with the new high-performance DSP circuit. The 12-axis color correction matrix lets you make fine adjustments in specific color regions. Functions such as skin detail let you further fine-tune the image.

Scan Reverse Function for Film Lens Use

The P2 VariCam Series can use an ultra prime lens and even an anamorphic lens adapter that creates a 2.35:1 aspect image for wide-screen cinematic shooting without cropping the image. Its scan reverse function cancels the image inversion that occurs when Angenieux's HD lens adaptor is used.

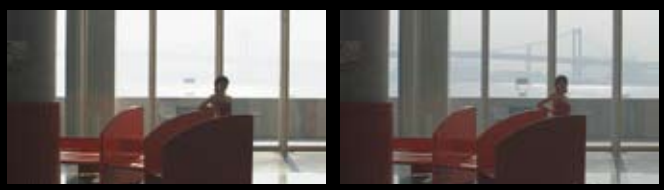
Dynamic Range Stretch (DRS)

In scenes with mixed contrast, such as when panning from indoors to outdoors, the DRS function automatically suppresses blocked shadows and blown highlights. A gamma curve and knee slope is estimated to match the contrast of each pixel, and applied in real time. When dark, bright, and intermediate shades are all contained in the same scene, this produces excellent gradation for each shade and minimizes blocked shadows and blown highlights. The images that result are enhanced by a visually wide dynamic range.

DRS OFF **DRS ON**

Seven Gamma Modes Including VariCam Film-Rec

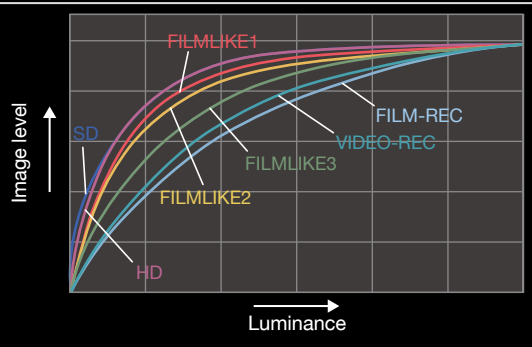
The DSP circuit in the P2 VariCam Series has seven selectable gamma modes. These include Film-Rec and Video-Rec gamma for movie production, which are the same modes incorporated in the VariCam. When using HD SDI dual-link output with the AJ-HPX3700, images recorded in Film-Rec gamma mode can be converted to P-10Log gamma, or "live" P-10 Log content can be recorded to external devices for high-end digital cinema production.



VIDEO GAMMA **FILM-LIKE GAMMA**

AJ-HPX3700/HPX2700 Gamma Modes

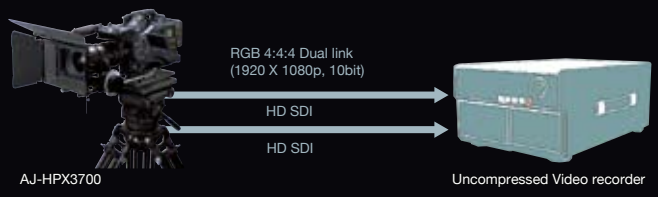
HD:	**A video gamma curve for HDTV**
SD:	**A video gamma curve for SDTV (higher gain in dark areas)**
FILMLIKE 1:	**For FILMLIKE TV production. This reproduces gradation in highlight areas more clearly than the HD gamma.**
FILMLIKE 2:	**Smoother film-like characteristics than FILMLIKE 1**
FILMLIKE 3:	**Smoother film-like characteristics than even FILMLIKE 2**
FILM-REC:	**For film-style image capture, provides low contrast wide dynamic range**
VIDEO-REC:	**For cinema production that is also suitable for video display**



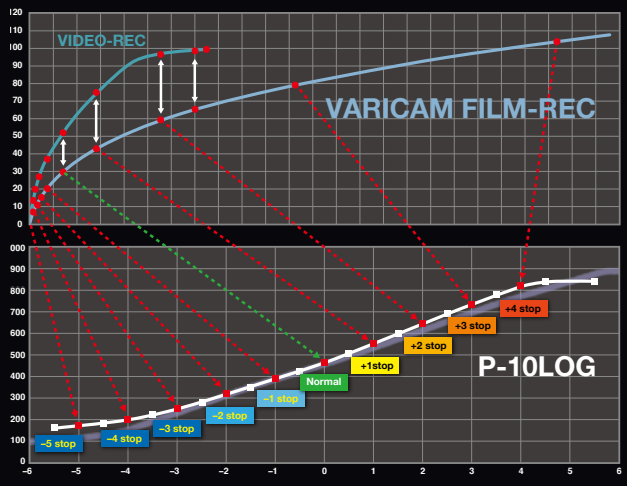
RGB 4:4:4/10-bit Log Output (AJ-HPX3700)

Both models come ready for system expansion with an HD SDI terminal that allows camera-through 1080/24PsF output. The AJ-HPX3700 adds a second HD SDI output terminal that can serve for dual-link output. HD images can be output with RGB 4:4:4 quality and the 10-bit Log (P-10Log) gamma curve*, ideal for high-end movie production using an uncompressed recorder.

***P-10Log images can be used only with camera-through output. They cannot be recorded onto a P2 card.**



Conversion chart from FILM-REC gamma to P-10LOG gamma



Film-Rec Gamma Monitor

In Film-Rec gamma mode, a cinema compensation function converts the signal to provide high-contrast images for monitoring with ideal gradation. Both the viewfinder and monitor display a fully preserved Film-Rec gamma curve while the images are recorded onto a P2 card or output from the HD SDI terminal. "VF Gamma" can be set from the menu for the LCD and viewfinder display, and "Mon Gamma" can be set for monitor or remote output.

Master-quality, 10-bit 4:2:2 AVC-Intra 100 Recording Assures the VariCams Deliver a Distinct Look That Closely Matches The Color and Response of Film Stock

VariCam's exclusive variable frame rate

Panasonic led the industry in developing the variable frame rate function. This ground-breaking function, from which VariCam takes its name, allows undercranking and overcranking to produce expressive quick-motion and slow-motion scenes.
The AJ-HPX2700's frame rate can be set all the way from 1 to 60 fps, and the AJ-HPX3700's from 1 to 30 fps.
***The settable frame-rate range varies with the system mode and the video format or recording format. See the Input/Output Video Format table on page 6 for details.**

•Normal cinematic shooting (at 24 fps or 30 fps)
The 24 fps rate refers to the same rate as used in film cameras. The 30 fps rate is the standard frame rate used in the production of TV commercials.

•Higher-speed shooting (at over 25 fps*)
This produces slow-motion effects. It is especially effective for high-action scenes like car chases or crashes, or to create a dramatic impact in a scene.

***When the standard speed is 24 fps. For a standard speed of 30 fps, anything over 31 fps will be overcranked.**

•Lower-speed shooting (at under 23 fps*)
This lets you attain a fast-motion effect. It can be combined with a warp-speed effect to give special emphasis to flowing water, fast-moving clouds, etc.

***When the standard speed is 24 fps. For a standard speed of 30 fps, anything under 29 fps will be undercranked.**

1080p/720p Native mode*

In Native mode, the P2 HD VariCam records images at the frame rate set in the camera. For example in 24pN mode, it only records 24 frames instead of the normal 60 frames. Playing back the recording at the normal rate, you can preview the speed effect right on the spot, without using a frame rate converter. Native mode also extends the recording time of a P2 card.

***The AJ-HPX3700 cannot record in 720p mode.**

720p over 60p mode (AJ-HPX2700)

This mode makes the AJ-HPX2700 compatible with previous VTR VariCam systems. In 720/24p mode,* it applies a 2:3 pulldown to record 60 frames. The recording time is the same as in 1080i or 720p mode, but the unit can output a DVCPRO HD stream from the IEEE 1394 connector as it records. This lets you produce a backup copy using a connected external P2 Mobile, P2 Gear, DVCPRO HD VTR, or Focus Enhancements FireStore FS-100.

***See the Input/Output Vdeo Format table on page 6 for details.**

1080/24p Advance Mode (DVCPRO HD Only)

The 24p Advance mode applies 2:3:3:2 pulldown to one of the 1080/24p recording modes to allow over 60i recording.*
This provides compatibility with the AG-HVX200/HPX170 Series P2 handheld cameras that record using an HD codec.

***See the Input/Output Video Format table on page 6 for details. For information on compatible nonlinear editing systems, visit <https://eww.pavc.panasonic.co.jp/pro-av/> and click "Nonlinear Compatibility Information."**

Electronic Shutter with Half Mode and Angle Setting

Both models feature an electronic shutter that offers 7 shutter speeds up to a maximum 1/2000 second, plus a Half mode, as well as an angle setting similar to a film camera. This combines with the variable frame rate function to support a wide variety of shooting techniques. A synchro scan function also provides optimal recording when shooting CRT monitors.

AJ-HPX3700 Input/Output Video Format

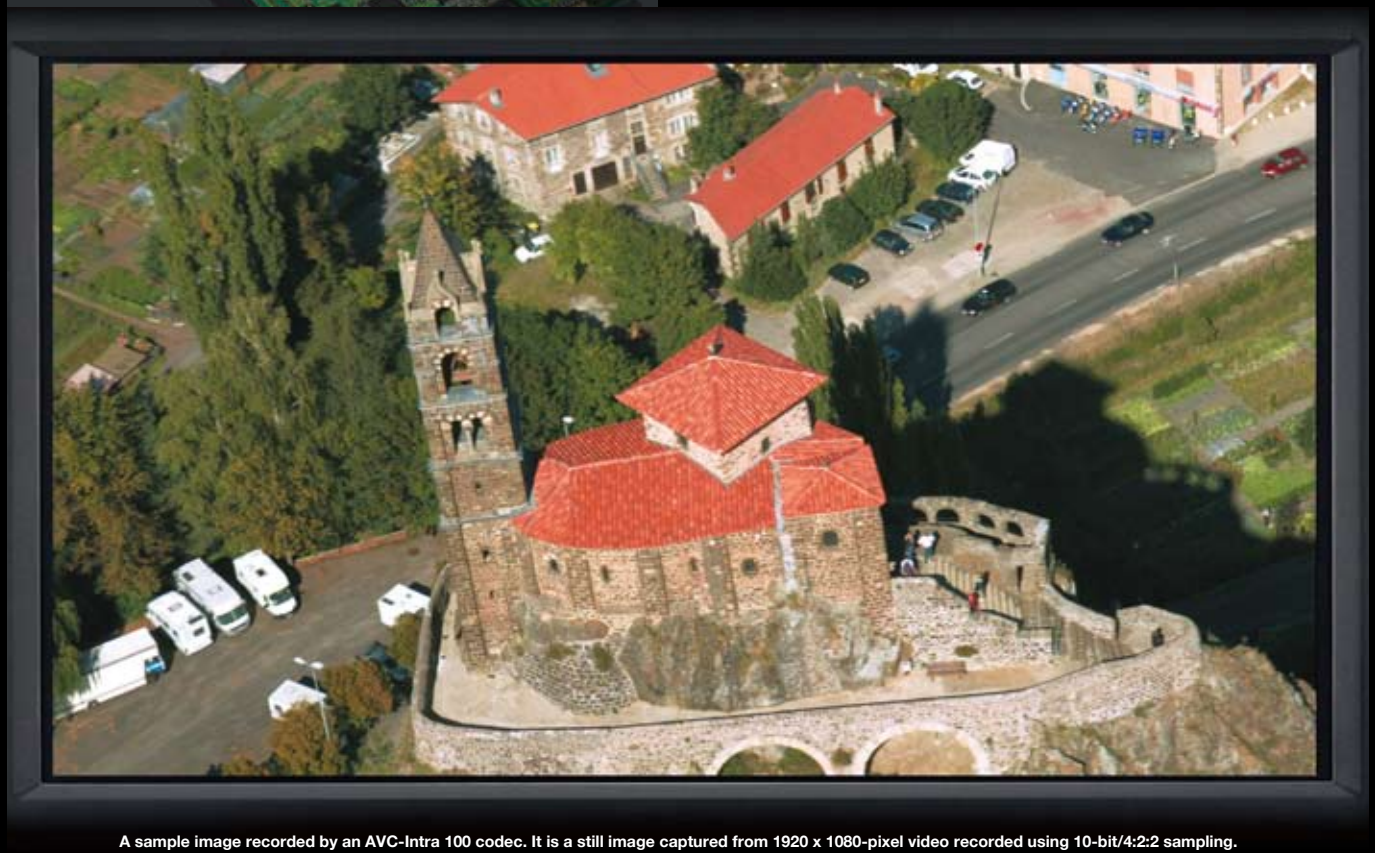
System Mode	Recording Mode	Camera Mode	VFR	Frame Rate	Recording Video Signal	Output Video Signal
1080/59.94i	DVCPRO HD/60i	60i	OFF	Not Effective	59.94i	1080/59.94i
			ON	1 to 30 Frame	59.94i (All frames effective)	1080/59.94i (All frames effective)
		30P	OFF Fix	Not Effective	29.97p over 59.94i	1080/29.97PsF over 59.94i (2:2)
		24P	OFF Fix	Not Effective	23.98p over 59.94i (2:3)	1080/23.98PsF over 59.94i (2:3)
		24PA	OFF Fix	Not Effective	23.98p over 59.94i (2:3:3:2)	1080/23.98PsF over 59.94i (2:3:3:2)
	AVC-Intra 100/60i AVC-Intra 50/60i	60i	OFF	Not Effective	59.94i	1080/59.94i
			ON	1 to 30 Frame	59.94i (All frames effective)	1080/59.94i (All frames effective)
	AVC-Intra 100/30pN AVC-Intra 50/30pN	30P	OFF	Not Effective	29.97p-29.97pN (Native)	1080/29.97PsF over 59.94i (2:2)
			ON	1 to 30 Frame	1 to 29.97p-29.97pN (Native)	EE: 1080/XX (1 to 30p) PsF over 59.94i Play: 1080/29.97PsF over 59.94i (2:2)
	AVC-Intra 100/24pN AVC-Intra 50/24pN	24P	OFF	Not Effective	23.98p-23.98pN (Native)	1080/23.98PsF over 59.94i (2:3)
			ON	1 to 30 Frame	1 to 29.97p-23.98pN (Native)	EE: 1080/XX (1 to 30p) PsF over 59.94i Play: 1080/23.98PsF over 59.94i (2:3)
1080/23.98PsF	AVC-Intra 100/24pN AVC-Intra 50/24pN	24P	OFF	Not Effective	23.98p-23.98pN (Native)	1080/23.98PsF over 47.96i (2:2)
			ON	1 to 24 or 30 Frame*	1 to 23.98p or 29.97p-23.98pN (Native)	EE: 1080/XX (1 to 24p or 30p) PsF over 47.96i Play: 1080/23.98PsF over 47.96i (2:2)
1080/24PsF	AVC-Intra 100/24pN AVC-Intra 50/24pN	24P	OFF	Not Effective	24p-24pN (Native)	1080/24PsF over 48i (2:2)
			ON	1 to 24 or 30 Frame*	1 to 24p or 30p -24pN (Native)	EE: 1080/XX (1 to 24p or 30p) PsF over 48i Play: 1080/24PsF over 48i (2:2)
1080/50i	DVCPRO HD/50i	50i	OFF	Not Effective	50i	1080/50i
			ON	1 to 25 Frame	50i (All frames effective)	1080/50i (All frames effective)
		25P	OFF Fix	Not Effective	25p over 50i (2:2)	1080/25PsF over 50i (2:2)
	AVC-Intra 100/50i AVC-Intra 50/50i	50i	OFF	Not Effective	50i	1080/50i
			ON	1 to 25 Frame	50i (All frames effective)	1080/50i (All frames effective)
	AVC-Intra 100/25pN AVC-Intra 50/25pN	25P	OFF	Not Effective	25p-25pN (Native)	1080/25PsFover 50i (2:2)
			ON	1 to 25 Frame	1 to 25p-25pN (Native)	EE: 1080/XX (1 to 25p) PsF over 50i Play: 1080/25PsF over 50i (2:2)

*** When the 24p frame range is set to "30 Frame" for the 1080/23.98PsF or 1080/24PsF system mode, up to 30 frames of the video signal will be recorded onto the P2 card. However, when the rate is set to 25 frames or higher, the signal sequence will not be correctly maintained because the HD SDI output signal is 23.98PsF or 24PsF.**

AJ-HPX2700 Input/Output Video Format

System Mode	Recording Mode	Camera Mode	VFR	Frame Rate	Recording Video Signal	Output Video Signal	Output IEEE 1394
1080/59.94i	DVCPRO HD/60i	60i	—	—	59.94i	1080/59.94i	60i
		30P	—	—	29.97p over 59.94i	1080/29.97PsF over 59.94i (2:2)	30p over 60i
		24P	—	—	23.98p over 59.94i (2:3)	1080/23.98PsF over 59.94i (2:3)	24p over 60i
		24PA	—	—	23.98p over 59.94i (2:3:3:2)	1080/23.98PsF over 59.94i (2:3:3:2)	24pA over 60i
	AVC-Intra 100/60i AVC-Intra 50/60i	60i	—	—	59.94i	1080/59.94i	—
	AVC-Intra 100/30pN AVC-Intra 50/30pN	30P	—	—	29.97p-29.97pN (Native)	1080/29.97PsF over 59.94i (2:2)	—
	AVC-Intra 100/24pN AVC-Intra 50/24pN	24P	—	—	23.98p-23.98pN (Native)	1080/23.98PsF over 59.94i (2:3)	—
1080/23.98PsF	AVC-Intra 100/24pN AVC-Intra 50/24pN	24P	—	—	23.98p-23.98pN (Native)	1080/23.98PsF over 47.96i (2:2)	—
1080/24PsF	AVC-Intra 100/24pN AVC-Intra 50/24pN	24P	—	—	24p-24pN (Native)	1080/24PsF over 48i (2:2)	—
1080/50i	DVCPRO HD/50i	50i	—	—	50i	1080/50i	50i
		25P	—	—	25p over 50i (2:2)	1080/25PsF over 50i (2:2)	25p over 50i
	AVC-Intra 100/50i AVC-Intra 50/50i	50i	—	—	50i	1080/50i	—
	AVC-Intra 100/25pN AVC-Intra 50/25pN	25P	—	—	25p-25pN (Native)	1080/25PsF over 50i (2:2)	—
720/59.94p	DVCPRO HD/60p	—	OFF	Not Effective	59.94p	720/59.94p	60p
			ON	1 to 60 Frame	1 to 59.94p over 59.94p	720/XX (1 to 60) p over 59.94p	XX (1 to 60) p over 60p
	DVCPRO HD/30pN	—	OFF	Not Effective	29.97p-29.97pN (Native)	720/29.97p over 59.94p (2:2)	EE: — Playback: over 60p
			ON	1 to 60 Frame	1 to 59.94p-29.97pN (Native)	EE: 720/XX (1 to 60) p over 59.94p Play: 720/29.97p over 59.94p (2:2)	
	DVCPRO HD/24pN	—	OFF	Not Effective	23.98p-23.98pN (Native)	720/23.98p over 59.94p (2:3)	
			ON	1 to 60 Frame	1 to 59.94p-23.98pN (Native)	EE: 720/XX (1 to 60) p over 59.94p Play: 720/23.98p over 59.94p (2:3)	
	AVC-Intra 100/60p AVC-Intra 50/60p	—	OFF	Not Effective	59.94p	720/59.94p	—
			ON	1 to 60 Frame	1 to 59.94p over 59.94p	720/XX (1 to 60) p over 59.94p	—
	AVC-Intra 100/30pN AVC-Intra 50/30pN	—	OFF	Not Effective	29.97p-29.97pN (Native)	720/29.97p over 59.94p (2:2)	—
			ON	1 to 60 Frame	1 to 59.94p-29.97pN (Native)	EE: 720/XX (1 to 60) p over 59.94p Play: 720/29.97p over 59.94p (2:2)	—
	AVC-Intra 100/24pN AVC-Intra 50/24pN	—	OFF	Not Effective	23.98p-23.98pN (Native)	720/23.98p over 59.94p (2:3)	—
			ON	1 to 60 Frame	1 to 59.94p-23.98pN (Native)	EE: 720/XX (1 to 60) p over 59.94p Play: 720/23.98p over 59.94p (2:3)	—
720/60p	DVCPRO HD/24pN	—	OFF	Not Effective	24p-24pN (Native)	720/24p over 60p (2:3)	—
			ON	1 to 60 Frame	1 to 60p-24pN (Native)	EE: 720/XX (1 to 60) p over 60p Play: 720/24p over 60p (2:3)	—
	AVC-Intra 100/24pN AVC-Intra 50/24pN	—	OFF	Not Effective	24p-24pN (Native)	720/24p over 60p (2:3)	—
			ON	1 to 60 Frame	1 to 60p-24pN (Native)	EE: 720/XX (1 to 60) p over 60p Play: 720/24p over 60p (2:3)	—
720/50p	DVCPRO HD/50p	—	OFF	Not Effective	50p	720/50p	50p
			ON	1 to 50 Frame	1 to 50p over 50p	720/XX (1 to 50) p over 50p	XX (1 to 50) p over 50p
	DVCPRO HD/25pN	—	OFF	Not Effective	25p-25pN (Native)	720/25p over 50p	EE: — Play: over 50p
			ON	1 to 50 Frame	1 to 50p-25pN (Native)	EE: 720/XX (1 to 50) p over 50p Play: 720/25p over 50p (2:2)	
	AVC-Intra 100/50p AVC-Intra 50/50p	—	OFF	Not Effective	50p	720/50p	—
			ON	1 to 50 Frame	1 to 50p over 50p	720/XX (1 to 50) p over 50p	—
	AVC-Intra 100/25pN AVC-Intra 50/25pN	—	OFF	Not Effective	25p-25pN (Native)	720/25p over 50p	—
			ON	1 to 50 Frame	1 to 50p-25pN (Native)	EE: 720/XX (1 to 50) p over 50p Play: 720/25p over 50p (2:2)	—

AVC-Intra: The most advanced compression technology for master quality video acquisition



A sample image recorded by an AVC-Intra 100 codec. It is a still image captured from 1920 x 1080-pixel video recorded using 10-bit/4:2:2 sampling.

AVC-Intra

Comes Equipped with AVC-Intra Codec

An AVC-Intra codec board is included as standard equipment. It allows recording in either of two modes: AVC-Intra 100, for full-pixel HD (1920 x 1080 and 1280 x 720) images, or AVC-Intra 50 for low-bit-rate, low-cost operation. AVC-Intra is a new codec that further advances HD production. It complies with the MPEG-4 AVC/H.264 international standard based on advanced image compression technology, and offers both superb image quality and highly efficient compression. It uses an intra-frame compression system to bring important advantages to professional editing.

High-Image-Quality AVC-Intra 100 Mode

With the same bit rate as DVCPRO HD, this mode supports full 10 bit recordings with 1920 x 1080 pixels. It enables the AJ-HPX3700 to capture master-quality video for high-end video production.

Low-Bit-Rate AVC-Intra 50 Mode

This mode delivers video quality very similar to DVCPRO HD, yet is able to do so at bit rates usually associated with standard definition (e.g. DVCPRO 50). AVC-Intra 50's lower bit rate doubles the recording time per P2 card over DVCPRO HD and lowers storage requirements for editing.

HD Multi-Format Capability, Including Native 24p

The AVC-Intra 100 and 50 codecs let you record in a choice of HD video formats: 1080 23.98p/24p/29.97p/25p, as well as 1080 50i/59.94i. These worldwide HD formats bring extra flexibility to all of your production needs. The AJ-HPX2700 also supports 720p recording for HD image production in a variety of formats, including 60p and 50p.

See the Input/Output Video Format table on page 6 for details.

Selectable DVCPRO HD Recording

The P2 VariCam Series also supports the conventional DVCPRO HD codec. This lets it flexibly adapt to various applications and system environments, and makes for a smooth transition from existing VTR VariCam (AJ-HDC27H) systems.

48-kHz/16-Bit, 4-Channel Digital Audio

These camcorders can record full 48-kHz/16-bit digital audio on all four channels. You can freely select the audio source for each channel, choosing from mic, line, wireless receiver, and others. A 5 pin XLR jack with 2-channel compatibility is used for the front mic input. Using the optional AJ-MC900G stereo microphone lets you record stereo with a single mic.

AVC-INTRA TECHNOLOGY

Sample Images of Intraframe Prediction

Left: **Original image *Center:* Intra-frame predictive image *Right:* Difference image obtained from subtracting the intra-frame predictive image from the original image. This shows the high accuracy of intra prediction.**

Intra-Frame (I-Only) Compression Superiority

Motion-image compression can be divided roughly into two methods: I-Only compression, which completes all processing within each frame, and Long GOP compression, which processes across multiple frames. AVC-Intra and DVCPRO HD use I-Only compression, while HDV uses Long GOP compression.

The MPEG-4 AVC/H.264 standard encompasses both methods. When the images of adjacent frames are similar, Long GOP compression achieves an advantageously low bit rate. However, this trait is not often seen in broadcasts like flash-filled press conferences, fast-action sports, and music shows with confetti and electronic displays.

Also, because processing is performed frame-by-frame in I-Only, new-generation multi-core CPUs offer high-speed parallel processing. This makes I-Only compression more suitable for Non-linear editing than Long GOP, for which parallel processing is difficult due to its inter-frame dependence.

With its I-Only compression, AVC-Intra produces remarkably stable images that are unaffected by adjacent frames, and meets professional needs in virtually all situations and workflows.

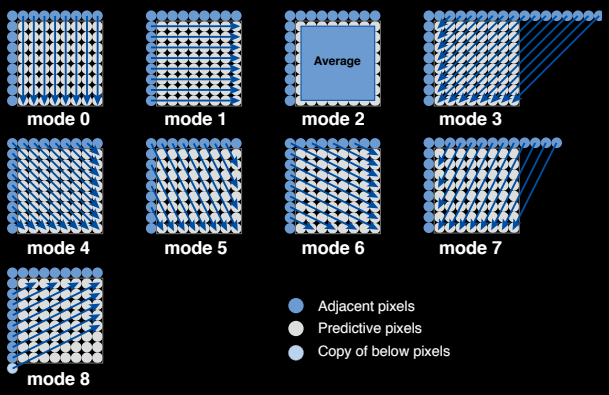
Twice the Compression Efficiency of MPEG-2

By selecting the most effective compression techniques from among those in compliance with the H.264 standard, AVC-Intra has doubled the compression efficiently over earlier Intra frame compression schemes. Its intraframe predictive and context-adaptive entropy coding are particularly effective methods for boosting compression efficiency.

Intraframe predictive coding (intra prediction)

This process generates predictive images based on adjacent blocks of 8 x 8 pixels. Selecting the most suitable predictive mode from among nine luminance signal modes (see illustration) and four color signal modes, it generates accurate predictive images. The residual data (obtained by subtracting a predictive image from the original input image) is recorded together with the predictive image. Because the prediction accuracy is high, there's minimal residual data, and thus high compression is achieved. This process is conducted within the frame, so prediction accuracy remains high even with fast-motion images.

Conceptual Illustration of Luminance Signal (Y) Intra Prediction Mode



This process generates predictive images based on adjacent blocks of 8 x 8 pixels. Selecting the most suitable predictive mode from among nine luminance signal modes (see illustration) and four color signal modes, it generates accurate predictive images.

Context-adaptive entropy coding

The entropy coding process used in MPEG-4 AVC/H.264 utilizes CAVLC (Context Adaptive VLC) and CAVBAC (Context Adaptive Binary Arithmetic Coding), both of which are context adaptive. MPEG-2 uses a fixed table when performing the VLC coding, with the result that compression efficiency is low with some types of images. In context-adaptive coding, on the other hand, operation varies with different kinds of images and high compression efficiency is maintained at all times.

P2 Card: Superior Mobility, Reliability, Compatibility, plus Fast Workflows and Long Recording Times.

P2 Cards Offer Outstanding Mobility and Reliability

P2 cards feature a large capacity of up to 64 GB* (using the AJ-P2C064, fourth quarter 2008), a compact size, and light weight of 45 grams (1.5 ounces).

This solid-state memory card is highly resistant to shock and vibration, so it brings high reliability and mobility to outdoor shooting. It lets the camera start recording immediately from Standby mode, and allows shooting to start within three seconds of turning the power on. This speedy response shortens downtime when replacing batteries, and greatly cuts down on battery power consumption by letting you turn the power off during standby. P2 cards can even be exchanged with the power off. Recorded data is automatically stored in blank card areas with no cueing required. This eliminates the risk of accidentally overwriting valuable data.

***Total card capacity includes space for data management such as system data, so the actual usable area is less than the capacity indicated on the card.**

Recording Functions with Five P2 Card Slots

With five P2 cards installed, the P2 HD VariCam can capture up to 800 minutes of 1080/24p content. It also provides several recording functions that are possible only with memory cards.

- ***Card selection:*** **The recording slot can be changed (sequential switching) even during recording. This lets you review, organize, edit and transmit just recorded content. Content can also be organized while shooting, by switching cards for each scene category.**
- ***Hot-swap-rec:*** **You can replace a full memory card with a blank one while the P2 cam is recording onto a second card. Successively swapping cards this way gives you virtually unlimited recording capability.**
- ***Loop-rec*:*** **By loop recording onto a specified recording area, you can continue to record over a fixed area.**
- ***Pre-rec*:*** **While in standby mode, you can continuously store, and subsequently record, up to 8 seconds of video and audio. In effect, this lets you record footage of events that occur even before you press the rec start button, giving you a way to "go back" and capture moments you otherwise would have missed.**
- ***Interval rec*:*** **This gives you automatic intermittent recording based on a set interval and recording time.**
- ***One-shot rec*:*** **This frame-shot recording function is useful for producing animations.**
- ***Rec review:*** **This lets you run a quick playback check of the 2 to 10 seconds that lead up to the end of the clip you have just recorded.**

***These functions cannot be used for variable frame rate recording.**

Ecological Benefits — Thanks to Solid-State Technology, Broadcasting Can Help Conservation.

Because P2 cards are re-usable and moving parts are substantially reduced, P2 HD is an environmentally-friendly technology. The wear-free and dropout-free memory card recording system does not need the tapes required by conventional VCRs.
The memory card system reduces waste generated when the heads, tape drive mechanisms, etc., are replaced.

Clip Thumbnail Function

The P2 HD cam automatically generates a thumbnail image for each clip. You can view thumbnails on the built-in 3.5" color LCD monitor, or, by connecting the camera's Monitor Out to a separate display. Any of the clips can be accessed instantly. Thumbnail images can be paused, fast-forwarded, and reversed just like a tape, and unwanted cuts can be deleted by selecting and deleting the corresponding thumbnail image. You can also specify a number of clips for seamless playback* or on-air broadcasting. And if a shooting opportunity should arise during playback, the P2 HD cam lets you start recording immediately with no cueing required and no risk of accidentally overwriting valuable data.

***Seamless playback is not possible between clips recorded in different formats.**

Text Memo (Bookmark) for Simple Editing

When recording or previewing a clip, press the Text Memo button at any of up to 100 locations and a text memo label, similar to a bookmark, is registered. Using only the P2 VariCam, you can create a new clip with data copied between text memo labels. Text information can also be written into each memo using the P2 VariCam or a PC with P2 Viewer installed. A shot mark, which allows convenient OK and NG marking, can also be added to each clip during or after recording.

This shows the text memo editing window of the provided Windows PC software, P2 Viewer. A list of memos is shown on the right side. The clip time line below the view window shows the memo marks. Text can be written to an empty memo space created by the camera-recorder. Memos can also be added, deleted or moved.

Proxy Data Recording (Option)

When the AJ-YAX800G proxy video encoder is installed, the P2 VariCam can record MPEG-4 proxy (low-resolution) data onto a P2 card or SD/SDHC Memory Card. This can be used for quick viewing of dailies with timecode and its low bit rate provides easy transmission over wired and wireless networks.

***Proxy data cannot be recorded when recording with the variable frame rate in Native mode, or when Pre-rec or Loop-rec is used.**
Proxy data refers to MPEG-4 low-resolution AV data in file form for moving pictures and audio, with timecode, metadata, and other management data included.
The use of DCF Technologies is under license from Multi-Format, Inc.

SD/SDHC Memory Card Slot

The P2 VariCam Series comes with an SD/SDHC Memory Card slot. You can create a metadata upload file (produced with P2 Viewer software) containing information such as the name of the camera operator, the recording location, and text memos on an SD/SDHC Memory Card, and load it as clip metadata. The SD slot is also used to upload scene files and firmware updates.

AJ-HPX3700 Recording Format and Recording Time

Recording Format	Pull down	Rec. Time (using five 64GB*2 P2 cards) and Codec		
		DVCPRO HD	AVC-Intra 100	AVC-Intra 50
1080/59.94i	–	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.
1080/29.97p (over 59.94i)	2-2		–	–
1080/23.98p (over 59.94i)	2-3		–	–
1080/23.98pA (over 59.94i)	2-3-3-2		–	–
1080/29.97pN (Native)*1	–	–	Approx. 320 min.	Approx. 640 min.
1080/24pN (Native)*1	–	–	Approx. 400 min.	Approx. 800 min.
1080/23.98pN (Native)*1	–	–	Approx. 400 min.	Approx.800 min.
1080/50i	–	Approx. 320 min.	Approx. 320 min.	Approx.640 min.
1080/25p (over 50i)	2-2		–	–
1080/25pN (Native)*1	–	–	Approx.320 min.	Approx.640 min.

***1: Native modes record only the effective frames. *2: Released in autumn 2008.**

AJ-HPX2700 Recording Format and Recording Time

Recording Format	Pull down	Rec. Time (using five 64GB*2 P2 cards) and Codec		
		DVCPRO HD	AVC-Intra 100	AVC-Intra 50
1080/59.94i	–	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.
1080/29.97p (over 59.94i)	2-2		–	–
1080/23.98p (over 59.94i)	2-3		–	–
1080/23.98pA (over 59.94i)	2-3-3-2		–	–
1080/29.97pN (Native)*1	–	–	Approx. 320 min.	Approx. 640 min.
1080/24pN (Native)*1	–	–	Approx. 400 min.	Approx. 800 min.
1080/23.98pN (Native)*1	–	–	Approx. 400 min.	Approx. 800 min.
1080/50i	–	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.
1080/25p (over 50i)	2-2		–	–
1080/25pN (Native)*1	–	–	Approx. 320 min.	Approx. 640 min.
720/59.94p	–	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.
720/29.97p (over 59.94p)	2-2		–	–
720/23.98p (over 59.94p)	2-3		–	–
720/29.97pN (Native)*1	–	Approx. 640 min.	Approx. 640 min.	Approx. 1280 min.
720/60p	–	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.
720/23.98pN (Native)*1	–	Approx. 800 min.	Approx. 800 min.	Approx. 1600 min.
720/50p	–	Approx. 320 min.	Approx. 320 min.	Approx. 640 min.
720/25p (over 50p)	2-2		–	–
720/25pN (Native)*1	–	Approx. 640 min.	Approx. 640 min.	Approx. 1280 min.

***1: Native modes record only the effective frames. *2: Released in autumn 2008.**

Versatile Shooting Assist Functions and Simple Operation Make Recording Quick and Easy

Camera operation part (both models)

16 Scene Files and 64 Lens Files

•Scene files: Store specific camera settings in built-in memory. Up to 16 files with settings can be stored in the camera's memory. Files can also be copied onto an SD/SDHC Memory Card, allowing storage of up to 8 files.
•Lens files: Store settings for interchangeable lenses. Up to 64 files can be stored in the camera unit, and 64 files can be saved on an SD/SDHC Memory Card.
•User files: Setup conditions can also be stored in built-in memory, and quickly retrieved when changed.

5 User Buttons

The User buttons let you turn frequently used functions on or off with a single touch. In addition to USER MAIN, USER 1, and USER 2, you can change MARKER SELECT and TEXT MEMO to other functions if desired. This lets you allocate up to 5 functions from the many camera-recorder functions, such as SLOT SELECT and Y GET.

Menu	Function	User	Text Memo	Marker Select
I.OVR	Half-step/1-step aperture during Auto Iris	√	–	–
S.BLK	Lower black level below the pedestal	√	–	–
B.GAMMA	Emphasize black gamma, black gradation	√	–	–
Y GET	Display the center brightness value	√	√	√
DRS	Dynamic range stretch	√	–	–
ASSIST	Focus assist (graph display)	√	√	√
C.TEMP	Change to a specified color temperature	√	–	–
VFR	Variable frame rate on/off	√	–	–
FRATE	Change to a specified frame rate	√	–	–
VF GAM	Convert the gamma only for the viewfinder	√	√	√
AUDIO CH1	Switch audio channel 1 input	√	–	–
AUDIO CH2	Switch audio channel 2 input	√	–	–
REC SW	Rec start/stop	√	√	√
RET SW	RET	√	√	√
PRE REC	Pre-rec on/off	√	√	√
SLOT SEL	Switch recording slot	√	√	√
PC MODE	Switch device/host for USB mode	√	√	√
TEXT MEMO	Add text memo	–	√	–
VF MARK	Switch marker type	–	–	√

Recorder operation part (both models)

Front lower part (both models)


Upper new grip handle (both models)

Focus Assist Function

This function simplifies focusing by displaying, in graph form, the frequency distribution of the incoming signal in the viewfinder and LCD monitor. By allocating this function to one of the User buttons, you can use it with a single touch.

Two-Layer Optical Filter

The 2-layer optical filter consists of an ND layer (clear, 1/4ND, 1/16ND, 1/64ND) and a CC layer (3200K, 4300K, 5600K, 1/2ND). Adding the 1/2ND to the CC layer enables finer aperture adjustment.

Versatile Shooting Assist Functions

• Variable color temperature: The color temperature can be adjusted with the jog dial after the white balance is set.
• Color bar (switchable between SMPTE, ARIB, and full color) and standard audio signal (1 kHz test tone) output
• Zebra: Select any two levels.
• Marker: Select from center, safety zone, safety area, and frame.

New Grip Handle

This innovative grip handle has five threaded holes that let you mount a variety of film accessories to it during on-site production.

Designed for High Reliability and Easy Mobility

• A 3-point locking viewfinder mount allows precise adjustment.
• The Audio Rec level adjustment features a push lock function.
• The Audio Input level adjustment (front) can be switched on/off and allocated to desired channels.
• Color viewfinder compatibility.
• A switch layout and design that reflect the requests of professional users.

1080/24PsF Line Output and Other System Interfaces to Meet High-End Production Needs

Side terminal (both models)

HD view finder (optional AJ-HVF21G— both models)

Rear terminal (AJ-HPX3700)

Rear terminal (AJ-HPX2700)

Three HD SDI Outputs

Two HD SDI output terminals (A/B) that also comply with 1080/24PsF standards and include embedded audio are standard equipment. This lets you make backup recordings on an AJ-HPM110 P2 Mobile or digital VTR, with rec start/stop linking. An HD SDI video signal can also be output from the MON OUT terminal. Character and marker displays can be set separately for HD SDI OUT and MON OUT.

Down-Converted SD Video Output

The output signal from the MON OUT terminal can be switched to HD SDI or VBS. When VBS is selected, a down-converted SD video signal (analog composite) is output.

IEEE 1394 DVCPRO Output (AJ-HPX2700 only)

The AJ-HPX2700 comes equipped with an IEEE 1394-compliant DVCPRO output (6 pin) terminal. Use the AJ-HPX2700 in tandem with a compatible recorder such as the AG-HPG10G P2 Gear, AJ-HPM100 P2 Mobile or Focus Enhancements FS-100 FireStore, and the AJ-HPX2700 can make degradation-free backup recordings with DVCPRO HD stream output.*

***IEEE 1394 backup recording is possible only with the DVCPRO HD codec.**

USB 2.0 Interface Compatible with Host and Device Mode

In device mode, the P2 HD cam's card slot can be used to connect a PC as an external device for nonlinear editing and transmission over networks. In host mode, P2 files can be copied onto a hard disk without using a PC.

Multi-Function RCU System (Option)

The P2 HD VariCam comes equipped with an RCU terminal for connecting the optional AJ-RC10G Remote Control Unit. This lets you adjust the image and control the recording operation while monitoring the camera image.

Multipurpose DC OUT Terminal (4 pin)

In addition to supplying power to an LCD monitor, this terminal can be used for remote rec start/stop control by connecting it to an external switch, or as a tally lamp by connecting it to an LED lamp. This kind of multipurpose switch is handy for mounting the P2 HD VariCam to a crane or other location.

Additional Features

- **By mounting the optional AJ-GPS910G GPS unit, the P2 HD VariCam can record real-time position data (latitude, longitude, and altitude), conforming to UMID standards.**

  ***The GPS unit is not available in some areas.**
- **Built-in SMPTE time code generator/reader, with TC in/out terminal.**
- **Genlock input terminal can also be used as return video (HD-Y/VBS)** ***It can not verify 23.98PsF and the 24PsF signal.**
- **UniSlot® wireless receiver compatible (dual channel)**

***UniSlot® is a trademark of Ikegami Tsusinki Co., Ltd.**

Easy to Ingest and Manage P2 Content with a Windows PC or Mac

The newest Mac P2CMS version is equipped with a DPX file conversion function.

P2 Contents Management Software

P2 CMS

(Ver. 1.2 for Windows, Ver. 1.3 for Mac)

P2 Content Management Software (Free Download)

Functions Featured on Both Models

- **Support for AVC-Intra files (Ver. 1.2 or later)**
- **A built-in P2 Viewer provides easy viewing of P2 content. Content can be played back at normal speed or +/- 4x speed in 0.5x steps.**
- **P2 content can be displayed in three modes: Thumbnail, Detail and Text.**
- **For quick content retrieval, a database can be automatically constructed using the P2 content metadata at the time of ingestion. Metadata can be added, edited, or deleted.**
- **Quick searching of P2 content using a metadata keyword or categorized view**
- **A property window indicates lists of P2 content metadata. Some metadata can be changed by editing the properties.**
- **Text memos and voice memos can be indicated, edited, deleted, or added.**
- **Export: Lets you copy P2 content to a hard drive or optical media for distribution and storage**
- **Backup: Lets you copy P2 content to optical media in the native P2CMS format – ideal for backing up P2 content registered in a database.**
- **Archive: After copying, automatically deletes video and audio MXF files from a hard drive to save space.**

*New Functions for Mac Ver. 1.3*1*

The new Mac version supports a plug-in for converting AVC-Intra 100 files to DPX*2 files. This helps to speed up and lower the cost of film production.

***1: Operates only on an Intel Mac. Does not operate on the Power Mac.**
***2: DPX (Digital Picture Exchange) is a common file format for digital film work.**

Operating Environment (Windows)

• Microsoft® Windows XP Professional SP2. (Windows 2000 and Windows Vista are not supported.) • Microsoft® DirectX 9.0b or newer version must be installed. (This can be downloaded from the Microsoft Website) • Microsoft® .NET Framework 2.0 must be installed. (This can be downloaded from the Microsoft website automatically during installation.) • Full-color (32 bit) display, and an audio function must be equipped. • The P2 driver included with the P2 product must be installed.

***To play back the AVC-Intra format, it is necessary to download the AVC-Intra decoder. To play back Proxy data, it is necessary to download the MPEG-4 decoder. DVCPRO HD format and AVC-Intra format clips cannot be played back with PCs that do not have a CPU that supports SSE2 instructions, such as Pentium M, Pentium 4, Pentium D and Celeron D.**

[Recommended Environment for Playing Codec Files]

DVCPRO HD:	**3.2 GHz or greater Pentium D, 1 GB or greater RAM**
AVC-Intra 50:	**2.66 GHz or greater Intel Core2 Duo processor, 1 GB or greater DDR2-667 RAM**
AVC-Intra 100:	**3 GHz or greater dual-core Xeon processor, 1 GB or greater DDR2-667 RAM**

Operating Environment (Macintosh)

• Mac OS X 10.4.11 (Intel Mac) • Mac OS X 10.5.1, 10.5.2 (Intel Mac) • Quick Time 7.4.1 or greater • 2 GHz or greater Intel Core Duo processor. • 1 GB or greater RAM • 1,024 x 768 or greater display • The P2 driver included with the P2 product must be installed.

***To play back the AVC-Intra format, it is necessary to download the AVC-Intra decoder. When you convert into DPX files, it is necessary to download the AVC-Intra decoder and DPX Plug-in. The system requirements of the installed software influences the system requirements of the application.**

[Recommended Environment to Play AVC-Intra Format Clips, and Convert into DPX Files]

•Dual CPU configuration quad-core Xeon processor
•2 GB or greater RAM

1. Cinema Production Workflow (P2 Card Recording)

P2 HD is an ideal system for producing 24p film for movie theater use or creating 30p finished packages for TV use from high-quality progressive images. The P2 card greatly improves shooting mobility. P2 Content Management Software version 1.3 (for Mac*) lets you convert AVC-Intra files recorded in Film-Rec gamma mode to uncompressed DPX (P10-Log gamma) files. Also, still images can be output as DPX files, so color grading instructions can be prepared in advance.

***The software comes in both Windows and Mac versions, but only the Mac version (version 1.3) includes the DPX conversion function.**

2. AJ-HPX3700 Cinema Workflow (Uncompressed Recording)

With its HD SDI dual-link capability, the AJ-HPX3700 can output high-quality 1920 x 1080, RGB 4:4:4/10-bit images directly from the camera. Also, images recorded in Film-Rec gamma mode can be converted to P10-Log gamma images. Using a line connection to an uncompressed video recorder (with a hard drive, etc.), the AJ-HPX3700 can directly record images as DPX files, giving you the highest possible image quality for P2 HD recording. Using files recorded onto P2 cards for offline editing, you can achieve greater efficiency in the final editing stage.

3. Workflow for 1080/59.94i Broadcasting

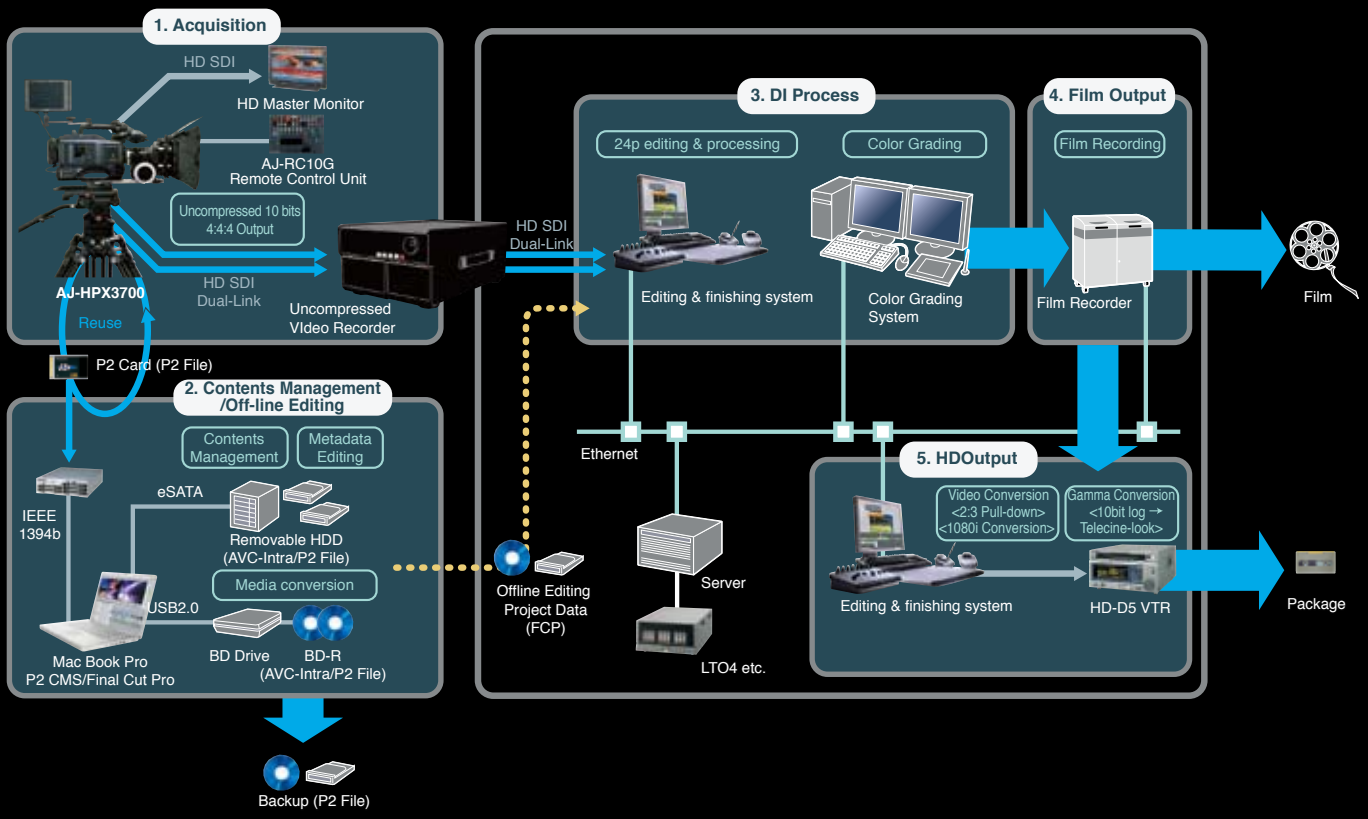
The P2 HD VariCam Series is an outstanding solution for producing HDTV programs with 10-bit/4:2:2 sampling. It offers the high quality provided by the advanced AVC-Intra 100 codec. And it can record video data to a P2 card while at the same time saving onto an SD Memory Card a low-resolution proxy file that can be used for off-line editing. Editing a project off-line makes the final editing process quicker and easier, which means greater production efficiency. At the recording site, the AJ-HPM110 P2 Mobile by itself can be used to monitor images, initialize P2 cards and copy data to them, and copy files to an external hard drive.

***Proxy data cannot be recorded when using the variable frame rate function in Native mode, or when the Pre-rec or Loop-rec functions are used.**

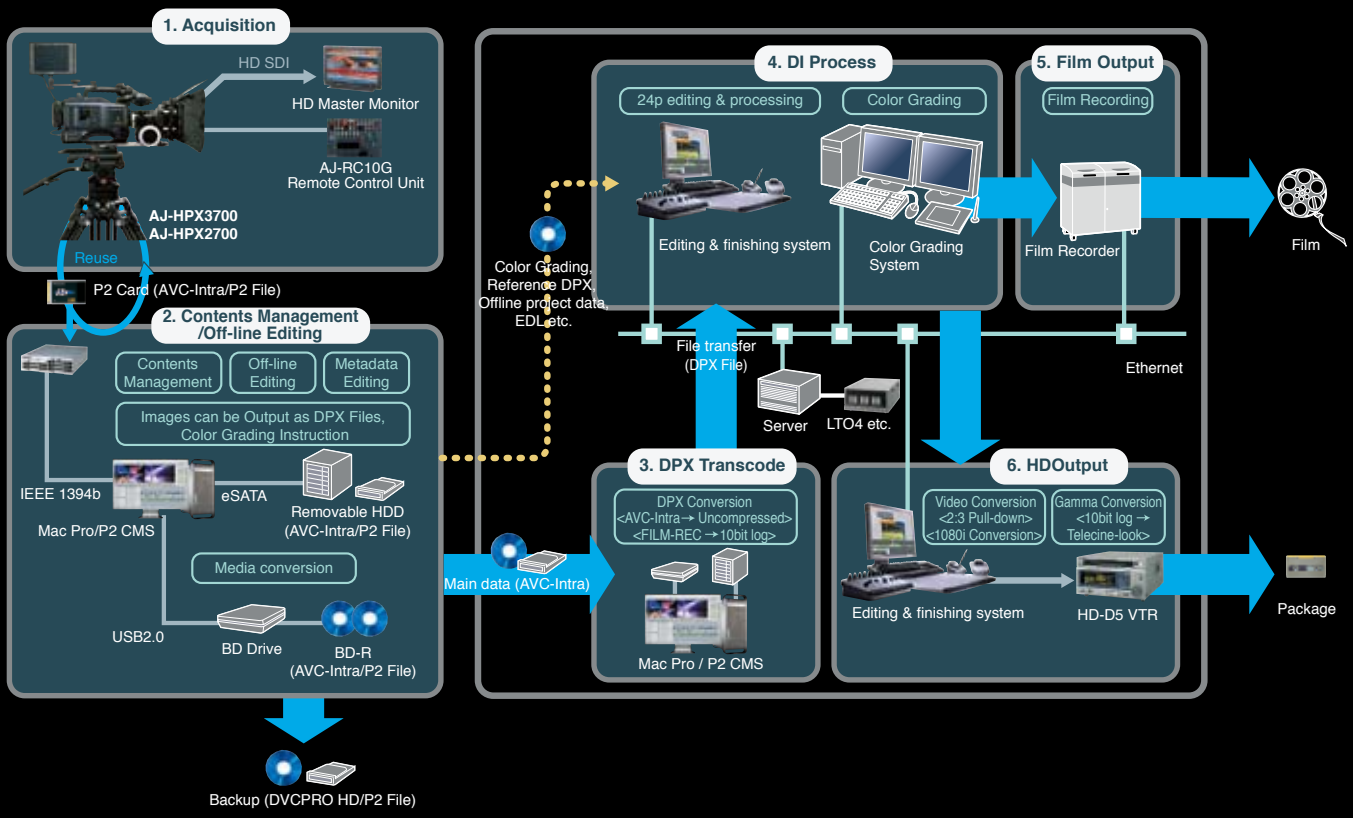
Nonlinear Editing Partner

Panasonic has been working on the collaboration with strategic P2 Partners. Many nonlinear editing products from Apple, Avid, Grass Valley, Harris and Quantel already support AVC-Intra. Autodesk has announced AVC-Intra support too. The AVC-Intra editing workflow is in place in the market.

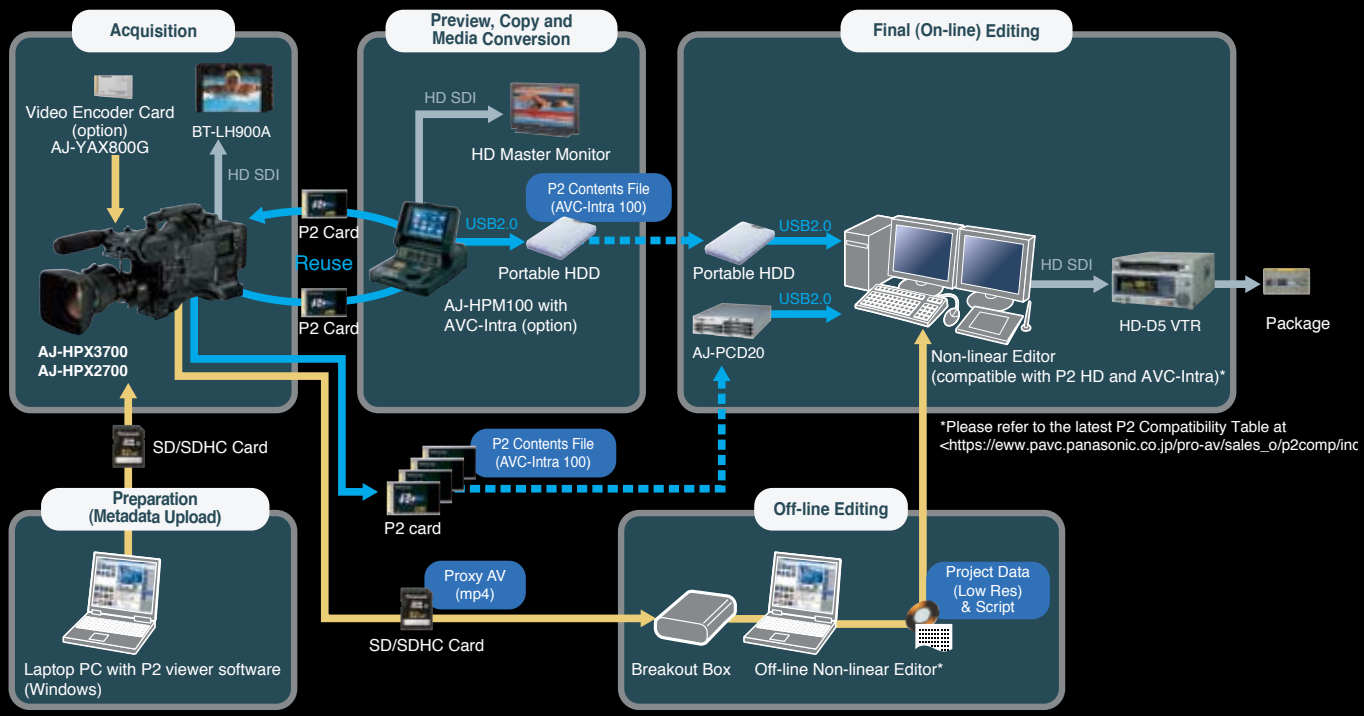
1.AJ-HPX3700 Cinema Workflow (Uncompressed Recording)



2. Cinema Production Workflow (P2 Card Recording)



3. Workflow for 1080/59.94i Broadcasting



OPTIONAL ACCESSORIES

AJ-RC10G
RCU (Remote Control Unit) with 10m remote control cable

***When using with AJ-HPX3700/AJ-HPX2700, the software of the AJ-RC10G need to be updated to version 1.11 or upper. Please see the details on our web at <https://eww.pavc.panasonic.co.jp/pro-av/support/desk/e/index.htm>.**

AJ-C10050G
Remote Control cable (50m)

AJ-HVF21G
2" HD EVF
59.94Hz/50Hz switchable

HA22x7.8BERM-M58
HA22x7.8BERD-S58
HA16x6.3BERM-M58
HA16x6.3BERD-S58
FUJINON 2/3" LENS compatible with CAC

HJ22ex7.6B IASE
HJ17ex7.6B IASE
CANON 2/3" LENS compatible with CAC

AJ-MC900G
Stereo Microphone

AJ-GPS910G
GPS Unit

SHAN-TM700
Tripod Adapter

AJ-P2C016RG
AJ-P2C032RG
P2 card

SD/SDHC memory card

AJ-YAX800G
Proxy Video Encoder

BT-LH900A
8.4" HD/SD LCD monitor

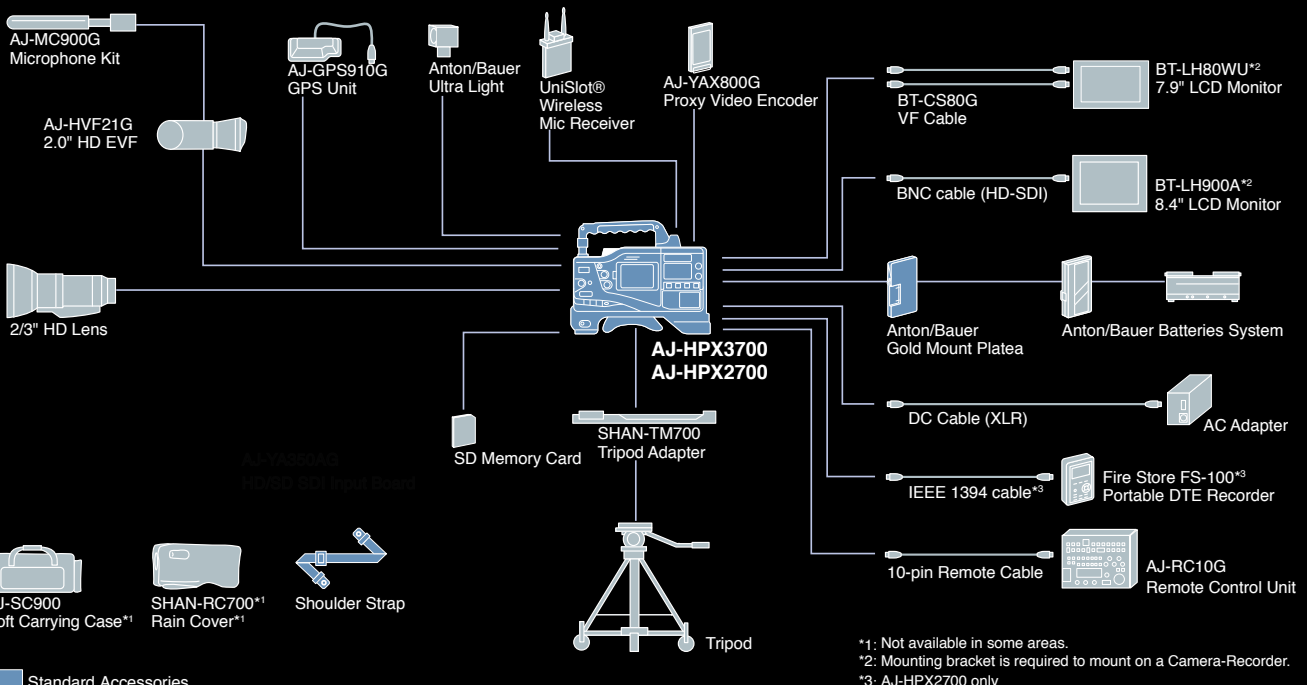
BT-LH80WU
7.9"Wide HD/SD LCD monitor

BT-CS80G
VF Cable (Viewfinder Cable, DC Cable)

Anton/Bauer Battery System

AJ-SC900
Soft Carrying Case
*Not available in some areas.

SHAN-RC700
Rain Cover
*Not available in some areas.



*1: Not available in some areas.
*2: Mounting bracket is required to mount on a Camera-Recorder.
*3: AJ-HPX2700 only

SPECIFICATIONS

	AJ-HPX3700	*AJ-HPX2700*
General Specification		
Power Supply	DC 12 V (11.0 V to 17.0 V)	
Power Consumption	42 W	38 W
Temperature	Operating Temperature : 0° C to +40° C (32° F to +104° F) Keeping Temperature: –20 ° C to +60 ° C (–4 ° F to +140 ° F)	
Operating Humidity	10% to 85 % (relative humidity)	
Operating Time	approx. 120 min. (when using DIONIC90 battery)	
Weight	approx. 4.9 kg (10.8 lbs, main unit only, excluding VF)	
Dimensions (W x H x D)	137 mm x 209 mm x 318 mm (5-7/16" x 8-1/4" x 12-9/16", excluding handle and option slot cover)	
Camera Section		
CCD Elements	CCD x 3 (2/3 inch interline transfer type, 2,200,000 pixel)	CCD x 3 (2/3 inch interline transfer type, 1,000,000 pixel)
Video Format	RGB 3CCD	
Total Picture Elements	2010 (H) x 1120 (V)	1370 (H) x 744 (V)
Effective Picture Elements	1920 (H) x 1080 (V)	1280 (H) x 720 (V)
Optical Filters	CC: 3200 K, 4300 K, 5600 K, 1/2 ND ND: CLEAR, 1/4 ND, 1/16 ND, 1/64 ND	
Quantizing	14 bits	
Horizontal Drive Frequncy	74.1758 MHz (59.94 Hz/23.98 Hz) , 74.25 MHz (50 Hz/24 Hz)	74.1758 MHz (59.94 Hz) , 74.25 MHz (50 Hz, 60 Hz)
Sampling Frequncy	74.1758 MHz (59.94 Hz/23.98 Hz) , 74.25 MHz (50 Hz/24 Hz)	74.1758 MHz (59.94 Hz) , 74.25 MHz (50 Hz, 60 Hz)
Digital Signal Process	74.1758 MHz (59.94 Hz/23.98 Hz) , 74.25 MHz (50 Hz/24 Hz)	74.1758 MHz (59.94 Hz) , 74.25 MHz (50 Hz, 60 Hz)
Programmable Gain	–3 dB, 0 dB, +3 dB, +6 dB, +9 dB, +12 dB, +15 dB, +18 dB, +21 dB, +24 dB, +27 dB, +30 dB	
VFR	1 to 30 fps (1080/59.94i) ,1 to 25 fps (1080/50p)	1 to 60 fps (720/59.94p, 720/60p), 1 to 50 fps (720/50p)
Shutter Speed	1/50 (50 Hz) sec., 1/60 sec., 1/100 (59.94 Hz) sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF 180 deg, 172.8 deg, 144 deg, 120 deg, 90 deg, 45 deg	
Syncro Scan Sutter	1/61.7 sec. to 1/7200 sec. (1080/59.94i) 1/30.9 sec. to 1/3600 sec. (1080/29.97p) 1/24.7 sec. to 1/2880 sec. (1080/23.98p (A)) 1/51.4 sec. to 1/6000 sec. (1080/50i) 1/25.7 sec. to 1/3000 sec. (1080/25p)	1/61.7 sec. to 1/7200 sec. (1080/59.94i, 720/59.94p) 1/30.9 sec. to 1/3600 sec. (1080/29.97p, 720/29.97p) 1/24.7 sec. to 1/2880 sec. (1080/23.98p (A) , 1080/24p, 720/23.98p) 1/51.4 sec. to 1/6000 sec. (1080/50i, 720/50p) 1/25.7 sec. to 1/3000 sec. (1080/25p, 720/50p)
Lens Mount	2/3 inch bayonet mount	
Optical System	F1.4 Prizm	
Sensitivity	F10 (2000 lx, 3200 K, 89.9 % reflect, 1080/59.94i)	
Minimum Luminance	2.48 lx (F 1.4, +30 dB) 0.042 lx (F 1.4, +30 dB, VFR=1 FRAME)	1.24 lx (F 1.4, +30 dB) 0.021 lx (F 1.4, +30 dB, VFR=1 FRAME)
Video S/N	54 dB (standard)	
Registration	Less than 0.03 % (whole zone, without lens distortion)	
Memory Card Recorder Section		
Recording Format	AVC-Intra 100/AVC-Intra 50/DVCPRO HD Format switchable	
Recording Video Signal	48 kHz/16 bits, 4CH	48 kHz/16 bits, 4CH (AVC-Intra/DVCPRO HD) 48.048 kHz/16 bits, 4CH (720/60p only)
Recording Media	P2 card	
Recording Playback Time*	approx. 32 min. (when using 32GB P2card AJ-P2C032RG, AVC-Intra 100 codec, recording in 1080/59.94p)	approx. 32 min. (when using 32GB P2card AJ-P2C032RG, AVC-Intra 100 codec, recording in 1080/59.94p or 720/59.94p)
Digital Video		
Sampling HD Frequncy	Y: 74.1758 MHz (59.94 Hz) /74.25 MHz (50 Hz) , P_B/P_R: 37.0879 MHz (59.94 Hz) /37.125 MHz (50 Hz)	
Quantizing	AVC-Intra 100/AVC-Intra 50: 10 bits, DVCPRO HD: 8 bits	
Video Compression	AVC-Intra 100/AVC-Intra 50: MPEG-4 AVC/H.264 Intra Profile, DVCPRO HD: DV-Bassed Comperssion (SMPTE370M)	
Digital Audio		
Quantizing	16 bits	
Frequncy Response	20 Hz to 20 kHz ±1.0 dB (reference level)	
Dynamic Range	More than 85 dB (1 kHz, AWTD)	
Distortion	Within 0.1 % (1 kHz, reference level)	
Headroom	18 dB/20 dB selectable	
Input and Output		
GENLOCK IN	BNC x 1, 1.0Vp-p, 75 Ω, (switchable to VIDEO IN or Return Video)	
MONITOR OUT	BNC x1 (switchable to VBS/HD SDI) , VBS: 1.0 Vp-p, 75 Ω, HD SDI: 0.8 Vp-p, 75 Ω (SMPTE292M/299M standards)	BNC x1 (switchable to VBS/HD SDI) , VBS: 1.0 Vp-p, 75 Ω, HD SDI: 0.8 Vp-p, 75 Ω (SMPTE292M/296M standards)
HD SDI A OUT	BNC x1, 0.8 Vp-p, 75 Ω (SMPTE292M/299M/372M/352M standards) , with HD SDI B Dual Link	BNC x 1, 0.8 Vp-p, 75 Ω (SMPTE292M/296M standards)
HD SDI B OUT	BNC x1, 0.8 Vp-p, 75 Ω (SMPTE292M/299M/372M/352M standards) , with HD SDI A Dual Link	BNC x 1, 0.8 Vp-p, 75 Ω (SMPTE292M/296M standards)
TC IN	BNC x 1, 0.5Vp-p to 8 Vp-p, 10 kΩ	
TC OUT	BNC x 1, low-impedance, 2.0 Vp-p±0.5 Vp-p	
DVCPRO	—	6 pin (Output) , Transfer Speed: 400/200/100Mbps (selectable), Transfer Data: IEEE 1394-1995/1394a-2000, IEC61883-1,2, SPMTE396M standards, Control Command: AV/C Command Set standards
AUDIO IN	XLR 3 pin x 2 (CH1/CH2) , LINE/MIC/MIC+48 V switchable, LINE: –3 dBu /0 dBu /+4 dBu selectable MIC : –60 dBu/–50 dBu selectable , MIC+48 V: Phantom +48 V, –60 dBu/–50 dBu selectable	
MIC IN	XLR 5 pin x 1, –50 dBu/–40 dBu selectable , Phantom +48 V (ON/OFF)	
WIRELESS IN	25 pin, D-SUB, –40 dBu	
AUDIO OUT	XLR 5 pin x 1 (CH1/CH2) , –3 dBu/0 dBu/+4 dBu selectable , balanced, low-impedance	
PHONES OUT	Stereo Mini Jack x 2	
DC IN	XLR 4 pin x 1, DC12 V (11 V to 17 V)	
DC OUT	4 pin, DC 12 V (11 V to 17 V) , Max.1.5A	
LENS	12 pin	
EVF	20 pin	
RCU	10 pin for AJ-RC10G	
GPS	6 pin for AJ-GPS910G	
USB (2.0)	USB: 2.0, HOST: 4 pin Type-A , DEVICE: 4 pin Type-B	
Monitor and Other packages		
LCD Monitor	3.5 inches, LCD color monitor, 210,000 pixels	
Supplied Accessories	Shoulder strap, Front audio volume knob (with screw), software CD-ROM	

*Time shown above is when you record a series of 1 shot to P2 card. Depending on numbers of shots you record, time will get shorter than the number shown above.

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

P2HD 5 Year Warranty Repair Program*1

Customers who register as users on the website will receive a extended warranty repair valid for up to five years.

	1st year	2nd year	3rd year	4th year	5th year*5
P2HD device*2	Basic warranty*3	Extended warranty repair*4			

*1: Please note that this extended warranty is not available in some countries/regions see web site below for details. *2: Not all models eligible for extended warranty coverage. *3: The basic warranty period may vary depending on the country/region see enclosed warranty for warranty coverage. *4: Not all repair work is covered by this extended warranty see enclosed warranty card for warranty coverage. *5: The maximum warranty period may be adjusted depending on the number of hours the device has been used.

Purchase P2 product → Register online within 1 month → "Registration Notice" e-mail sent

Make sure to save the "Registration Notice" e-mail during the warranty period.

Details about user registration and the extended warranty: http://panasonic.biz/sav/pass_e

Please refer to the latest Non-linear Compatibilty Information, P2 Support and Downlord and Service Information, etc. at panasonic web site.

https://eww.pavc.panasonic.co.jp/pro-av/index.html

Notes Regarding the Handling of P2 Files Using a PC

Mounting and Transferring Files

The PC must be installed with the included P2 driver in order to recognize, copy and transfer P2 files. This driver is also necessary when using the PC card slot and when handling P2 files stored on a hard-disk device, such as P2 store. The included P2 driver is compatible with Windows Vista, Windows XP, Windows 2000 and Mac OSX. For other operating requirements, refer to the P2 installation manual. The P2 driver and the P2 installation manual can be downloaded free from a Panasonic website. Visit https://eww.pavc.panasonic.co.jp/pro-av/ and click "P2 Support and Download."

Preview and Nonlinear Editing

The PC must be installed with the P2 Viewer software for Windows PC, P2 CMS, or P2-compatible editing software available from Adobe, Apple, Avid, Grass Valley, or Matrox in order to preview P2 files. Note that the specified operating requirements must be met to operate these applications. For playing and editing HD video clips, the PC or Mac must meet additional operating requirements.
For software download or other information, visit https://eww.pavc.panasonic.co.jp/pro-av/ and click "P2 Support and Download" or "Nonlinear Compatibility Information."
For the operating requirements of other editing software, visit the website of the relevant software manufacturer.

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Factories of Systems Business Group have received ISO14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)

Mixed Sources
Product group from well-managed forests and other controlled sources
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