

Panasonic
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P2HD

AJ-HPX3100

Memory Card Camera Recorder



AVC **INTRA** **DVCPRO HD** **DVCPRO 60** **DVCPRO** **IX**

High-End Performance in a Compact, Lightweight Design. This 2/3-type P2 HD Camera Recorder Ushers in a New Level of Mobility to Nature, Dramatic, Documentary and ENG Production.

The new AJ-HPX3100 may just change the way you view high-end broadcast camera recorders. Its new body design has a low center of gravity for added stability and gives you an unobstructed view to both sides. It weighs only about 3.9 kg (8.6 lb). Two P2 card slots reside on the side where the main controls are arranged. Boasting excellent mobility and easy operation, the camera section incorporates a 2.2 megapixel 2/3-type 3CCD, a high-performance DSP, and an AVC-Intra Codec LSI. The AJ-HPX3100 records broadcast-quality HD video with full-pixel (1920 x 1080) resolution using 10 bit/4:2:2 sampling. It has a high sensitivity of F11 (60i)*¹ or F12 (50i)*¹ at 2,000 lx and low noise with a 59 dB*² S/N ratio to assure the level of recording quality that is demanded for broadcasting and video production. P2 HD functions newly offered by the AJ-HPX3100 include 24 bit audio,*³ high-quality proxy recording*⁴, and wireless metadata input capability via wireless LAN*⁵. Armed with the reliability and quick recording starts of solid-state memory cards, the AJ-HPX3100 could revolutionize your news gathering and program production workflow. The AJ-HPX3100 has also dramatically reduced power consumption as compared with the conventional model*⁶, thus improving mobility and helping to protect the global environment.

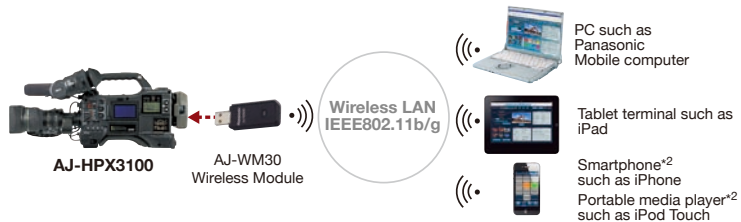
- **A newly designed body with low center of gravity offers unobstructed views on both sides and weighs approx. 3.9 kg (8.6 lb) without accessories.**
- **Power consumption is approx. 34 W for the camera recorder only, about 23% lower than a conventional model.*⁶**
- **The 2.2 megapixel 2/3-type 3CCD provides high-resolution full-pixel (1920 x 1080) HD images.**
- **A high sensitivity of F11/F12*¹, and an excellent S/N ratio of 59 dB.*²**
- **The AVC-Intra 100 codec records high-quality images using 10 bit/4:2:2 sampling.**
- **Supports high-quality 24 bit audio recording*³**
- **The one-clip recording function records multiple cuts in a single clip.**
- **New options enable high-quality proxy video*⁴ and wireless LAN capability.*⁵**
- **Optional color or black-and-white type viewfinder.**
- **Supports optional camera studio systems.**

*1: F11 sensitivity is attainable in the 1080/59.94i mode, and F12 sensitivity is attainable in the 1080/50i mode. *2: The S/N ratio is 59 dB when DNR is turned ON. *3: Only in the AVC-Intra 100/50 mode. For playback, equipment or software compatible with 24 bit audio is required. For details, refer to "Note Regarding 24 bit Audio" on page 10. *4: The optional AJ-YDX30G Video Encoder Board is required. *5: The optional AJ-WM30 Wireless Module and AJ-SFU3100G Upgrade Software Key are required. *6: Compared with the current P2 HD camera recorder model, the AJ-HPX3000.





Picture simulated



Wireless Network Connectivity

A wireless network connection*1 lets you use a smartphone,*2 tablet device or PC/Mac to confirm the camera status, to input metadata and also to play proxy data*3 as well as save it.*4 Text memos can also be entered with one-touch operation. A wireless network connection helps to use metadata effectively in video production.

*1: The optional AJ-WM30 Wireless Module and AJ-SFU3100G Upgrade Software Key are required for wireless connection. A device is connected in ad-hoc mode only.

*2: Playback of proxy data recorded in HQ or SHQ mode is possible with iPhone4 and iPod Touch fourth-generation and newer models.

*3: The optional AJ-YDX30G Video Encoder Board is required for use of proxy data.

*4: Proxy data can be saved only in PCs/Macs.

* For the latest information, see "Support & Download" on the Panasonic website (<http://pro-av.panasonic.net/>).

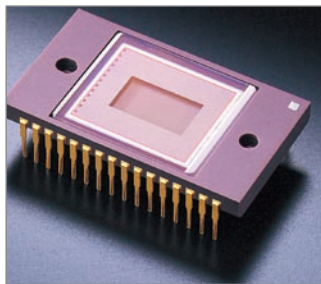


CAMERA SECTION

High-Image-Quality, High-Sensitivity HD Camera with 2.2-Megapixel 2/3-type 3CCD

2.2-Megapixel 3CCD Offering Both High Resolution and High Sensitivity

The camera section features a 3CCD system with a high-density 2.2 megapixel 2/3 type 3CCD to offer full-pixel HD (1920 x 1080) resolution and high F11 or F12* sensitivity. The switchable interlace/progressive system adapts to 1080/23.98p (or 29.97p, 25p) native video recording.



*F11 sensitivity is attainable in the 1080/59.94i mode, and F12 sensitivity is attainable in the 1080/50i mode.

14 bit DSP Circuit Achieves High Image Quality with S/N Ratio of 59 dB

The high-performance DSP circuit provides rich gradation and superb color reproduction based on 14 bit A/D conversion. With an S/N ratio of 59 dB (when the DNR is turned ON), it also offers low noise. The circuit features high-precision picture quality adjustment functions such as a skin tone detail function and a 12 axis independent color correction function. The new DSP circuit achieves less consumption than previous models.



Chromatic Aberration Compensation (CAC)

This exclusive technology works between the 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.

•Simulation Showing the CAC (Chromatic Aberration Compensation) Effect



Full screen

CAC OFF

CAC ON

High-Sensitivity Digital Super Gain

The digital super gain (frame cumulative mode) lets the AJ-HPX3100 record with a high S/N ratio*1 and less of the noise that commonly comes with higher gain. The gain and digital super gain can be flexibly combined to achieve highly sensitive recording of up to a +76 dB*2 gain increase and 0.005 lx minimum illumination, to suit various shooting conditions.

*1: Due to the use of image accumulation, the number of recorded frames per second decreases. This results in a frame-by-frame playback effect.

*2: With super gain set at +42 dB and digital super gain (cumulative mode) at +34 dB.

DRS (Dynamic Range Stretch) Function

DRS recognizes the average brightness of highlight and shadow areas and then automatically adjusts the aperture and uses knee control to suppress blocking in the shadow areas. In scenes with mixed dark and light areas, DRS automatically provides a wider dynamic range with minimal blown highlights and blocked shadows. Two new color saving modes (Mode 1: Natural color, Mode 2: Vivid color) for high-brightness effects and a depth (3 steps for compression level) setting function have been added to improve adjustment.

Simulation Showing the DRS Function



Blown highlights and Blocked shadows are suppressed simultaneously.

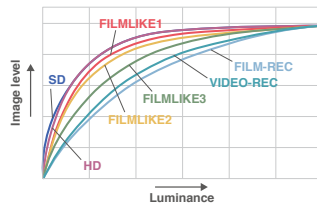
Maximum 4x Digital Zoom

Digital zoom electronically increases the magnification rate of the lens by 2x, 3x or 4x. HD images retain their superior resolution even with zooming, and — unlike when a lens extender is used — brightness is not reduced.

* The digital processing effect is perceptible in the image when x3 or x4 zoom is used.

Seven Gamma Modes Including VariCam Film-Rec

The DSP circuit in the AJ-HPX3100 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.



• AJ-HPX3100 Gamma Modes

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

Scan Reverse Function for Film Lens Use

The AJ-HPX3100 scan reverse function cancels the image inversion that occurs when Angenieux or Canon HD lens adaptors are used.

Scene Files and Lens Files

- Scene Files: Store specific camera settings. Four files with settings can be stored in the camera unit, and eight files can be stored on an SD/SDHC memory card. The files can be copied between the camera's memory and the SD/SDHC memory card.
- Lens Files: Store settings for interchangeable lenses. Eight files can be stored in the camera unit, and 64 (8 x 8) files can be saved on an SD/SDHC Memory Card.

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.



Focus Assist ON

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 SHOT MARK and TEXT MEMO to other functions if desired.

Menu	Function	User	Shot Mark	Text Memo
INH	No assigned function	√	√	√
S.GAIN	Super gain	√	—	—
DS.GAIN	Digital super gain	√	—	—
S.IRIS	Backlight compensation	√	—	—
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	√	—	—
D.ZOOM	Digital zoom x2/x3/x4	√	—	—
ATW	Auto tracking white balance	√	—	—
ATW LOCK	ATW lock	√	—	—
Y GET	Display the center brightness value	√	√	√
DRS	Dynamic range stretch	√	—	—
ASSIST	Focus assist (graph display)	√	√	√
C.TEMP	Change to a specified color temperature	√	—	—
AUDIO CH1/3	Switch audio channel 1/3 input	√	—	—
AUDIO CH2/4	Switch audio channel 2/4 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	√	√	√
LCD B.L.	Switch monitor backlight brightness	√	√	√
SHOT MARK	Add/Delete a shot mark	—	√	—
TEXT MEMO	Add text memo	—	—	√

AWB with Wide Adjustment Range and Advanced Functions

The auto white balance (AWB) function offers a wide color temperature adjustment range of up to 15000 K. The two-value memory/1-value preset enables quick switching. The color temperature can be adjusted with the jog dial after the white balance is set. A subject-following ATW (auto tracking white) function is also provided.

Optional Color and Black-and-White Viewfinders

The optional AJ-CVF100G HD Color Viewfinder employs a 25.4 mm (1 inch) 1,500,000-dot-equivalent (960 x 540 x 3 [RGB]) transmission-type LCOS (Liquid Crystal On Silicon) to achieve high resolution, high brightness and high response. It helps to reduce the possibility of white balance adjustment errors and other errors in recording. The optional AJ-HVF21KG 50.8 mm (2 inches) Black-and-White HD Viewfinder can also be used.

Versatile Shooting Assist Functions

- Electronic Shutter with Half-Speed: The AJ-HPX3100 features six shutter fixed speeds of up to 1/2000 sec., plus "half-speed" (180 degree) and synchro-scan capability.
- Two optical filters, ND and CC, have four positions each. The 3200K, 4300K, 5600K and 6300K positions of the CC filter help to express deeper colors.
- Mode Check: Displays a list of the camera settings on the viewfinder and LCD monitor.
- Zebra: Select any two levels from among 0% to 109%, in 1% step.
- Y-GET: Measures brightness at the screen center and displays precise numerical data.
- A 3 point locking viewfinder mount allows precise adjustment.
- The large Audio volumes (4ch) feature a push lock function.
- The Audio Input level adjustment (front) can be switched ON/OFF and allocated to desired channels.

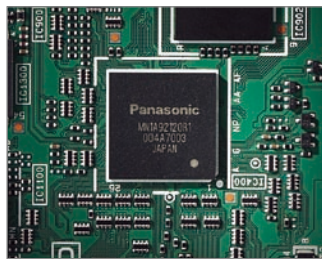


P2 RECORDER SECTION

AVC-Intra Codec for High-Quality Image and Sound Recording. P2 HD for Superb Reliability.

Comes Equipped with an AVC-Intra Codec

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. A single-chip codec LSI is another way the P2 cam has reduced power consumption.

- High-Image-Quality AVC-Intra 100: With the same bit rate as DVCPRO HD, this mode supports full 10 bit 4:2:2 recordings with 1920 x 1080 pixels. It brings new mobility to high-end video production.

- Low-Bit-Rate AVC-Intra 50: 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). The lower bit rate doubles the recording time per P2 card over DVCPRO HD and lowers storage requirements. It supports 10 bit 4:2:0 recordings with 1440 x 1080 pixels.

High-Quality 24 Bit 4-Channel Audio Recording

The AVC-Intra mode supports 24 bit digital audio recording* (16-bit for DVCPRO HD, DVCPRO and DV). The AJ-HPX3100 offers 4-channel audio in all recording modes. Each channel input can be selected from FRONT (mic), REAR (line) and WL (wireless). The level volume also supports 4 channels.

* The audio signal can be played back by using 24 bit digital audio equipment. For details, refer to "Note Regarding 24 bit Audio" on page 10.

The P2 Card: Reliable, Reusable and with Extended Recording Time

P2 cards feature a large capacity of up to 64 GB^{*1}, a compact size, and light weight. In addition to the semiconductor memory's inherent resistance to impact, vibration and temperature change, the P2 card also offers outstanding reliability. Unlike tapes and discs, it has no rotating or physically contacting parts. It's built to withstand repeated recording and initialization over long term of use. The P2 card connector is specifically designed to stand up to the repeated insertion and removal involved in professional use.



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

Immediate Startup and Better Data Protection

When you press the Record button in standby mode, the P2 cam instantly finds a blank area on the P2 card and begins recording. 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. It can begin recording immediately even when you're using it to preview video. In normal use, there is no chance of accidentally overwriting a recording. Recordings will not be erased unless you intentionally delete a file or initialize the card.

HD Recording Format supported by AJ-HPX3100

Recording video Format	Pull down	Rec. Time (using two 64GB P2 cards) by Codec		
		DVCPRO HD	AVC-Intra 100	AVC-Intra 50
1080/59.94i	—	Approx. 128 min.	Approx. 128 min.	Approx. 256 min.
1080/29.97p (over 59.94i)	—		—	—
1080/23.98p (over 59.94i)	2-3		—	—
1080/23.98pA (over 59.94i)	2-3-3-2		—	—
1080/29.97pN (native)*	—	—	Approx. 128 min.	Approx. 256 min.
1080/23.98pN (native)*	—	—	Approx. 200 min.	Approx. 400 min.
1080/50i	—	Approx. 128 min.	Approx. 128 min.	Approx. 256 min.
1080/25p (over 50i)	—		—	—
1080/25pN (native)*	—		—	Approx. 128 min.

*Native modes record only the effective frames.

SD Recording Format supported by AJ-HPX3100

Recording video Format	Pull down	Rec. Time (using two 64GB P2 cards) by Codec		
		DVCPRO 50	DVCPRO*	DV*
480/59.94i	—	Approx. 256 min.	Approx. 512 min.	Approx. 512 min.
480/29.97p (over 59.94i)	—			
480/23.98p (over 59.94i)	2-3			
480/23.98pA (over 59.94i)	2-3-3-2			
576/50i	—	Approx. 256 min.	Approx. 512 min.	Approx. 512 min.
576/25p (over 50i)	—	—	—	—

*When recording Audio 2ch.

HD Multi-Format Capability, Including Native 1080p

The AVC-Intra 100 and 50 codecs let you record in a choice of HD video formats: 1080 23.98p/25p/29.97p, as well as 1080 50i/59.94i. These world-wide HD formats provide extra flexibility in all of your production needs.

DVCPRO HD Codec and SD Video Recording

The AJ-HPX3100 supports the conventional DVCPRO HD codec and also offers DVCPRO 50/DVCPRO/DV capability for SD recording. This lets it flexibly adapt to various applications and system environments.

Clip Thumbnail Function

The P2 cam automatically generates a thumbnail image for each clip. You can view thumbnails on the built-in color LCD monitor. Any of the clips can be accessed instantly.

The new shift button and scroll bar allow easy selection of clips. A playback can be paused, fast-forwarded, and reversed just like a tape, and an unwanted clip 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 from fields.

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

Advanced Recording Functions

Employing Two Card Slots

- **Card selection:** The recording slot can be changed (sequential switching). 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:** Thanks to the two card slots, you can hot-swap P2 cards for continuous non-stop recording.
- **Loop-rec*:** By allocating the open space on two P2 cards, the camera continue to record over that area until the operator pushes the stop button.
- **Pre-rec:** This stores approximately 8 seconds of video and audio data in memory while in standby mode and lets you recover and use the data from the approximate 8 seconds before you started recording.
- **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 clip-end you have just recorded.

Text Memo (Bookmark) and Shot Mark

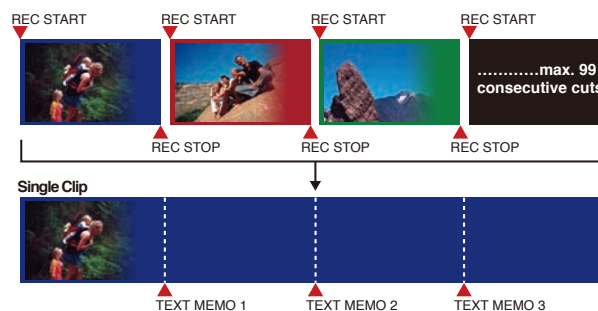
When recording or previewing a clip, press the Text Memo button at any of up to 100 locations and a text memo label, similar to a bookmark, is registered. Using only the P2 cam, you can create a new clip with data copied between text memo labels. Text information can also be written into each memo.

A shot mark, which allows convenient OK and NG marking, can also be added to each clip during or after recording. Text memo and shot mark facilitate the search and display of a desired scene during nonlinear editing.

*Text memo and shot mark cannot be added in Loop-rec, Interval-rec, or One-shot rec mode.

One-Clip Rec Mode

The One-Clip Rec mode is handy for recording a variety of events. Whereas normal Rec mode produces a clip for each Rec start/stop cut, One-Clip Rec mode records up to 99 consecutive cuts as a single clip, which greatly improves the nonlinear editing work that follows. A text memo is automatically attached when recording begins, making it easy to find desired cuts within the clip.



Supports Metadata Such as GPS Information

When the optional AJ-GPS910G GPS Unit is mounted, the AJ-HPX3100 can record position information (latitude, longitude, altitude) as UMID information metadata. It also enables the recording of information pre-registered via an SD card, such as the camera operator's name, reporter's name and program name, as clip metadata. This data can be used to manage clips and to provide easy searching and sorting. The metadata on each clip can be viewed by PC or other devices via a P2 card, a USB cable or the optional AJ-WM30 wireless module in addition to AJ-HPX3100 itself.

Direct Upload to a PC*1 or Nonlinear Editor

The AJ-HPX3100 records the A/V data for each recording as a file on the P2 card, which eliminates the need for digitizing. The files can be used directly in a nonlinear editing system or, they can be transferred over a network or simply onto a hard disk drive. The P2 card transfers data at a high speed up to 1.2 Gbps*2 allowing faster, easier operation. The P2 card is convenient too — you can plug it directly into the card slot on certain laptops.



*1: PCs must be installed with the included P2 driver in order to mount P2 cards. For editing, PCs must be installed with P2-compatible editing software available from various companies. Read "Notes Regarding the Handling of P2 Files Using a PC" on the back page.

*2: 1.2 Gbps is the maximum transfer speed when using the P2 card E Series. Transfer speed is subject to changes depending on the system configuration.



SYSTEM INTERFACE

System Functions Engineered for Broadcasting Operation & Options Designed for Added Ease

High-Resolution Proxy Video Supported (New Option)

When equipped with the newly developed optional AJ-YDX30 Video Encoder Board, the AJ-HPX3100 can record proxy data, which supports a file format (please see the chart on page 8) with higher resolution and better sound quality than previous formats, in a P2 card or SD/SDHC memory card. Furthermore, it enables the evaluation of video quality during off-line editing to improve work efficiency.

* Proxy data cannot be recorded if the Loop REC function is used in recording. Proxy data is AV data with low-resolution video and audio containing a time code, metadata, and other control information. DCF technologies are used under license from Multi-Format, Inc.



media players. By connecting a PC/Mac to the AJ-HPX3100, you can save proxy data in the PC/Mac and also transfer files over the Internet.

• **Metadata input and editing:** Settings before recording, addition of GPS information, shot marks and text memos during recording, and editing after recording are possible.

Wireless LAN Connectivity (New Option)

When installed with the optional AJ-WM30 Wireless Module and AJ-SFU3100G Upgrade Software Key, the AJ-HPX3100 gains wireless LAN connectivity.*1 The following three functions can be used with PCs/Macs, smartphones*2 and portable media players*2. The AJ-HPX3100 has a built-in web application to allow remote operation from a WWW browser, without using special software.

• **Camera recorder status display:** Information such as video format, card/battery remaining capacity, time code, rec status, optical filter position, metadata and others can be checked remotely.

• **Proxy video*3 playback and storage*4:** Recorded video clips can be viewed on PCs/Macs, tablet devices, smartphones and portable



PC Browser



iPhone Browser

*1: A device is connected in ad-hoc mode only.

*2: Playback of proxy data recorded in HQ or SHQ mode is possible with iPhone4 and iPod Touch fourth-generation and newer models.

*3: To use proxy video, optional AJ-YDX30G video encoder board is required.

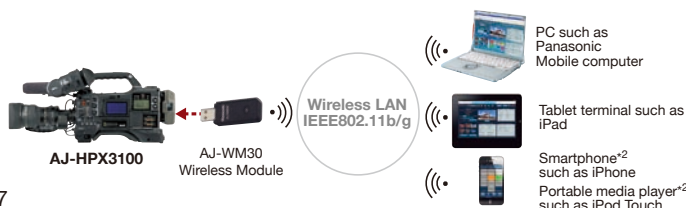
*4: Proxy data can be saved only in PCs/Macs.

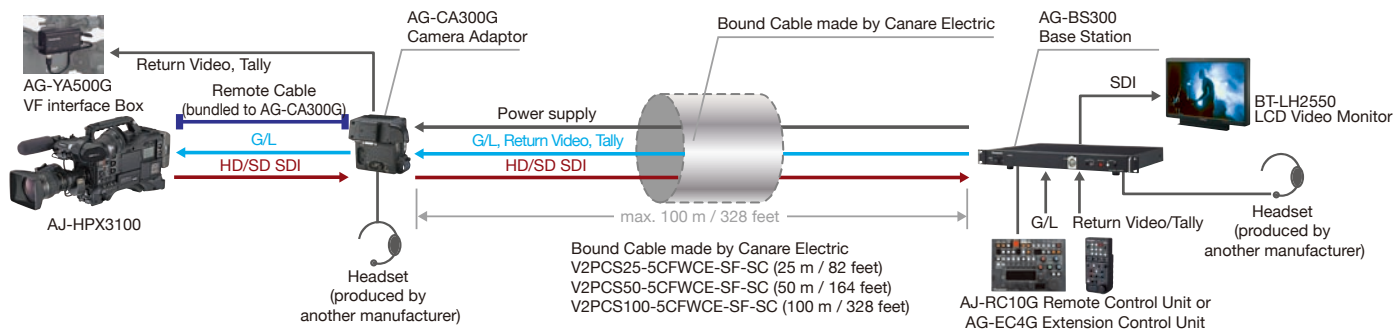
*For the latest information, see "Support & Download" on the Panasonic website (<http://pro-av.panasonic.net/>).

Camera Studio System

This system supports low-cost studio integration. Two BNC cables allow the transmission of high-quality HD digital images, return images, tally signals, mic signals, and genlock signals over a cable length of 100 meters (328 feet) maximum. A special cable can be used to supply power to the camera.*

For use with the AJ-HPX3100, the AG-EC4G Extension Remote





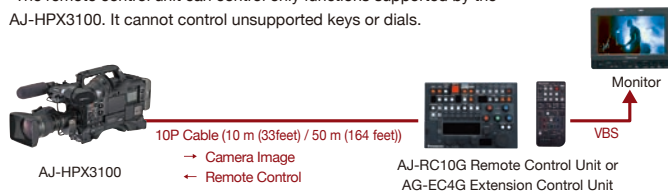
Control Unit, which enables full control over image adjustments and recording, teams with the lightweight, compact, and highly mobile AG-CA300G Camera Adaptor.

*Power can be supplied only when the AG-BS300 Base Station is driven by an AC power source. A separate power cord is also required between the AG-BS300 Base Station and the AG-CA300G Camera Adaptor.

Remote Control-Ready

The AG-EC4G Extension Remote Control Unit or AJ-RC10G Remote Control Unit* offer both studio use and direct connection to the AJ-HPX3100. This lets you adjust the images and control the camera operation while viewing the monitor.

*The remote control unit can control only functions supported by the AJ-HPX3100. It cannot control unsupported keys or dials.

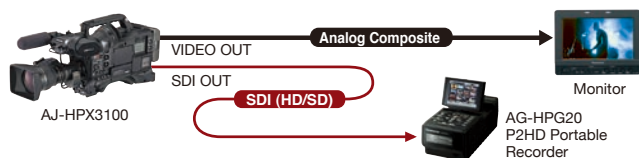


HD/SD SDI Output Terminals and Down-Converter

Two video line output terminals (BNC) are provided as standard equipment and flexibly support monitoring and line recording. The built-in down-converter outputs high-quality SD video signals for broadcasting use. The aspect mode can also be selected.

•**SDI OUT (HD/SD):** Can also output signals with embedded audio. Backup recording operation can be interlinked with the Rec Start/ Stop controls of an HD-SDI input-equipped Panasonic recorder, such as the AG-HPG20, etc. The AJ-HPX3100 can also output down-converted SD-SDI from an HD source.

•**MON OUT:** Can output HD SDI/SD SDI/Composite. HD signals can be down converted.



Standard HD/SD SDI Input Terminals

The AJ-HPX3100 supports line recording through the SDI input terminal; thus, it can be used as a portable recorder. It supports 1080/59.94i, 1080/50i, 480/59.94i and 576/50i input signals.

*The input signal must be in the same format as the recording format of the camera recorder.

Genlock Terminal for Return Video Signal Input

Return video signal (analog HD-Y signal) input to the GENLOCK IN terminal or HD/SD video signal (HD/SD SDI signal) input to the SDI IN terminal can be viewed on the viewfinder.

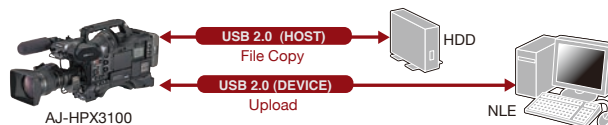
*The input signal must be in the same format as the recording format of the camera recorder.

XLR Audio Input with Automatic Switching Function

The 2-channel XLR audio input terminals on the rear panel are compatible with a +48 V phantom power supply. The new automatic front/rear switching function automatically selects the rear input signal when input is connected to the rear terminal.

USB 2.0 Interface

The AJ-HPX3100 incorporates the Host and Device USB 2.0 as standard connectors. In Device mode, a P2 card slot can be used as an external PC device. In Host mode, an external hard disk drive can be connected, making it easy to copy data from the P2 card to HDD. The thumbnails of stored video in HDD also can be viewed.



TC IN, TC OUT Terminals

The AJ-HPX3100 has a built-in SMPTE time code generator/reader. TC IN and OUT terminals make time code throughput possible. This permits an external time-code lock.

Other System Functions and Options

- UniSlot® wireless receiver compatible (2 channels).
- * UniSlot® is a trademark of Ikegami Tsusinki Co., Ltd.
- Anton/Bauer light connector on the top (lower front side of the handle).
- Equipped with earphone terminals (stereo mini-jack) and speaker.
- Multiple battery support, including Anton/Bauer or IDX batteries*.

* The V-mount battery plate is required for IDX batteries.

Compatibility with Nonlinear Editing Systems

There are many nonlinear editing products in the market that already support P2. P2 native editing makes it possible for you to maintain high-quality video and a flexible editing workflow.*

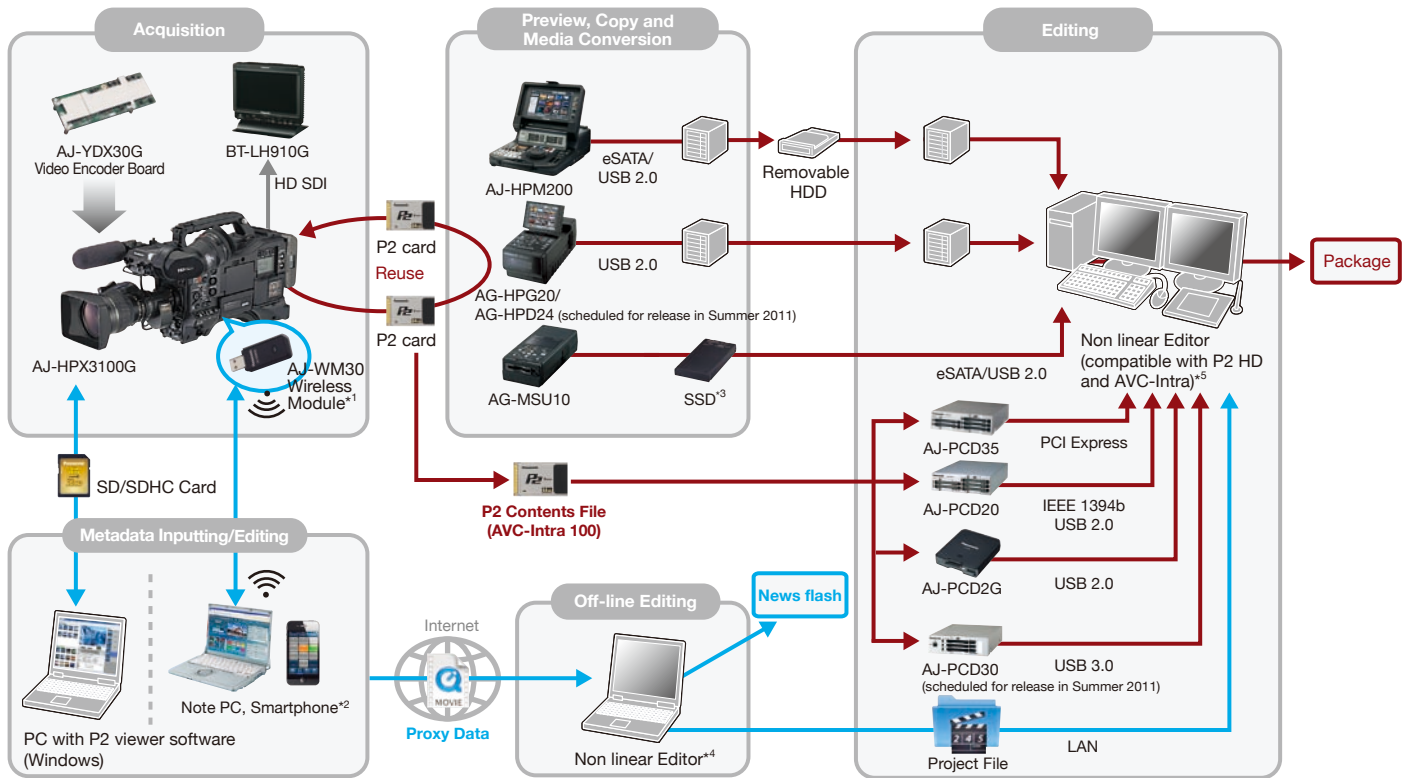
* For information on compatible nonlinear editing systems, visit <https://eww.pavc.panasonic.co.jp/pro-av/> and click "Nonlinear Compatibility Information." For the operating requirements and other details of editing software, visit the website of the relevant software manufacturer.

List of proxy data supported by the AJ-YDX30G video encoder board

Recording Mode	File Format	Video			Audio		Total Record Rate*3	Recording Time*3 (per 1GB)
		Resolution	Codec	Bit Rate	channel	Codec		
SHQ 2CH MOV*1	MOV	960×540	H.264 High Profile	3500 kbps	2CH	Linear PCM	Approx. 5060 kbps	Approx.25 min.
HQ 4CH MOV*1	MOV	640×360	H.264 High Profile	1500 kbps	4CH	AAC-LC	Approx. 1780 kbps	Approx.72 min.
HQ 2CH MOV*1	MOV	640×360	H.264 High Profile	1500 kbps	2CH	AAC-LC	Approx. 1650 kbps	Approx.78 min.
LOW 2CH MOV	MOV	(1080) 480×270 (NTSC) 352×240*2 (PAL) 352×288*2	H.264 Baseline Profile	800 kbps	2CH	AAC-LC	Approx. 950 kbps	Approx.135 min.
STD 2CH MP4 (default)	MP4	320×240	MPEG-4 Simple Profile	1500 kbps	2CH	AAC-LC	Approx. 1650 kbps	Approx. 78 min.

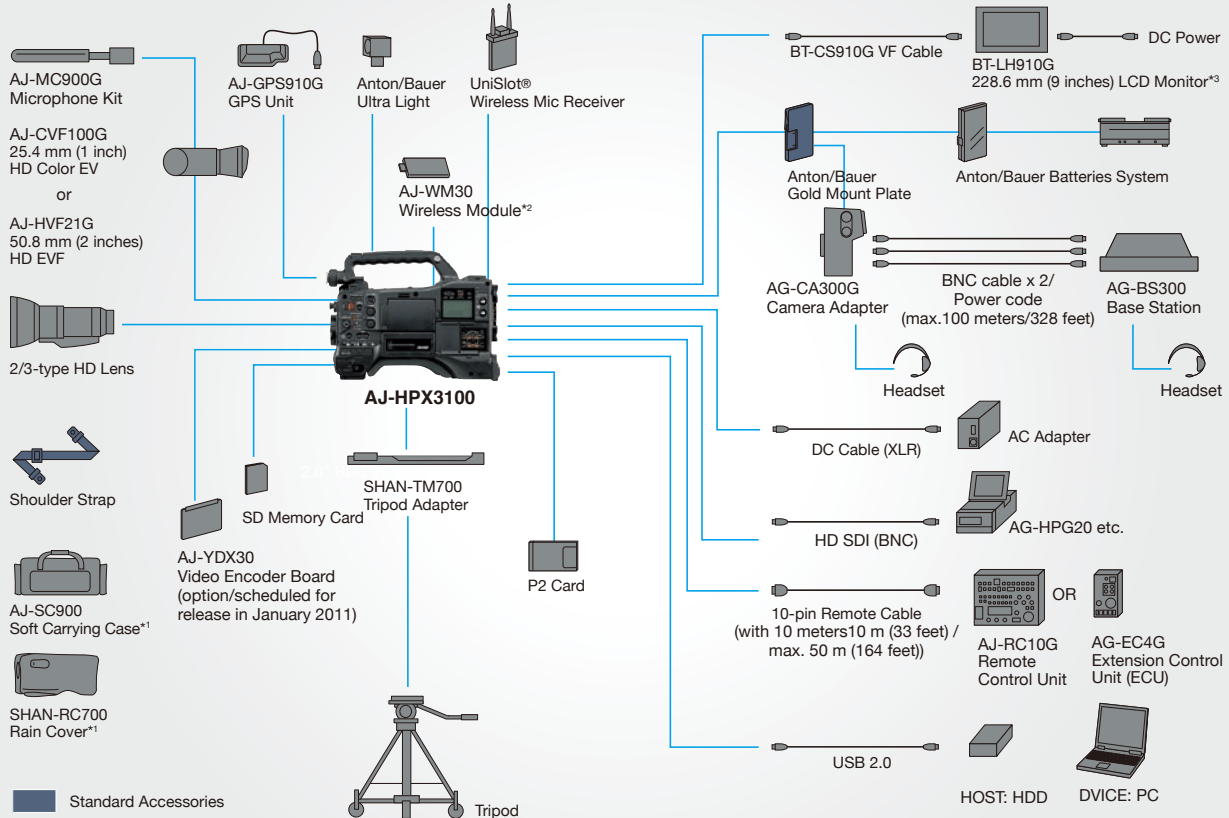
*1: These modes can not be selected when the P2 card recording mode is set to SD. *2: Only this mode can be selected when the P2 card recording mode is set to SD (NTSC/PAL). *3: Total recording rates and recording times are reference values which were obtained from continuous recording using our products. Actual recording time varies depending on the recorded scenes and the number of clips.

SYSTEM WORKFLOW



*1: The optional AJ-SFU3100G Upgrade Software Key is required. *2: Select a model that supports IEEE 801.11b/g ad-hoc connection. Proxy data can be stored and transferred by Mac/PC only. *3: The AG-MBX10 Removable SSD Interface Box is required. Use a commercially available optional SSD (must be a model for which compatibility has been confirmed by Panasonic). *4: Must support proxy video data. *5: To link with an off-line editing system, compatibility with project data of the off-line editing system is required.

System Chart



*1: Not available in some areas. *2: Optional AJ-SFU3100G upgrade software key (sold separately) is required.. *3: Mounting bracket is required to mount on a Camera Recorder.



AJ-P2E064XG
AJ-P2E032XG
AJ-P2E016XG
 Memory Card "P2 card" E Series*1



AJ-HPD2500 "P2 deck"
 Memory Card Recorder/Player
 This new P2 deck enhances file-based broadcasting workflows with versatile editing, transmission and networking functions.



AJ-HPM200 "P2 mobile"
 Memory Card Recorder/Player
 Advanced P2 mobile with versatile functions such as networking, AVCHD compatibility (option) and eSATA interface.



AG-HPD24 "P2 Portable"
 Memory Card Portable Recorder
 (Scheduled for release in Summer 2011)
 Equipped with USB 3.0 and RS-422A interfaces, this compact 2-slot P2 deck supports 3D recording.



AG-HPG20 "P2 Portable"
 Memory Card Portable Recorder
 Featuring HD SDI input for high-quality AVC-Intra recording. Ideal for HD field recording or for video playback at events.



AG-MSU10 "P2 MSU"
 Mobile Storage Unit
 Fast copying from P2 cards to a removable solid-state drive*2. It simplifies backing-up P2 content in the field.



AG-MBX10G
 Removable SSD Interface Box*3
 Removable disk tray for AG-MSU10 (does NOT include drive).



AJ-PCD35 "P2 drive"
 Memory Card Drive
 High-speed PCI Express interface.

AJ-PCD20 "P2 drive"
 Memory Card Drive
 USB2.0 & IEEE 1394b interface.



AJ-PCD30 "P2 drive"
 Memory Card Drive
 (Scheduled for release in Summer 2011)
 3-slot drive with USB 3.0 interface for high-speed 1.5-Gbps data transfer.



AJ-PCD2G "P2 drive"
 Memory Card Drive
 USB-Bus-powered 1-Slot P2 drive
 Ideal for mobile application.



P2 Viewer 3.6 (download free*4)
 Viewing Software
 Supports P2 HD. This Windows PC utility makes it easy to view and copy P2 files.*5



P2 CMS 1.4 (download free*4)
 Content Management Software
 Easy to Ingest and Manage P2 Content. The newest version is compatible with Mac OS X 10.6 "Snow Leopard".

*1: The P2 card E Series may require P2 equipment software to be updated. Please go to the P2 support page on the Panasonic web page <https://www.pavc.panasonic.co.jp/pro-av/>
 *2: Use a commercially available removable SSD that is recommended by Panasonic. In addition to the removable SSD interface box that comes with the AG-MSU10 as a standard accessory, an additional AG-MBX10 can be purchased as an option. Do not use a hard disk drive instead of an SSD. For compatible SSD information, please refer to the following WEB site: http://pro-av.panasonic.net/en/sales_o/p2/ag-msu10/ *3: Case only. SSD must be purchased separately. *4: For P2 Viewer or P2 CMS download and operating requirement information, visit <https://www.pavc.panasonic.co.jp/pro-av/>. *5: Update to a 24 bit compatible version is necessary. For details, please refer to "Note Regarding 24 bit Audio" below.

Note Regarding 24 bit Audio

Clips recorded using 24 bit audio must be played back with 24 bit compatible P2 equipment or the P2 Viewer. If clips are played back with equipment not compatible with 24 bit audio, the clip number will be indicated in red and the clips will not be played back. A P2 Viewer not compatible with 24 bit audio will not reproduce the sound properly. To play back those clips, use the latest version of P2 Viewer. For the latest information on 24 bit compatible P2 equipment and P2 Viewer, see "Support & Download" on the Panasonic website (<http://pro-av.panasonic.net/>).

P2 Memory Card Recorder: Lower Operating Costs, Better for the Environment

P2 Reduces Total Cost of Ownership

- (1) Faster, easier editing because digitization is not necessary
- (2) Lower media costs because memory cards are reusable
- (3) Lower maintenance costs because there is no moving mechanism

By reducing editing, media and maintenance costs, P2 can help improve your bottom line. Users can also take advantage of a special five-year free-repair service program that Panasonic offers for P2 HD equipment.

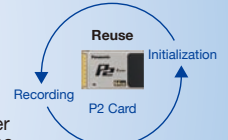


The P2 Card Helps Preserve the Environment: Repeated Reusability and Low Power Consumption

Allowing repeated file copying and initialization, a single P2 card can be used and re-used, again and again. When combined with an IT-based workflow that requires no dubbing, P2 cards can greatly reduce storage media expenses.

In addition, a memory card recorder uses less power since it has no moving mechanism. The AJ-HPX3100 has achieved approximately a 23% reduction in power consumption as compared to the previous model AJ-HPX3000.

* The power consumption of the AJ-HPX3100 is 34 W, as compared to 44 W for the AJ-HPX3000 model sold between 2007 and 2010.



OPTIONAL ACCESSORIES

AS OF MARCH, 2010



AJ-CVF100G
25.4 mm (1 inch)
HD Color EVF



AJ-HVF21KG
50.8 mm (2 inches)
HD EVF
59.94Hz/50Hz switchable



AJ-MC900G
Stereo Microphone



AJ-GPS910G
GPS Unit



SHAN-TM700
Tripod Adapter



AJ-YDX30 **NEW**
Video Encoder Board



SDHC memory card



AJ-WM30 **NEW**
Wireless Module

AJ-SFU3100G **NEW**
Upgrade Software Key



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



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



BT-LH900A
213.36 mm (8.4 inches)
HD/SD LCD monitor



BT-LH910G **NEW**
228.6 mm (9 inches)
HD/SD LCD monitor



BT-CS910G
VF Cable

Other Manufacturer's Products



2/3-type CAC Applicable Lenses

[Canon]
HJ22ex7.6B IRSE A
HJ22ex7.6B IASE A
HJ22ex7.6B IASE*
HJ21ex7.5B IRSE A
HJ21ex7.5B IASE A
HJ21ex7.5B IASE*
HJ17ex7.6B IRSE A
HJ17ex7.6B IASE A
HJ17ex7.6B IASE*
HJ14ex4.3B IRSE
HJ14ex4.3B IASE
HJ11ex4.7B IASE*

[Fujinon]
HA23x7.6BERM-M58
HA22x7.8BERM-M58
HA22x7.8BERD-S58
HA18x7.6BERM-M58B
HA16x6.3BERM-M58
HA16x6.3BERD-S58
HA13x4.5BERM-M58B

*Installation of CAC data
might be required
depending on lenses.



Anton/Bauer
Dionic Battery



Anton/Bauer
Ultra Light

Camera Studio System



BNC cables transmit degradation-free HD digital images up to 100 meters (328 feet) in addition to giving you full remote control.

AG-CA300G
Camera Adaptor

AG-EC4G
Extension Control Unit

AG-BS300
Base Station

AJ-RC10G
RCU (Remote Control Unit)
with 10 meters (32 feet) remote control
cable

AG-YA500G
VF Interface Box

AJ-C10050G
Remote Control Cable
(50 meters / 164 feet)

Bound Cable for Camera Studio System
(between AG-BS300 and AG-CA300G)

[Canare]
V2PCS25-5CFWCE-SF-SC (25 meters/82 feet)
V2PCS50-5CFWCE-SF-SC (50 meters/164 feet)
V2PCS100-5CFWCE-SF-SC (100 meters/328 feet)
Power Cable for Camera Studio System
(between AG -BS300 and AG -CA300G)

[Canare]
DC50V10-CE01PS-SC (50 meters/164 feet)
DC100V10-CE01PS-SC (100 meters/328 feet)

Canare Electric CO., Ltd.
<http://www.canare.co.jp/oversea/mainmenu.html>

General Specification

Power Supply:	DC12V (11V to 17V)
Power Consumption:	34W (main unit only)
Operating Temperature:	0°C to 40°C (32 °F to 104 °F)
Operating Humidity:	10 % to 85 % (relative humidity)
Keeping Temperature:	-20 °C to 60 °C (-4 °F to 140 °F)
Operating Time:	Approx. 150 min., when using DIONIC90 battery
Weight:	Approx. 3.9 kg/8.6 lbs (main unit only)
Dimensions (W x H x D):	140 mm x 270.5 mm x 335.8 mm (5-9/16" x 10-11/16" x 13-1/4") excluding handle and option cover

Camera Section

CCD Elements:	CCD x 3 (2/3-type interline transfer type, RGB, 2,200,000 pixel)
Picture Elements:	Total: 2010 (H) x 1120 (V)
Lens Mount:	2/3-bayonet type
Optical Color Separation:	Prism system
CCI Filters:	A: 3200K, B: 4300K, C: 5600K, D: 6300K
ND Filters:	1: CLEAR, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND
Quantizing:	14 bits
Horizontal Drive Frequency:	59.94 Hz: 74.1758 MHz, 50 Hz: 74.25 MHz
Sampling Frequency:	59.94 Hz: 74.1758 MHz, 50 Hz: 74.25 MHz
Digital Signal Process:	59.94 Hz: 74.1758 MHz, 50 Hz: 74.25 MHz
Programmable Gain:	-6 dB, -3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB, 21 dB, 24 dB, 27 dB, 30 dB selectable
Digital Super Gain:	6 dB, 10 dB, 12 dB, 15 dB, 20 dB, 24 dB, 28 dB, 34 dB selectable
Super Gain:	30 dB, 36 dB, 42 dB selectable
Shutter Speed:	1/60 (50 Hz) sec., 1/100 (59.94 Hz) sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF 180.0 deg, 172.8 deg, 144.0 deg, 120.0 deg, 90.0 deg, 45.0 deg
Shutter Speed: (Syncro Scan)	1/61.7 sec. to 1/7200 sec. (1080/59.94i, 480/59.94i) 1/30.9 sec. to 1/3600 sec. (1080/29.97p, 480/29.97p) 1/24.7 sec. to 1/2880 sec. (1080/23.98p, 480/23.98p) 1/51.4 sec. to 1/6000 sec. (1080/50i, 576/50i) 1/25.7 sec. to 1/3000 sec. (1080/25p, 576/25p)
Sensitivity:	1080/59.94i: F11, 1080/50i: F12 (2000 lx, 89.9 % reflect)
Minimum Luminance:	0.005 lx (F1.4, S.GAIN 42 dB + DS.GAIN 34 dB)
Video S/N:	DNR ON: 59 dB, DNR OFF: 54 dB (standard)
Registration:	Less than 0.03 % (whole zone, without lens distortion)
Horizontal Resolution:	1,000 TV lines (at center standard)

Memory Card Recorder Section

Recording Media :	P2 card		
Recording Format:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD/ DVCPRO50/DVCPRO/DV Format switchable		
Recording Video Signal:	1080/59.94i, 1080/29.97p over 59.94i, 1080/23.98p over 59.94i, 1080/23.98p over 59.94i, 1080/29.97pN, 1080/23.98pN, 1080/50i, 1080/25p over 50i, 1080/25pN, 480/59.94i, 480/29.97p over 59.94i, 480/23.98p over 59.94i, 480/23.98pA over 59.94i, 576/50i, 576/25p over 50i		
Recording Audio Signal:	AVC-Intra 100/50: 48 kHz, 16 bit/24 bit switchable, 4ch DVCPRO HD/DVCPRO 50: 48 kHz, 16 bit, 4ch DVCPRO/DV: 48 kHz, 16 bit, 2ch/4ch switchable		
Recording Playback Time*:	P2card x 1	P2card x 2	
64GB P2card:	AVC-Intra 100 AVC-Intra 50 DVCPRO HD DVCPRO 50 DVCPRO/DV	Approx. 64 min. Approx. 128 min. Approx. 64 min. Approx. 128 min. Approx. 256 min.	Approx. 128 min. Approx. 256 min. Approx. 128 min. Approx. 256 min. Approx. 512 min.
32GB P2card:	AVC-Intra 100 AVC-Intra 50 DVCPRO HD DVCPRO 50 DVCPRO/DV	Approx. 32 min. Approx. 64 min. Approx. 32 min. Approx. 64 min. Approx. 128 min.	Approx. 64 min. Approx. 128 min. Approx. 64 min. Approx. 128 min. Approx. 256 min.
16GB P2card:	AVC-Intra 100 AVC-Intra 50 DVCPRO HD DVCPRO 50 DVCPRO/DV	Approx. 16 min. Approx. 32 min. Approx. 16 min. Approx. 32 min. Approx. 64 min.	Approx. 32 min. Approx. 64 min. Approx. 32 min. Approx. 64 min. Approx. 128 min.

* 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.

Digital Video

Sampling Frequency:	AVC-Intra 100/AVC-Intra 50/DVCPRO HD: Y: 74.1758 MHz, P _B /P _R : 37.0879 MHz (59.94 Hz) Y: 74.2500 MHz, P _B /P _R : 37.1250 MHz (50 Hz) DVCPRO50: Y: 13.5 MHz, P _B /P _R : 6.75 MHz DVCPRO: Y: 13.5 MHz, P _B /P _R : 3.375 MHz
Quantizing:	AVC-Intra 100/AVC-Intra 50: 10 bit DVCPRO HD/DVCPRO50/DVCPRO/DV: 8 bit
Video Compression:	AVC-Intra100/AVC-Intra50: MPEG-4 AVC/H.264 Intra Profile DVCPRO HD: DV base compression (SMPTE 370M) DVCPRO 50/DVCPRO: DV base compression (SMPTE 314M) DV: DV compression (IEC 61834-2)

Digital Audio

Frequency Response:	20 Hz to 20 kHz ±1.0 dB (reference level)
Dynamic Range:	More than 85 dB (1 kHz, AWTD, 16 bit) More than 93 dB (1 kHz, AWTD, 24 bit)
Distortion: Within	0.1 % (1 kHz, reference level, 16 bit) 0.05 % (1 kHz, reference level, 24 bit)
Headroom :	18/20 dB selectable

Video Input/Output

GENLOCK IN:	BNC x 1, 1.0V [p-p], 75Ω (switchable to VIDEO IN or Return Video on menu)
SDI OUT:	BNC×1 HD SDI: 0.8 V [p-p], 75Ω, SMPTE292M/299M standards SD SDI: 0.8 V [p-p], 75Ω, SMPTE259M-C/272M-A/ ITUR. BT656-4 standards
MON OUT:	BNC×1 (switchable to HD SDI/SD SDI/Composite on menu) HD SDI: 0.8 V [p-p], 75Ω SD SDI: 0.8 V [p-p], 75Ω, SMPTE259M-C/272M-A/ ITUR. BT656-4 standards Composite: 1.0V [p-p], 75Ω
SDI IN:	BNC×1 (switchable for VIDEO IN/Return Video/ GENLOCK IN, on menu) HD SDI: 0.8 V [p-p], 75Ω, SMPTE292M/299M standards SD SDI: 0.8 V [p-p], 75Ω, SMPTE259M-C/272M-A/ ITUR. BT656-4 standards

Audio Input/Output

AUDIO IN:	CH1/CH2: XLR 3 pin x 2, LINE/MIC/MIC + 48V switchable LINE: 4 dBu (-3 dBu/0 dBu/4 dBu selectable on menu) MIC: -60 dBu (-60dBu/-50 dBu selectable on menu) MIC + 48V: Phantom +48 V, -60 dBu (-60dBu/-50 dBu selectable on menu)
MIC IN :	XLR 5 pin x 1, Phantom +48 V (ON/OFF selectable on menu) -40 dBu (-50dBu/-40 dBu selectable on menu)
WIRELESS IN :	25 pin D-SUB, -40 dBu
AUDIO OUT:	CH1/CH2: XLR 5 pin x 1, balanced, low-impedance 4 dBu (-3 dBu/0 dBu/4 dBu selectable on menu)
PHONES OUT:	Stereo mini jack x 2 (3.5mm diameter)
Speaker:	28mm round shape x 1

Other Input/Output Signal

TC IN:	BNC×1, 0.5 V [p-p] to 8 V [p-p], 10 kΩ
TC OUT:	BNC×1, low impedance, 2.0 V [p-p] ±0.5 V [p-p]
DC IN:	XLR 4 pin x 1, DC 12 V (DC 11 V-17 V)
DC OUT:	4 pin, DC 12 V (DC 11 V-17 V), max 1.5 A.
LENS:	12 pin
Right Connector:	2 pin, DC 12 V (DC 11 V-17 V) Output current: max. 4.5 A (to 50 W)
EVF:	20 pin
REMOTE:	10 pin for AJ-RC10G, AG-EC4G
GPS:	6 pin for AJ-GPS910G
USB 2.0:	HOST: 4-pin Type-A, DEVICE: 4-pin Type-B
Monitor:	81.28 mm (3.2 inches) LCD monitor, approx. 921,000 dots (16:9)

Included Accessories

Shoulder strap, Front audio volume knob (with screw),
AUDIO connector cap, Mount cap, XLR connector cap, GPS connector cap,
Software CD-ROM

Weight and dimensions shown are approximate.

The content of this catalog is a thing as of March, 2011.

Specifications are subject to change without notice.



P2 Asset Support System

The free member's service program for P2HD/AVCCAM

Extensive information for video professionals

Thirsty for Knowledge?

No purchase necessary
Information services for members

- ▶ The latest technical information
- ▶ FAQs, user's voices
- ▶ Tool download

Always the best performance

Additional content with product registration

- ▶ Firmware, utility downloads
- ▶ Quick inspection, service history
- ▶ Newsletters

Contact us through PASS

Direct answers to your inquiries. Sign up now (no purchase necessary)

http://panasonic.biz/sav/pass_e



5 year extended warranty program

1st year Basic Warranty

2nd year

3rd year

4th year

5th year with the warranty program

Extended for free upon registration

* Availability of this extended service program and service content may depend on country/region and model.

* A maximum 5 year or pre-specified hours of operation from the date of purchase, whichever comes first.

* Not all repair work is covered by this extended warranty program.

Informative product-related content also available with equipment registration.

Please refer to the latest Non-linear Compatibility Information, P2 Support, Download and Service information, etc. on the Panasonic web site:



<http://pro-av.panasonic.net/>

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 7, 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 for free from the following Panasonic web site: <https://eww.pavc.panasonic.co.jp/pro-av/> and click "P2 Support and Download."

Preview and Nonlinear Editing

To preview (play) P2 files on a PC, it is necessary to install P2 Viewer software (downloadable for free, for Windows only) or P2 CMS content management software (downloadable for free, for both Windows and Mac), both from Panasonic, or P2-compatible editing software available from other companies (for details, visit https://eww.pavc.panasonic.co.jp/pro-av/sales_o/p2/partners.html). Note that each software places specific requirements on the operating environment, and the operating environment must meet additional requirements to play and edit HD content on Windows PCs and Macs. For P2 Viewer or P2 CMS download and operating requirement information, visit <https://eww.pavc.panasonic.co.jp/pro-av/>. For operating requirements and details of other P2 editing software, visit the website of the relevant software manufacturer.



[Countries and Regions]

Panasonic Corporation
Digital Imaging Business Group
2-15 Matsuba-cho, Kadoma, Osaka 571-8503
Japan
<http://pro-av.panasonic.net/>

Argentina	+54 1 308 1610
Australia	+61 2 9986 7400
Bahrain	+973 252292
Belgium	+32 (0) 2 481 04 57
Brazil	+55 11 3889 4035
Canada	+1 905 624 5010
China	+86 10 6515 8828
Hong Kong	+852 2313 0888
Czech Republic	+420 236 032 552/511
Denmark	+45 43 20 08 57
Egypt	+20 2 23938151
Finland, Latvia, Lithuania, Estonia	+358 (9) 521 52 53
France	+33 (0) 1 55 93 66 67
Germany, Austria	+49 (0)611 235 0
Greece	+30 210 96 92 300
Hungary	+36 (1) 382 60 60
India	+91 120 247 1000
Indonesia	+62 21 385 9449
Iran (Vida)	+98 21 2271463
(Panasonic Office)	+98 2188791102
Italy	+39 02 6788 367
Jordan	+962 6 5859801
Kazakhstan	+7 727 298 0891
Korea	+82 2 2106 6641
Kuwait	+96 522431385

Lebanon	+96 11665557
Malaysia	+60 3 7809 7888
Mexico	+52 55 5488 1000
Netherlands	+31 73 64 02 577
New Zealand	+64 9 272 0100
Norway	+47 67 91 78 00
Pakistan	+92 5370320 (SNT)
Palestine	+972 2 2988750
Panama	+507 229 2955
Peru	+51 1 614 0000
Philippines	+63 2 633 6163
Poland	+48 (22) 338 1100
Portugal	+351 21 425 77 04
Puerto Rico	+1 787 750 4300
Romania	+40 21 211 4855
Russia & CIS	+7 495 6654205
Saudi Arabia	+96 626444072
Singapore	+65 6270 0110
Slovak Republic	+421 (0) 2 52 92 14 23
Slovenia, Albania, Bulgaria, Serbia, Croatia, Bosnia, Macedonia, Montenegro	+36 (1) 382 60 60
South Africa	+27 11 3131622
Spain	+34 (93) 425 93 00
Sweden	+46 (8) 680 26 41
Switzerland	+41 (0) 41 259 96 32
Syria	+963 11 2318422/4

Taiwan	+886 2 2227 6214
Thailand	+66 2 731 8888
Turkey	+90 216 578 3700
U.A.E. (for All Middle East)	+971 4 8862142
Ukraine	+380 44 4903437
U.K.	+44(0)1344 70 69 13
U.S.A.	+1 877 803 8492
Vietnam	+848 38370280



JQA-0443



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