

Panasonic
ideas for life

P2HD

AG-HPX370 *series*

Memory Card Camera Recorder
(AG-HPX370/371/372/374)

A Breakthrough P2 Cam with High Image Quality and High Sensitivity.



*Shown above with Standard Lens, Permanently-set Viewfinder, Optional Microphone, and Optional Battery.

AVC INTRA

DVCPRO HD

DVCPRO 50

DVCPRO

DV

HIGH QUALITY &

A New Full-HD U.L.T. (Ultra Luminance Technology) Image Sensor Rivals



Newly developed 1/3-inch U.L.T. image sensor

AG-HPX370 series

1/2-inch MOS
equipped camera



Comparison of Recorded Images

Panasonic's AG-HPX370 series P2 HD camera recorder moves you up to a whole new level of production quality. A new, state-of-the-art 2.2 megapixel 3-chip U.L.T. (Ultra Luminance Technology) imager produces stunning HD content in a wide range of shooting conditions, with the F10* sensitivity and image quality of larger imagers. With a superior 10-bit, 4:2:2, full 1920 x 1080 resolution AVC-Intra codec, the HPX370 series can record more image detail more accurately. Ready for global production, the HPX370 series offers international HD and SD standards, including 1080i and 720p as well as industry-standard DVCPRO HD. Data is recorded onto reliable P2 memory cards. With its superb image rendering, long recording time, easy operation and flexible adaptability to IT, the AG-HPX370 series is a powerful answer to today's advanced video production demands. It also offers low operating costs and high environmental performance.

*F10 sensitivity in 1080/59.94i and F11 sensitivity in 1080/50i at 2,000 lx.

HIGH SENSITIVITY

the Image Quality and Sensitivity of High-End Professional Camera Recorders.



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. And because a memory card recorder has no moving mechanism, it uses less power. For example, the AG-HPX370 series uses about 51% less power than the tape-based AJ-HDX900 camcorder.

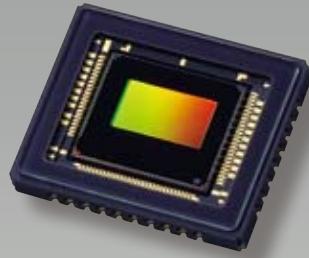


Camera Section

The AG-HPX370 series features a newly developed camera section with a 2.2-megapixel image sensor and 20 bit digital signal processor. Image quality is outstanding.

Newly Developed U.L.T.*1 Image Sensor with F10*2 Sensitivity and Superb Image Quality

High levels of sensitivity and image quality have been achieved with a new high-sensitivity photodiode and low-noise pixel transistor, both based on low-noise analog process technology that was accumulated in Panasonic CCD camera development. Plus, the same levels of sensitivity and image quality that are found in Interlace mode are now possible in Progressive mode thanks to P.A.P. (Progressive Advanced Processing), a 3D adaptive processing technology.



Newly developed 1/3-inch
U.L.T. image sensor

*1: Ultra Luminance Technology

*2: F10 sensitivity in 1080/59.94i and F11 sensitivity in 1080/50i at 2,000 lx.



AG-HPX370 series

1/2-inch MOS equipped camera

*Shooting conditions: Gain: 0 dB,
Filter: Clear,
Lens aperture: Open,
Illumination: 60 lx

Fujinon High-Performance 17x Zoom Lens

The AG-HPX370 series comes equipped with a Fujinon 1/3-inch 17x zoom lens. Optimized for use with the AG-HPX370 series, this high-performance HD lens incorporates advanced broadcast lens technologies to achieve a compact size, light weight, F1.6 at 4.5 mm f-value at the wide end, and excellent zoom response. The zoom is comfortable to grip and use. Also, quick zoom and auto cruising zoom functions can be allocated to the VTR and RET switches.

Chromatic Aberration Compensation (CAC)

This exclusive technology sets up a conversation between lens and camera which allows for a highly sophisticated algorithm to be deployed that will automatically compensate the registration error that is caused mainly by lens chromatic aberration, and minimize the circumjacent blur.

Simulation Showing the CAC (Chromatic Aberration Compensation) Effect



Full screen

CAC OFF

CAC ON

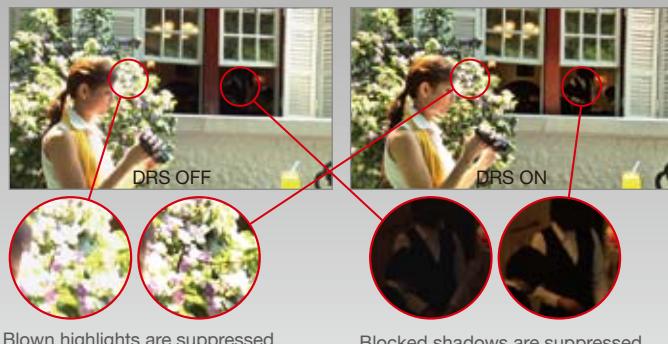


Dynamic Range Stretch (DRS)

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 are 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.

*The DRS function does not operate in 1080/25p, 1080/24p or 1080/30p mode.

Simulation Showing

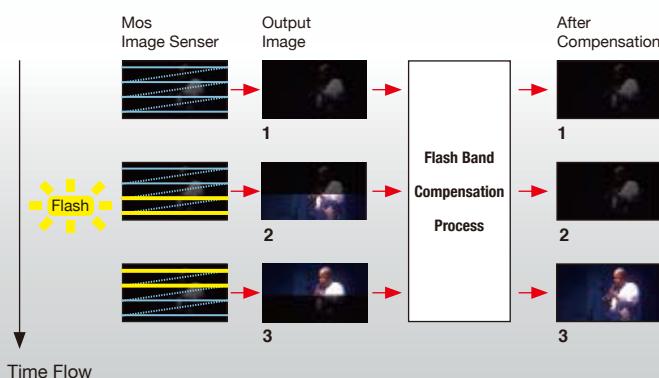


Blown highlights are suppressed.

Blocked shadows are suppressed.

Flash Band Compensation

In contrast with the CCD image sensor, which accumulates still images of single frames that are exposed with identical timing, the MOS image sensor uses a rolling shutter system that sequentially scans each line of pixels. This lowers power consumption and enables high-speed drive, but because the exposure timing differs for each line, when an external flash is used, it tends to produce images where the brightness is divided between the top and bottom of the image. This is called the flash band effect. The AG-HPX370 series is equipped with highly accurate flash band detection and compensation software* on the camera's signal processing LSI. By generating pairs of frames containing flash bands, and frames in which a flash extends from the previous frame to the entire screen, and then using the compensation process to adjust the level, the flash band effect of MOS-based imagers is eliminated.



3-Position Gain Selector / 24dB Gain-Up Function

There is a 3-position gain selector, with L, M and H settings. To each setting you can assign a gain value from -3 dB to 12 dB, in 3 dB steps. There is also a USER button — just give it a quick touch to instantly boost the gain by 24 dB.

Newly Developed 20 bit Digital Signal Processor

The AG-HPX370 series incorporates a high-performance 20 bit DSP that handles image rendering processes such as gamma and various detail enhancement functions with exceptional precision. Consuming less power than conventional processors, the new DSP contributes to the AG-HPX370 series outstanding environmental performance.



Scene File Dial

Set this dial for an instant set of shooting conditions. Six preset files are provided, and you can change any of the six file names and their settings as desired. You can also store and load the settings to and from an SD card.

• File Description

F1:	— Standard settings
F2: FLUO.	Indoor shooting under fluorescent lights
F3: SPARK	Highlighting subjects at receptions, events etc.
F4: B-STR	Enhanced gradations of luminance in low light scenes
F5: CINE V	Cine-Like setting shifted to prioritize contrast*
F6: CINE D	Cine-Like setting shifted to prioritize dynamic range*

*Selecting this file does not change the video recording format. If you want to switch to 25p, 24p and 30p, you must do so as a separate procedure.

Slow, Synchro and High-Speed Shutter

The shutter speed can be set between 1/6.25 second on the slow end in 50Hz mode (1/6 second in 59.94Hz mode) and 1/2000 second on the fast end. Used with the variable frame rate function, this allows you to create a blurring effect or crystal-clear stop-motion of sports action. The AG-HPX370 series also features a synchro scan function for capturing screen shots from a computer monitor.

Advanced Image Adjustments Built-In

- Matrix setting including a Cine-Like mode
- Adjustable H detail level, V detail level, detail coring and skin tone detail
- Adjustable chroma level, chroma phase, color temp and master pedestal
- Knee point settings: Auto, Low, Mid and High
- User files can be saved to an SD card and shared with other cameras. User files are separate from Scene Files.
- 4-position (off, 1/4 ND, 1/16 ND, 1/64 ND) optical neutral density filter wheel

Cine-like Functions

The gamma, variable frame rate and other advanced functions let you capture images with a cinema-like feel, expanding your creative and expressive possibilities.

7-Mode Gamma for Richer Gradation

Drawing on technologies developed for the VariCam, Panasonic has equipped the AG-HPX370 series with advanced gamma functions that address seven different shooting scenarios and enhance your creative abilities. This includes the Cine-Like Gamma, which produces the characteristic tone of film recordings.

AG-HPX370 series Gamma Modes

HD NORM:	Suitable for standard HD recording
LOW:	Works to flatten out a high contrast scene
SD NORM:	Normal setting for SD
HIGH:	Provides more contrast and color gradation
B.PRESS:	Provides more contrast and blacks in low contrast scenes
CINE-LIKE D:	The Cine-Like mode shifted to prioritize dynamic range
CINE-LIKE V:	The Cine-Like mode shifted to prioritize contrast



HD NORM Mode



CINE-LIKE D Mode

20-Step Variable Frame Rate

Like the VariCam, the AG-HPX370 series allows undercranking and overcranking common in film cameras, to create fast-motion and slow-motion effects. In 720p mode,* the frame rate can be set to any of 20 steps.

*In 1080 and 480 modes, the frame rate can be set only to 25p, 24p or 30p.

VFR in 50 Hz Mode

Frame rate	Effect of 25p standard
12p	208% (Quick)
15p	167% (Quick)
18p	139% (Quick)
20p	125% (Quick)
21p	119% (Quick)
22p	114% (Quick)
23p	109% (Quick)
24p	104% (Quick)
25p	100% (Standard)
26p	96% (Slow)
27p	93% (Slow)
28p	89% (Slow)
30p	83% (Slow)
32p	78% (Slow)
34p	74% (Slow)
37p	68% (Slow)
42p	60% (Slow)
45p	56% (Slow)
48p	52% (Slow)
50p	50% (Slow)

VFR in 59.94 Hz Mode

Frame rate	Effect of 24p standard	Effect of 30p standard
12p	200% (Quick)	250% (Quick)
15p	160% (Quick)	200% (Quick)
18p	133% (Quick)	167% (Quick)
20p	120% (Quick)	150% (Quick)
21p	114% (Quick)	143% (Quick)
22p	109% (Quick)	136% (Quick)
24p	100% (Standard)	125% (Quick)
25p	96% (Slow)	120% (Quick)
26p	92% (Slow)	115% (Quick)
27p	89% (Slow)	111% (Quick)
28p	86% (Slow)	107% (Quick)
30p	80% (Slow)	100% (Standard)
32p	75% (Slow)	94% (Slow)
34p	71% (Slow)	88% (Slow)
36p	67% (Slow)	83% (Slow)
40p	60% (Slow)	75% (Slow)
44p	55% (Slow)	68% (Slow)
48p	50% (Slow)	63% (Slow)
54p	44% (Slow)	56% (Slow)
60p	40% (Slow)	50% (Slow)

- **Normal cinematic shooting** (at 24 fps, 25 fps or 30 fps) refers to the same rate as used in film cameras. The AG-HPX370 series can record in 1080/24p (over 60i) or 480/24p (over 60i) mode, as well as 720/24p mode. 25 fps or 30 fps is the standard frame rates used in the production of TV commercials, music clips and video software. The AG-HPX370 series can also record in 1080/25p (over 50i), 1080/30p (over 60i), 576/25p (over 50i) or 480/30p (over 60i) mode, as well as 720/25p and 720/30p mode.



- **Higher-speed shooting** (at over 25 fps*) produces slow-motion effects. This 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 in 59.94 Hz mode. For a standard speed of 25 fps in 50Hz mode, anything over 26 fps will be overcranked.



- **Lower-speed shooting** (at under 22 fps*) lets you attain a fast-motion effect. This technique 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 in 59.94 Hz mode. For a standard speed of 25 fps in 50 Hz mode, anything under 24 fps will be undercranked.



Native and Over-50p/60p Modes

• 720p Native Mode

In Native mode, the AG-HPX370 series records images at the frame rate set in the camera. For example in 24 pN mode, it only records 24 frames instead of the normal 60 frames*. Using the AG-HPX370 series to play 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.

*In 25 pN mode in 50 Hz system mode, AG-HPX370 series records only 25 frames instead of the normal 50 frames

• 720p over 50p/60p Mode

This is a mode for recording 50p-converted or 60p-converted video. For example, in 24p mode, it records 60 frames by applying a 2:3 pulldown. 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 recorder such as AJ-HPM200 or AG-HPG20, DVCPRO HD recorder.

*Only when the recording format is DVCPRO HD. There is no output when the AVC-Intra codec is used.

*24p = 23.98p, 30p = 29.97p, 60p = 59.94p and 60i = 59.94i



1080/480 24p Advance Mode (in 59.94Hz mode)

The 1080 and 480 progressive recording systems convert recordings to 60i in 24p, 30p, or 24pA (Advance) mode. The 24p Advance mode uses 2:3:3:2 pulldown, which allows for an easy extraction to a 24p timeline and no quality loss in the process with compatible NLEs.*

*AVC-Intra recording is not possible.

* For information on compatible nonlinear editing systems, visit <https://www.pavc.panasonic.co.jp/pro-av/> and click "Nonlinear Compatibility Information."

*24p = 23.98p, 30p = 29.97p, 60p = 59.94p and 60i = 59.94i

Scan Reverse Function for Use with Film Lenses

The AG-HPX370 series comes with scan reverse. This function cancels the image inversion that occurs when a Cinema lens adaptor is used.

Shown above is a sample of operation style.

AVC-Intra Codec

High-quality 1920 x 1080 pixel, 10 bit, 4:2:2 HD recording

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.

In the AG-HPX370 series, a new single-chip digital signal processor is integrated with the AVC-Intra codec circuit. This is another way the AG-HPX370 series reduced power consumption.



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 AG-HPX370 series 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: 1080/25p, 1080/50i, 1080/23.98p or 29.97p as well as 1080/59.94i. These HD formats bring extra flexibility to all of your production needs. The AG-HPX370 series also supports 720p recording for HD image production in a variety of formats, including 50p, 59.94p, 23.98p and 29.97p.



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.

Selectable DVCPRO HD Recording

The AG-HPX370 series also supports the conventional DVCPRO HD codec. Because the AG-HPX370 series are designed to be used with the AG-HPX170 series/HVX200A series or a DVCPRO HD VTR, it adapts to a variety of system configurations.

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

The AG-HPX370 series 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-in, line-in and wireless receiver.

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-Frame Only) Compression Superiority

Motion-image compression can be divided roughly into two methods: I-Frame 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-Frame Only compression, while HDV uses Long GOP compression.

The MPEG-4 AVC/H.264 standard encompasses both methods.

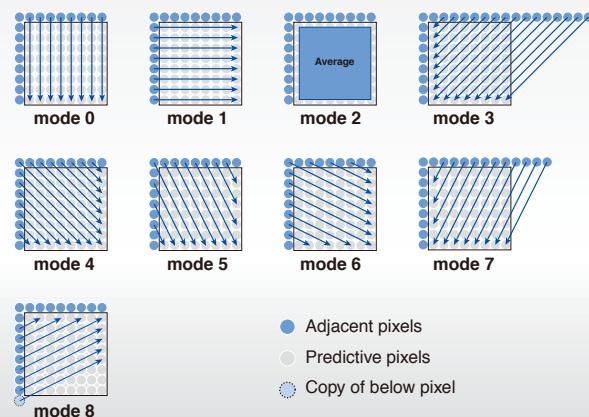
When the images of adjacent frames are similar, Long GOP compression achieves an advantageously low bit rate. However, this trait is not often seen in broadcasts like flash-filled press conferences, fast-action sports, and video with rapid move and electronic displays. Also, because processing is performed frame-by-frame in I-Frame Only, new-generation multi-core CPUs offer high-speed parallel processing. This makes I-Frame Only compression more suitable for nonlinear editing than Long GOP, for which parallel processing is difficult due to its inter-frame dependence. With its I-Frame 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 ratio of MPEG-2, even with I-Frame Only compression. 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.



Context-adaptive entropy coding

The entropy coding process used in MPEG-4 AVC/H.264 utilizes CAVLC (Context Adaptive VLC) and CABAC (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 Recorder Section

The P2 recorder section offers reliable, large-capacity, high-speed memory card recording and a number of advanced functions.

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 many years of use. The P2 card connector is specifically designed to stand up to the repeated insertion and removal involved in professional use. The E Series^{*2} (AJ-P2E016XG, AJ-P2E032XG, and AJ-P2E064XG) provides lower cost recording capability for those customers with budgetary concerns.

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

*2: When using the P2 card E Series, software updates are necessary for certain P2 devices. For details, visit the Panasonic website at <https://www.pavc.panasonic.co.jp/pro-av/>.

Immediate Startup and Better Data Protection

When you press the Record button in standby mode, the AG-HPX370 series instantly finds a blank area on the P2 card and begins recording. 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.

AG-HPX370 series Recording Format & Recording Time

HD Format	Pull down	Codec & Recording Time (with two 64 GB P2 Card)		
		DVCPro HD	AVC-Intra 100	AVC-Intra 50
50Hz	1080/50i	—	128 min.	256 min.
	1080/25p over 50i	2:2	—	—
	1080/25pN (Native) ^{*1}	—	128 min.	256 min.
	720/50p	—	128 min.	256 min.
	720/25p over 50p ^{*2}	2:2	—	—
	720/25pN (Native) ^{*1}	—	256 min.	512 min.
60Hz	1080/59.94i	—	128 min.	256 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}	—	128 min.	256 min.
	1080/23.98pN (Native) ^{*1}	—	160 min.	320 min.
	720/59.94p	—	128 min.	256 min.
	720/29.97p over 59.94p ^{*2}	2:2	—	—
SD Format	720/23.98p over 59.94p ^{*2}	2:3	—	—
	720/29.97pN (Native) ^{*1}	—	256 min.	512 min.
	720/23.98pN (Native) ^{*1}	—	320 min.	640 min.
SD Format		Codec & Recording Time (with two 64 GB P2 Card)		
		DVCPro 50	DVCPro	DV
50Hz	576/50i	—	256 min.	512 min.
	576/25p over 50i	2:2		
60Hz	480/59.94i	—		
	480/29.97p over 59.94i	2:2		
	480/23.98p over 59.94i	2:3		
	480/23.98pA over 59.94i	2:3:3:2		

*1: Native modes record only the effective frames.

*2: When you select 25 FRAME/24 FRAME/30 FRAME in VFR mode in DVCPro HD mode.

Clip Thumbnail Function

The P2 HD camcorder 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. 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.

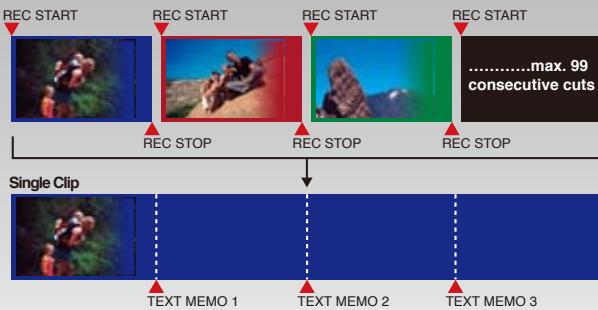


image. You can also specify a number of clips for seamless playback* or on-air broadcasting from fields. And if a shooting opportunity should arise during playback, the P2 HD cam lets you start recording immediately with no cueing required and no risk of accidentally overwriting valuable data.

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

New 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.



Direct Upload to a PC*1 or Nonlinear Editor

The AG-HPX370 series 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 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 giving you 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: 1.2Gbps is maximum transfer speed when using P2 card E series. Transfer speed is subject to be changed depended on system configuration.

Advanced Recording Functions Employing Two Card Slots

In addition to continuous, double-card recording, the AG-HPX370 series also enables some useful recording functions that are possible only with memory cards.

- **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. With multiple cards you can record for hours without interruption.
- **Loop-rec***: The real benefit of loop recording can only be dramatized when you don't know when the event is going to happen, you just know that it will. By allocating the open space on the cards the camera will continue to record over that area until the operator pushes the stop button, thereby assuring that the recording has been made, and the event captured.

- **Pre-rec*:** While in standby mode, you can continuously store, and subsequently record, up to 3 seconds in HD (7 seconds in SD). This will help you to get your shot every time.

- **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, native mode, and 1080/24p over 59.94i, 720/24p over 59.94p, 720/25p over 50p recording.

* Pre-rec is not possible in loop-rec, interval-rec, or one-shot rec mode.

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 AG-HPX370 series, you can create a new clip with data copied between text memo labels. Text information can also be written into each memo using the AG-HPX370 series 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.

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

SD/SDHC Card Slot

The AG-HPX370 series comes with an SD/SDHC card slot. You can create a metadata upload file (produced with P2 Viewer software or the Third Party software,) containing information such as clip name, the name of the camera operator, the recording location, and text memos on an SD/SDHC card, and load it as clip metadata. This information will be very useful when it comes to editing the project and quickly finding the right clip to place on the timeline. The SD card slot is also used to upload scene files, user files and firmware updates.

Proxy Data Recording (Option)

When the AJ-YAX800G proxy video encoder is installed, the AG-HPX370 series can record MPEG-4 proxy (low-resolution) data onto a P2 card and SD/SDHC 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/Pull-down mode, or when Loop-rec, interval-rec, or one-shot rec is used. Proxy data refers to MPEG-4 low-resolution AV data in file form for moving images and audio, with timecode, metadata, and other management data included. The use of DCF technologies is under license from Multi-Format, Inc.

16:9/4:3 Aspect Ratio Conversion

The 16:9/4:3 Conversion mode can be used with SD-recorded images or SD output down-converted from HD playback. You can select from three modes: side crop, letterbox, and squeeze.

Compatibility with Nonlinear Editing Systems

In developing P2 products, Panasonic has been working in collaboration with a number of strategic P2 Partners.

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://www.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.

Operation

The new design improves mobility and operating ease while supporting a variety of assist functions.

New Design for an enhanced Level of Mobility

The AG-HPX370 series innovative new form brings greater mobility, comfort and operating ease to the familiar shoulder-held shooting style. The body is small and weighs just 3.6 kg (7.9 lbs) with viewfinder. A large shoulder pad and low center of gravity combine to ensure outstanding stability on the shoulder. The low-profile design also provides an unobstructed view to the camera operator's right.



Controls and Card Slots Grouped on One Side

All operation switches and volume controls are set on the left side of the camera. P2 card slots, which were set on the right side in previous models, have also been moved to the left side. Their logical horizontal arrangement makes it easy to insert and remove cards quickly.

Low Power Consumption — Only 19 W

By developing a new energy-efficient DSP and integrating the AVC-Intra codec circuitry with it, Panasonic significantly downsized the printed circuit board. This not only makes the AG-HPX370 series smaller and lighter, it also reduces power consumption. The new image sensor helps lower power consumption too. Together, these innovations reduce power use to only 19 W during recording. The lower battery consumption can mean greater mobility in the field.



Focus Assist Functions

Press the Focus Assist button and the center section of the screen expands in size, making it easier to determine if the focus is correct. Also, the Focus Bar* that visually indicates the focus level can be displayed on the screen.

*When 'Focus Bar' in Display Menu is "ON".



Simplified Waveform and Vectorscope Display

The AG-HPX370 series has waveform and vectorscope display functions of the captured video signal on the LCD monitor.



Three User Buttons

The AG-HPX370 series allows 16 functions (listed below) to be assigned to the User buttons. The three buttons are arranged in a group for easy use. Assigned functions can be accessed at the touch of a button.

Assignable Functions

REC REVIEW:	Rec review function
SPOTLIGHT:	Spotlight compensation
BACKLIGHT:	Backlight compensation
ATW:	Auto tracking white balance
ATW LOCK:	ATW lock function
GAIN: 24dB:	24dB gain up
Y GET:	Display the center brightness value
DRS:	Dynamic range stretch
TEXT MEMO:	Add text memo
SLOT SEL:	Switch recording slot
SHOT MARK:	Add/Delete a shot mark
MAG A. LVL:	Enlarged display of audio level meter
PRE REC:	Pre-rec function
PC MODE:	USB mode ON/OFF (Host or Device to be set on MENU)
WFM:	Switches waveform monitor display
FBC:	Flash Band Compensation ON/OFF

High Image Quality Color Viewfinder and LCD

The AG-HPX370 series's color EVF uses a 0.45-inch approx. 1,226,000 dots-equivalent (852 x 480 x 3[RGB]) LCOS (liquid crystal on silicon) display panel. This newly developed system delivers bright, detailed, high-resolution images and a high response speed. The AG-HPX370 series's LCD monitor is a 3.2-inch panel with a 16:9 aspect ratio. With approx. 921,000 dots (1920 x 480), it boasts higher resolution than the LCDs in previous models.



Support Functions for Greater Convenience

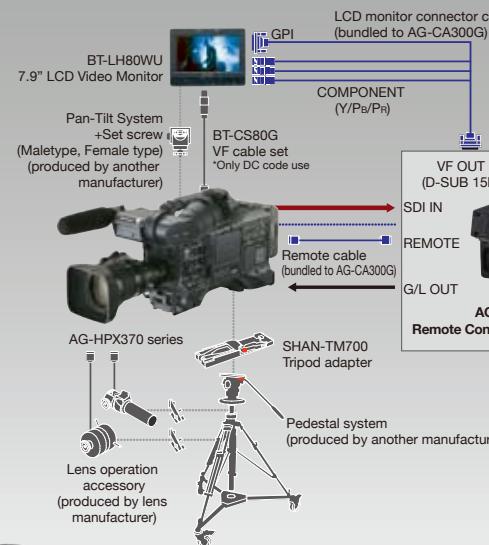
- White balance: Three values (A/B/Preset) of white balance with the auto tracking white function.
- Mode check: Displays a list of the camera settings on the viewfinder and LCD monitor.
- Zebra: Select any two levels from among 50% to 109%, in 1% steps.
- Y-GET: Measures brightness at the screen center and displays precise numerical data.
- 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.

System Interface

The AG-HPX370 series comes equipped with a wealth of interfaces.

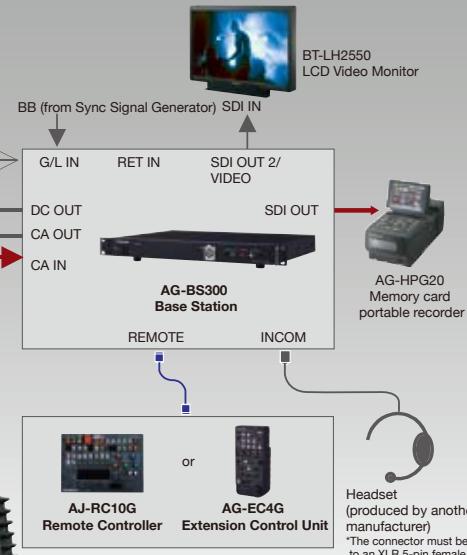
New Camera Studio System

A camera extension system to support 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 m maximum. Special cable, which is manufactured by another manufacture, can be used to supply power to the camera.*



For use with the AG-HPX370 series, 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.

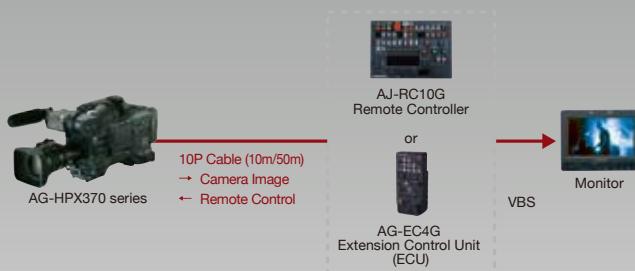
*Power can be supplied only when the AG-BS300 Base Station is driven by an AC power source. A separate power cord is also required between the AG-BS300 Base Station and the AG-CA300G Camera Adaptor.



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 AG-HPX370 series. This lets you adjust the images and control the camera operation while viewing the monitor.

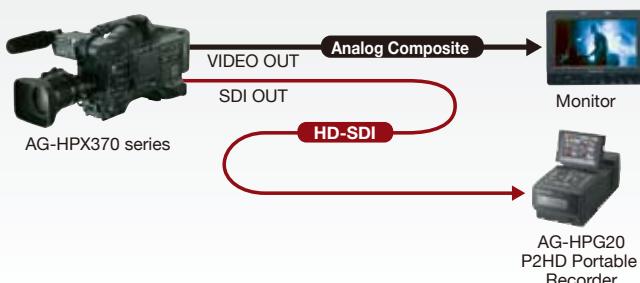
*The AJ-RC10G can control only functions supported by the AG-HPX370 series. It cannot control unsupported keys or dials.



HD/SDI Output Terminals and Down-Converter

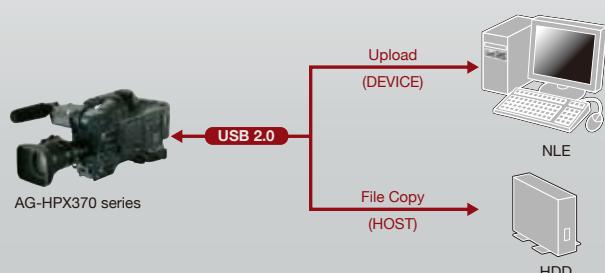
The AG-HPX370 series comes with two output types: a composite video output and two SDI outputs. In addition to HD-SDI output, the internal down-converter allows high-quality SD video to be output. The aspect mode is selectable.

- **SDI OUT (HD/SD):** Can also output signals with embedded audio. When the AG-HPX370 series are set for HD-SDI output, 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. The AG-HPX370 series can also output down-converted SD-SDI from an HD source.
- **VIDEO OUT:** Outputs SD (composite) signals. HD signals are down-converted.



USB2.0 Interface

The AG-HPX370 series standard USB2.0 connector supports both Host and Device modes. In Device mode, a P2 card slot can be used as an external PC device, making it easy to upload data to a nonlinear editing system or network server. In Host mode, an external hard disk drive can be connected to the slot, making it easy to copy data from the P2 card, write data to the card, or view thumbnails of stored video clips.



IEEE 1394 Interface

The IEEE 1394-compliant DVCPRO (6-pin) output connector lets you input/output HD/SD compression streams including DVCPRO HD without decoding.* This means you can connect and use a DVCPRO HD VTR or P2 HD recorder for degradation-free backup recording.

* Output is not possible in 720p native mode (25pN), Interval-rec, and One-shot rec mode. AVC-Intra is not supported. Text memo, shot mark can not be added in Loop-rec, Interval-rec, or One-shot rec mode.



TC IN, TC OUT, and GENLOCK IN Terminals

The AG-HPX370 series has a built-in SMPTE time code generator/reader. TC IN and OUT terminals make time code throughput possible. The GENLOCK IN terminal permits external time-code lock.

Other System Functions and Options

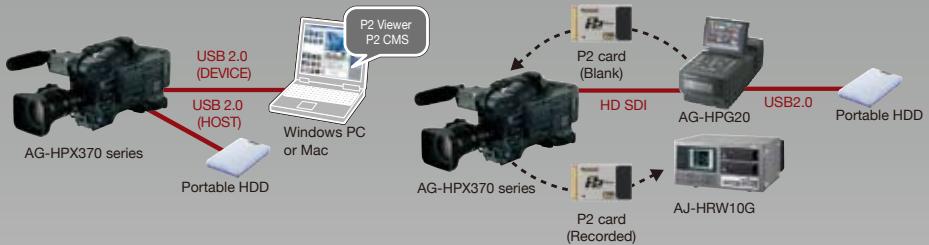
- UniSlot® wireless receiver compatible (dual or single channel compatible channel)
- UniSlot® is a trademark of Ikegami Tsusinki Co., Ltd.
- XLR audio input: 2-channel mic/line inputs supporting 48V phantom power supply.
- Multiple battery support, including Anton Bauer or IDX batteries*. * The V-mount battery plate is required for IDX batteries.
- Equipped with earphone terminal (mini-jack) and speaker.



System Workflow

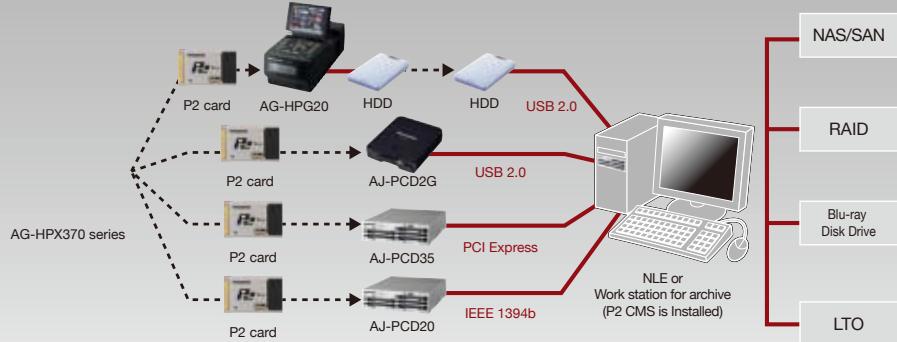
Acquisition and On-site Storage

The AG-HPG20 P2 Portable Recorder enables easy on-site viewing, backup recording and card-to-card and card-to-HDD file copying. The AJ-HRW10G Rapid Writer can transfer data files easily and rapidly from P2 cards to the internal HDD in the field. Using a Windows PC or a Mac with P2 Viewer or P2 CMS (content management software), it is possible to view files, display properties, perform simple editing, create metadata, edit voice and text memos, and copy files*¹.



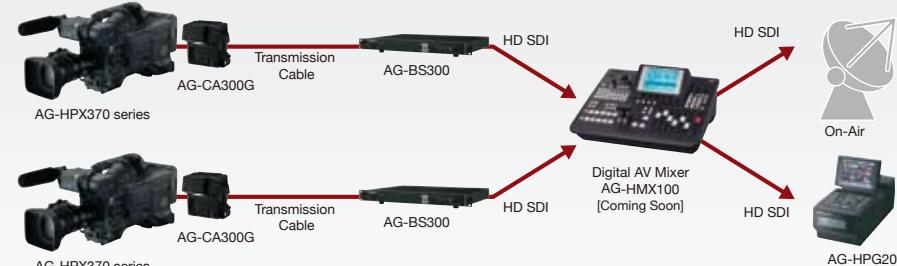
Editing, Production and Archiving

The AJ-PCD35*² or AJ-PCD20 P2 drive and the AG-HPG20 let you use P2 cards in nonlinear editing systems, and HDD units let you use HDD data in the same way*¹. There is no need for digitizing, so files can be used immediately as clips. P2 CMS lets you copy P2 files to an HDD while automatically creating a metadatabase-tagged database to simplify operations ranging from searching and sorting to file copying, backup and archiving. This makes it easy to backup or archive files onto optical media.*³



Studio or Event Recording, and Broadcasting

The AG-HPX370 series includes standard SDI (HD/SD) output, making it ideal for broadcasting and image production applications. Using the camera extension system adds even more to its low-cost efficiency.



*1: For details, see the rear cover page (Notes Regarding the Handling of P2 Files Using a PC).

*2: Before using the P2 card E Series, you must install the latest version of the software in the AJ-PCD35. For the latest version information, please go to the P2 support page from the Panasonic web page <<http://pro-av.panasonic.net/>>

*3: Cannot be used with some types of nonlinear editing systems, PCs, and software.

P2HD Equipment

(As of April, 2010)



AJ-P2E064XG
AJ-P2E032XG
AJ-P2E016XG
Memory Card (P2 card E series)*¹



AJ-PCD35
Memory Card Drive "P2 drive"**²
(Interface: PCI-Express)



AJ-PCD20
Memory Card Drive "P2 drive"
(Interface: USB 2.0 / IEEE 1394b)



AJ-PCD2G
Memory Card Drive "P2 drive"
(Interface: USB 2.0)
NEW

*1: P2 card E series may require to update the software of P2 equipment. please go to the P2 support page from the Panasonic web page <https://www.pavc.panasonic.co.jp/pro-av/>
*2: Before using P2 card E series, you must install the latest version of the software in the AJ-PCD35.
For the latest version information, please go to the P2 support page from the Panasonic web page <https://www.pavc.panasonic.co.jp/pro-av/>

Optional Accessories

(As of April, 2010)



OTHER MANUFACTURER'S PRODUCTS



Anton/Bauer
Hytron Battery



Anton/Bauer
Dionic Battery

**V2PCS25-5CFWCE-SF-SC
(82'/25 meters)**
**V2PCS50-5CFWCE-SF-SC
(164'/50 meters)**
**V2PCS100-5CFWCE-SF-SC
(328'/100 meters)**

Canare Electric
Bound Cable between
AG-BS300 and AG-CA300G

**DC50V10-CE01PS-SC
(164'/50 meters)**
**DC100V10-CE01PS-SC
(328'/100 meters)**

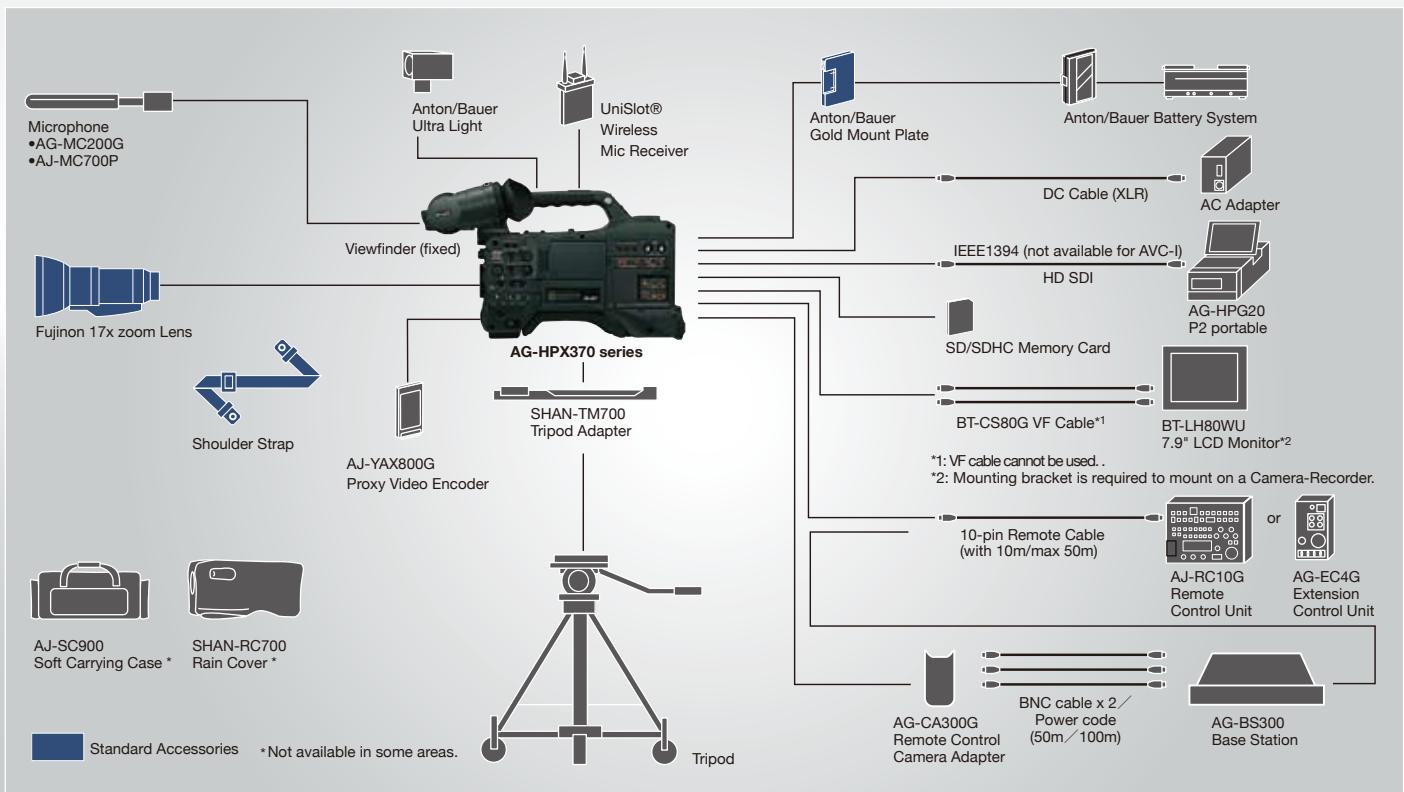
Canare Electric
Power Cable between
AG-BS300 and AG-CA300G

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



*3: For P2 Viewer or P2 CMS download and operating requirement information, visit <https://www.pavc.panasonic.co.jp/pro-av/>.

Details



Specifications

General

Supply Voltage:	DC12V (11V to 17V)
Power Consumption:	Approx. 19 W (with standard VF, lens, LCD monitor ON)
Operating Temperature:	0°C to 40°C
Keeping Temperature:	-20°C to 60°C
Operating Humidity:	10% to 85% (no condensation)
Weight:	Approx. 3.6 kg excluding battery and accessories Approx. 5 kg with supplied Fujinon lens
Dimensions (WxHxD):	246 mm x 251 mm x 441 mm, excluding prominent parts 246 mm x 251 mm x 549 mm, with Fujinon lens, excluding prominent parts

Camera

Pick-up Device:	2.2M pixels Progressive MOS Image sensor x 3
Lens Mount:	1/3" bayonet type
Optical Color Separation:	Prism system
ND Filter:	4 position (Clear, 1/4 ND, 1/16 ND, 1/64 ND)
Gain Selection:	-3dB, 0dB, 3dB, 6dB, 9dB, 12dB, 24dB
Shutter Speed (Preset):	50i/50p mode: 1/50 (OFF) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec. 25p mode: 1/25 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec. 60i/60p mode: 1/60(OFF) sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec. 30p mode: 1/30(OFF) sec., 1/60 sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.
Shutter Speed (Variable):	50i mode: 1/50.0 sec. to 1/250.0 sec. 25p mode: 1/25.0 sec. to 1/250.0 sec. 60i mode: 1/60.0 sec. to 1/249.8 sec. 30p mode: 1/30.0 sec. to 1/249.8 sec. 24p mode: 1/24.0 sec. to 1/249.8 sec.
Shutter Speed (Slow):	50i/50p mode: 1/12.5 sec., 1/25 sec. 25p mode: 1/6.25 sec., 1/12.5 sec. 60i/60p mode: 1/15 sec., 1/30 sec. 30p mode: 1/7.5 sec., 1/15 sec. 24p mode: 1/6 sec., 1/12 sec.
Aperture Angle:	3 deg to 359.5 deg, 0.5 deg step select
Variable Frame Rate :	50 Hz mode: variable 12/15/18/20/21/22/23/24/25/26/27/28/30/ 32/34/37/42/45/48/50 fps (frames per second) 59.94Hz mode: variable 12/15/18/20/21/22/24/25/26/27/28/30/ 32/34/36/40/44/48/54/60 fps (frames per second)
Sensitivity:	F11 (2000 lx, 3200K, 89.9% reflect, 1080/50i) F10 (2000 lx, 3200K, 89.9% reflect, 1080/59.94i)
Minimum Luminance:	0.4 lx (F1.6 , Gain 24dB , shutter speed 1/30 sec.)
Horizontal Resolution :	More than 1000 TV lines (center)

Memory Card Recorder

Recording Media:	P2 Card
Recording Format:	AVC-Intra 100/AVC-Intra 50/DVCPro HD/DVCPro50/ DVCPro/DV selectable
Recording Video Signal:	1080/50i, 1080/25p, 1080/25pN, 720/50p, 720/25p, 720/25pN, (50 Hz) 576/50i, 576/25p
Recording Video Signal:	1080/59.94i, 1080/29.97p, 1080/29.97pN, 1080/23.98p, (59.94 Hz) 1080/23.98pA, 1080/23.98pN, 720/59.94p, 720/29.97p, 720/29.97pN, 720/23.98p, 720/23.98pN, 480/59.94i, 480/29.97p, 480/23.98p, 480/23.98pA
Recording Time*:	AVC-Intra 100/DVCPro HD Approx. 16 min. with a 16GB P2 card Approx. 32 min. with a 32GB P2 card Approx. 64 min. with a 64GB P2 card AVC-Intra 50/DVCPro50 Approx. 32 min. with a 16GB P2 card Approx. 64 min. with a 32GB P2 card Approx. 128 min. with a 64GB P2 card DVCPro/DV Approx. 64 min. with a 16GB P2 card Approx. 128 min. with a 32GB P2 card Approx. 256 min. with a 64GB P2 card

* 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/DVCPro HD: Y: 74.2500MHz, Pb/Pr: 37.1250MHz (50Hz) Y: 74.1758MHz, Pb/Pr: 37.0879MHz (59.94Hz) DVCPro50: Y: 13.5MHz, Pb/Pr: 6.75MHz DVCPro: Y: 13.5MHz, Pb/Pr: 3.375MHz
Quantizing:	AVC-Intra 100/AVC-Intra 50: 10bit DVCPro HD/DVCPro50/DVCPro/DV: 8bit
Video Compression:	AVC-Intra 100/AVC-Intra 50: 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

Recording Audio Signal:	AVC-Intra 100/AVC-Intra 50/DVCPro HD: 48kHz/16bits, 4CH DVCPro50: 48kHz/16bits, 4CH DVCPro/DV: 48kHz/16bits, 2CH/4CH switchable
Headroom:	20dB/18dB switchable

Video Input/Output

GENLOCK IN:	BNC x 1, 1.0V [p-p] 75 Ω
VIDEO OUT:	BNC x 1, 1.0V[p-p] 75 Ω
SDI OUT:	BNC x 2, 0.8V[p-p] 75 Ω HD/SD switchable

Audio Input/Output

MIC IN:	XLR (3pin), +48 V compatible MIC: -40/-50/-60 dBu (switchable on menu)
Audio IN:	XLR (3pin) x 2 (CH1/CH2), LINE/MIC/+48V switchable LINE: 0 dBu, MIC: -50/-60 dBu (switchable on menu)
Wireless:	25 pin, D-SUB, -40dBu
Audio Out:	Pin jack x 2 (CH1/CH2), Out: 316 mV, 600Ω,
Earphone:	Stereo mini jack (3.5mm diameter)
Internal Speaker:	28mm round shape x 1

Other Input/Output Signal

TC In:	BNC x 1, 0.5 V [p-p] to 8 V [p-p], 10kΩ
TC Out:	BNC x 1, low impedance, 2.0 V ±0.5 V [p-p]
IEEE 1394:	6 pin, digital In/Out, based on IEEE 1394 Standard
DC In:	XLR x 1, 4-pin, DC12V (DC11.0V to 17.0V)
DC Out:	4-pin, DC12V (DC11.0V to 17.0V), max 1.5 A.
Remote:	10 pin
Lens:	12 pin
USB 2.0 (Device):	Type-B, 4-pin (USB ver2.0)
USB 2.0 (Host):	Type-A, 4-pin (USB ver2.0)

Monitor, Speaker and Other packages

LCD Monitor:	3.2-inch approx. 921,000 dots (16:9)
View Finder:	0.45-inch approx. 1,226,000 dots (16:9)
Supplied Accessories:	Fujinon lens, Front lens cap, Rear lens cap, Zoom lever, Lens connector cap, Lens hood, Lens hood cap, Eye cup, Shoulder belt, Front audio level knob with screw, Mount cap, BNC connector cap, XLR connector cap, Software CD-ROM

Weight and dimensions shown are approximate.

The content of this catalog is a thing as of April, 2010.

Specifications are subject to change without notice.

P2 Asset Support System

The member's service program

Providing necessary information when you need it

P2 Asset Support System assists your P2HD use by providing extended warranty repairs
& various technical information (update notices, operation guides, etc.) upon registration.

Free registration, no membership fees

5-year extended warranty repairs

Exclusive offer for P2HD !

Maximum 5-year extended warranty repairs are applied for P2HD models after registration.

Several other services are also provided to members.



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

* Not all models are eligible for extended warranty coverage.

* Please note that this extended warranty is not available in some countries/region see website below for the details.

*1: The basic warranty period may vary depending on the country/region see enclosed warranty card for warranty coverage.

*2: Not all repair work is covered by this extended warranty see enclosed warranty card for warranty coverage.

The maximum warranty period may be adjusted depending on the number of hours the device has been used.

Latest news only for you

In the member's web site, information is selected and presented for your models only. To be alerted to new firmware information and other releases, an email newsletter can be subscribed to.

Document library

You can filter through and find various technical information (operation guides, technical descriptions, etc.) quickly from the library.

Manage your equipment

You can easily know the update status and past service history of each unit, and can leave comments in free text as memos about your equipment.

Details and user registration: http://panasonic.biz/sav/pass_e

Please refer to the latest Non-linear Compatibility Information,
P2 Support and Download and Service Information, etc. at 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 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://www.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://www.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://www.pavc.panasonic.co.jp/pro-av/>. For operating requirements and details of other P2 editing software, visit the website of the relevant software manufacturer.

Panasonic®

[Countries and Regions]

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Japan
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Argentina	+54 1 308 1610	Kuwait	+96 522431385	Switzerland	+41 (0) 41 259 96 32
Australia	+61 2 9986 7400	Lebanon	+96 11665557	Syria	+963 11 2318422/4
Bahrain	+973 252292	Malaysia	+60 3 7809 7888	Taiwan	+866 2 2227 6214
Belgium	+32 (0) 2 481 04 57	Mexico	+52 55 5488 1000	Thailand	+66 2 731 8888
Bulgaria	+359 2 946 0786	Montenegro, Serbia	+41 (0) 26 466 25 20	Turkey	+90 216 578 3700
Brazil	+55 11 3889 4035	Netherlands	+31 73 64 02 577	U.A.E. (for All Middle East)	+971 4 8862142
Canada	+1 905 624 5010	New Zealand	+64 9 272 0100	Ukraine	+380 44 4903437
China	+86 10 6515 8828	Norway	+47 67 91 78 00	U.S.A.	+44 (0)1344 70 69 20
(Hong Kong	+852 2313 0888)	Pakistan	+92 5370320 (SNT)	Vietnam	+1 201 348 5300
Czech Republic	+420 236 032 552/511	Palestine	+972 2 2988750		+848 38370280
Denmark	+45 43 20 08 57	Panama	+507 229 2955		
Egypt	+20 2 23938151	Peru	+51 1 614 0000		
Finland, Latvia, Lithuania, Estonia	+358 (9) 521 52 53	Philippines	+63 2 633 6163		
France	+33 (0) 1 55 93 66 67	Poland	+48 (22) 338 1100		
Germany, Austria	+49 (0) 611 235 401	Portugal	+351 21 425 77 04		
Greece	+30 210 96 92 300	Puerto Rico	+1 787 750 4300		
Hungary	+36 (1) 382 60 60	Romania	+40 21 211 4855		
India	+91 120 247 1000	Russia & CIS	+7 495 9804206		
Indonesia	+62 21 385 9449	Saudi Arabia	+96 626444072		
Iran (Vida)	+98 21 2271463	Singapore	+65 6270 0110		
(Panasonic Office)	+98 2188791102	Slovak Republic	+421 (0) 2 52 92 14 23		
Italy	+39 02 6788 367	Slovenia, Croatia, Bosnia, Macedonia	+44 (0) 20 76 63 36 57		
Jordan	+962 6 5859801	South Africa	+27 11 3131622		
Kazakhstan	+7 727 298 0891	Spain	+34 (93) 425 93 00		
Korea	+82 2 2106 6641	Sweden	+46 (8) 680 26 41		



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