

Panasonic
ideas for life

AVCCAM
LINE-UP CATALOG
September, 2010



AVCCAM

File-based, full-HD recording! Strong support for professional image production.



AVCCAM 3-Year Warranty Repair Program*
* AVCCAM users qualify for a 3-year warranty on repairs.
Visit the website for details: <www.panasonic.biz/sav/pass_e>
* AG-HCK10G camera head is not included.

An Image Production System for the Age of Full-HD Multimedia

These AVCCAM series feature the efficient data compression and full-HD image quality of advanced AVCHD technology, and a file-based recording system that lets you configure an efficient production system without having to digitize recorded images. These next-generation camera recorder series also provides smooth support for Blu-ray authoring and Internet distribution.

AVCCAM SERIES



Memory Card Camera Recorder
AG-HMC150 series

Memory Card Camera Recorder
AG-HMC40 series

The AV industry has seen some dramatic changes in recent years.

• Changes in recording media

Shifting from tape to file-based recording media like the SD Memory Card has made shooting more reliable and more efficient.



DV Tape

(Tape-based recording)



SDHC Memory Cards

(File-based recording)

• Changes in video media

The transition of video media from DVDs to higher-capacity BDs has enabled the delivery of higher-resolution images.



DVD

(720x480/720x576)



BD

(1920x1080)

• Changes in the viewing environment

The improved viewing environment that many of today's consumers enjoy has created a need for higher-quality images.



CRT TV

(Standard Definition)



Flat Panel TV

(Full High-Definition)



Memory Card Camera Recorder
AG-HMC80 Series

Memory Card Portable Recorder
AG-HMR10 series



Camera Head
AG-HCK10G

High-Quality AVCHD Recording and High-Efficiency File-Based Recording. Providing a next-generation production environment with advanced technologies.



AVCHD

**More than twice
as high compression
efficiency as HDV (MPEG-2)**

When a flash causes large contrast differences and reduces depth perception, HDV shows considerable block noise, while AVCHD in the PH mode minimize break-up.

For snowcapped mountains

SD Memory Card recording stands up to temperature changes and impacts when shooting in harsh environments.



For beautiful nature scenes

The advanced PH mode meets the demand for high-quality on-location recording.



Memory Card Camera Recorder
AG-HMC80 series

AVCHD Format for High-Quality Efficient HD Recording

Panasonic AVCCAM camera recorders use the AVCHD format for tapeless recording with high image quality and low bit rates. This format complies with the latest H.264 motion image compression standard, and employs the High Profile standard to improve compression efficiency. Featuring twice the compression efficiency of HDV (MPEG-2), the AVCCAM series achieves extended HD recording.

■ Comparison of HD Recording Formats

	HDV	AVCHD
Pixel (H x V)	1440 x 1080	1920 x 1080
Compression Method	MPEG-2	MPEG-4 AVC/H.264

MPEG-4 AVC/H.264 Technologies

● Intra-Frame Prediction

This process generates predictive pixels based on the adjacent pixels within each frame. It then selects the optimal predictive mode. The generated predictive image is subtracted from the original input image, and the residual data is compressed and recorded at a low bit rate. The entire process is conducted within the frame, so prediction accuracy remains high even with fast-motion images.

● Variable Block Size Motion Compensation

In contrast with MPEG-2, in which inter-frame compression based on the correlation between adjacent frames uses fixed blocks of 16 x 16 pixels, AVCHD divides the blocks into multi-sizes as small as 4 x 4 pixels. In this method, it is able to use large blocks to process images that show only slight changes on the screen, and smaller blocks to process images that have considerable change. This raises the accuracy of motion compensation to boost the quality of fast-motion images while increasing compression efficiency.

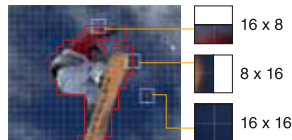
MPEG-2 (fixed block size)

Blocks of the same size are used to process parts both with and without motion.



MPEG-4 AVC/H.264 (variable block size)

Block size is precisely varied to match the size of the moving part contained in each block.



● Loop Filter Prevents the Propagation of Compression Distortion

Because MPEG-2 uses a decoding image that contains compression induced block distortion as a reference image for motion compensation, it exhibits residual distortion — even within the same frame — when a large amount of block distortion is generated. MPEG-4 AVC/H.264 detects block distortion in the decoding image and removes it with a contextadaptive filter that functions according to the degree of distortion. This prevents the propagation of block distortion by keeping the reference image clean at all times.

● New CABAC Entropy Encoding

The AVCHD format uses CABAC (Context Adaptive Binary Arithmetic Coding) for its variable-length encoding. Compared with the variablelength encoding of MPEG-2, in which the compression efficiency is greatly affected by subject type, CABAC provides lossless compression with constantly high efficiency and no distortion for virtually all subject types. Because MPEG-2 compresses and converts data according to the standard's fixed conversion rules, the compression efficiency may drop for image types other than those that were considered when the standard was established. In place of fixed conversion rules, CABAC provides the best possible conversion method by constantly optimizing and automatically tracking the image that is being processed, in parallel with the compression process.

High-end AVCHD Image Quality High Bit Rate of the Pro-use PH Mode

The AVCCAM series features the image-enhancing PH mode that Panasonic developed exclusively for AVCCAM camera recorders. It delivers a maximum AVCHD bit rate of 24 Mbps (average: 21 Mbps). Designed for professional image production, this mode lets you record the AVCCAM series's 1920 x 1080 full-raster HD images.

*An AVCCAM may not be able to record all formats above. Please check the specification of the camera recorder or recorder.

■ Records for 180 minutes (approx.) in the highest-quality (PH) mode

Recording Mode	Image Size (H x V)	Bit Rate	Max. Recording Time with a 32GB SDHC Memory Card
AVCHD	PH Mode	1920 x 1080 1280 x 720 Approx. 21 Mbps (Average), Max. 24 Mbps	Approx. 180 minutes
	HA Mode	1920 x 1080 Approx. 17 Mbps (Average)	Approx. 240 minutes
	HG Mode	1920 x 1080 Approx. 13 Mbps (Average)	Approx. 320 minutes
	HE Mode	1440 x 1080 Approx. 6 Mbps (Average)	Approx. 720 minutes
DV Mode*	720 x 480/720 x 576	Approx. 25 Mbps (Average)	Approx. 128 minutes

*: A Class 6 or higher SDHC or SD Memory Card is required for DV recording. A Class 4 or higher SDHC or SD Memory Card is required for PH and HA recording. Use a Class 2 or higher SDHC or SD Memory Card for other modes. (Panasonic SDHC or SD Memory Cards are recommended.)

*1: AG-HMC80 series only has DV mode.

Ease, Efficiency, Reliability Large-capacity SDHC Memory Card

Unlike with videotape, there's no need for cueing with the SDHC Memory Card because recording automatically begins in a blank section of memory. Nor do you have to worry about accidentally recording over important footage. You can delete unwanted clips instantly right on the spot to preserve memory capacity. Editing after shooting is smooth and easy, with no need for digitizing.

- Combined with a maximum data transfer speed of 22 MB/s,* this makes data transfers to computers easy and effortless.
- SDHC Memory Cards are inexpensive and can be easily purchased on location when needed.

*Data transfer speed varies depending on the usage of SD devices. The speed given here is the maximum speed according to Panasonic specifications.

More Efficient than Tape Versatile Solid-state Recording Functions

● Shot mark

To simplify shot selection, you can add a mark to the thumbnail images of each clip. You can then display and play only the clips that have shot marks.

● Pre-REC

This helps to ensure you always get the shot you want, by letting you continuously store, and subsequently record, images and sounds for three seconds before the REC button is pressed in standby mode.

* AG-HMR10 series can be used only when combined with the AG-HCK10G.

● REC check

You can check the end of the most recently recorded clip with one-touch ease.

* AG-HMR10 series can be used only when combined with the AG-HCK10G.

● Last clip delete

Only the most recently recorded clip is deleted with this one-touch function, adding practical convenience to everyday operation. It can be assigned as a User button function if desired.

● Meta-data recording*

The date, camera operator, location, title and other information can be added to the video data.

* AG-HMC80 series in AVCHD mode only.

Versatile recording functions powerfully support Full-HD video production to meet even the most demanding professional applications.

For TV dramas

The high-sensitivity 3MOS and Pro Tuning functions let you compose and shoot scenes exactly as you want them.



For weddings

The Focus Assist function provides swift, accurate focusing for scenes that you can't afford to miss.

For news relays

Optical image stabilisation minimizes hand-shake blur even when shooting on sites with unstable footing.



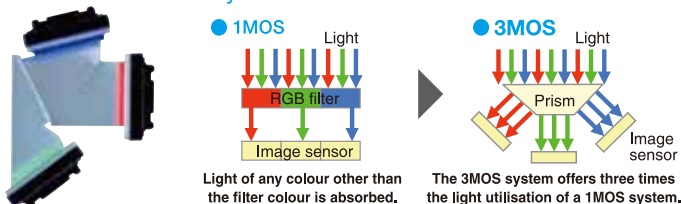
Memory Card Camera Recorder
AG-HMC150 series

Highly Nuanced Image Expression Progressive 3MOS Sensors*

The progressive 3MOS image sensors record full-HD images. This produces full-raster HD images with high resolution and superb image quality. Because each of the three separate image sensors receives one of the three primary colours of light (red, green and blue), they render more precise images and more faithful colours than the single light-receiving 1MOS sensor.

* For the AG-HMC80 series/AG-HMC40 series and AG-HCK10G.

What's the 3MOS System?



Take Clear Shots While Walking or Zooming Optical Image Stabiliser (OIS)

Because the hand-shake correction is done by actually driving the lens, there's none of the image degradation that occurs with electronic stabilisation. You can capture beautiful, high-quality shots even in situations where hand-shake is typically a big problem – such as when zooming, shooting indoors in dim lighting, or shooting outdoors at night.

*Hand-shake from strong vibrations may remain. Also, visible differences may be slight under some conditions.



Image with OIS OFF



Image with OIS ON

Suppresses Blocked Shadows and Blown Highlights Dynamic Range Stretch (DRS)

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 minimises blocked shadows and blown highlights. The images that result are enhanced by a visually wider dynamic range.

Images with the Dynamic Range Stretch (DRS) Effect

Image with DRS OFF



Blown highlights are suppressed.

Image with DRS ON



Blocked shadows are suppressed.

Highly Detailed Image Composition Advanced Pro Tuning Functions

Matrix settings

Lets you choose basic colour hues that convey the desired overall image mood.

NORM1	For colours suited to shooting outdoors or under halogen lights
NORM2	For colours more vivid than NORM1
FLUO	For colours suited to shooting indoors under fluorescent lights
CINE-LIKE	To reproduce colours similar to those in cinemas

Knee point settings

Controls the highlights within the frame. (AUTO/LOW/MID/HIGH)

Adjustable H detail level, V detail level, detail coring and skin detail

Corrects edges and removes image noise.

Adjustable chroma level, chroma phase, colour temp and master pedestal

Sets the basic levels for brightness and other signals.

Scene file*

The AVCCAM series can save camera settings as scene files for instant recall later in similar shooting conditions.

* For the AG-HMC150 series/AG-HMC80 series and AG-HMC40 series.

Cine-like Gamma Curves

7-mode Gamma for Richer Gradation

Drawing on technologies developed for the VARICAM HD camera recorders for digital cinema, Panasonic has equipped the AVCCAM 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 warm tone of film recordings.



Image with VIDEO GAMMA



Image with CINE-LIKE GAMMA

The AVCCAM series Gamma Modes

HD NORM	Suitable for HD recording
LOW	Works to flatten out a high contrast scene
SD NORM	Normal setting for SD (This was available in the DVX100 series.)
HIGH	Expands the tone of dark parts and makes a brighter image The contrast softens.
B.PRESS	Makes the contrast sharper than LOW
CINE-LIKE D	The Cine-like mode shifted to prioritise dynamic range
CINE-LIKE V	The Cine-like mode shifted to prioritise contrast

Quick, Easy Focusing HD Focus Assist

Centre zoom/Focus Bar function*

The centre zoom function enlarges the centre of the frame for better visibility, and HD focus assist displays a bar that grows and shrinks to indicate the degree of focusing.

* A histogram is available for AG-HMC150 series instead of the Focus Bar.

Push auto function

Pressing the Push auto button in manual mode temporarily activates the Auto Focus (AF) system for quick focusing.

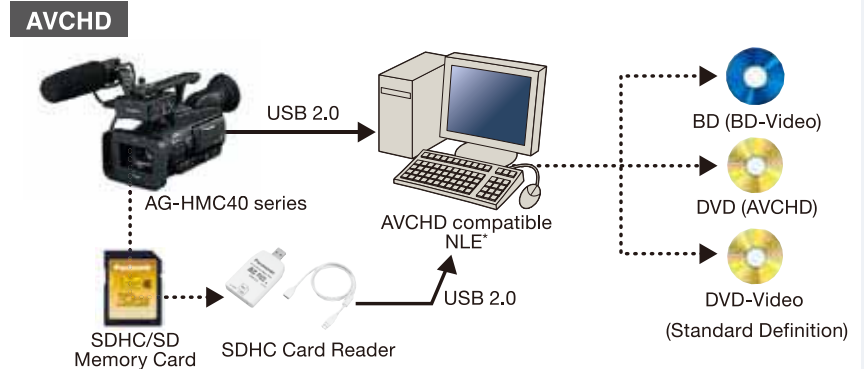
The AVCCAM series lets you configure a speedy, efficient image production system.

It also makes video packaging and Internet distribution smooth and easy.



AVCHD Nonlinear Editing

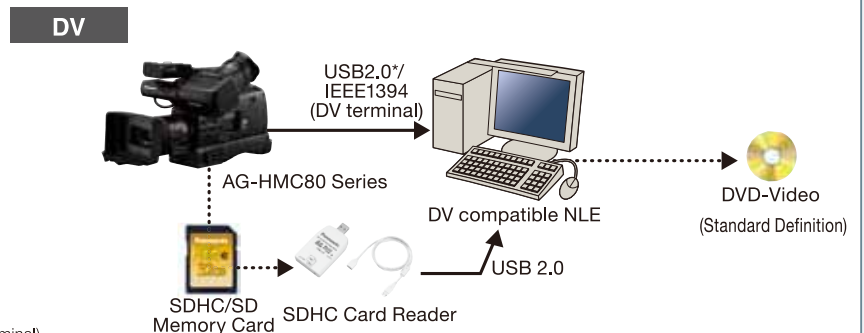
Compatibility with existing HD editing environments
AVCHD files can be transferred at high speed by using the USB 2.0 interface to connect the AVCCAM series or an SDHC Memory Card reader to a Windows PC/Mac. This dramatically improves productivity when compared with the time-consuming task of digitising.



*New AVCHD transcoder software is available for free downloading on the following website.
<For US customers: www.panasonic.com/broadcast>
<Outside US: www.pavc.panasonic.co.jp/pro-av/support/desk/e/download.htm>

DV Nonlinear Editing <AG-HMC80 series only>

The AG-HMC80 series has an IEEE 1394-compliant DV (6-pin) output terminal. Simply connect it to an existing DV nonlinear editor for transmitting its DV compression stream output.



*File transfers are not supported.
*AVCHD files can not be converted to DV files and output via IEEE1394 (DV terminal).

*To Transfer DV file data via USB2.0, the camera recorder needs to be set AVCHD mode.

Copying onto BD/DVDs with BD/DVD Recorder

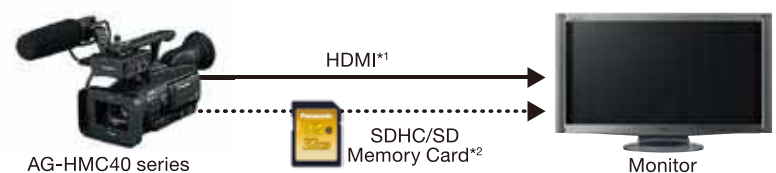
You can easily copy AVCHD data onto the built-in HDD of a Panasonic BD/DVD recorder. You can also copy HD images onto a BD or DVD.



*Needs to be compatible with AVCREC. BD/DVD recorder is not available in some areas.

HD Playback on a Monitor

Full-HD images recorded in AVCHD can be previewed on a monitor.



*1: Use an HDMI cable with Type A terminal (Not compatible with VIERA Link).
*2: Monitor needs to be compatible with AVCHD playback.

■ A Host of Software to Support Production

● AVCCAM Viewer*¹ (Free Download)

AVCCAM Viewer for Windows PC/Mac² makes it easy to preview AVCCAM files and other AVCHD motion images, still images and meta-data, with very simple operation. Files can be played from an SDHC/SD Memory Card, BD (Blu-ray Disc™), or hard disk, and saved to a PC (hard disk) from an SDHC/SD Memory Card or BD. Files can also be copied or deleted, meta-data can be displayed, and data can be written to an SDHC/SD Memory Card or BD³.



[Windows PC]

- CPU: Intel® Core™2 Duo (2.4 GHz or faster)
- OS: Microsoft® Windows® 7 (32 bit), Windows Vista® SP1 (32 bit), Windows XP SP2 or later (32 bit)
- RAM: 1024 MB or more for Windows Vista, 512 MB or more for Windows XP (1024 MB or more recommended)

[Mac]

- CPU: Intel® Core™2 Duo (2.6 GHz or faster)
- OS: Mac OS X 10.6 (Snow Leopard)/10.5 (Leopard)/10.4 (Tiger)
- RAM: 1024 MB or more (2048 MB or more recommended)

*1: AVCCAM Viewer doesn't support DV files.

*2: Copying and playing data on BD (BD-RE Ver3.0) are not supported by Mac OS X 10.4 (Tiger).

*3: Do not insert a disc [DVD (AVCHD)] produced with the provided HD Writer 2.5E software into a device that does not support the AVCHD standard. If it is inserted into such a device, the disc may not eject. Also, do not play the disc with a device that does not support the AVCHD standard.

● AVCCAM Restorer

The AVCCAM Restorer is software for restoring inconsistencies in video data recorded on an SDHC/SD Memory Card. The software mainly targets inconsistent data created under the following conditions.

-When the camera recorder fails to complete writing of the file in the normal manner due to the power being cut or the like.

-When the writing of the recorded video data to the SDHC/SD Memory Card has failed.

[Windows PC]

- CPU: Intel® Core™2 Duo (2.4 GHz or faster)
- OS: Microsoft Windows 7 (32 bit), Windows Vista SP1 (32 bit), Windows XP SP2 or later (32 bit)
- RAM: 1024 MB or more (2048 MB or more recommended)

[Mac]

- CPU: Intel® Core™Duo (2.0 GHz or faster)
- OS: Mac OS X 10.6 (Snow Leopard)/10.5 (Leopard)/10.4 (Tiger)
- RAM: 1024 MB or more (2048 MB or more recommended)

*This software can only be used with AVCHD clips recorded with a Panasonic AVCCAM series camera.

*Note that it will not always be possible to restore the data using this software.

*This software targets recorded data that has been damaged for restoration. It is not capable of performing processing to restore deleted data.

● AVCCAM SD Card File Recovery (Coming soon)

The AVCCAM SD Card file recovery is software for repairing the file which was erased or formatted accidentally.

[Windows PC]

- CPU: Intel® Core™2 Duo (2.4 GHz or faster)
- OS: Microsoft Windows 7 (32 bit), Windows Vista SP1 (32 bit), Windows XP SP2 or later (32 bit)
- RAM: 1024 MB or more (2048 MB or more recommended)

[Mac]

- CPU: Intel® Core™Duo (2.0 GHz or faster)
- OS: Mac OS X 10.6 (Snow Leopard)/10.5 (Leopard)/10.4 (Tiger)
- RAM: 1024 MB or more (2048 MB or more recommended)

*This software can only be used with AVCHD, DV and JPEG clips recorded with a Panasonic AVCCAM series camera.

*Note that it will not always be possible to repair the file using this software.

Bundled*¹ with EDIUS Neo 2 Booster Nonlinear Editing Software*² (Windows PC only)

This software makes it simple and easy to edit full-HD images, and also lets you burn BDs and DVDs.



■ Features

- The EDIUS Neo 2 Booster allows for real-time, native editing of AVCHD video.
- Without special hardware, AVCHD codec engine can process more than 3 real-time streams simultaneously. (tested with an Intel® Core™ i7 CPU system)
- It supports Windows 7.

[PC Minimum System Requirements]

- CPU: Intel® or AMD CPU 3.0 GHz or faster (Multiple CPUs or multi-core CPUs are recommended. SSE2 and SSE3 instruction sets supported. Intel® Core™2 Duo or faster required for real time AVCHD editing- Core™ i7 recommended.)
- OS: Microsoft Windows 7 (32 bit/64 bit) (Home Premium/Professional/Ultimate) Microsoft Windows Vista SP1 (32 bit/64 bit) (Home Basic/Home Premium/Business/Ultimate), Windows XP SP2 or above (32 bit) (Home/Professional)
- RAM: 1 GB or more (2 GB or more recommended)

*1: Limited time offer. The package model has U on the end of model number.

*2: Only the EDIUS Neo 2 Booster install disc is bundled with this package. The Bonus Content CD is not included with the bundle version. Also, PASS registration is required to install the software.

➤ For more details, please visit the following website:

<<http://pro-av.panasonic.net/>> (Starting AVCCAM EDIUS Neo 2 Booster Bundle Sales)>

➤ For details about EDIUS Neo 2 Booster, please visit:

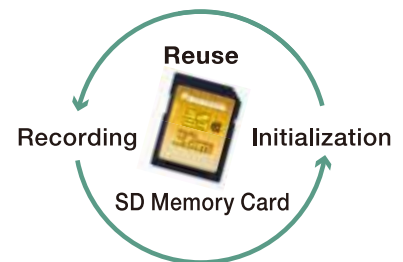
<http://www.grassvalley.com/products/edius_neo_2_booster>

ECO

In addition to offering high-quality images and excellent efficiency, the AVCCAM series is eco-minded.

The SD Memory Card Helps Preserve the Environment with Its Reusability and Low Power Consumption

The SDHC/SD Memory Card media for the AVCCAM camera recorder is totally free from abrasion and dropout. There is no drive mechanism required, as there is for tape and disc-based recorders, so power consumption is low and size and weight are reduced. Malfunctions are less likely to occur, and there is no need to replace heads or transport components. This translates into lower costs and easier maintenance, greater energy savings, and less waste when the unit is eventually disposed of. All of these features help to conserve the environment.



The shoulder-mount design ensures stable shooting. Both AVCHD and DV recording are supported!



AG-HMC80 series

(AG-HMC80P/HMC81E/HMC82EN/HMC83MC/HMC84ER)
Memory Card Camera Recorder



Supports two recording formats for use in a wide variety of video systems.

- 12x optical zoom lens with Optical Image Stabiliser (OIS), and user-settable Manual Focus Ring that can be assigned to iris or zoom.
- 1/4.1 type 3.05-megapixel (approx. 2-megapixels/effective image pixels), progressive 3MOS for high image quality.
- AVCHD/DV multi-format recording.
- Professional High-quality (PH) mode for full-raster HD recording.
- AVI file recording with DV compression.
- Dynamic Range Stretch (DRS) provides a wider dynamic range with minimal blown highlights and blocked shadows.
- Selectable gamma including Cine-like mode.
- Still-image shooting function (approx. 10.6-megapixels).
- Thumbnail display on the viewfinder/monitor allows easy image confirmation and deletion.
- Shoulder-mount style for stable recording.
- Waveform monitor display function on LCD display is ideal for checking luminance.
- Large, tiltable viewfinder/monitor with eyecup.
- Digital zoom (2x, 5x, 10x).
- Focus assist function (focus bar display, enlarged display and face detection function).
- Advanced Pro-tuning Functions.
- Zebra display, synchroscan and slow shutter function.
- Three user-assignable, shooter-customizable buttons.
- TC/UB recording compatibility.
- Time Date Stamp capability inserts time and date information into the video signal.
- 43mm Filter Diameter.

Versatile interfaces also let you output DV compressed images.

- DV Terminal Provided as a Standard Feature.
- Professional audio specifications include XLR audio input (2 channel input, mic/line switchable, 48V compatibility).
- USB 2.0 (B-type devices)*1.
- HDMI out (A-type device)*1, analogue component out (BNCx3) composite out (BNCx1)*2, audio out (RCaX2)*1.
- Camera remote terminals (focus & iris control, REC start/stop & zoom control).
- External microphone jack (3.5 mm diameter).
- Built-in Stereo Microphone.

*1: AVCHD mode only

*2: BNC connector is switchable use between component and composite out

[GENERAL]

Power Supply	DC7.2 V (using with battery), 7.3 V (using with AC adapter)
Power Consumption	11 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 80 % (No condensation)
Weight	Approx. 3.2 kg (Approx. 7.06 lb.) (camera recorder only) Approx. 3.3 kg (Approx. 7.28 lb.) (including SD memory cards, supplied battery)
Dimensions (W x H x D)	267 mm x 233 mm x 458 mm (10-1/2 inches x 9-3/16 inches x 18-5/16 inches) excluding the projection part

[CAMERA]

Pick-up Device	3MOS (1/4.1 type progressive modes supported)
Picture Elements	Total: Approx. 3.05 megapixels x 3 Effective (video): Approx. 2.51 megapixels x 3 (16:9) Effective (still image): Approx. 2.32 megapixels x 3 (4:3), Approx. 2.65 megapixels x 3 (3:2), Approx. 2.51 megapixels x 3 (16:9)
Lens	Lens with optical image stabiliser, motorised/manual mode switching, 12x zoom, F1.8 to 2.8 (f=4.0 mm to 48 mm) 35 mm equivalent (video): 40.8 mm to 490 mm (16:9) 35 mm equivalent (still image): 41.3 mm to 496 mm (3:2), 40.8 mm to 490 mm (16:9), 45.0 mm to 540 mm (4:3)
Filter Diameter	43 mm
Optical Colour Separation	Prism system
ND Filter	Automatic On/Off by IRIS
Minimum shooting distance	Approx. 0.9 m (35.43 inches)
Gain Selection	<Motion Image> 0 dB to 24 dB (Variable in 1 dB step; USER button allocation; up to 34 dB using the High Gain setting) <Still Image> 0 dB to 18 dB (Variable in 1 dB step)
White balance	ATW, ATW LOCK, preset 3200 K, preset 5600 K, Ach or Bch

[Video Recording (AVCHD mode)]

Recording Format	AVCHD
Compression Method	MPEG-4 AVC/H.264
Recording Video Format	[HMC80] PH mode: 1080/60i, 1080/30p (over 60i), 1080/24p (native), 720/60p, 720/30p, 720/24p HA, HG and HE mode: 1080/60i only [HMC81/82/83/84] PH mode: 1080/50i, 1080/25p (over 50i), 720/50p, 720/25p (over 50p) HA, HG and HE mode: 1080/50i only
Transmission Rate	PH mode: Approx. 21 Mbps (VBR, Max. 24 Mbps) HA mode: Approx. 17 Mbps (VBR), HG mode: Approx. 13 Mbps (VBR) HE mode: Approx. 6 Mbps (VBR)

[Video Recording (DV mode)]

Recording Format	DV
File Format	AVI Type2
Recording Video Format	[HMC80] 480/60i, 480/30p (over 60i), 480/24p (over 60i) [HMC81/82/83/84] 576/50i, 576/25p (over 50i)

[Video System (AVCHD mode)]

Video Signals	[HMC80] 1080/60i, 720/60p [HMC81/82/83/84] 1080/50i, 720/50p
HDMI Output	HDMI x 1 (HDMI Type A terminal), [HMC80] 1080/60i, 720/60p, 480/60p [HMC81/82/83/84] 1080/50i, 720/50p, 576/50p (Not compatible with VIERA Link)
Component Output	BNC x 3, Y: 1.0 V [p-p], 75 Ω, Pb/Pb: 0.7 V [p-p], 75 Ω
Composite Output*1	BNC x 1, 1.0 V [p-p], 75 Ω

[Video System (DV mode)]

Video Signals	[HMC80] 480/60i [HMC81/82/83/84] 576/50i
Component Output	BNC x 3, Y: 1.0 V [p-p], 75 Ω, Pb/Pb: 0.7 V [p-p], 75 Ω, [HMC80] 480/60i [HMC81/82/83/84] 576/50i
Composite Output*1	BNC x 1, 1.0 V [p-p], 75 Ω

*1: Shares analogue component terminal (Y terminal) (SW switching).

Analogue component signals and composite signals cannot be output at the same time.

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

Combines smoothly with an optional camera to shoot special angles, such as from high above or inside a car!



* AG-HCK10G camera head is not included.



AG-HMR10 series *POVcam* AG-HCK10G

(AG-HMR10P/HMR10E) Camera Head for AG-HMR10 series (optional)
Memory Card Portable Recorder



■ AG-HMR10 series

HD SDI input and output enable a wide range of operating possibilities.

- The AG-HCK10G camera head can be remotely controlled while images are checked on the 8.89 cm (3.5 inches) LCD monitor.
- Professional High-quality (PH) mode for full-raster HD recording.
- Meets a Variety of Needs, convenient Playback Functions.
- Built-in speaker.
- Waveform monitor display function on LCD display is ideal for checking luminance.
- User-assignable, shooter-customizable buttons.
- TC/UB recording compatibility.
- Time Date Stamp capability inserts time and date information into the video signal.
- HD SDI input works with any HD SDI camera or camera recorder.
- USB 2.0 (B-type devices).
- HDMI and HD/SD SDI output.
- Four threaded holes for mounting applications.
- Camera remote terminals (REC start/stop & zoom control).
- External microphone jack (3.5 mm diameter).

■ AG-HCK10G

Even with this compact body, it shoots detailed, full-HD images.

- 12x optical zoom lens with Optical Image Stabiliser (OIS).
- The iris, focus, and zoom can be remotely controlled from the AG-HMR10 series.
- 1/4.1 type approx. 2.51-megapixel (effective image pixels), progressive 3MOS for high image quality.
- 1080/23.98p (native), 1080/59.94i, 50i or 720/59.94p, 50p HD multi-format recording.*
- Dynamic Range Stretch (DRS) provides a wider dynamic range with minimal blown highlights and blocked shadows.*
- Selectable gamma including Cine-like mode.
- Built-in microphone.*
- Digital zoom (2x, 5x, 10x)*.
- Focus assist function (focus bar display, enlarged display)*.
- Advanced Pro-tuning Functions.
- Zebra display, synchroscan and slow shutter function.
- The camera head option cable (optional) comes in 3 m (9.84 ft) (AG-C20003G) and 20 m (65.62 ft) (AG-C20020G) lengths.
- 6.36 mm (1/4 inches) socket for mounting.
- 43 mm lens filter size.

* Settings are made on the AG-HMR10 series

< AG-HMR10 series >

[GENERAL]

Power Supply	DC7.2 V (using with battery), 7.3 V (using with AC adapter)
Power Consumption	11.7 W (when the optional AG-HCK10G Camera Head is connected) 6.5 W (in standalone condition)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 80 % (No condensation)
Weight	Approx. 580 g (Approx. 1.28 lb.) excluding battery, Approx. 691 g (Approx. 1.52 lb.) including bundled battery
Dimensions (W x H x D)	96 mm x 52.6 mm x 133 mm (3-3/4 inches x 2-1/8 inches x 5-1/4 inches) excluding the projection

[Video Recording]

Recording Format	AVCHD
Compression Method	MPEG-4 AVC/H.264
Recording Video Format*1	[59.94 Hz] PH mode: 1080/60i, 1080/30p*2 (over 60i), 1080/24p*2 (Native)*3, 720/60p, 720/30p*2 (over 60p) and 720/24p*2 (Native)*3 HA, HG and HE mode: 1080/60i only [50 Hz] PH mode: 1080/50i, 1080/25p*2 (over 50i), 720/50p and 720/25p*2 (over 50p) HA, HG and HE mode: 1080/50i only
Transmission Rate	PH mode: Approx. 21 Mbps (VBR, Max. 24 Mbps) HA mode: Approx. 17 Mbps (VBR), HG mode: Approx. 13 Mbps (VBR) HE mode: Approx. 6 Mbps (VBR)

[Video IN/OUT]

SDI Input	HD SDI Input, BNC x 1, 0.8 V [p-p], 75 Ω
SDI Output	HD SDI/SD SDI Output, BNC x 1, 0.8 V [p-p], 75 Ω
AG-HCK10G Input	20-pin dedicated terminal (connection with the AG-HCK10G)
HDMI Output	HDMI Output x 1 (HDMI Type A terminal), [59.94 Hz] 1080/60i, 720/60p, 480/60p [50 Hz] 1080/50i, 720/50p, 576/50p (Not compatible with VIERA Link)

< AG-HCK10G >

[GENERAL]

Power Supply	DC8 V-9 V (Supplied from the AG-HMR10 series)
Power Consumption	3.5 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 80 % (No condensation)
Weight	Approx. 275 g (Approx. 0.61 lb.)
Dimensions (W x H x D)	53.5 mm x 56 mm x 123.8 mm (2-1/8 inches x 2-1/4 inches x 4-7/8 inches) excluding the projection part

[CAMERA]

Pick-up Device	3MOS (1/4.1 type progressive modes supported)
Picture Elements	Effective: Approx. 2.51 megapixels x 3 (16:9)
Lens	Lens with optical image stabiliser, 12x zoom, F1.8 to 2.8 (f=4.0 mm to 48 mm), 35 mm equivalent: 40.8 mm to 490 mm (16:9)
Filter Diameter	43 mm
Optical Colour Separation	Prism system
ND Filter:	Auto On/Off by IRIS
Minimum shooting distance	Approx. 0.9 m (Approx. 35.43 inches)
Gain Selection	0 dB to 34 dB (Variable in 1-dB steps)
White balance	ATW, preset 3200 K, preset 5600 K, W.set

*1: When the system frequency has been changed, turn the unit's power off and then back on so that the setting takes effect.

*2: Selectable only when combined with the AG-HCK10G.

*3: In the Native mode, AG-HMR10 series record only active frames.

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

Handles and microphone adaptors (optional) are detachable to enable a wide range of shooting styles!

AG-HMC40 series

(AG-HMC40P/HMC41E/HMC43MC)
Memory Card Camera Recorder



A wide variety of interfaces are featured, including easy touch panel operation.

- 12x optical zoom lens with Optical Image Stabiliser (OIS), and user-settable Manual Focus Ring that can be assigned to iris or zoom.
- 1/4.1 type 3.05-megapixel (approx. 2.51-megapixels/effective image pixels), progressive 3MOS for high image quality.
- Professional High-quality (PH) mode for full-raster HD recording.
- Dynamic Range Stretch (DRS) provides a wider dynamic range with minimal blown highlights and blocked shadows.
- Selectable gamma including Cine-like mode.
- Still-image shooting function (approx. 10.6-megapixels).
- Thumbnail display on the 6.86 cm (2.7 inches) LCD monitor allows easy image confirmation and deletion.
- Compact, handheld size and lightweight (less than 1kg (2.2 lb.)).
- Built-in 2-channel microphone and speaker, plus detachable handle.
- Professional audio specifications include optional detachable XLR audio input (separately purchased: 2-channel input, mic/line switchable, 48 V compatibility).
- Simple touch-panel operation.
- Waveform monitor display function on LCD display is ideal for checking luminance.
- Digital zoom (2x,5x,10x).
- Focus assist function (focus bar display, enlarged display and face detection function).
- Advanced Pro-tuning Functions.
- Zebra display, synchroscan and slow shutter function.
- Three user-assignable, shooter-customizable buttons.
- TC/UB recording compatibility.
- Time Date Stamp capability inserts time and date information into the video signal.
- USB 2.0 (mini B-type devices).
- HDMI out, analogue component (mini-D), AV Multi out (Composite, audio ch1,ch2).
- Camera remote terminals (focus & iris control, REC start/stop & zoom control).
- External microphone jack (3.5 mm diameter).

This handy camera features a wide-angle lens and high-sensitivity CCD for high-quality shooting that rivals broadcast footage!

AG-HMC150 series

(AG-HMC150P/HMC151E/HMC152EN/HMC153MC/HMC154ER)
Memory Card Camera Recorder



A host of advanced functions, such as 13x optical zoom, meet high-end shooting needs.

- Leica Dicomar* 13x zoom lens with 28mm (35mm equivalent) wide-angle setting, 72 mm Filter diameter, Optical Image Stabiliser (OIS).
- User-settable Manual Focus Ring that can be assigned to iris.
- 1/3 type 16:9 progressive CCD for high image quality and sensitivity.
- High-performance DSP with 14 bit A/D conversion and 19 bit inner processing capability.
- Professional High-quality (PH) mode for full-raster HD recording; also supports AVCHD (MPEG-4 AVC/H.264) format.
- Dynamic Range Stretch (DRS) provides a wider dynamic range with minimal blown highlights and blocked shadows.
- Selectable gamma including Cinelike mode.
- Thumbnail display on the 8.89 cm (3.5 inches) LCD monitor provides fast viewing or deletion.
- Built-in 2-channel microphone and speaker.
- Manual audio level VR (2-channel).
- Waveform monitor display function on LCD display is ideal for checking luminance.
- Digital zoom (2x,5x,10x).
- Focus assist function (histogram display, enlarged display).
- Advanced Pro-tuning Functions.
- Zebra display, synchro-scan and Slow shutter function.
- Three user-assignable, buttons.
- TC/UB recording compatibility.
- Time Date Stamp capability inserts time and date information into the video signal.
- USB 2.0 (mini B-type devices).
- HDMI out, analogue component (mini-D), Composite, audio ch1,ch2.
- Camera remote terminals (focus & iris control, REC start/stop & zoom control).
- External microphone jack (3.5 mm diameter).

*Leica and Dicomar are registered trademarks of Leica Microsystems IR GmbH.

[GENERAL]

Power Supply	DC7.2V (using with battery), 7.3V (using with AC adapter)
Power Consumption	7.8 W (max., when the AG-MYA30G XLR microphone adapter is connected) 5.8 W (in standalone condition)
Operating Temperature	0°C to 40°C (32 °F to 104 °F)
Operating Humidity	10% to 80% (No condensation)
Weight	Approx. 0.98 kg (Approx. 2.16 lb.) camera recorder only, Approx. 1.4 kg (Approx. 3.08 lb.) including SD memory cards, supplied battery, microphone and XLR adapter
Dimensions (W x H x D)	136 mm x 135 mm x 304 mm (5-11/32 inches x 5-5/16 inches x 11-31/32 inches) excluding the projection part

[CAMERA]

Pick-up Device	3MOS (1/4.1 type progressive modes supported)
Picture Elements	Total: Approx. 3.05 megapixels × 3 Effective (video): Approx. 2.51 megapixels × 3 (16:9) Effective (still image): Approx. 2.32 megapixels × 3 (4:3), Approx. 2.65 megapixels × 3 (3:2), Approx. 2.51 megapixels × 3 (16:9)
Lens	LEICA DICOMAR lens with optical image stabiliser, motorised/ manual mode switching, 12× zoom, F1.8 to 2.8 (f=4.0mm to 48mm) 35mm equivalent (video): 40.8mm to 490mm (16:9) 35mm equivalent (still image): 41.3mm to 496mm (3:2), 40.8mm to 490mm (16:9), 45.0mm to 540mm (4:3)
Filter Diameter	43 mm
Optical Colour Separation	Prism system
ND Filter	Auto On/Off by IRIS
Minimum shooting distance	Approx. 0.9 m (35.43 inches)
Gain Selection	<Motion Image> 0 dB to 24 dB (Variable in 1 dB step; USER button allocation; up to 34 dB using the High Gain setting) <Still Image> 0 dB to 18 dB (Variable in 1 dB step)

[Video Recording]

Recording Format	AVCHD
Compression Method	MPEG-4 AVC/H.264

[Video System]

Video Signals	[HMC40] 1080/60i, 720/60p [HMC41/43] 1080/50i, 720/50p
HDMI Output	HDMI × 1 (HDMI Type A terminal), [HMC40] 1080/60i, 720/60p, 480/60p [HMC41/43] 1080/50i, 720/50p, 576/50p (Not compatible with VIERA Link)
Component Output	Mini-D × 1, Y: 1.0 V [p-p], 75Ω, Pb/Pr: 0.7 V [p-p], 75Ω
Composite Output	AV Multi out, 1.0 V [p-p], 75Ω

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

[GENERAL]

Power Supply	DC7.2 V (using with battery), 7.3 V (using with AC adapter)
Power Consumption	9.8 W (when recording)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 80 % (No condensation)
Weight	Approx. 1.7 kg (Approx. 3.75 lb.) (camera recorder only) Approx. 1.98 kg (Approx. 4.30 lb.) (including SD memory cards, supplied battery, and microphone)
Dimensions (W x H x D)	154 mm x 164 mm x 397 mm (6-1/16 inches x 6-5/16 inches x 15-5/8 inches) excluding the projection part

[CAMERA]

Pick-up Device	3CCD (1/3 type interline transfer type, and progressive modes supported)
Lens	Lens with optical image stabiliser, motorised/manual mode switching, 13× zoom, F1.6 to 3.0 (f=3.9 mm to 51 mm) 35 mm equivalent: 28 mm to 368 mm
Filter Diameter	72 mm
Optical Colour Separation	Prism system
ND Filter	1/4, 1/16, 1/64
Gain Selection	50i/50p/60i/60p mode: 0/3/6/9/12/18 dB, (0 dB fixed in slow shutter mode) 25p/30p/24p mode: 0/3/6/9/12 dB, (0 dB fixed in slow shutter mode)

[Video Recording]

Recording Format	AVCHD
Compression Method	MPEG-4 AVC/H.264

[Video System]

Video Signals	[HMC150/151] 1080/60i, 720/60p [HMC151/152/153/154] 1080/50i, 720/50p
HDMI Output	HDMI × 1 (HDMI Type A terminal), [HMC150/151] 1080/60i, 720/60p, 480/60p [HMC151/152/153/154] 1080/50i, 720/50p, 576/50p (Not compatible with VIERA Link)
Component Output	Mini-D × 1, Y: 1.0 V [p-p], 75 Ω, Pb/Pr: 0.7 V [p-p], 75 Ω
Composite Output	Pinjack × 1, 1.0 V [p-p], 75 Ω

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

The World's First*¹ Professional HD Camera Recorder Conforms the Micro Four Thirds Compliant.*²

AG-AF100 series

Memory Card Camera Recorder <Coming Soon>



- A 4/3 type image sensor with digital still camera technology.
- Micro Four Thirds lens mount.
- Extended recording in AVCHD high-quality PH mode.
- Multi HD format and multi frame rate.
- A professional design with HD SDI, XLR and other interfaces.

*¹: As of September 2010. (based on our investigation)

*²: The AG-AF100 is designed to comply with the Micro Four Thirds standards, but it does not guarantee compatibility with all Micro Four Thirds standard lenses.

The World's First*³ Integrated Twin-lens FULL HD 3D Camera Recorder.

AG-3DA1

Memory Card Camera Recorder



- The twin-lens system lets you adjust the convergence point for recording 3D images with natural-looking depth.
- The two independent optical systems add flexibility to expressive 3D image recording.
- Equipped with two 1/4.1 type Approx. 2.07-megapixels 3MOS units for left-eye and right-eye images.
- The recording system uses AVCHD Pro high-image-quality PH mode. Full-HD left-eye and right-eye images are recorded in sync onto two SDHC Memory Cards.
- Equipped with a 8.13 cm (3.2 inches) (16:9) side-mounted LCD monitor with approx. 921,000 dots. Lch/Rch/overlay switchable display.
- Equipped with HDMI 1.4a (frame packing) in addition to HD SDI (x2, simultaneous).

*³: As an integrated twin-lens 3D camera recorder capable of recording full-HD video to its memory card. As of September 2010 (based on our investigations).

■ Function Comparison Chart

Feature	AG-HMC80 series	AG-HMR10 series AG-HCK10G	AG-HMC40 series	AG-HMC150 series
Pick-up device	3MOS (1/4.1 type progressive modes supported)	3MOS (1/4.1 type progressive modes supported)	3MOS (1/4.1 type progressive modes supported)	3CCD (1/3 type progressive modes supported)
Weight(camera recorder only)	Approx. 3.2 kg (Approx. 7.06 lb.) (camera recorder only)	AG-HMR10 series: Approx. 580 g (Approx. 1.28 lb.) (excluding battery) AG-HMR10G: Approx. 275 g (Approx. 0.61 lb.)	Approx. 0.98 kg (Approx. 2.16 lb.) (camera recorder only)	Approx. 1.7 kg (Approx. 3.75 lb.) (camera recorder only)
Angle of view (35mm equivalent)	40.8mm to 490mm	40.8mm to 490mm	40.8mm to 490mm	28 mm to 368 mm
Optical Zoom	12x	12x	12x	13x
Leica Dicomar* lens	-	-	✓	✓
High-performance DSP	-	-	-	✓
High Bit Rate of the Pro-use PH Mode	✓	✓	✓	✓
DV Compression Recording	✓	-	-	-
Face detection function	✓	-	✓	-
Optical Image Stabiliser (OIS)	✓	✓	✓	✓
Dynamic Range Stretch (DRS)	✓	✓	✓	✓
Still images	✓	-	✓	-

*Leica and Dicomar are registered trademarks of Leica Microsystems IR GmbH.

Options

As of September 2010



VW-VBG130
Battery Pack
• 7.2V 1,320mAh



AG-MC200G
XLR microphone
• Sensitivity: -40 dB $\pm$ 3.5 dB
(0dB=1V/Pa, at 1kHz)
• Maximum Input level: 127 dB
(1000Hz, Distortion within 1%)
• S/N: More than 69 dB



VW-W4307H
Wide conversion lens



VW-VBG260
Battery Pack
• 7.2V 2,640mAh
(Supplied with the AVCCAM series)



AG-MYA30G
XLR microphone adapter



VW-T4314H
Tele conversion lens



VW-VBG6
Battery Pack
• 7.2V 5,800mAh



RP-SDW32G
RP-SDW16G
SDHC memory card



BT-LH2550 65 cm (25.5 inches)
BT-LH1760 43 cm (17 inches)
BT-LH1710 43 cm (17 inches)
BT-LH900A 21 cm (8.4 inches)
BT-LH80WU 20 cm (7.9 inches)
LCD monitors



AG-C20003G 3m
AG-C20020G 20m
Camera Head Option Cable

*An HDMI-DVI-D conversion connector is required to connect the AG-HMC40 series to the BT-LH2250/LH1760/LH1710 monitor. For all other monitors, a D-terminal component (Y/Pb/Pr BNC terminal) conversion cable is required and included.

*These options are not available in some areas.

■ Options Compatibility Chart

Product name	Model number	AG-HMC80 series	AG-HMR10 series AG-HCK10G	AG-HMC40 series	AG-HMC150 series
Battery Pack	VW-VBG130	-	-	✓	-
	VW-VBG260	✓	✓	✓	✓
	VW-VBG6	✓	-	✓	✓
XLR microphone	AG-MC200G	✓	-	✓	✓
XLR microphone adapter	AG-MYA30G	-	-	✓	-
SDHC memory card	RP-SDW32G	✓	✓	✓	✓
	RP-SDW16G				
Wide conversion lens	VW-W4307H	✓	✓	✓	-
Tele conversion lens	VW-T4314H	✓	✓	✓	-
LCD monitor	BT-LH2550				
	BT-LH1760				
	BT-LH1710	✓	✓	✓	✓
	BT-LH900A				
	BT-LH80WU				
Camera Head Option Cable	AG-C20003G AG-C20020G	-	✓	-	-

Assisting you in selecting equipment and creating content

PASS is a membership-based service program which offers support for your equipment purchases and maximizes the performance of your equipment by providing various tools and product-related information. Much informative content is available with profile registration only,

and 3- and 5-year extended warranty programs and an asset management system are made available for free upon product registration. PASS requires no registration or membership fees whatsoever.

Learn more about the PASS world at http://panasonic.biz/sav/pass_e

No registration or membership fees

Available 24-hours-a-day
7-days-a-week

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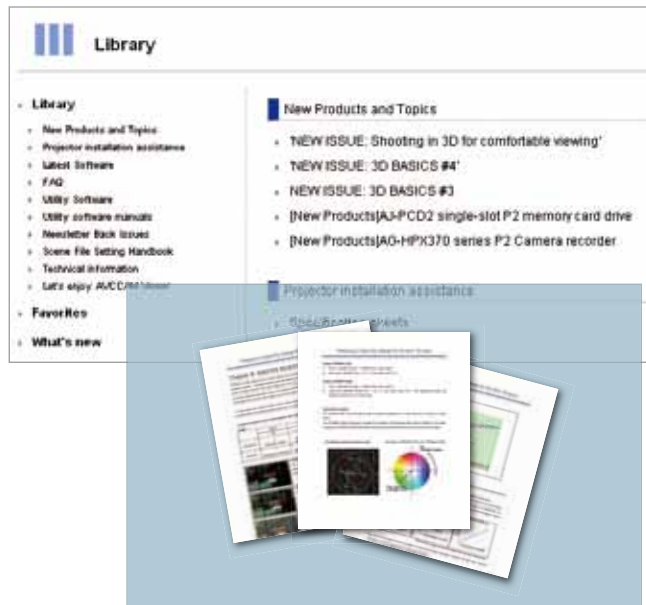
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PASS Newsletter

Optional subscription to email newsletter.

Document library

Find various technical information (operation guides, technical descriptions, etc.).



Asset management (*requires equipment registration)

Manage your equipment with a centralized web-based database.

Maintenance history (*requires equipment registration)

View and share the repair and maintenance history of your equipment.

Firmware updates

Receive official update notifications timely.

Owner's voice

Find opinions and comments about the products from current users.

Application notes

Discover various usage and application examples of P2HD and AVCCAM line.



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Sign up now !! ▶▶▶ http://panasonic.biz/sav/pass_e

Read the membership rules on the registration site carefully prior to signing up

P2 Asset Support System The member's service program

Providing valuable information when you need it

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

Free registration, no membership fees

■ 3-year extended warranty repair program

Exclusive offer for AVCCAM!

Maximum 3-year extended warranty repair is applied for AVCCAM models after registration. Several other services are also provided to members.



1st year	2nd year	3rd year
Basic warranty*1	AVCCAM Extended warranty repair*2	

* AG-HCK10G camera head is not included.

* Not all models are eligible for extended warranty coverage.

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

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

*2: Not all repair work is covered by this extended warranty. See the 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 website, information is selected and presented for your models. To be alerted to new firmware information and other releases, an email newsletter can be subscribed to.

■ Document library

You can browse 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 Nonlinear Compatibility Information, AVCHD Support and Download and Service Information, etc. on the Panasonic website.



For US Customers: www.panasonic.com/avccam
For Outside US: <http://pro-av.panasonic.net/>

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