Panasonic
ideas for life

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

Memory Card Camera Recorder
AG-HMC80 series

Memory Card Camera Recorder
AG-HMC150 series

Memory Card Portable Recorder
AG-HMR10

Camera Head
AG-HCK10G

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.

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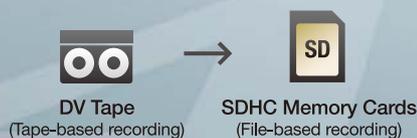
· Changes in video media
The transition of video media from DVDs to higher-capacity BDs has enabled the delivery of higher-resolution images.

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)
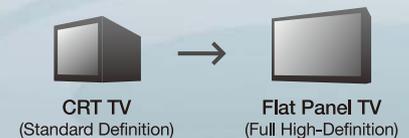
AVCCAM

SERIES

Memory Card Camera Recorder
AG-HMC40 series

Memory Card Camera Recorder
AG-AF100 series

* The lens is optional.

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

AVCHD

Samples recorded with HDV   Samples recorded with AVCHD (PH mode)

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 intense sports scenes

The Pre-REC function of the file-based recording format makes sure you won't miss any important scenes.

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.
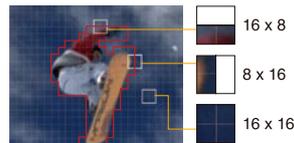
MPEG-2 (fixed block size)
Blocks of the same size are used to process parts both with and without motion.

16 x 16
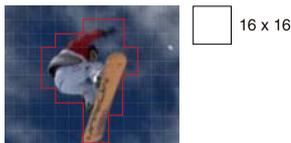
MPEG-4 AVC/H.264 (variable block size)
Block size is precisely varied to match the size of the moving part contained in each block.

16 x 8
8 x 16
16 x 16

●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*1		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/SDXC*1 Memory Card

Unlike with videotape, there's no need for cueing with the SDHC/SDXC*1 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 digitising.

●Combined with a maximum data transfer speed of 22 MB/s,*2 this makes data transfers to computers easy and effortless.
●SDHC/SDXC*1 Memory Cards are inexpensive and can be easily purchased on location when needed.

*1: The SDXC Memory Card can be used only with the AG-AF100 series.
*2: 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 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 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 can be used only in AVCHD mode.

● INDEX
Index flags can be added to any desired points in a clip during recording or playback. Up to 100 index flags can be added to each clip.
* For the AG-AF100 series, AG-HMC150 series and AG-HMR10.

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

For TV dramas

The high-sensitivity Imager and Pro Tuning functions let you compose and shoot scenes exactly as you want them.
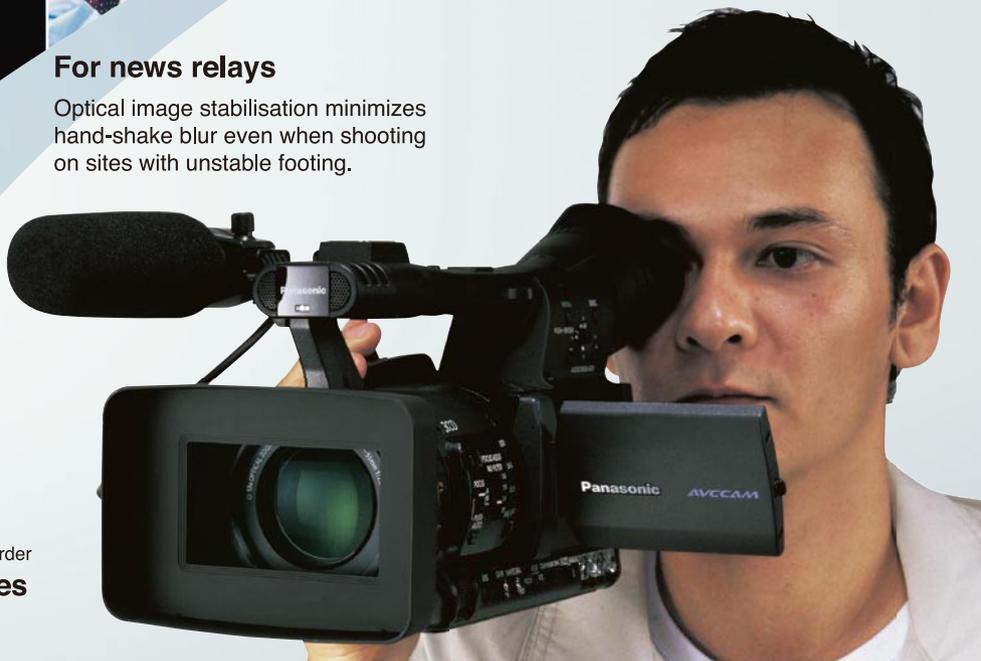
For weddings

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

AG-AF100 series : The World's First[1] Professional HD Camera Recorder Conforms the Micro Four Thirds Standard.[2]

■ Four Thirds type MOS image sensor

It is equipped with a Four Thirds type MOS image sensor almost the same imaging area[3] as that of 35mm film (motion picture). With the AG-AF100 series, you can record beautiful, shallow depth of field, film-like images.

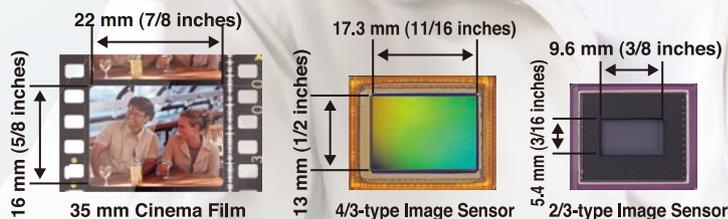[1]: As of April 2011. (based on our investigation)
[2]: Panasonic does not guarantee the compatibility or performance of all lenses that are mountable on the AG-AF100 series.
[3]: Effective imaging area is clipped to an aspect ratio of 16:9.

■ Micro Four Thirds lens mount[4]

The short flange back distance of Micro Four Thirds lens mount enables the use of a wealth of interchangeable lenses, including cinema lenses with the mount adaptors.

[4]: Use of all lenses / adaptors is not guaranteed.

22 mm (7/8 inches)
16 mm (5/8 inches)
35 mm Cinema Film

17.3 mm (11/16 inches)
13 mm (1/2 inches)
4/3-type Image Sensor

9.6 mm (3/8 inches)
5.4 mm (3/16 inches)
2/3-type Image Sensor

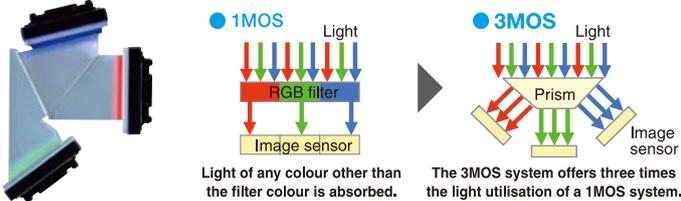* Numerical value shown are approximate.

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?

● **1MOS** Light

RGB filter

Image sensor

Light of any colour other than the filter colour is absorbed.

● **3MOS** Light

Prism

Image sensor

The 3MOS system offers three times the light utilisation of a 1MOS system.

Take Clear Shots While Walking or Zooming
Optical Image Stabiliser (OIS)*1

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.
*1: AG-AF100 series can use O.I.S. only with O.I.S. equipped compatible lenses.
   Please refer to the "Lens Compatibilities" <http://pro-av.panasonic.net/en/af100/lens_compatibility.html>

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   Image with DRS ON
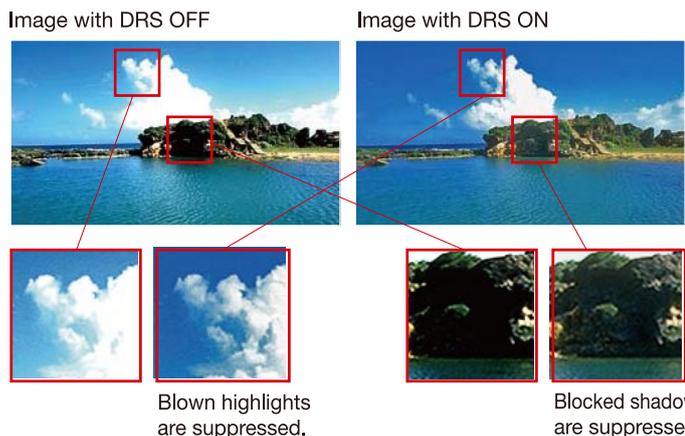
Blown highlights are suppressed.   Blocked shadows are suppressed.

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-AF100 series, 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.
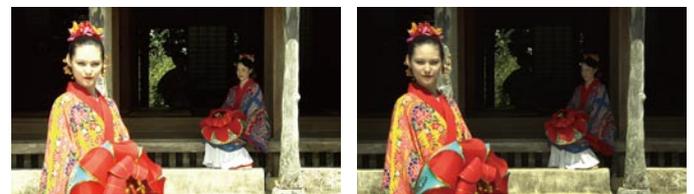
Image with VIDEO GAMMA   Image with CINE-LIKE GAMMA

■ 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*1/Focus Bar function*2**
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.

*1: The Focus-in-Red function is provided on the AG-AF100 Series instead of the Center Zoom function.
*2: A histogram is available for AG-HMC150 series instead of the Focus Bar.

● **Waveform Monitor Display**
A horizontal analysis of the input signal's brightness level can be displayed on the monitor. This lets you highly accurately adjust the standard black and white levels while checking the Waveform Monitor (WFM). It is also possible to switch from Waveform Monitor (WFM) to Vectorscope (VECTOR) display.*3

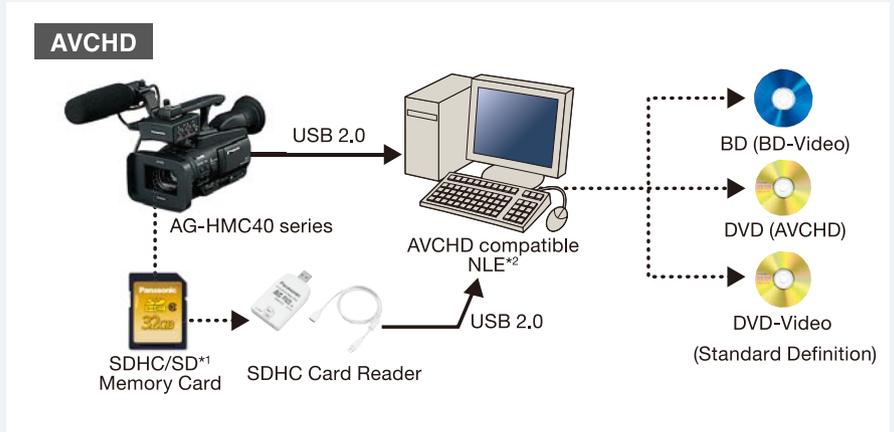*3: For the AG-AF100 series, AG-HMC150 series and AG-HMR10.

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

It also makes video packaging and Internet distribution smooth and easy.
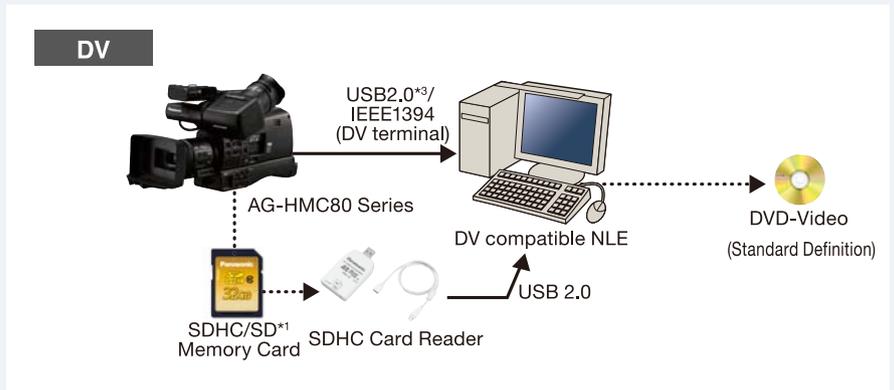
▌AVCHD Nonlinear Editing

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.

AVCHD

USB 2.0

AG-HMC40 series

AVCHD compatible NLE[2]

USB 2.0

SDHC/SD[1] Memory Card   SDHC Card Reader

BD (BD-Video)

DVD (AVCHD)

DVD-Video (Standard Definition)

▌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).

DV

USB2.0[3]/ IEEE1394 (DV terminal)

AG-HMC80 Series

DV compatible NLE

USB 2.0

SDHC/SD[1] Memory Card   SDHC Card Reader

DVD-Video (Standard Definition)

▌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.

AG-HMC40 series

SDHC/SD[1] Memory Card   BD/DVD Recorder[4]

BD   DVD (AVCHD)

▌HD Playback on a Monitor

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

HDMI[5]

AG-HMC40 series

SDHC/SD[1] Memory Card[6]

Monitor
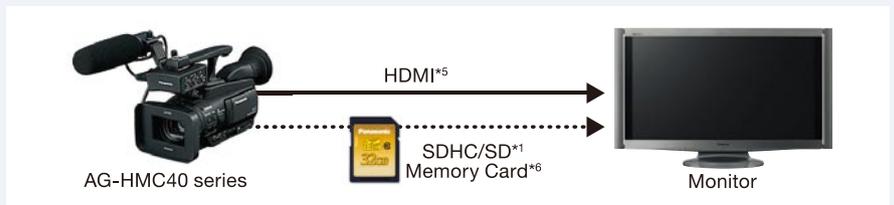
*1: The AG-AF100 series can use the SDXC Memory Card.
*2: New AVCHD transcoder software is available for free downloading on the following website.
  <For US customers: www.panasonic.com/broadcast> <Outside US: https://eww.pavc.panasonic.co.jp/pro-av/support/desk/e/download.htm>
*3: To Transfer DV file data via USB2.0, the camera recorder needs to be set AVCHD mode.
*4: Needs to be compatible with AVCREC. BD/DVD recorder is not available in some areas.
*5: Use an HDMI cable with Type A terminal (Not compatible with VIERA Link). *6: Monitor needs to be compatible with AVCHD playback.

■ Precautions for Using the SDXC Memory Card

• The SDXC Memory Card can be used for products that display the SDXC logo mark either on the product itself, or in the User's Manual. It cannot be used with products that are only compatible with SDHC/SD Memory Cards.
• How to confirm SDXC compatibility: Confirm compatibility by looking for the SDXC logo mark on the product or in the User's Manual, or check the information provided by the product manufacturer.
• When using the SDXC Memory Card with a computer: For a computer with Windows 7 OS, use the SDXC Memory Card via an SDXC-compatible USB reader/writer, or connect the SDXC Memory Card to an SDXC-compatible product via a USB terminal. If you want to use the SDXC Memory Card in a direct slot, be sure to check the information provided by the manufacturer for the computer that you plan to use, and follow the instructions therein.

08

▌ A Host of Software to Support Production

●AVCCAM Viewer*1 (Free Download)

AVCCAM Viewer for Windows PC/Mac*2 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 SDXC*3/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 SDXC*3/SDHC/SD Memory Card or BD*4.

[Windows PC]

- •CPU: Intel® Core™2 Duo (2.4 GHz or faster)
- •OS (32 bit): Microsoft® Windows® 7, Windows Vista® SP1, SP2, Windows XP SP3
- •RAM: 1024 MB or more for Windows 7 and Windows Vista (2048 MB or more recommended), 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: Mac version doesn't support SDXC memory card.

*4: 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 (Free Download)

The AVCCAM Restorer is software for restoring inconsistencies in video data recorded on an SDXC/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 SDXC/SDHC/SD Memory Card has failed.

[Windows PC]

- •CPU: Intel® Core™2 Duo (2.4 GHz or faster)
- •OS (32 bit): Microsoft Windows 7, Windows Vista SP1, SP2, Windows XP SP3
- •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 (Free Download)

The AVCCAM SD Card file recovery is software for repairing the file which was erased or formatted accidentally. It supports SDXC/SDHC/SD memory card.

[Windows PC]

- •CPU: Intel® Core™2 Duo (2.4 GHz or faster)
- •OS (32 bit): Microsoft Windows 7, Windows Vista SP1, SP2, Windows XP SP3
- •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 repaire the file using this software.

AVCCAM Importer (Under development)

AVCCAM Importer is a software for Apple Final Cut Pro to enable direct editing of AVCHD*".mts" file without conversion. Since AVCCAM Importer is a plug-in component for Apple QuickTime, QuickTime Player can play AVCHD ".mts" file and other software based on QuickTime Framework can also handle AVCHD ".mts" file directly after installation of AVCCAM Importer on a Mac.

*AVCCAM Importer supports the AVCHD files produced by AVCCAM products only.

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 SDXC/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.

Reuse

Recording — Initialization
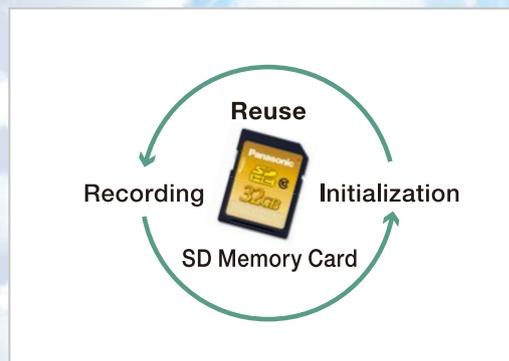
SD Memory Card

The world's first*[1] professional HD camera recorder conforms the Micro Four Thirds mount.

*

AG-AF100 series
(AG-AF100P/AF101E/AF102EN/AF103MC/AF104ER)
Memory Card Camera Recorder

* The lens is optional.

* The photo shows one example of an applicable system. The matte box is sold by Vocas. For details, visit the Vocas website (http://www.vocas.com/).

* Panasonic does not guarantee the compatibility or performance of all lenses that are mountable on the AG-AF100 series. Use a support system when mounting a lens weighing more than 1 kg (2.2 lb).

Equipped with a Four Thirds type image sensor and Micro Four Thirds lens mount.

- The first professional HD camera recorder to adopt the Micro Four Thirds standards.
- 4/3-type MOS image sensor with about the same imaging area*[2] as 35mm cinema film.
- Optical low-pass filter optimized for HD motion images. Reduces the aliasing noise that often occurs in motion images captured by an image sensor with a high pixel density.
- Equipped with a high-performance 18-bit digital signal processor (DSP) for image processing.
- Internal neutral density (ND) filter that is essential for video recording.
- Dynamic Range Stretch (DRS) provides a wider dynamic range with minimal blown highlights and blocked shadows.
- Selectable gamma including Cine-like mode.
- Advanced Pro-tuning Functions.

Featuring the Pro-Level Image Quality of PH Mode and Full-HD Variable Frame Rate Recording.

- Professional High-quality (PH) mode for full-raster HD recording.
- Uncompressed LPCM 2-Channel Recording for High-Quality Sound.
- New Variable Frame Rate (VFR) function*[3] that supports full-HD (1920 x 1080) progressive mode.
- Supports the new SDXC Memory Card.

A Control Section Created for Cine-Like Image Production, and a Design and Interfaces Ready for System Expansion.

- Selectable frame area settable as a target zone for focusing, iris adjustment and YGET (brightness measurement).
- HD focus assist function with a focus bar to indicate the focus level and a focus-in-red display to show the focus area.
- Simplified Waveform and Vectorscope Display.
- Three user-assignable buttons.
- Professional audio specifications, including XLR audio input (2 channel input, mic/line switchable, 48V compatibility).
- TC/UB recording compatibility.
- USB 2.0 (B-type devices).
- HDMI, composite and HD/SD SDI output.
- Camera remote terminals (focus & iris control,*[4] REC start/stop control).

*1: As of April 2011 (based on a Panasonic survey).

*2: The effective imaging area is trimmed to a 16:9 aspect ratio.

*3: Cannot be played in 1080/60p mode. 720p VFR not supported. Class 6 or higher SDXC/SDHC/SD Memory Card is required for VFR recording.

*4: Need to use the compatible lenses that support remote control.

[GENERAL]

Power Supply	DC 7.2 V (when the battery is used) DC 7.3 V (when the AC adaptor is used)
Power Consumption	12.4 W (when recording)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 80 % (No condensation)
Weight	Approx. 1.3 kg (Approx. 2.9 lb) (Excluding the handle, grip, battery and accessories)
Dimensions (W x H x D)	163.4 mm × 195 mm × 290.4 mm (6-7/16 inches × 7-11/16 inches × 11-7/16 inches) (Including the handle and grip)

[CAMERA]

Pick-up Device	4/3 MOS fixed pickup device, single panel (primary color filter)
Picture Elements	Effective picture elements: Approx. 12.4 megapixels Single panel (16:9)
Lens	Not included
Lens Mount	Micro Four Thirds system Lens mount
ND Filter	1/4, 1/16, 1/64
Gain Settings	[VIDEO CAM mode] –6 dB to 18 dB (3 dB step) [FILM CAM mode] ISO200 to ISO3200
Color Temperature settings	ATW, ATW LOCK, preset 3200 K, preset 5600 K, preset VAR, Ach, Bch

[Video/Recording/Playback]

Recording Format	AVCHD compliant (MPEG-4 AVC/H.264)
Recording Video Format	[59.94 Hz] PH mode: 1080/59.94i, 1080/29.97p, 1080/23.98p, 720/59.94p, 720/29.97p, 720/23.98 HA/HE mode: 1080/59.94i [50 Hz] PH mode: 1080/50i, 1080/25p, 720/50p, 720/25p, HA/HE mode: 1080/50i
Transmission Rate	PH mode: Approx. 21 Mbps (VBR) HA mode: Approx. 17 Mbps (VBR) HE mode: Approx. 6 Mbps (VBR)
VFR Recording*	[1080/24p, 30p] 12/15/18/20/21/22/24/25/26/ 27/28/30/32/34/36/40/44/48/54/60 frame/sec. [1080/25p] 12/15/18/20/21/22/23/24/25/26/ 27/28/30/32/34/37/42/45/48/50 frame/sec.

[Video Output]

SDI (HD/SD)	BNC x 1, 0.8 V [p-p], 75 Ω [59.94 Hz] 1080/60i, 1080/24psF, 720/60p, 480/60i [50 Hz] 1080/50i, 720/50p, 576/50i
HDMI	HDMI x 1, (HDMI TypeA terminal), VIERA Link not supported [59.94 Hz] 1080/60i, 720/60p, 480/60p [50 Hz] 1080/50i, 720/50p, 576/50p
VIDEO	RCA pin jack, 1.0 V [p-p], 75Ω [59.94 Hz] 480/60i [50 Hz] 576/50i

[Other Connectors]

INDEX Remote	Super mini jack (2.5mm diameter)
TC PRESET IN/OUT (also used for VIDEO OUT)	IN: 1.0 V to 4.0 V [p-p], 10 kΩ OUT: 2.0 V ±0.5 V [p-p], low impedance

* Cannot be played in 1080/60p mode. 720p VFR not supported. Class 6 or higher SDXC/SDHC/SD Memory Card is required for VFR recording.

* Register as an owner for this device to receive a special service warranty up to three years of free warranty repairs.

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 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 adaptor)
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 × 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	Lens with optical image stabiliser, motorised/manual mode switching, 12× 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 × 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 × 3, Y: 1.0 V [p-p], 75 Ω, PB/PR: 0.7 V [p-p], 75 Ω
Composite Output*1	BNC × 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 × 3, Y: 1.0 V [p-p], 75 Ω, PB/PR: 0.7 V [p-p], 75 Ω, [HMC80] 480/60i [HMC81/82/83/84] 576/50i
Composite Output*1	BNC × 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.

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 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).

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

* Register as an owner for this device to receive a special service warranty up to three years of free warranty repairs.

[GENERAL]

Power Supply	DC7.2V (using with battery), 7.3V (using with AC adaptor)
Power Consumption	7.8 W (max., when the AG-MYA30G XLR microphone adaptor 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 adaptor
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 adaptor)
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 6-15/32 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] 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.*[2] Full-HD left-eye and right-eye images are recorded in sync onto two SDHC Memory Cards.
- Switchable 59.94Hz/50Hz for worldwide recording capability.

Recording Format	When set to 59.94 Hz	When set to 50 Hz
1080	1080/59.94i, 1080/29.97p, 1080/23.98p (Native)	1080/50i, 1080/25p
720	720/59.94p	720/50p

* In the Native mode, AG-3DA1 records only active frames.

- The LCD monitor displays a 3D Guide*[3] that shows numerical values for the effective distance range of the subject together with the numerical value of the convergence point, for natural-looking 3D images.
- The lenses, camera head and recorder section are integrated into a compact body. Unlike a conventional rig-type 3D camera system, this model brings excellent flexibility and mobility to FULL HD 3D recording.
- Lightweight camera body weighs less than 2.4 kg (Approx. 5.29 lb) for excellent mobility.
- 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).
- Built-in Stereo microphone.
- Provided with two XLR connections for either microphone or line input.
- Equipped with remote terminal for focus, iris, zoom, REC start/stop, and convergence point control.
- Auto REC function for control of REC start/stop of an external recorder connected by SDI.

*1: As an integrated twin-lens 3D camera recorder capable of recording full-HD video to its memory card. As of April 2011 (based on our investigations).

*2: A Class 4 or higher SDHC or SD Memory Card is required for PH recording.

*3: When the subject is located outside the distance range indicated by the 3D Guide, it may result in a double image or an unnatural image without proper 3D effects.

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
Memory Card Portable Recorder

POVCAM AG-HCK10G
Camera Head for AG-HMR10 (optional)

* The image is simulated.

■ AG-HMR10
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 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.
- 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.

< AG-HMR10 >
[GENERAL]

Power Supply	DC7.2 V (using with battery), 7.3 V (using with AC adaptor)
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)
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 record only active frames.
* Weight and dimensions shown are approximate. Specifications are subject to change without notice.

Function Comparison Chart

Feature	AG-AF100 series	AG-HMC80 series	AG-HMR10 AG-HCK10G	AG-HMC40 series	AG-HMC150 series
Pick-up device	MOS (4/3 type, single panel)	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. 1.3 kg(Approx. 2.9 lb) (Excluding the handle, grip, battery and accessories)	Approx. 3.2 kg (Approx. 7.06 lb) (camera recorder only)	AG-HMR10: Approx. 580 g (Approx. 1.28 lb) (excluding battery) AG-HCK10G: 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)	Interchangeable lens	40.8mm to 490mm	40.8mm to 490mm	40.8mm to 490mm	28 mm to 368 mm
Optical Zoom	Interchangeable lens	12x	12x	12x	13x
Leica Dicomar* lens				✓	✓
Micro Four Thirds lens mount	✓				
High-performance DSP	✓				✓
High Bit Rate of the Pro-use PH Mode	✓	✓	✓	✓	✓
DV Compression Recording		✓			
Face detection function	✓	✓		✓	
Optical Image Stabiliser (OIS)	Interchangeable lens	✓	✓	✓	✓
Dynamic Range Stretch (DRS)	✓	✓	✓	✓	✓
Still images	✓ (1920 x 1080)	✓ (3984 x 2656)		✓ (3984 x 2656)	
SDI Output	✓		✓		

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

Options

VW-VBG130
Battery Pack
• 7.2V 1,320 mAh/ 1,250 mAh (typ./min.)

VW-VBG260
Battery Pack
• 7.2V 2,640 mAh/ 2,500 mAh (typ./min.) (Supplied with the AVCCAM series)

VW-VBG6
Battery Pack
• 7.2V 5,800 mAh/ 5,400 mAh (typ./min.)

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

RP-SDW32G
RP-SDW16G
SDHC memory card

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

AG-MYA30G
XLR microphone adaptor

VW-W4307H
Wide conversion lens

VW-T4314H
Tele conversion lens

DMW-MA1
Mount adaptor (for Four Thirds Lens)

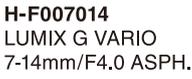**Panasonic Micro Four Thirds Lens**
H-FS045200
LUMIX G VARIO 45-200mm/F4.0-F5.6/MEGA O.I.S.
H-FS014042
LUMIX G VARIO 14-42mm/F3.5-F5.6 ASPH./MEGA O.I.S.
H-FS014045
LUMIX G VARIO 14-45mm/F3.5-F5.6 ASPH./MEGA O.I.S.
H-F007014
LUMIX G VARIO 7-14mm/F4.0 ASPH.
H-VS014140
LUMIX G VARIO HD 14-140mm/F4.0-F5.8 ASPH./MEGA O.I.S.
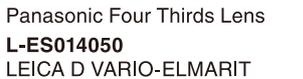**H-H020**
LUMIX G 20mm/F1.7 ASPH.
H-F008
LUMIX G FISHEYE 8mm/F3.5
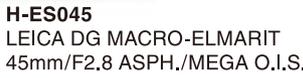
H-ES045
LEICA DG MACRO-ELMARIT 45mm/F2.8 ASPH./MEGA O.I.S.

Panasonic Four Thirds Lens
L-ES014050
LEICA D VARIO-ELMARIT 14-50mm/F2.8-3.5 ASPH./MEGA O.I.S.
L-RS014050
LEICA D VARIO-ELMAR 14-50mm/F3.8-5.6 ASPH./MEGA O.I.S.
L-RS014150
LEICA D VARIO-ELMAR 14-150mm/F3.5-5.6 ASPH./MEGA O.I.S.
L-X025
LEICA D SUMMILUX 25mm/F1.4 ASPH.

*Panasonic does not guarantee the compatibility or performance of all lenses that are mountable on the AG-AF100 series. For compatible lens information, please refer to the Panasonic WEB site <http://pro-av.panasonic.net/en/af100/index.html>

*These options are not available in some areas.

Options Compatibility Chart

Product name	Model number	AG-AF100 series	AG-HMC80 series	AG-HMR10 AG-HCK10G	AG-HMC40 series	AG-HMC150 series
Battery Pack	VW-VBG130				✓	
	VW-VBG260		✓	✓	✓	✓
	VW-VBG6	✓	✓		✓	✓
XLR microphone	AG-MC200G	✓	✓		✓	✓
XLR microphone adaptor	AG-MYA30G				✓	
SDXC memory card		✓				
SDHC memory card	RP-SDW32G RP-SDW16G	✓	✓	✓	✓	✓
Wide conversion lens	VW-W4307H		✓	✓	✓	
Tele conversion lens	VW-T4314H		✓	✓	✓	
Camera Head Option Cable	AG-C20003G AG-C20020G			✓		
Interchangeable lens/Mount adaptor		✓				

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* Availability of this extended service program and service content may depend on country/region and model.
* Not all repair work is covered by this extended warranty program.
* AG-HCK10G optional AVCCAM camera-head is out of coverage of this service program.

Informative product-related content also available with equipment registration.

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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051

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