# Panasonic
## ideas for life

**AVCCAM**

# AG-3DA1
### Integrated Twin-Lens 3D Camera Recorder



# 3D
## PROFESSIONAL

**AVCHD**  **DOLBY DIGITAL STEREO CREATOR**  **HDMI** HIGH-DEFINITION MULTIMEDIA INTERFACE  **SDHC**
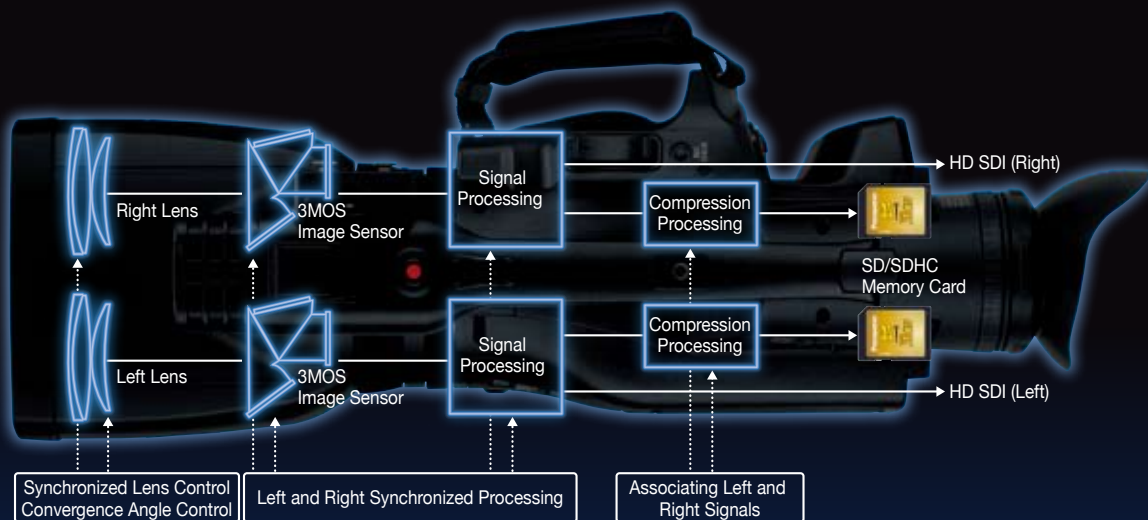
# 3D Production

## Another Step Closer to Natural Human Vision

### The World's First* Integrated Twin-Lens 3D Camera Recorder Accelerates 3D Video Production

Real-life 3D images are expected to find widespread application in fields ranging from movies and TV broadcasts to industrial and educational uses. In response to the rapidly growing needs for 3D image production, Panasonic now offers a revolutionary solution: AG-3DA1 the world's first* integrated twin-lens FULL HD 3D camera recorder. The AG-3DA1 features a camera section with two integrated lens systems that are configured to resemble the human eyes, and a recorder section that records left-channel and right-channel full-HD images using the high-quality PH mode of the file-based AVCHD format. With the same approximate weight and size of a 2D camera recorder, the AG-3DA1 is easy to handle. It's also quick to operate, as it doesn't require any adjustment of the left and right lens alignment such as vertical gap, size difference, rotation and luminance difference. The AG-3DA1 frees the user from the kind of complex, cumbersome procedures of a conventional rig-type 3D camera system. Data files recorded onto a memory card are readily processed using a nonlinear editing system. With its excellent mobility , flexibility and low cost operation, the AG-3DA1 opens the door to 3D image production.

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

# MADE EASIER



**Right Lens** — 3MOS Image Sensor — Signal Processing — Compression Processing — HD SDI (Right)

SD/SDHC Memory Card

**Left Lens** — 3MOS Image Sensor — Signal Processing — Compression Processing — HD SDI (Left)

Synchronized Lens Control / Convergence Angle Control

Left and Right Synchronized Processing

Associating Left and Right Signals

**Schematic of the AG-3DA1:**
The left-channel and right-channel optical sections, image sensors, signal processing circuits and recording section are precisely synchronized. The AG-3DA1 outputs left-eye and right-eye full-HD image signals as simultaneous HD-SDI video and also records to the SD/SDHC memory cards in the AVCHD format.

# TWIN-LENS SYSTEM

The high-precision HD twin-lens system allows easy acquisition of natural-looking 3D images.

## The Integrated Structure Revolutionizes Mobility for Nimble Camera Work

Conventional rig-type 3D camera systems are large and heavy because they mount two existing cameras onto a robust frame. They also require a separate recording system and power supply unit, which makes the cable connection complex and restricts the location and the type of camera work. As a result, the scenes that can be acquired with a rig-type 3D camera system are limited. The compact body of the AG-3DA1 integrated twin-lens FULL HD 3D camera recorder weighs only 2.4 kg (5.3lb). It offers the same portability and mobility as a conventional 2D camera recorder  for flexible image acquisition. The AG-3DA1 enhances camera work for all kinds of 3D image production.

## The Twin-Lens System Sets You Free
## From Complex Camera Adjustments for 3D Images

To achieve natural-looking 3D images, you need to pay close attention to the following key points for left- and right-eye images: (1) Vertical deviation, (2) Angle deviation, (3) Difference in brightness and color, (4) Rotation error, (5) Correct adjustment of the parallax, (6) Appropriate image composition. With a conventional rig-type 3D camera system using two separate cameras, these adjustments have to be made precisely for each and every scene. The two integrated optical systems of the AG-3DA1 eliminate the need for manual adjustments of (1) through (4), because they're performed entirely inside the camera recorder.* The optical systems are assembled with high precision, and the lenses, image sensors and signal processing circuits for the left and right systems are accurately synchronized (see the diagram on the previous page). The AG-3DA1 lets you concentrate only on the parallax adjustment and image composition.

*Fine adjustments of the vertical position, focus and iris are also possible.

Video Recorder

Conventional Rig-Type 3D Camera Systems

**AG-3DA1**
Integrated Twin-Lens 3D Camera Recorder
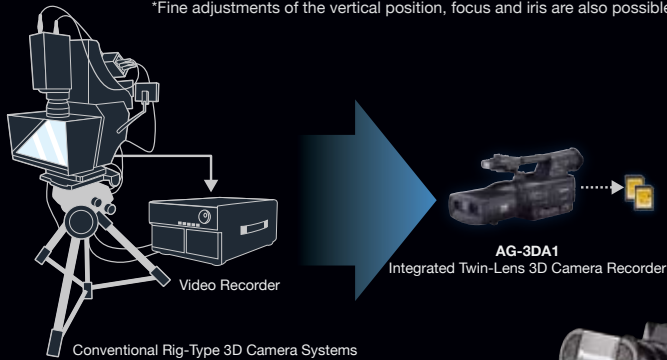
## HD Twin-Lens with No Adjustment for Image Acquisition

The distance between the two lens axes is approximately the same as the distance between the human eyes, to provide easy-to-view, natural-looking 3D images. The HD twin-lens system is set with a distance of about 60 mm (2.3inches) between the two lenses. The lens axes, viewing angle, rotation, and gradation are pre-adjusted before the components are precisely assembled. This eliminates the need for lens adjustment before shooting. Camera operations such as focusing, zooming and iris adjustment are also synchronized for the left and right lenses.

The new twin HD lenses were designed exclusively for FULL HD 3D image acquisition. They boast low chroma aberration and high resolution, and deliver superb color reproduction, detailed nuances and crisp 3D images even in dark scenes – with minimal flare and ghosting. A built-in 5.6x (approx.) optical zoom function, which extends from 47.1 mm (35mm equivalent) wide angle to 264 mm (35mm equivalent) telephoto, covers a wide viewing angle that is well matched to 3D content production.

## Convergence Point Adjustment Function

The parallax angle between the two lenses is varied inside the optical unit. This moves the convergence point (the reference plane of the 3D image) in a fore-and-aft direction to control the leaping and depth effects of recorded objects, and acquires natural-looking 3D images. The convergence point can be adjusted easily by using the CONV (convergence) dial* while viewing the L/R-MIX image on the LCD monitor.

*The dial function is switchable between CONV (convergence) adjustment and IRIS (iris) adjustment.



**When the convergence point is brought forward**

Shooting          Viewing

"B" seems to be located in the back.

Parallax Angle

Convergence Point

3D Camera

3D Glasses

"F" appears to exist on the screen plane.



**When the convergence point is moved toward the back**

Shooting          Viewing

"B" appears to exist on the screen plane.

Parallax Angle

Convergence Point

3D Camera

3D Glasses

"F" seems to project from the screen.

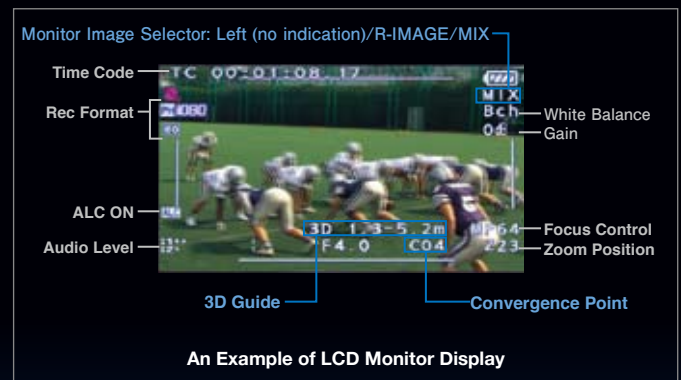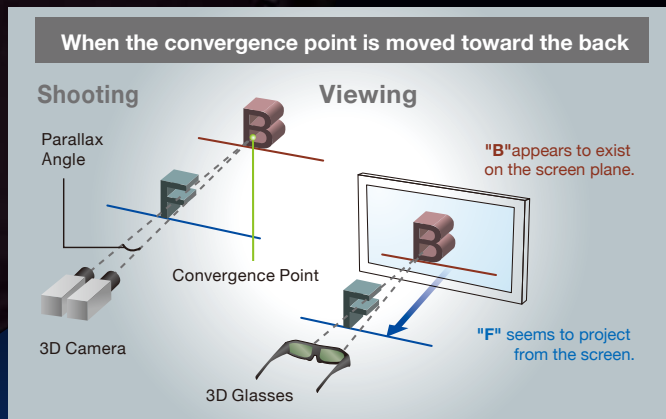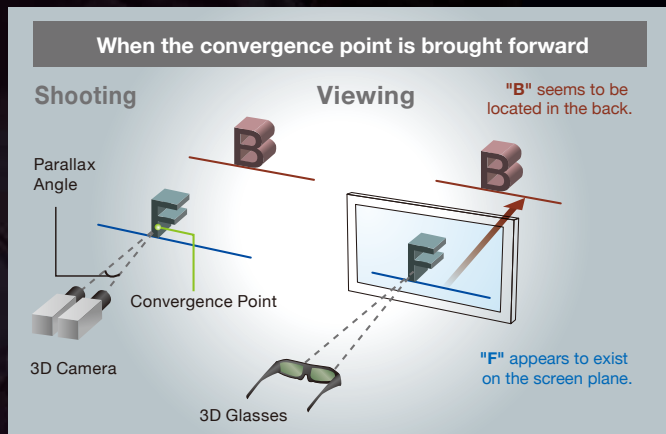## Display Functions Assist 3D Image Acquisition

The LCD monitor and viewfinder of the AG-3DA1 both display a variety of information to assist 3D image shooting and ensure superb 3D effects.

•**3D Guide:** This displays numerical values for the distance range of the subject to achieve better 3D effects while viewing. Natural-looking 3D images can be captured by using the displayed information as a guide. This function offers two modes: Guide Display 1 mode assumes playback on screens that are 196 cm/ 77 inches or smaller, and Guide Display 2 mode is designed for a screen size of 508 cm/ 200 inches.

•**Convergence Point:** This displays the numerical value of the convergence point together with the 3D Guide to assist adjustments.

•**L/R-MIX Monitor Image Selector:** The image display on the LCD monitor and viewfinder can be selected from three modes: Left Lens (no mode indication), Right Lens (R-IMAGE) and Left/Right Mix (MIX).

*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.



Monitor Image Selector: Left (no indication)/R-IMAGE/MIX

Time Code — TC 00:01:08.17

Rec Format

MIX
Bch — White Balance
0± — Gain

ALC ON

Audio Level

3D 1.3-5.2m
F4.0    C04

Focus Control
Zoom Position

3D Guide          Convergence Point

**An Example of LCD Monitor Display**

## Dual 3MOS for High-Quality FULL HD 3D Images

The AG-3DA1 is equipped with two 1/4.1 type 2.07-megapixel (approx.) 3MOS units for left- and right-eye images. Full-pixel full-HD left- and right-eye images are accurately synchronized to create FULL HD 3D images.

## 6-Mode Gamma includes "Cine-like" mode

Drawing on technologies developed for the VariCam, Panasonic has equipped the AG-3DA1 with advanced gamma functions that address six different shooting scenarios and enhance your creative abilities.

**AG-3DA1 Gamma Modes**

| | |
|---|---|
| HD NORM: | Suitable for HD recording |
| LOW: | Works to flatten out a high contrast scene |
| 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 prioritize dynamic range |
| CINE-LIKE V: | The Cine-Like mode shifted to prioritize contrast |

Image with VIDEO GAMMA

Image with CINE-LIKE GAMMA

## Advanced Image Adjustments Built-In

- **Matrix Tables:** Enable quicker color settings for each scene, with three modes: NORM1, NORM2 and CINE-LIKE.
- **Knee point settings:** Low, Mid and High
- Adjustable H detail level, V detail level, and detail coring
- Adjustable chroma level, chroma phase, color temp and master pedestal

## High Image Quality Color Viewfinder and LCD

The AG-3DA1's color EVF uses a 1.14 cm/0.45 inches approx. 1,226,000 dots-equivalent (852 x 480 x 3 [RGB] ) LCOS (liquid crystal on silicon) display panel. This system delivers bright, detailed, high-resolution images and a high response speed. The AG-3DA1's LCD monitor is a 8.13 cm/3.2 inches panel with a 16:9 aspect ratio. With approx. 921,000 dots (1920 x 480), it boasts high resolution.

Color Viewfinder

## Focus Assist Functions

The AG-3DA1 has a focus ring for manual focusing, much like a conventional 2D camera recorder. As a focus assist function, a focus bar is displayed on the LCD monitor and viewfinder. The AG-3DA1 also features a PUSH AUTO button that temporarily activates the auto focus function.

Focus Bar

## Simplified Waveform and Vectorscope Display

The AG-3DA1 has waveform and vectorscope display functions of the captured video signal on the LCD monitor.

\* for only Left channel signal in camera mode.

Waveform

Vectorscope

## Two User Buttons

The AG-3A1 allows four functions (listed below) to be assigned to two user buttons. Assigned functions can be accessed at the touch of a button.

**Assignable Functions**

| | |
|---|---|
| R-IMAGE: | Displays the right-eye image on the LCD monitor and viewfinder. |
| MIX: | Overlays the left-eye image and right-eye image on the LCD monitor and viewfinder. |
| SHOT MARK: | Records a shot mark. |
| INH: | Pressing this button does not activate any function. |

## Other Professional Camera Features

• **White balance:** Two memories (A/B) and Preset (3200K or 5600K).
• **Mode check:** Displays a list of the camera settings on the viewfinder and monitor.
• **Zebra:** Select any two levels from among 50% to 105%.
• Color bar and 1 kHz test-tone output.
• **Tally lamps:** Provided on the unit's front and rear.

## Superb Mobility for Low-Angle Shots

Lightweight camera body weighs 2.4 kg (5.3 lb.) approximately. The upper part of the handle grip contains both the Rec Start/Stop button and a lens zoom control (with three speeds). This design assures easy shooting even at low angles. The excellent mobility of the AG-3DA1 allows flexible camera angles that are not possible with other 3D cameras.

## File-Based Recording to Two Memory Cards

Using the two Left/Right memory card slots, the AG-3DA1 records left-channel and right-channel full-HD images simultaneously to two SD/SDHC Memory Cards. The solid-state memory card ensures high reliability and withstands operating temperatures of –25°C to 85°C (–13°F to 185°F). This enables use in harsh temperatures and fluctuating humidity. It is also free of dropouts and head clogging. With memory cards, there is no need to search for a blank space to record. Data is automatically recorded in an available space. This eliminates accidental overwriting of existing data. After shooting, recorded clips can be previewed or deleted immediately. After recording, data can be uploaded to editing software without digitizing. SD/SDHC Memory Cards are inexpensive and can be easily purchased in local markets.

* Use SDHC/SD Memory Cards of Class 4 or higher. SDXC cards cannot be used.

## HD Multi-format Recording

Multi-format HD recording in the AG-3DA1 responds to a host of 3D content production needs and worldwide applications. It supports the following HD video formats. The maximum recording time is approximately 180 minutes in each mode (when two 32 GB SDHC cards are mounted in the Left/Right slots).

**AG-3DA1 series Recording Format**

| | |
|---|---|
| • 59.94Hz mode: | 1080/60i, 1080/30p (over 60i), 1080/24p (native*), 720/60p |
| • 50Hz mode: | 1080/50i, 1080/25p (over 50i), 720/50p |

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

## AVCHD PH Mode for FULL HD 3D Recording

The AG-3DA1 records in AVCHD PH mode, based on MPEG-4 AVC/H.264 High Profile, which is the latest video compression technology. With more than twice the compression efficiency of MPEG-2 (such as in HDV), AVCHD provides both high image quality and a low data rate. PH mode was developed by Panasonic exclusively for AVCCAM professional video production. Boasting 24 Mbps (average: 21 Mbps), which is the maximum bit rate for the AVCHD format, the AG-3DA1 records 1920 x 1080 full-pixel HD images. The multi-slice feature of the PH mode also helps to speed up processing by nonlinear editors that are equipped with multi-core CPUs, by using parallel processing to take full advantage of the CPU power.

**Sample comparison:** When a flash causes large contrast differences and reduces correlation of consecutive image, HDV shows considerable block noise, while AVCHD in the PH mode minimize break-up.

**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 |

## Versatile Solid-State Recording Functions

- Thumbnail View for easy playback or deletion of clips displayed on the LCD monitor
- Shot mark: Allows convenient OK and NG marking, and can be added to each clip during or after recording.
- Rec check: You can check the end of the most recently recorded clip with one-touch ease.



## Clip Metadata Function

You can create a metadata upload file (produced with AVCCAM Viewer software) containing information such as clip name, the name of the camera operator, the recording location, and text memos on an SD/SDHC card, and load it as clip metadata. This information will be very useful when it comes to editing the project and quickly finding the right clip to place on the timeline.

## Professional-Level Audio Input

The AG-3DA1 is equipped with two audio input channels for digital audio (Dolby Digital) recording. The AG-3DA1 also comes equipped with a built-in stereo microphone and with XLR-type audio input terminals (2 channels, mic/line switchable, 48 V compatible) on the rear panel. You can switch audio channels 1 and 2 separately to either line or front mic input. Large level adjustment dials are easy to operate and offer high visibility.
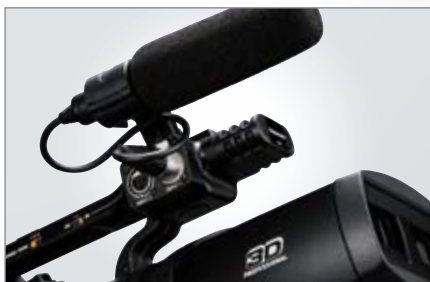


## SMPTE Time Code Generator/Reader

The built-in SMPTE time-code generator/reader lets you select the Drop Frame/Non-Drop Frame and Free Run/Rec Run modes, preset and regenerate. User bits are also provided.

## HD SDI Simultaneous Output with Sync-Rec Function

HD SDI Left/Right terminals on the AG-3DA1 allow camera-through or playback left-channel/right-channel FULL HD 3D image output (simultaneous). This enables 3D images to be monitored on a BT-3DL2550 3D Video Monitor. When the external recorders/recorder are/is connected, line recording of camera-through FULL HD 3D video signals is also possible.
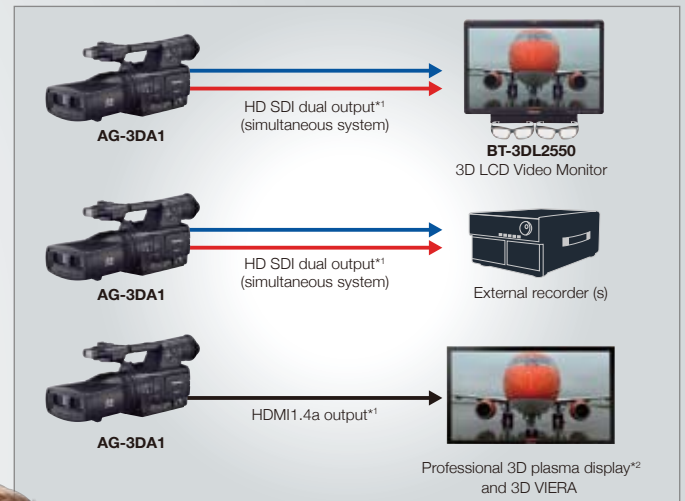


## HDMI 1.4a Output

The AG-3DA1 featues an HDMI 1.4a output terminal*1 that outputs FULL HD 3D video signals for viewing on 3D VIERA and Panasonic 3D plasma displays.*2 This terminal outputs camera-through signals or left-channel/right-channel FULL HD 3D playback signals.

*1: HDMI output and HD SDI output cannot be used simultaneously.
*2: Professional 3D Plasma Display is scheduled for release in Autumn of 2010. Please refer to the latest Professional 3D Plasma Display Information at Panasonic website.<http://panasonic.net/proplasma/>
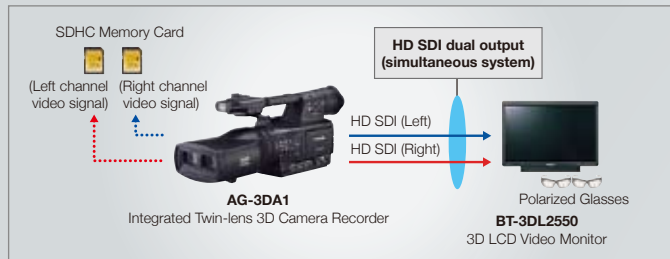
## 3D Compatible Camera Remote

The camera remote terminal allows remote adjustment of the convergence point in addition to the focus, iris, zoom and REC start/stop.
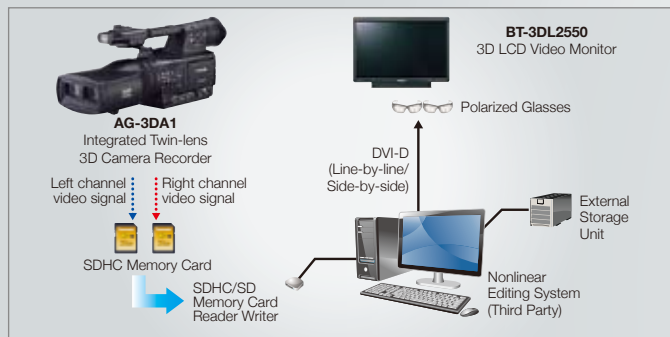
# 3D SYSTEM WORKFLOW

System workflow for 3D recording and editing with the AG-3DA1, and peripheral equipment

## 3D Acquisition System



Connecting the BT-3DL2550 3D LCD Video Monitor via HD SDI Dual-Link lets you view the stereo image so that you may adjust the 3D image to create the effect you want by varying the focus and convergence point.

## 3D Content Editing System



3D video data recorded by the AG-3DA1 can be edited by a computer-based (Windows/Mac), low-cost nonlinear editing system installed with a 3D editor plug-in (third-party software, sold separately)* that supports existing AVCHD-compatible video editing. The use of files allows easy ingestion to a computer, much in the same way as in ordinary 2D image editing. The addition of the 3D plug-in also lets you adjust the 3D images. This plug-in produces a DVI-D video output so that images can be viewed and checked using the BT-3DL2550. Editing results can be saved in an external storage unit for handover to the subsequent process (MA/Blu-ray 3D™ authoring, etc.).

* Panasonic does not guarantee proper operation of third-party software.

## File Operation with Windows® PC or Mac®

### AVCCAM Viewer
**Viewing Software for AVCHD files**
(download free*1, not compatible with 3D files)

AVCCAM Viewer for Windows PC/Mac*2 makes it easy to preview AVCCAM files. Files can be played from an SD Memory Card, Blu-ray Disc, or hard disk, and saved to a PC (hard disk) from an SD Memory Card or Blu-ray Disc. Files can also be copied to an SD Memory Card or Blu-ray Disc*3 or deleted and meta data can be displayed.

**AVCCAM Viewer System Requirement**
[for Windows PC] • CPU: Intel® Core™2 Duo (2.4 GHz or faster) • OS: Microsoft® Windows7 (32bit), Windows Vista® Business (32bit), Windows XP SP2 or later (32bit) • RAM: 1GB or more (2GB or more recommended)
[for Mac] • CPU: Intel® Core™2 Duo 2.6 GHz or faster • OS: Mac OS X 10.6 (Snow Leopard), 10.5 (Leopard) or 10.4 (Tiger) • RAM: 1024 MB or more (2048 MB or more recommended)

*1: AVCCAM Viewer software can be downloaded for free from the following Panasonic website. PASS registration is required. For details, please visit the following website and click on "Support and Downloading Information." <https://eww.pavc.panasonic.co.jp/pro-av/support/desk/e/download.htm>
*2: The software does not support 3D playback, 3D BD production or simultaneous management of two SD Memory Cards. Use the software individually for the left and right channels.
*3: Copying and playing data on Blu-ray Discs (BD-RE Ver 3.0) are not supported by Mac OS X 10.4 (Tiger). 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
**HD Content File Restore Software** (supplied with CD-ROM*1)

AVCCAM Restorer software can also be used to restore files that were damaged, for example, by a power interruption during recording. This software also provides a repair function for 3D data files.

**AVCCAM Restorer System Requirement**
[for Windows PC] • CPU: Intel® Pentium® III 1.0 GHz or faster • OS: Microsoft® Windows7 (32bit), Windows Vista® SP1 or later (32bit), Windows XP SP2 or later (32bit) • RAM: 1GB or more (2GB or more recommended)
[for Mac] • CPU: Intel® Core™2 Duo 2.0 GHz or faster • OS: Mac OS X 10.6 (Snow Leopard), 10.5 (Leopard) or 10.4 (Tiger) • RAM: 1024 MB or more (2048 MB or more recommended)

*1: AVCCAM Restorer is included in the supplied CD-ROM. This software can also be downloaded free. For details, please visit the following website and click on "Support and Downloading Information."<https://eww.pavc.panasonic.co.jp/pro-av/support/desk/e/download.htm>

## PROFESSIONAL 3D PRODUCTION SYSTEMS

Panasonic products that can be combined with the AG-3DA1 for professional 3D production



* Simulated Image

**BT-3DL2550**
3D LCD Video Monitor

**AG-HMX100** (Coming Soon)
Digital A/V Mixer
* For 3D Video switching only.
  Effects are not supported.

# SPECIFICATIONS

**3D PROFESSIONAL**

## [GENERAL]

| | |
|---|---|
| Power Supply: | DC 7.2 V (when the battery is used)/ 7.9 V (when the AC adapter is used) |
| Power Consumption: | 17 W (recording) |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 80 % (No condensation) |
| Weight: | Approx. 2.4 kg (5.3 lb) (excluding battery) |
| Dimensions (W x H x D): | 158 mm × 187 mm × 474 mm, excluding the projecting part (6-1/4 inches × 7-3/8 inches × 18-11/16 inches) |

## [CAMERA]

| | |
|---|---|
| Pick-up Device: | 1/4.1 type MOS solid-state image sensing device × 3 × 2 |
| Picture Elements: | Effective picture elements: Approx. 2,070,000 pixels × 3 (16:9) × 2 |
| Lens: | Motorized 5.6 x zoom, F1.8 (WIDE) to F2.4 (TELE) Focal Length (f=4.2 mm to 23.5 mm) (35 mm equivalent: 47.1 mm to 264 mm), 16:9 |
| Optical Color Separation: | Prism system |
| Optical Axis Interval : | Approx. 60 mm |
| Minimum Shooting Distance: | Approx.1.2 m (47-1/4 inches) (all zoom range) |
| Gain Settings: | 0 to +24 dB (variable in 1 dB steps) |
| Color Temperature Settings: | 3200 K/5600 K preset, Ach, Bch |
| Shutter Speed [set to 59.9 Hz]: (Preset) | 60i, 60p mode: 1/60 sec., 1/100 sec., 1/120 sec., 1/250 sec. 30p mode: 1/30 sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec. 24p mode: 1/24 sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec. |
| (Synchro Scan) | 60i, 60p mode: 1/60.0 sec. to 1/250.0 sec. 30p mode: 1/30.0 sec. to 1/250.0 sec. 24p mode: 1/24.0 sec. to 1/250.0 sec. |
| Shutter Speed [set to 50 Hz]: (Preset) | 50i, 50p mode: 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec. 25p mode: 1/25 sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec. |
| (Synchro Scan) | 50i, 50p mode: 1/50.0 sec. to 1/250.0 sec. 25p mode: 1/25.0 sec. to 1/250.0 sec. |

## [Recording]

| | |
|---|---|
| Recording Specification: | AVCHD |
| Compression Method: | MPEG-4 AVC/H.264 |
| Recording Media*1: | SD Memory Card: 512 MB, 1 GB, 2 GB (FAT12 and FAT16) SDHC Memory Card: 4 GB, 6 GB, 8 GB, 12 GB, 16 GB, 32 GB (FAT32) |
| Recording Format: [set to 59.9 Hz] | AVCHD PH mode 1080/60i*2, 1080/30p*2 (over 60i*2) 1080/24p*2 (native*3), 720/60p*2 |
| [set to 50 Hz] | 1080/50i, 1080/25p (over 50i), 720/50p |
| Transmission Rate: | Approx. 21 Mbps (VBR/PH mode) |
| Recording Time: | Approx. 180 min. (rough indication) with a Panasonic SDHC 32 GB Memory Card is used |
| SD Memory Card slot: | 2 slots (for left/right) |
| SD Memory Card: | Maximum number of clips to be recorded continuously: 200 clips (when formatting and recording continues without removing the card) Maximum number of clips to be played back: 200 clips (up to 200 clips can be displayed) |
| Thumbnail Display: | 8 thumbnails/page |
| Editing Functions: | Delete, Protect |

## [Video Output]

| | |
|---|---|
| HDMI Output: | HDMI type A connector × 1, HDMI ver 1.4a Standard 3D compatible (not compatible with VIERA Link) |
| [set to 59.94 Hz]: | 1080/60i*2 (Frame Packing) 1080/24p*2 (Frame Packing) 720/60p*2 (Frame Packing) 1080/60i*2, 720/60p*2, 480/60p*2 |
| [set to 50 Hz]: | 1080/50i (Frame Packing) 720/50p (Frame Packing) 1080/50i, 720/50p, 576/50p |
| HD SDI Output: | BNC × 2 (HD SDI 1/2 for L/R), 0.8 V [p-p], 75 Ω |
| [set to 59.94 Hz]: | 1080/60i*2, 1080/24PsF*2, 720/60p*2 |
| [set to 50 Hz]: | 1080/50i, 720/50p |

## [Audio System]

| | |
|---|---|
| Compression Method: | Recording/playback: Dolby Digital/2 channels |
| Sampling Frequency: | 48 kHz |
| Quantization: | 16 bit |
| Compressed Bit-Rate: | PH mode: 384 kbps |

## [Audio Input/Output]

| | |
|---|---|
| Internal Microphone: | Stereo Microphone |
| XLR Input: | XLR 3-pin × 2 (INPUT 1, INPUT 2), High Impedance LINE: 0 dBu, MIC: –50 dBu/–60 dBu (selectable in menu) |
| HDMI Output: | 2 channels (Linear PCM) |
| Headphone output: | Stereo mini jack (3.5 mm diameter) × 1 |
| Built-in Speaker: | 20 mm (round) × 1 |

## [Other Input/Output]

| | |
|---|---|
| Camera Remote: | Super mini jack (2.5 mm diameter) × 1 (ZOOM, REC S/S) Mini jack (3.5 mm diameter) × 1 (FOCUS, IRIS) Super mini jack (2.5 mm diameter) × 1 (CONV.) |

## [Monitor]

| | |
|---|---|
| LCD monitor: | 81.3 mm (3.2 inches), approx. 921,000 pixels, 16:9, LCD color monitor |
| Viewfinder: | 11.4 mm (0.45 inches), approx. 1,226,000 pixels, 16:9, LCD color viewfinder |

## [Standard Accessories]

| | |
|---|---|
| Accessories: | AC adapter with AC power supply cable, Battery (5400 mAh × 1), Battery charger with AC power supply cable, Microphone holder with adapter and screws, Eye cup, Lens cap, Input terminal cover × 2, Screw spacer, CD-ROM (contents repair software) |

*1: SD/SDHC Memory card (8MB to 32GB) can be used for reading metadata. Use an SD/SDHC Memory Card of class 4 or above when recording. The SDXC card cannot be used.
*2: 24p=23.98p, 30p=29.97p, 60p=59.94p and 60i=59.94i
*3: In the Native mode, AG-3DA1 record only active frames.

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

# OPTIONS

**CGA-D54**
Battery Pack
• 7.2 V 5,400 mAh

**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

**RP-SDW32G/RP-SDW16G**
SDHC Memory Card

* These options are not available in some areas.

# 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 | |

* 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**

*AVCHD and the AVCHD logo are registered trademark of Sony Corporation and Panasonic Corporation "Blu-ray Disc" and the Blu-ray Disc logo are trademarks. Dolby and the double-D symbols are trademarks of Dolby Laboratories. HDMI and the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing, LLC. Leica and Dicomar are registered trademarks of Leica Microsystems IR GmbH. SD Logo is a trademark. SDHC logo marks are a registered trademark. Apple, Macintosh, Mac OS, Quick Time and Final Cut Studio are trademarks of Apple Inc., registered in the U.S. and other countries. EDIUS is a trademark of Thomson Canopus Co., Ltd.  Intel, Celeron, Pentium, Core and Xeon are trademarks of Intel Corporation, registered in the U.S. and other countries. Microsoft, Windows and the Windows logo are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Please refer to the latest 3D Product Information on the Panasonic website.   **http://pro-av.panasonic.net/en/3d**

# Panasonic®

[Countries and Regions]

| | | | | | |
|---|---|---|---|---|---|
| Argentina | +54 1 308 1610 | Lebanon | +96 11665557 | Switzerland | +41 (0) 41 259 96 32 |
| Australia | +61 2 9986 7400 | Malaysia | +60 3 7809 7888 | Syria | +963 11 2318422/4 |
| Bahrain | +973 252292 | Mexico | +52 55 5488 1000 | Taiwan | +886 2 2227 6214 |
| Belgium | +32 (0) 2 481 04 57 | Montenegro, Serbia | | Thailand | +66 2 731 8888 |
| Brazil | +55 11 3889 4035 | | +41 (0) 26 466 25 20 | Turkey | +90 216 578 3700 |
| Canada | +1 905 624 5010 | Netherlands | +31 73 64 02 577 | U.A.E. (for All Middle East) | |
| China | +86 10 6515 8828 | New Zealand | +64 9 272 0100 | | +971 4 8862142 |
| Hong Kong | +852 2313 0888 | Norway | +47 67 91 78 00 | Ukraine | +380 44 4903437 |
| Czech Republic | +420 236 032 552/511 | Pakistan | +92 5370320 (SNT) | | +44 (0)1344 70 69 20 |
| Denmark | +45 43 20 08 57 | Palestine | +972 2 2988750 | U.S.A. | +1 877 803 8492 |
| Egypt | +20 2 23938151 | Panama | +507 229 2955 | Vietnam | +848 38370280 |
| Finland, Latvia, Lithuania, Estonia | | Peru | +51 1 614 0000 | | |
| | +358 (9) 521 52 53 | Philippines | +63 2 633 6163 | | |
| France | +33 (0) 1 55 93 66 67 | Poland | +48 (22) 338 1100 | | |
| Germany, Austria | +49 (0)611 235 0 | Portugal | +351 21 425 77 04 | | |
| Greece | +30 210 96 92 300 | Puerto Rico | +1 787 750 4300 | | |
| Hungary | +36 (1) 382 60 60 | Romania | +40 21 211 4855 | | |
| India | +91 120 247 1000 | Russia & CIS | +7 495 9804206 | | |
| Indonesia | +62 21 385 9449 | Saudi Arabia | +96 626444072 | | |
| Iran | | Singapore | +65 6270 0110 | | |
| (Vida) | +98 21 2271463 | Slovak Republic | +421 (0) 2 52 92 14 23 | | |
| (Panasonic Office) | +98 2188791102 | Slovenia, Albania, Bulgaria, Serbia, | | | |
| Italy | +39 02 6788 367 | Croatia, Bosnia, Macedonia | | | |
| Jordan | +962 6 5859801 | | +36 (1) 382 60 60 | | |
| Kazakhstan | +7 727 298 0891 | South Africa | +27 11 3131622 | | |
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JQA-0443

ISO 14001
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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.)

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