Panasonic

SEPTEMBER. 2017


BROADCAST AND PROFESSIONAL VIDEO

# PRODUCT LINEUP

**Panasonic video production lineup**
**covering all kinds of video production needs, including cinema, broadcast, professional video and business use.**

# CONTENTS

CINEMA VARICAM

Uncompressed V-RAW Recording

CINEMA VARICAM

Achieve Your Vision

## VariCam Pure

**4K Camera Recorder**

PL Lens | super35mm 1MOS | Codex Capture Drive Slot x 2

**Uncompressed 4K/120p V-RAW Recording with Compact, Lightweight Package**

- A Package of the VariCam 35 camera module and the Codex's "V-RAW 2.0" recorder*1.
- Super 35mm 4K MOS sensor.
  - 14+ stops of latitude with "V-Log" gamma.
  - Dual Native ISO (ISO800/ISO5000).
- Uncompressed 4K/120p V-RAW Recording
  - The recorder captures uncompressed V-RAW data to Codex's Capture Drive 2.0 at 4K up to 120 fps.
  - Using Codex's Production Suite, recorded data can be offloaded as a wide range of file formats including V-RAW, ProRes and DNxHR. This ensures wide-ranging support for existing workflows.
- High mobility with compact size of 33 mm shorter than VariCam 35.
- Camera module and recorder module can be operated in separate locations using an extension module.

## VariCam 35

**4K Camera Recorder**

PL Lens | super35mm 1MOS | ProRes | expressP2/P2 card Slot x 2 | microP2 card Slot x 2

**Super 35mm 4K MOS Sensor with 4K/120-fps Compatibility in a 4K Cinema Camera.**

- Super 35mm 4K MOS sensor.
  - 14+ stops of latitude with "V-Log" gamma.
  - Dual Native ISO (ISO800/ISO5000).
- Multiple codec recording for 4K/UHD/2K/HD.
- 4K/UHD-VFR recording: 1 fps to 120 fps.
- AVC-Intra4K recording (4:4:4 12 bit,*3 4:2:2 10 bit).
- For 2K/HD recording, Apple ProRes*2 is supported in addition to AVC-ULTRA.
- AVC-Intra 4K/UHD/2K/HD recording.
- Dual codec recording as main (4K/UHD/2K/HD) and sub (2K/HD/Proxy) simultaneously.
- In-camera color grading function.
- Camera module and recorder module can be operated in separate locations using an extension module.

VARICAM

Capture Action

## VariCam HS

**2/3-type HD Camera Recorder**

2/3-type Lens | 2/3-type 3MOS | ProRes | expressP2/P2 card Slot x 2 | microP2 card Slot x 2

**HD Acquisition System with 2/3-type Depth of Field and Maximum 240-fps Speed for Capturing Decisive Moments.**

- 2/3-type 2.2-megapixel 3MOS sensor.
  - 2/3-type bayonet mount for use with conventional HD lens.
  - 14 stops of latitude, "F REC" and "V-Log" gamma.
- Maximum 240-fps VFR recording: 1 fps to 240 fps.
- Multiple codec HD recording.
  - Visually loss-less quality codec AVC-Intra200.
  - Apple ProRes*2 supported.
  - Dual codec recording as main (HD) and sub (HD/Proxy) simultaneously.
- In-camera color grading function.
- Camera module and recorder module can be operated in separate locations using an extension module.

CINEMA VARICAM

Cinematic VariCam Look in Your Hands

4K PROFESSIONAL HDR

AVC ULTRA

# VariCam LT

**4K Camera Recorder**

EF Lens | PL Lens (option) | super35mm 1MOS | ProRes | expressP2/P2 card Slot x 1 | SD Memory Card Slot x 1

### Lightweight, Compact 4K Cinema Camera Offering Many of The Features of VariCam 35.

- Same Super 35mm 4K MOS sensor as VariCam 35.
  – 14+ stops of latitude with "V-Log" gamma.
  – Dual Native ISO (ISO800/ISO5000).
- A standard EF lens mount*3 and a optional PL mount user changeable mount.
- V-LOOK scene file mode for creating cinematic images without color grading.
- Native 4K/60p shooting and 2K/HD cropped 240p slow motion.
- AVC-Ultra 4K/UHD/2K/HD recording.
- For 2K/HD recording, Apple ProRes*2 is supported in addition to AVC-Ultra.
- Dual codec recording as main (4K/UHD/2K/HD) and sub (HD/proxy) simultaneously.
- Uncompressed RAW output with 4K or 2K cropped.
- In-camera color grading function.
- IR (Infrared) cinematography shooting function.

EVA1

4K PROFESSIONAL HDR

Scheduled for release in the fall of 2017

# AU-EVA1 NEW

**Compact Cinema Camera**

EF Lens | 5.7K super35mm 1MOS | SD Memory Card Slot x 2

### Explore Your Undiscovered Creativity With 5.7K Compact Cinema Camera

- The newly developed 5.7 K Super 35mm image sensor achieves high-quality 4K/10 bit 4:2:2 images.
- The wide 14 stops dynamic range, V-Log gamma and wide-color-gamut V-Gamut colorimetry, which are inherited from the VariCam Series, ensure cinema-like pictures.
- Dual native ISO of 800/2500 offers very high sensitivity with low noise.
- Supports High-frame-rate recording of 4K 60 fps/2K 240 fps maximum.
- The IR (infrared ray) cut filter ON/OFF mechanism provides the ability to shoot fantasy-like IR images with Cinematography mode.
- The main unit is lightweight and compact, weighing only 1.2 kg.*5 It is equipped with an EF lens mount.*4 The LCD monitor features a touch-panel function and allows flexible mounting.
- The detachable handle and rotary grip add a new dimension of mobility by enabling the installation of the camera to a drone or gimbal.

VariCam Series Web Site
http://pro-av.panasonic.net/en/varicam/index.html

AU-EVA1 Special Site
http://pro-av.panasonic.net/en/eva1/index.html

* Pictures are the example of the configuration using options.
*1 : Customers who have already purchased the VariCam 35 camera module can also connect to the V-RAW 2.0 recorder AU-VCXRAW2. V-RAW 2.0 is manufactured by Codex and sold by Panasonic. Jointly developed with Codex Digital. *2 : ProRes is licensed from Apple Inc. Apple ProRes codec from Atomos under license. Atomos is trademark and copyright of Atomos Global Pty. Ltd. *3: Up to 30p of frame rate. *4: Panasonic does not guarantee the compatibility or performance of all EF lenses. For more details, to be updated on the Panasonic website. *5: Main unit only (excluding the handle, grip and LCD monitor).

*Applicable function varies depending on the models.
*These do not include the function of AU-EVA1.

The Hollywood Post Alliance Engineering Excellence Award 2015

### Super 35mm Native 4K Sensor

All models in the Cinema VariCam Series are equipped with the super 35mm sensor. This sensor won The Hollywood Post Alliance Engineering Excellence Award 2015.

### Wide Latitude "V-Log" Gamma

All models in the series also offer the dynamic range of 14+ stops on "V-Log" gamma. This wide dynamic range assures accurate image rendering, particularly from the critical shadow to highlight areas. Transition into highlights is remarkable for its highly natural roll-off.

### Natural "V-Gamut" Color Space

The color separation filter is optimized to achieve the Cinematic VariCam look. It offers natural color and accurate color linearity. The new "V-Gamut" color space encompasses the entire BT. 2020 color space. "V-Log" with "V-Gamut" has sufficient latitude and color space for HDR. Grading output is available for post production.

### Dual Native ISO

The image sensor has two native ISO settings: 800 and 5000. This allows the camera to achieve much higher sensitivity without increased noise before gain processing. It captures images with very low light or natural light, reduces the amount of additional lighting required, and may extend the "Magic Hour."

### In-Camera Color Grading

A built-in LUT box lets you make color decisions on-set with 3rd party applications. Grading information, such as 3D LUT files and CDL files, allows you to provide the same images you create on-set to post-production with easy management.

### 4K Master and HD Graded Simultaneous Recording

In addition to main recording up to 4K, you can record one more version up to 2K. This enables an ungraded 4K master recording with V-Log, simultaneous with an HD graded recording. You can use the HD graded recording for immediate viewing or off-line editing. Dailies that had been created after shooting can now be produced on-set and with only the camera.

### Multi-Codec 4K/UHD/2K/HD Recording

• V-RAW: VariCam Pure supports uncompressed 4K resolution RAW recording with a frame rate of up to 120 fps. VariCam LT can output uncompressed RAW from SDI output terminals.
• AVC-ULTRA: VariCam 35 supports AVC-Intra 4K. It offers high picture quality and a manageable file size.
• Apple ProRes:* ProRes (2K/HD) is the industry standard codec.

* ProRes is licensed from Apple Inc.

### Large-Diameter OLED Viewfinder

The high-resolution OLED panel displays very clear and accurate images with no lag, low latency, high sharpness, and accurate color. A wide angle of view with viewfinder magnification of 0.78x and large-diameter 38mm eyepiece lens offer comfortable viewing with minimal vignetting. An optical zoom and locking diopter are also equipped.

### Separate Operation with Extension Module

VariCam Pure, VariCam 35 and VariCam HS have a modular design. The camera module and recording module can be positioned at separate locations and connected with the AU-VEXT1G Extension Module. This lets you mount only the camera head to a crane, thus adding flexibility to your camera work.

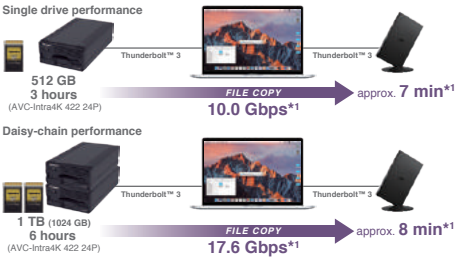
### Remote Control App "VariCam ROP"

The VariCam ROP app for iPad/iPhone is available free of charge from the Apple App Store. It enables wireless remote control of the VariCam Series.

* For wireless LAN connection with the camera, the AJ-WM30 or AJ-WM50 Wireless Module must be purchased separately.

### Incredibly Fast Offload — expressP2 x Thunderbolt™ 3

The expressP2 card B Series has a data offload speed of 10 Gbps. The AU-XPD3 expressP2 Drive, equipped with Thunderbolt™ 3 interface, brings out the best of the expressP2 card B Series.




*1: The actual data transfer speed and time depend on the system.
* Thunderbolt and the Thunderbolt logo are trademarks of Intel Corporation in the U.S. and/or other countries.

The Cinema VariCam line of cameras has been used on a wide variety of movies, commercials, and TV programs.

| | VariCam PURE | VariCam 35 | VariCam LT | AU-EVA1 | VariCam HS |
|---|---|---|---|---|---|
| Module Configuration | Camera Module: AU-V35C1G Recording Module: AU-VCXRAW2 | Camera Module: AU-V35C1G Recording Module: AU-VREC1G | AU-V35LT1G (Integrated) | AU-EVA1 (Integrated) | Camera Module: AU-V23HS1G Recording Module: AU-VREC1G |
| Viewfinder | AU-VCVF1G | AU-VCVF1G | AU-VCVF10G (HD-SDI Input Type) | Supplied LCD | AU-VCVF1G |
| Extension Module | AU-VEXT1G | AU-VEXT1G | — | — | AU-VEXT1G |
| Lens Mount | PL mount | PL mount | EF mount (exchangeable to optional PL mount) | EF mount | 2/3-type B4 mount |
| Image Sensor | super35 mm, MOS, 8.9 megapixels | super35 mm, MOS, 8.9 megapixels | super35 mm, MOS, 8.9 megapixels | super35 mm, MOS, 17.25 megapixels | 2.2 megapixels, MOS x 3 |
| Exposure Latitude | 14+ stop | 14+ stop | 14+ stop | 14 stop | 14 stop |
| V-Gamut Color Space. | ✓ | ✓ | ✓ | ✓ | — |
| Dual Native ISO | ISO 800, ISO 5000 | ISO 800, ISO 5000 | ISO 800, ISO 5000 | ISO 800, ISO 2500 | — |
| In Camera Grading | ✓ | ✓ | ✓ | — | ✓ |
| Recording Media | CODEX Capture Drive | expressP2 card, P2 card, microP2 card (sub) | expressP2 card, P2 card, SD Memory Card (proxy) | SD Memory Card | expressP2 card, P2 card, microP2 card (sub) |
| Recording Format | 4K, UHD | 4K, UHD, 2K, HD | 4K, UHD, 2K, HD | 4K, UHD, 2K, HD | HD |
| Maximum Frame Rate | 120 fps/100 fps | 120 fps/100 fps | 4K/UHD: 60 fps/50 fps, 2K/HD: 240 fps/200 fps | 4K: 60 fps 2K: 240p | 240 fps |
| Dual Codec Recording | — | ✓ | ✓ | — | ✓ |
| V-RAW Recording | ✓ | — | — | — | — |
| AVC-ULTRA Recording | — | ✓ | ✓ | — | ✓ |
| ProRes Recording | — | ✓ | ✓ | — | ✓ |
| RAW Output | — | — | ✓ | ✓*1 | — |
| Remote Control App supported | ✓ | ✓ | ✓ | ✓*2 | ✓ |

✓: It is possible to use it. *1: This function will be supported by version upgrade. *2: “EVA ROP App” for iPad or Android tablet.

## AU-V35C1G
4K Camera Module

## AU-V23HS1G
2/3 type
HD Camera Module

## AU-VREC1G
Recording Module

## AU-VCXRAW2
V-RAW2.0 Recorder

The AU-VCXRAW2 is manufactured by Codex and sold by Panasonic. Jointly developed with Codex Digital.

## AU-V35LT1G
Memory Card
Camera Recorder

THUNDERBOLT™

## AU-XPD3 NEW
Memory Card Drive
expressP2 card drive

## AU-XPD1
Memory Card Drive
expressP2 card drive*1*2

AU-XP0512BG AU-XP0256BG

## AU-XP0512BG
(512 GB)
## AU-XP0256BG
(256 GB)

Memory Card
expressP2 card B series*1

AJ-P2E060FG AJ-P2E030FG

## AJ-P2E060FG
(60 GB)
## AJ-P2E030FG
(30 GB)

Memory Card
P2card F series

## AJ-P2M064BG NEW
(64 GB)

Memory Card
microP2 card B series

*1: Exchanging AU-XPD1 hardware, free of charge, might be necessary when expressP2 card B series used on AU-XPD1. For details please visit Panasonic website. (http://pro-av.panasonic.net/). “Notes when using expressP2 card B series”.
*2 Connection of the AU-XPD1 requires two USB cables. And a power supply is connected with USB 3.0 port of PC or an AC adaptor.

As of September, 2017

**AU-VCVF1G**
Electronic
HD Color View Finder

**AU-VCVF10G**
View Finder

**AU-VSHL2G**
Shoulder Mount Module

**AU-VSHL1G**
Shoulder Mount Module

**AU-VMPL1G**
PL Mount

**AU-VGRP1G**
Grip Module

**AU-VEXT1G**
Extension Module

**AU-VCBL20G** (20 m)
**AU-VCBL05G** (5 m)
Extension Cable

**AJ-MC900G**
Microphone

**AG-MC200G**
XLR Microphone

**AJ-MH800G**
Microphone Holder

**AK-HRP200G**
Remote Operation Panel (ROP)

**AJ-WM50**
Wireless Module*

**AJ-WM30**
Wireless Module*

SD/SDHC/SDXC
Memory Card

*Not available in some areas.

| | | VariCam Pure | VariCam 35 | VariCam LT | AU-EVA1 | VariCam HS |
|---|---|---|---|---|---|---|
| Electronic HD Color View Finder | **AU-VCVF1G** | ✓ | ✓ | | | ✓ |
| View Finder | **AU-VCVF10G** | | | ✓ | | |
| Shoulder Mount Module | **AU-VSHL2G** | ✓ | ✓ | ✓ | | ✓ |
| Shoulder Mount Module | **AU-VSHL1G** | ✓ | ✓ | ✓ | | ✓ |
| PL Mount | **AU-VMPL1G** | | | ✓ | | |
| Grip Module | **AU-VGRP1G** | | | ✓ | | |
| Extension Module | **AU-VEXT1G** | ✓ | ✓ | | | ✓ |
| Extension Cable (20 m) | **AU-VCBL20G** | ✓ | ✓ | | | ✓ |
| Extension Cable (5 m) | **AU-VCBL05G** | ✓ | ✓ | | | ✓ |
| Microphone | **AJ-MC900G** | ✓ | ✓ | ✓ | | ✓ |
| XLR Microphone | **AG-MC200G** | ✓ | ✓ | ✓ | ✓ | ✓ |
| Microphone Holder | **AJ-MH800G** | ✓ | ✓ | ✓ | | ✓ |
| Remote Operation Panel (ROP) | **AK-HRP200G** | | ✓ | ✓ | | ✓ |
| Wireless Module*1 | **AJ-WM50** | ✓ | ✓ | ✓ | ✓ | ✓ |
| Wireless Module*1 | **AJ-WM30** | ✓ | ✓ | ✓ | | ✓ |
| expressP2 card (B series) | **AU-XP0512BG**<br>**AU-XP0256BG** | | ✓ | ✓ | | ✓ |
| P2 card (F series) | **AJ-P2E060FG**<br>**AJ-P2E030FG** | | ✓*2 | ✓*2 | | ✓ |
| microP2 card (B series) | **AJ-P2M064BG** | | ✓ | ✓ | ✓ | ✓ |
| SD/SDHC/SDXC Memory Card | | | ✓ | ✓ | ✓ | ✓ |

✓: It is possible to use it. *1: Not available in some areas. *2: 2K/HD only.


4K Workflow Partners are committed to support the VariCam 4K workflow, including AVC-Intra 4K, V-LUT, V-RAW, and/or In-Camera Color Grading.

## In Camera Grading

Colorfront: On-Set Live!
FilmLight: Prelight
Pomfort: LiveGrade Pro / Air

## Offloading

Codex: Production Suite
Imagine Products: ShotPutPro
Pomfort: SilverStack
YoYotta: YoYottaID

## RAW Recorder

Atomos: Shogun Inferno / Flame
Codex: V-RAW 2.0 recorder
Convergent Design: Odyssey 7Q/ 7Q+

## Editing/Grading

Adobe: Premiere Pro CC
Apple: Final Cut Pro X
Assimilate: Scratch, Scratch Play
Autodesk: Flame family, Smoke
Avid: Media Composer
Blackmagic Design: DaVinci Resolve, DaVinci Resolve Studio
Colorfront: On-Set Dailies, Express Dailies, Transkoder
Digital Vision: NuCoda
Filmlight: Baselight, Daylight
GrassValley: EDIUS Pro
S.A.M: Quantel Rio, Rio Assist

## AVC-Ultra / RAW Import Plug-in

Calibrated Software: AVC-Intra LT Import for Adobe
Drastic Technology: Media Reactor

# VariCam PURE

### General (Combination of AU-V35C1G and AU-VCXRAW2)

| | |
|---|---|
| Power: | DC IN 24 V |
| Power Consumption: | 105 W |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (Relative humidity) |
| Weight: | Approx. 5.15 kg (11.35 lb)<br>(V35C1: 2.7 kg (5.95 lb)/VRAW2.0: 2.45 kg (5.40 lb))<br>*5.45 kg (12.02 lb) including a cheese plate |
| Dimensions: | 180.2 mm (W) x 236.3 mm (H) x 314 mm (H)<br>(7-3/32 inches x 9-19/64 inches x 12-23/64 inches)<br>excluding protrusion and accessories |

### Camera

| | |
|---|---|
| Pickup Device: | Super 35 mm, MOS sensor |
| Number of Pixels: | Total pixels: Approx.10.3 million pixels<br>Effective Pixels: Approx. 8.9 million pixels |
| Lens Mount: | PL mount |
| Optical Filter: | ND filter: 1: CLEAR, 2: 0.6 ND, 3: 1.2 ND, 4: 1.8 ND |
| Latitude: | 14+ Stops |
| ISO Setting: | Native ISO: 800, 5000<br>800 Base: 200 to 4000<br>5000 Base: 1250 to 12800 |
| Shutter Speed: | [deg] mode: 1.0 deg to 358 deg (0.5 deg step)<br>[sec] mode: 1/24 sec. to 1/250 sec. (for 24p) |

### V-RAW2.0 Recorder (AU-VCXRAW2)<br>When used with AU-V35C1G<br>Memory Card Recorder

| | |
|---|---|
| Recording Media: | CODEX Capture Drive |
| Recording Resolution: | 4096 x 2160 (4K), 3840 x 2160 (UHD) |
| Recording Frame Rate: | Maximum 120 fps/100 fps |
| System Frequency | 59.94p, 50p, 29.97p, 25p, 24p, 23.98p |
| Recording Format | V-RAW: 4K 12 bit/4K 10 bit/<br>UHD 12 bit/UHD 10 bit |
| Recording Video Signal: | 4096 x 2160/<br>59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>3840 x 2160/<br>59.94p, 50p, 29.97p, 25p, 23.98p |
| Recording Time: | with 2TB Capture Drive<br>4K 12 bit (23.98 fps ): Approx. 100 min.<br>4K 10 bit (23.98 fps): Approx. 112 min.<br>4K 10 bit (120 fps): Approx. 22 min.<br>UHD 12 bit (23.98 fps): Approx. 106 min.<br>UHD 10 bit (23.98 fps): Approx. 119 min.<br>UHD 10 bit (120 fps): Approx. 23 min. |

### Digital Video

| | |
|---|---|
| Quantizing: | 12 bit/10 bit |
| Video Data Process: | Uncompressed RAW |

### Digital Audio

| | |
|---|---|
| Recording Audio Signal: | 48 kHz/24 bit, 2 CH |
| Headroom: | 18 dB/20 dB MENU switching |

### Digital Audio

| | |
|---|---|
| SDI OUT 1-4: | HD (1.5 G)/3G-SDI: 0.8 V [p-p], 75 Ω |
| MON OUT 1/2: | HD (1.5 G)/3G-SDI: 0.8 V [p-p], 75 Ω |
| VF OUT: | HD (1.5 G)/3G-SDI: 0.8 V [p-p], 75 Ω |

### Audio Input/Output

| | |
|---|---|
| INPUT 1/2: | XLR x 1, 5-pin |
| PHONES: | Stereo mini jack |
| Speaker: | 20 mm diameter, round x 1 |

### Other Input/Output

| | |
|---|---|
| GENLOCK IN: | HD (1.5 G)/3G-SDI, 0.8 V [p-p], 75 Ω |
| TC IN/OUT: | BNC x 1 (Input/Output switching)<br>IN: 0.5 V [p-p] – 8 V [p-p], 10 kΩ<br>OUT: 2.0 V [p-p] ± 0.5 V [p-p], low impedance |
| DC IN: | 24 V (10.5 V – 34 V) 2-pin Fisher |
| DC OUT/RS: | 24 V x 3 |
| DC OUT: | 12 V x 1 |
| LENS: | 12-pin |
| LAN: | 100BASE-TX/10BASE-T LEMO |
| USB 2.0 (HOST): | Type A connector, 4-pin |
| CONTROL PANEL: | 20-pin, control panel contact terminals |
| SD Card Slot: | x1<br>for Version Up<br>3D LUT/ CDL file Upload and Save<br>Set Up File Upload and Save |

### Control Panel

| | |
|---|---|
| Control Pane: | LCD 3.5-type QHD color monitor,<br>approx. 1.56 million dots |

### Offload Formats From CODEX Production Suite

| Recording Mode | Recording Format |
|---|---|
| ProRes 422 HQ | 1920 × 1080, 10 bit<br>2048 × 1080, 10 bit<br>4096 × 2160, 10 bit<br>3840 × 2160, 10 bit |
| ProRes 4444 | 1920 × 1080, 12 bit<br>2048 × 1080, 12 bit<br>4096 × 2160, 12 bit<br>3840 × 2160, 12 bit |
| ProRes 4444 XQ | 1920 × 1080, 12 bit<br>2048 × 1080, 12 bit<br>4096 × 2160, 12 bit<br>3840 × 2160, 12 bit |
| DNxHR 444 | 2048 × 1080, 10 bit<br>3840 × 2160, 10 bit<br>4096 × 2160, 10 bit |
| DNxHR HQX | 2048 × 1080, 10 bit<br>3840 × 2160, 10 bit<br>4096 × 2160, 10 bit |
| DNxHR HQ | 2048 × 1080, 10 bit<br>3840 × 2160, 10 bit<br>4096 × 2160, 10 bit |

# VariCam 35

## General (Combination of AU-V35C1G and AU-VREC1G)

| | |
|---|---|
| Power: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 99 W (With all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (Relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Approx. 5.0 kg (Body only) |
| Dimensions: | 179 mm (W) x 230.5 mm (H) x 347 mm (D)<br>(7-1/16 inches x 9-1/16 inches x 13 -21/32 inches)<br>(Body only, excluding protrusion) |

## Camera Module (AU-V35C1G)

| | |
|---|---|
| Pickup Device: | super 35 mm MOS 8.9 megapixels |
| Number of Pixels: | Total pixels: Approx.10.3 million pixels<br>Effective Pixels: Approx. 8.9 million pixels |
| Lens Mount: | 35 mm PL mount |
| Optical Filter: | ND filter: 1: CLEAR, 2: 0.6 ND, 3: 1.2 ND, 4: 1.8 ND |
| EI Settings: | Native ISO: 800, 5000<br>800 Base: 200 to 4000<br>5000 Base: 1250 to 12800 |
| Shutter Speed: | [deg] mode: 1.0 deg to 358 deg (0.5 deg step)<br>[sec] mode: 1/24 sec. to 1/250 sec.<br>(When 24p mode) |

## Recording Module (AU-VREC1G)
## When used with AU-V35C1G

### Memory Card Recorder

| | |
|---|---|
| Recording Media: | expressP2 card, P2 card, microP2 card |
| Recording Resolution: | 4096 x 2160, 3840 x 2160, 2048 x 1080, 1920 x 1080 |
| Recording Frame Rate: | Maximum 4K/UHD 100p/120p, HD 100p/120p |
| System Frequency: | 59.94p, 50p, 29.97p, 25p, 24p, 23.98p |
| Recording Format: (Main Recorder) | AVC-Intra4K444, AVC-Intra4K422, AVC-Intra4K-LT, AVC-Intra2K444, AVC-Intra2K422, AVC-Intra444, AVC-Intra200, AVC-Intra422, AVC-Intra100, ProRes 4444 XQ, ProRes 4444, ProRes 422 HQ, ProRes 422, ProRes 422 LT |
| Recording Format: (Sub Recorder) | AVC-Intra2K422, AVC-Intra422, AVC-Intra100, AVC-LongG 50, AVC-LongG 25 |
| Recording Video Signal: | 4096 x 2160/59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>3840 x 2160/59.94p, 50p, 29.97p, 25p, 23.98p<br>2048 x 1080/59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>1920 x 1080/59.94p, 50p, 29.97p, 25p, 23.98p, 59.94i, 50i |
| Recording Time: (Main Codec) | When expressP2 card 512 GB is used*<br>AVC-Intra4K444 (24p): Approx. 90 min.<br>AVC-Intra4K422 (VFR ON, 50fps/60 fps): Approx. 72 min.<br>AVC-Intra4K422 (VFR OFF, 24p): Approx. 180 min.<br>AVC-Intra4K-LT (VFR ON, 100fps/120 fps): Approx. 64 min.<br>AVC-Intra100 (VFR ON, 100fps/120 fps): Approx. 128 min.<br>ProRes 422 HQ (VFR ON, 60 fps): Approx. 120 min. |
| Recording Time: (Sub Codec) | When microP2 card 64 GB is used*<br>AVC-Intra2K422 (25p/29.97p): Approx. 64 min.<br>AVC-Intra100 (25p/29.97p): Approx. 64 min.<br>AVC-LongG 50 (25p/29.97p): Approx. 128 min.<br>AVC-LongG 25 (25p/29.97p): Approx. 256 min. |

### Digital Video

| | |
|---|---|
| Quantizing: | 12 bit (AVC-Intra4K444),<br>10 bit (Other than AVC-Intra4K444) |
| Video Compression Format: | AVC-Intra4K444, AVC-Intra4K422, AVC-Intra4K-LT, AVC-Intra2K422, AVC-Intra100:<br>MPEG-4 AVC/H.264 Intra Profile<br>AVC LongG50, AVC LongG25:<br>MPEG-4 AVC/H.264 ProRes 422 HQ |

### Digital Audio

| | |
|---|---|
| Recording Audio Signal: | 48 kHz/24 bit, 4 ch |
| Headroom: | 18 dB/20 dB menu switchable |

### Proxy

| | |
|---|---|
| File Format: | MOV |
| Video Compression Format: | H.264/AVC High Profile |
| Audio Compression Format: | LPCM |
| Recording Time: | Approx. 25 min. (1 GB)* |

### Video Input/Output

| | |
|---|---|
| SDI OUT: | HD (1.5 G) /3G-SDI, 0.8 V [p-p], 75 Ω (1 set, 4 pieces) |
| MON OUT1: | HD (1.5 G)/3G-SDI, 0.8 V [p-p], 75 Ω |
| MON OUT2: | HD (1.5 G)/3G-SDI, 0.8 V [p-p], 75 Ω |
| VF SDI: | HD (1.5G) /3G-SDI, 0.8 V [p-p], 75 Ω |

### Audio Input/Output

| | |
|---|---|
| AUDIO IN (CH1/CH2): | XLR x 2, 3-pin, LINE/MIC/MIC+48 V/AES switchable |
| MIC IN: | XLR x 1, 5-pin |
| PHONES: | Stereo mini jack |
| Speaker: | 20 mm diameter, round x 1 |

### Other Input/Output

| | |
|---|---|
| GENLOCK IN: | HD (1.5 G) /3G-SDI, 0.8 V [p-p], 75 Ω |
| TC IN/OUT: | BNC x 1, IN/OUT switch selection<br>IN: 0.5 V [p-p] to 8 V [p-p], 10 kΩ<br>OUT: 2.0 V [p-p] ± 0.5 V [p-p], Low impedance |
| DC IN: | XLR 4-pin, DC 12 V (DC 11.0 V – 17.0 V) |
| DC OUT/RS: | 4-pin, DC 12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| DC OUT: | 2-pin, DC12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| LENS: | 12-pin x 1, 4-pin x 2 |
| VF: | 14-pin |
| LAN: | 100BASE-TX/10BASE-T |
| USB 2.0 (DEVICE): | Type B connector, 4-pin |
| USB 2.0 (HOST): | Type A connector, 4-pin |
| EXT: | 50-pin (for external recording only)* |

### Control Panel

| | |
|---|---|
| Display Panel: | LCD, 3.5-type QHD color monitor<br>Approx. 1.56 million dots |

## Extension Module (AU-VEXT1G)

| | |
|---|---|
| Power: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 33 W (Body only)<br>63 W (With all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (Relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Camera Extension Module: Approx. 0.95 kg<br>Recording Extension Module: Approx. 0.65 kg |
| Dimensions: | Camera Extension Module:<br>121 mm (W) x 143 mm (H) x 73 mm (D)<br>(4-13/16 inches x 5-11/16 inches x 2-7/8 inches)<br>Recording Extension Module:<br>106 mm (W) x 143 mm (H) x 61 mm (D)<br>(4-3/16 inches x 5-11/16 inches x 2-7/16 inches) |

### Input/Output

| | |
|---|---|
| DC IN: | XLR 4-pin, DC 12 V (DC 11.0 V – 17.0 V) |
| DC OUT: | 2-pin, DC 12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| EXT: | 48-pin |

## Electronic HD Color View Finder (AU-VCVF1G)

| | |
|---|---|
| Display Panel: | OLED, 0.7-type, approx. 2.76 million dots |
| Signal Input: | 1080/59.94p, 1080/50p, 1080/60p |

*These are reference values for continuous recording. The recording time may differ depending on the scene or the number of clips.

# VariCam LT

## General Specification

| | |
|---|---|
| Power: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 47 W (with body only)<br>77 W (with all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (Relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Approx. 2.7 kg (6.0 lb),<br>excluding handle and accessories<br>Approx. 3.0 kg (6.6 lb),<br>including handle, excluding accessories |
| Dimensions: | 184.0 mm (W) x 230.5 mm (H) x 247.0 mm (D)<br>(7-1/4 inches x 9-3/32 inches x 9-3/4 inches)<br>Body only, excluding protrusion and accessories |

Ensure that the total current taken from the DC OUT terminal, LENS/GRIP terminal, DC OUT/RS terminal and USB HOST terminal does not exceed 30 W.

## Camera Unit

| | |
|---|---|
| Pickup Device: | Super 35 mm, MOS sensor |
| Number of Pixels: | Total pixels: Approx.10.3 megapixels<br>Effective pixels: Approx. 8.9 megapixels |
| Lens Mount: | EF mount |
| Optical Filter: | ND filter:<br>1: CLEAR, 2: 0.6 ND, 3: 1.2 ND, 4: 1.8 ND |
| Gain setting: | [ISO] mode:<br>Native ISO: 800, 5000<br>800 Base: 200 to 4000<br>5000 Base: 1250 to 12800<br>[dB] mode: –12 dB to 14 dB (2 dB step) |
| Shutter Speed: | [deg] mode: 1.0 deg to 358 deg (0.1 deg step)<br>[sec] mode: 1/24 sec. to 1/250 sec. (for 24p) |
| Sensitivity: | [GAIN MODE]=[NORMAL], [GAMMA]=[VIDEO45]<br>F7 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94p)<br>F8 (2000 lx, 3200 K, 89.9 % reflection, 1080/50p) |

## Memory Card Recorder

| | |
|---|---|
| Recording Media: | Main slot x 1: expressP2 card, P2 card<br>Sub slot x 1: SD memory card |
| Recording Resolution: | 4096 x 2160 (4K), 3840 x 2160 (UHD),<br>2048 x 1080 (2K), 1920 x 1080 (HD) |
| Recording Frame Rate: | 4K/UHD: Maximum 60 fps or 50 fps<br>2K/HD: Maximum 240 fps or 200 fps |
| System Frequency: | 59.94p, 50p, 29.97p, 25p, 24p, 23.98p,<br>59.94i, 50i |
| Recording Format: (Main Recorder) | AVC-Intra4K422, AVC-Intra4K-LT,<br>AVC-Intra2K444, AVC-Intra2K422,<br>AVC-Intra2K-LT, AVC-Intra444, AVC-Intra422,<br>AVC-Intra-LT, AVC-Intra100,<br>ProRes 4444 XQ, ProRes 4444<br>ProRes 422 HQ, ProRes 422, ProRes 422 LT |
| Recording Format (Sub Recorder): | AVC-LongG6 Recording |
| Video Signal: | 4096 x 2160/<br>59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>3840 x 2160/<br>59.94p, 50p, 29.97p, 25p, 23.98p<br>2048 x 1080/<br>59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>1920 x 1080/<br>59.94p, 50p, 29.97p, 25p, 23.98p, 59.94i, 50i |
| Recording Time*1: (Main Codec) | When using expressP2 card 512 GB<br>and when [FREQUENCY]= [23.98p]<br>AVC-Intra4K422, 23.98 fps: Approx. 180 min.<br>AVC-Intra4K422, VFR ON, 30 fps: Approx. 146 min.<br>AVC-Intra4K-LT, VFR ON, 60 fps: Approx. 128 min.<br>AVC-Intra422, VFR ON, 60 fps: Approx. 260 min.<br>ProRes 422 HQ VFR ON, 60 fps: Approx. 134 min. |
| Recording Time*1: (Sub Codec) | AVC-LongG6:<br>Approx. 655 min. |

## Digital Video

| | |
|---|---|
| Quantizing: | AVC-Intra2K444, AVC-Intra444: 12 bit<br>Others: 10 bit |
| Video Compression Format: | AVC-Intra4K422, AVC-Intra4K-LT,<br>AVC-Intra2K444, AVC-Intra2K422,<br>AVC-Intra2K-LT, AVC-Intra444,AVC-Intra422,<br>AVC-Intra-LT, AVC-Intra100:<br>MPEG-4 AVC/H.264 Intra Profile<br>ProRes 422 HQ, ProRes 4444:<br>Apple ProRes*2 |

## Digital Audio

| | |
|---|---|
| Recording Audio Signal: | 48 kHz/24 bit, 4 ch |
| Headroom: | 18 dB/20 dB switchable menu |

## AVC Proxy

| | |
|---|---|
| File Format: | MOV |
| Video Compression Format: | MPEG-4 AVC/H.264 Intra Profile |
| Audio Compression Format: | AAC |
| Recording Time*3 | Approx. 655 min.<br>When using a 64 GB SDXC memory card |

## Video Input/Output

| | |
|---|---|
| SDI OUT1/ SDI OUT2: | HD (1.5 G)/3G-SDI, 0.8 V [p-p], 75 Ω |
| VF SDI: | HD (1.5 G)/3G-SDI, 0.8 V [p-p], 75 Ω |

## Audio Input/Output

| | |
|---|---|
| INPUT 1/2: | XLR x 1, 5-pin |
| INPUT 3/ INPUT 4: | XLR x 2, 3-pin, Supports menu switching<br>to select LINE/MIC or enable/disable<br>the power supply of the microphone. |
| PHONES: | Stereo mini jack |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| GENLOCK IN: | HD (1.5 G) /3G-SDI, 0.8 V [p-p], 75 Ω |
| TC IN/OUT: | BNC x 1, Input/Output switching<br>Input: 0.5 V [p-p] to 8 V [p-p], 10 kΩ<br>Output: 2.0 V [p-p] ± 0.5 V [p-p], low impedance |
| DC IN: | XLR x 1, 4-pin, DC 12 V (DC 11.0 V – 17.0 V) |
| DC OUT/RS: | 4-pin, DC 12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| DC OUT: | 2-pin, DC12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| LENS/GRIP: | 12-pin |
| LAN: | 100BASE-TX/10BASE-T |
| USB DEVICE: | USB 2.0 devices: Type B connector, 4-pin |
| USB HOST: | USB 2.0 host: Type A connector, 4-pin |
| CONTROL PANEL: | 20-pin, control panel contact terminals |
| EF Mounting Contact: | 8-pin |

## Control Panel

| | |
|---|---|
| Display Panel: | LCD, 3.5-type QHD color monitor,<br>approx. 1.56 million dots |

*1: Figures are for continuous recording as one clips. Depending on the number or clips, the overall recording time may be shorter than the above.

*2: ProRes is licensed from Apple Inc. Apple ProRes codec is under license from Atomos. Atomos is a trademark and copyright of Atomos Global Pty. Ltd.

*3: Reference value for continuous recording. The recording the may differ depending on the scene or the number of clips.

# AU-EVA1

## General Specification

| | |
|---|---|
| Power: | DC 7.28 V (battery operation)<br>DC 12 V (AC adapter operation) |
| Power Consumption: | 19 W (with LCD/HDMI/SDI ON) |
| Operating Temperature: | 0 °C to 40 °C (32°F to 104°F) |
| Operating Humidity: | 10% to 85% (relative humidity) |
| Storage Temperature: | –20 °C to 60 °C (–4°F to 140°F) |
| Weight: | Body: Approx. 1.2 kg (2.65 lb)<br>(excluding accessories)<br>Shooting: Approx. 2.05 kg (4.52 lb)<br>(with accessories) |
| Dimensions: | 135 mm (W) x 133 mm (H) x 170 mm (D)<br>(excluding protrusions and accessories)<br>(5-5/16 inches x 5-1/4 inches x 6-11/16 inches) |

## Camera Unit

| | |
|---|---|
| Image Sensor: | Super 35 mm, MOS sensor |
| Number of Pixels: | Total pixels:<br>Approx. 20.49 megapixels, 6340 (H) x 3232 (V)<br>Effective pixels:<br>Approx. 17.25 megapixels, 5720 (H) x 3016 (V) |
| Sensor Area and Max Frame Rate: | S35: 4K/UHD 60 fps/50 fps<br>2K/HD 120 fps/100 fps<br>4/3": 2K/HD 240 fps/200 fps |
| Latitude: | 14 stop |
| Log: | V-Log |
| Gamma: | eV-Look Gamma (2 types)<br>Video Gamma<br>Hybrid Log Gamma (HLG) |
| Gamut: | V-Gamut (V-Log) |
| EI Settings: | [ISO] mode: NATIVE ISO: 800, 2500<br>800 Base: 200 to 2000<br>2500 Base: 1000 to 25600<br>[dB] mode: (Normal) –12 dB to 8 dB<br>(High) –8 dB to 20 dB |
| Shutter Speed: | [deg] mode: 1.0 deg to 358 deg (0.5 deg step)<br>12 presets<br>[sec] mode: 1/24.1 sec to 1/8000 sec (23.98p)<br>12 presets |
| Color Temp: | ATW, AWB, 2000 K to 15000 K ±10.0 GMg<br>12 presets |
| Lens Mount: | EF mount |
| Image Stabilization: | Electric Image Stabilization (EIS) |
| Auto Focus: | One push auto focus |
| ND Filter: | CLEAR, 0.6ND, 1.2ND, 1.8ND, Electrical driven |
| IR Cut Filter: | USER assignable IR shooting (filter ON/OFF) |

## Memory Card Recorder

| | |
|---|---|
| Recording Media: | SDHC memory card (4 GB to 32 GB)<br>SDXC memory card (32 GB to 128 GB)<br>UHS-I/UHS-II UHS Speed Class3 is supported,<br>Video Speed Class V90 is supported |
| Recording Slot: | SD memory card slot x 2 |
| Recording Resolution: | 4096 x 2160 (4K), 3840 x 2160 (UHD),<br>2048 x 1080 (2K), 1920 x 1080 (FHD),<br>1280 x 720 (HD) |
| Recording System Frequency: | 59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>59.94i, 50i (AVCHD only) |
| Recording Format: | Please see page 14 for the<br>Recording Format and Recording Time table |
| Recording Time: | Please see page 14 for the<br>Recording Format and Recording Time table |
| 2slot Functions: | Simul Rec, Relay Rec, Loop Rec*1,<br>Background Rec*1 |
| Other Rec Functions: | Pre Rec, Interval Rec*1, One Shot Rec*1 |

## Digital Video

| | |
|---|---|
| Quantizing: | MOV: 4:2:2 10 bit/4:2:0 8 bit<br>AVCHD: 4:2:0 8 bit |
| Video Compression Format: | H.264/MPEG-4 AVC High Profile |

## Digital Audio

| | |
|---|---|
| Recording Audio Format: | MOV: 48 kHz/24 bit, 2 CH, Linear PCM<br>AVCHD: 48 kHz/16 bit, 2 CH, Dolby Audio™ |
| Headroom: | 18 dB/20 dB (menu switchable) |

## Video Output

| | |
|---|---|
| SDI OUT: | BNC x 1, SDI REC REMOTE is supported<br>0.8 V [p-p], 75 Ω, 4K (6G), HD (3G/1.5G)<br>Output format (4:2:2 10 bit):<br>• 4096 x 2160: 29.97p, 25p, 24p, 23.98p<br>• 3840 x 2160: 29.97p, 25p, 24p, 23.98p<br>• 1920 x 1080: 59.94p, 50p, 59.94i, 50i, 29.97p, 29.97PsF, 25p, 25PsF, 24p, 24PsF, 23.98p, 23.98PsF<br>• 1280 x 720p: 59.94p, 50p<br>RAW*1 output format (10 bit):<br>• 5760 x 3072: 29.97p, 25p, 24p, 23.98p<br>• 4096 x 2160: 59.94p, 50p, 29.97p, 25p, 24p, 23.98p |
| HDMI: | HDMI x 1, TypeA,<br>HDMI REC REMOTE is supported,<br>Viera Link is NOT supported<br>Output format (4:2:2 10 bit):<br>• 4096 x 2160: 59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>• 3840 x 2160: 59.94p, 50p, 29.97p, 25p, 24p, 23.98p<br>• 1920 x 1080: 59.94p, 50p, 59.94i, 50i, 29.97p, 25p, 24p, 23.98p<br>• 1280 x 720: 59.94p, 50p<br>• 720 x 480: 59.94p<br>• 720 x 576: 50p<br>Output format (4:2:0 8 bit):<br>• 4096 x 2160: 59.94p, 50p<br>• 3840 x 2160: 59.94p, 50p |

## Audio Input/Output

| | |
|---|---|
| Internal Mic: | Stereo microphone |
| INPUT1/2: | XLR (3-pin) x 2 (INPUT1/2), input high impedance,<br>LINE/MIC/MIC +48 V (menu switchable)<br>MIC: –40 dBu/–50 dBu/–60 dBu (menu switchable)<br>LINE: +4 dBu/0 dBu (menu switchable) |
| SDI OUT: | Linear PCM 2 CH |
| HDMI: | Linear PCM 2 CH |
| PHONES: | 3.5 mm stereo mini jack x 1 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| TC IN/OUT: | BNC x1 for IN/OUT (menu switchable)<br>IN: 1.0 V [p-p] to 4.0 V [p-p], 10 kΩ<br>OUT: 2.0 V [p-p] ±0.5 V [p-p], low impedance |
| LCD: | 40-pin (Dedicated) |
| REMOTE: | 2.5 mm Super Mini Jack |
| USB 2.0 (HOST): | Type-A, 4-pin for Wireless Module (AJ-WM50) |
| EF Mounting Contact: | 8-pin |
| DC IN 12 V: | DC 12 V EIAJ type 4 |

## LCD Monitor

| | |
|---|---|
| Size: | 3.5-type LCD monitor (approx. 1,150,000 dots)<br>Touch panel<br>(MENU control, Shooting assist functions) |
| Switches: | MIRROR (OFF, B/T, ROTATE) |

## Hand Grip

| | |
|---|---|
| Mounting Mechanism: | One touch rotatable/Detachable |
| Switches: | REC, MENU, MENU/IRIS multi-dial,<br>User switch x 2 |

## Included Accessories

| | |
|---|---|
| Accessories: | Battery (5900 mAh), Battery charger, AC adapter, AC cable, Shoulder strap, Microphone holder, Microphone holder adapter, LCD monitor (with hood and mounting attachment), Handle, Grip, Grip belt, Mount cap |

*1: Functions to be supported by firmware update.

## Recording Format and Recording Time

| Format | Pixel | Main Codec (bps) | Frequency | Sampling | Bitrate (average) | Recording Time (128 GB) |
|---|---|---|---|---|---|---|
| MOV* | 4096 x 2160 (4K) | 422ALL-I 400M Update | 29.97p, 24p, 25p, 23.98p | 4:2:2 10 bit | 400 Mbps (VBR) | Approx. 40 min. |
| | | 422LongGOP 150M | 29.97p, 24p, 25p, 23.98p | 4:2:2 10 bit | 150 Mbps (VBR) | Approx. 1 hour 50 min. |
| | | 420LongGOP 150M | 59.94p, 50p | 4:2:0 8 bit | 150 Mbps (VBR) | Approx. 1 hour 50 min |
| | | 420LongGOP 100M | 29.97p, 24p, 25p, 23.98p | 4:2:0 8 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | 3840 x 2160 (UHD) | 422ALL-I 400M Update | 29.97p, 25p, 23.98p | 4:2:2 10 bit | 400 Mbps (VBR) | Approx. 40 min. |
| | | 422LongGOP 150M | 29.97p, 25p, 23.98p | 4:2:2 10 bit | 150 Mbps (VBR) | Approx. 1 hour 50 min. |
| | | 420LongGOP 150M | 59.94p, 50p | 4:2:0 8 bit | 150 Mbps (VBR) | Approx. 1 hour 50 min. |
| | | 420LongGOP 100M | 29.97p, 25p, 23.98p | 4:2:0 8 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | 2048 x 1080 (2K) | 422ALL-I 200M Update | 59.94p, 50p | 4:2:2 10 bit | 200 Mbps (VBR) | Approx. 1 hour 20 min. |
| | | 422ALL-I 100M Update | 29.97p, 24p, 25p, 23.98p | 4:2:2 10 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | | 422LongGOP 100M | 59.94p, 50p | 4:2:2 10 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | | 422LongGOP 50M | 29.97p, 24p, 25p, 23.98p | 4:2:2 10 bit | 50 Mbps (VBR) | Approx. 5 hours 20 min. |
| | | 420LongGOP 100M | 59.94p, 50p | 4:2:0 8 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | | 420LongGOP 50M | 29.97p, 24p, 25p, 23.98p | 4:2:0 8 bit | 50 Mbps (VBR) | Approx. 5 hours 20 min. |
| | 1920 x 1080 (FHD) | 422ALL-I 200M Update | 59.94p, 50p | 4:2:2 10 bit | 200 Mbps (VBR) | Approx. 1 hour 20 min. |
| | | 422ALL-I 100M Update | 29.97p, 24p, 25p, 23.98p | 4:2:2 10 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | | 422LongGOP 100M | 59.94p, 50p | 4:2:2 10 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | | 422LongGOP 50M | 29.97p, 25p, 23.98p | 4:2:2 10 bit | 50 Mbps (VBR) | Approx. 5 hours 20 min. |
| | | 420LongGOP 100M | 59.94p, 50p | 4:2:0 8 bit | 100 Mbps (VBR) | Approx. 2 hours 40 min. |
| | | 420LongGOP 50M | 29.97p, 25p, 23.98p | 4:2:0 8 bit | 50 Mbps (VBR) | Approx. 5 hours 20 min. |
| AVCHD | 1920 x 1080 (FHD) | PS | 59.94p, 50p | 4:2:0 8 bit | 25 Mbps (VBR) | Approx. 11 hours |
| | | PH | 23.98p, 59.94i, 50i | 4:2:0 8 bit | 21 Mbps (VBR) | Approx. 12 hours 30 min. |
| | | HA | 59.94i, 50i | 4:2:0 8 bit | 17 Mbps (VBR) | Approx. 17 hours |
| | 1280 x 720 (HD) | PM | 59.94p, 50p | 4:2:0 8 bit | 8 Mbps (VBR) | Approx. 35 hours |

Update = Functions to be supported by firmware update. * SDXC memory card is required for MOV recording.

## Available Memory Card

| Format | Memory Card Type | Bitrate or Recording Function | Speed Class |
|---|---|---|---|
| MOV | SDXC | 400 Mbps Update | Video Speed Class V60 or faster |
| | | 2K/FHD VFR Mode* (ALL-I Codec) Update | |
| | | 200 Mbps Update | Video Speed Class V30, UHS Speed Class 3 or faster |
| | | 150 Mbps | |
| | | 100 Mbps | |
| | | 2K/FHD VFR Mode* (LongG Codec) | |
| | | 50 Mbps | Video Speed Class V10, UHS Speed Class 1, Speed Class 10 or faster |
| AVCHD | SDHC/SDXC | All | Speed Class 4 or faster |

Update = Functions to be supported by firmware update. *VFR: Variable Frame Rate

## Available Battery Pack

| Battery | Voltage and Capacity | Charge time*1 | Continuous shooting time*2 |
|---|---|---|---|
| AG-VBR59 (Bundled) | 7.28 V, 5900 mAh/43 Wh | Approx. 3 hours 20 min. | Approx. 2 hours 50 min. |
| AG-VBR89G | 7.28 V, 8850 mAh/64 Wh | Approx. 4 hours | Approx. 4 hours 15 min. |
| AG-VBR118G | 7.28 V, 11800 mAh/86 Wh | Approx. 4 hours 40 min. | Approx. 5 hours 40 min. |
| VW-VBD58 | 7.2 V, 5800 mAh/42 Wh | Approx. 5 hours 20 min. | Approx. 2 hours 40 min. |

*1: When using bundled battery charger. *2: “Continuous shooting time” is when you use this machine in the following condition [Menu setting is factory preset, Have LCD monitor and grip attached, No cable is connected to outputs]. Under other conditions, continuous shootable time becomes shorter.

# VariCam HS

## General (Combination of AU-V23HS1G and AU-VREC1G)

| | |
|---|---|
| Power: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 90 W (With all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (Relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Approx. 4.5 kg (Body only) |
| Dimensions: | 179 mm (W) x 230.5 mm (H) x 347 mm (D)<br>(7-1/16 inches x 9-1/16 inches x 13-21/32 inches)<br>(Body only, excluding protrusion) |

## Camera Module (AU-V23HS1G)

| | |
|---|---|
| Pickup Device: | 2/3-type 2.2 megapixels, MOS x 3 |
| Lens Mount: | 2/3-type bayonet |
| Optical filter: | CC filter A: 3200 K, B: 4300 K, C: 5600 K, D: 0.3N<br>ND filter 1: CLEAR, 2: 0.6ND, 3: 1.2ND, 4: 1.8ND |
| Gain Settings: | [ISO] mode: ISO 640 to 12800<br>[dB] mode : 0 dB to 18 dB (3 dB step) |
| Shutter Speed: | [deg] mode: 1.0 deg to 360 deg (0.5 deg step)<br>[sec] mode: 1/24 sec. to 1/250 sec.<br>(when 23.98p mode) |
| Sensitivity: | [Gamma: HD] mode:<br>F9 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94p)<br>F10 (2000 lx, 3200 K, 89.9 % reflection, 1080/50p) |

## Recording Module (AU-VREC1G)
## When used with AU-V23HS1G

### Memory Card Recorder

| | |
|---|---|
| Recording Media: | expressP2 card, P2 card, microP2 card |
| Recording Resolution: | 1920 x 1080, 1280 x 720 |
| Recording Frame Rate: | Maximum 240p/200p |
| System Frequency: | 59.94p, 50p, 29.97p, 25p, 23.98p, 59.94i, 50i |
| Recording Format: (Main Recorder) | AVC-Intra444, AVC-Intra200,<br>AVC-Intra422, AVC-Intra100,<br>ProRes 4444 XQ, ProRes 4444,<br>ProRes 422 HQ, ProRes 422, ProRes 422 LT |
| Recording Format: (Sub Recorder) | AVC-Intra422, AVC-Intra100,<br>AVC-LongG 50, AVC-LongG 25 |
| Recording Video Signal: | 1080/59.94p, 50p, 29.97p, 25p, 23.98p,<br>59.94i, 50i, 720/59.94p, 50p |
| Recording Time: (Main Codec) | When expressP2 card 512 GB is used*1<br>Approx. 256 min. (AVC-Intra100, VFR OFF)<br>Approx. 64 min. (AVC-Intra100, VFR ON, 200 fps/240 fps)<br>Approx. 120 min. (ProRes 422 HQ, VFR ON, 60 fps) |
| Recording Time: (Sub Codec) | When microP2 card 64 GB is used*1<br>Approx. 64 min. (AVC-Intra100, 25p/29.97p)<br>Approx. 128 min. (AVC-LongG50, 25p/29.97p)<br>Approx. 256 min. (AVC-LongG25, 25p/29.97p) |

### Digital Video

| | |
|---|---|
| Quantizing: | AVC-Intra2K444, AVC-Intra444: 12 bit<br>Others: 10 bit |
| Video Compression Format: | AVC-Intra444, AVC-Intra200, AVC-Intra422,<br>AVC-Intra100:<br>MPEG-4 AVC/H.264 Intra Profile<br>AVC-LongG 50, AVC-LongG 25:<br>MPEG-4 AVC/H.264<br>ProRes 422 HQ, ProRes 4444: Apple ProRes |

### Digital Audio

| | |
|---|---|
| Recording Audio Signal: | 48 kHz/24 bit, 4 ch<br>Head room 18 dB/20 dB menu switchable |

### Proxy

| | |
|---|---|
| File Format: | MOV |
| Video Compression Format: | H.264/AVC High Profile |
| Audio Compression Format: | LPCM |
| Recording Time (1GB)*: | Approx. 25 min. |

### Video Input/Output

| | |
|---|---|
| SDI OUT: | HD (1.5 G) /3G-SDI: 0.8 V [p-p], 75 Ω (1 set, 4 pieces) |
| MON OUT1: | HD (1.5 G) /3G-SDI: 0.8 V [p-p], 75 Ω |
| MON OUT2: | HD (1.5 G) /3G-SDI: 0.8 V [p-p], 75 Ω |
| VF SDI: | HD (1.5 G) /3G-SDI: 0.8 V [p-p], 75 Ω |

### Audio Input/Output

| | |
|---|---|
| AUDIO IN (CH1/CH2): | XLR x 2, 3-pin, LINE/MIC/MIC+48 V/AES switchable |
| MIC IN: | XLR x 1, 5-pin |
| PHONES: | Stereo mini jack |
| Speaker: | 20 mm diameter, round x 1 |

### Other Input/Output

| | |
|---|---|
| GENLOCK IN: | HD (1.5 G) /3G-SDI: 0.8 V [p-p], 75 Ω |
| TC IN/OUT: | BNC x 1, IN/OUT switch selection<br>IN: 0.5 V [p-p] to 8 V [p-p], 10 kΩ<br>OUT: 2.0 V [p-p] ± 0.5 V [p-p], Low impedance |
| DC IN: | XLR 4-pin, DC12 V (DC 11.0 V – 17.0 V) |
| DC OUT/RS: | 4-pin, DC12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| DC OUT: | 2-pin, DC12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| LENS: | 12-pin |
| VF: | 14-pin |
| LAN: | 100BASE-TX/10BASE-T |
| USB 2.0 (DEVICE) : | Type B connector, 4-pin |
| USB 2.0 (HOST) : | Type A connector, 4-pin |

### Control Panel

| | |
|---|---|
| Display Panel: | LCD, 3.5-type QHD color monitor<br>Approx. 1.56 million dots |

## Extension Module (AU-VEXT1G)

| | |
|---|---|
| Power: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 33 W (Body only)<br>63 W (With all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (Relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Camera Extension Module: Approx. 0.95 kg<br>Recording Extension Module: Approx. 0.65 kg |
| Dimensions: | Camera Extension Module:<br>121 mm (W) x 143 mm (H) x 73 mm (D)<br>(4-13/16 inches x 5-11/16 inches x 2-7/8 inches)<br>Recording Extension Module:<br>106 mm (W) x 143 mm (H) x 61 mm (D)<br>(4-3/16 inches x 5-11/16 inches x 2-7/16 inches) |

### Input/Output

| | |
|---|---|
| DC IN: | XLR 4-pin, DC 12 V (DC 11.0 V – 17.0 V) |
| DC OUT: | 2-pin, DC 12 V (DC 11.0 V – 17.0 V),<br>maximum output current 1.0 A |
| EXT: | 48-pin |

## Electronic HD Color View Finder (AU-VCVF1G)

| | |
|---|---|
| Display Panel: | OLED, 0.7-type, approx. 2.76 million dots |
| Signal Input: | 1080/59.94p, 1080/50p, 1080/60p |

* These are reference values for continuous recording. The recording time may differ depending on the scene or number of clips.

As of September, 2017

AVCHD Progressive | HDMI | SDXC | DOLBY AUDIO | LEICA DICOMAR

## AG-DVX200

**Memory Card Camera Recorder**

Integrated Lens System (Optical 13x Zoom) | 4/3-type MOS | SD Memory Card Slot x 2

**New 4/3-type Sensor Opens New Doors for Image Production with an Integrated Lens 4K/60p*1 Camera Recorder.**

- 4/3-type sensor for beautiful bokeh effects and 4K resolution.
- 12 stops of latitude from V-Log L gamma.
- Variable frame rate HD recording up to 120 fps.
- Nimble mobility with an integrated optical 13x zoom lens and intelligent full-auto functions.
- Microdrive focus unit provides a high-speed, high-precision Intelligent AF.
- Advanced Optical Image Stabilizer (O.I.S.) expand correction area with ball OIS system.
- The 5-axis Hybrid Image Stabilizer effects hand-shake correction in various directions.*2
- Dual Codec Recording allows images to be simultaneously recorded into two different, Main UHD*3/FHD and Sub FHD, formats.
- Two SD Memory Card slots boosts recording reliability: Background Recording, Relay Recording, Simultaneous Recording, SD Memory Card Copy.
- The manual three rings and other controls are specially designed to satisfy professional users.
- Equipped with professional interfaces such as 3G-SDI out, XLR in and TC preset in/out.
- Wireless remote control from an iPad.*4

AVCHD Progressive | HDMI | SDXC | DOLBY AUDIO | LEICA DICOMAR

## AG-UX180

**Memory Card Camera Recorder**

Integrated Lens System (Optical 20x Zoom) | 1.0-type MOS | SD Memory Card Slot x 2

**4K 60p/50p*1 Camcorder featuring the Industry's Widest Angle 24 mm,*5 20x Optical Zoom and 1.0-type MOS Sensor.**

- High-definition, high-sensitivity 1.0-type (effective size) MOS sensor.
- 4K 24p, UHD 60p/50p, FHD 60p/50p multi-format and HD 120 fps (59.94 Hz) /100 fps (50 Hz) super slow-motion recording are available.
- New microdrive focus unit provides a high-speed, high-precision Intelligent AF.
- Advanced hand-shake correction with increased correction area, ball OIS system, and 5-axis Hybrid Image Stabilizer. (FHD only)
- Dual Codec Recording allows images to be simultaneously recorded into two different, Main UHD*3/FHD and Sub FHD, formats.
- Two SD Memory Card slots boosts recording reliability: Background Recording, Relay Recording, Simultaneous Recording.
- The manual three rings and other controls are specially designed to satisfy professional users.
- Equipped with professional interfaces such as 3G-SDI out, XLR in and TC preset in/out.
- Wireless remote control from an iPad.*4

*Pictures are the example of the configuration using options.
*1: Actual recording is UHD (3840 x 2160) 59.94p/50p.
*2: It does not work in 4K / UHD shooting mode.
*3: UHD 60p/50p recording mode is not supported.
*4: iOS 7.1, iOS 8.1, and iOS 9 are supported. The optional AJ-WM30/WM50 Wireless Module is required for wireless connection.
*5: Equivalent to 35mm under 4K 24p (aspect ratio of 17:9) Wide angle 24mm is the widest in the industry for a camcorder with integrated lens. (As of September 2017, according to Panasonic survey.)
*6: 35mm film camera equivalent in FHD mode. 35.4mm in UHD mode.
*7: 60 Hz area model: UHD 30p/24p, FHD 60p. 50 Hz area model: UHD 25p, FHD 50p.

UX SERIES
FOR PROFESSIONAL 4K SHOOTING

4K PROFESSIONAL
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# AG-UX90

## Memory Card Camera Recorder

Integrated Lens System (Optical 15x Zoom) | 1.0-type MOS | SD Memory Card Slot x 2

**4K (UHD) /FHD Camcorder with a Wide-Angle 24.5 mm*6, 15x Optical Zoom Lens and**

1.0-type MOS Sensor.

- High-definition 1.0-type MOS sensor.
- UHD 30p (25p*7) /24p, FHD 60p (50p*7) multi-format recording are available.
- High bit rate 50 Mbps mode for FHD image recording.
- New microdrive focus unit provides a high-speed, high-precision Intelligent AF.
- Advanced hand-shake correction with increased correction area, ball OIS system, and 5-axis Hybrid Image Stabilizer. (FHD only)
- Two SD Memory Card slots boosts recording reliability: Relay Recording, Simultaneous Recording.
- The manual three rings and other controls are specially designed to satisfy professional users.
- Pro-level functions and design, including XLR audio input.
- Wireless remote control from an iPad.*4

## 4K Camcorder Comparison Table

| | AG-DVX200 | AG-UX180 | AG-UX90 |
|---|---|---|---|
| Lens Angle of View (FHD)/ Magnification | 28 mm to 365.3 mm/x13 | 24 mm to 480 mm/x20 | 25.4 mm to 367.5 mm/x15 |
| i.Zoom/Digital Zoom | ✓ | ✓ | ✓ |
| 5-Axis Hybrid Image Stabilizer | ✓ | ✓ | ✓ |
| Manual Three Rings | ✓ | ✓ | ✓ |
| Intelligent AF | ✓ | ✓ | ✓ |
| Custom AF | ✓ | ✓ | ✓ |
| Expand/Peaking | ✓ | ✓ | ✓ |
| One-Push AF | ✓ | ✓ | ✓ |
| Manual Focus Assist | ✓ | ✓ | — |
| Focus Transition | ✓ | ✓ | — |
| Area Function | ✓ | ✓ | ✓ |
| Image Sensor | 4/3-type MOS | 1.0-type (effective size) MOS | 1.0-type MOS |
| Gamma | V-Log L + 8 mode | 8 mode | 8 mode |
| 16-Axis Independent Color Correction | ✓ | ✓ | — |
| IR (Infrared) Shooting in Dark Places | ✓ | ✓ | — |
| Skin Detail/Master Detail | ✓ | ✓ | ✓ |
| Variable Frame Rate | FHD: 2 fps to 120 fps | FHD: 2 fps to 60 fps | FHD: 2 fps to 60 fps |
| Super Slow | — | HD: 120 fps | — |
| Recording Format | 4K/UHD/FHD/HD/SD | 4K/UHD/FHD/HD/SD | UHD/FHD/HD/SD |
| Relay/Simultaneous Recording | ✓ | ✓ | ✓ |
| Background Recording | ✓ | ✓ | — |
| Dual Codec Recording | ✓ | ✓ | — |
| Pre Rec/Interval Rec | ✓ | ✓ | ✓ |
| Time Stamp | ✓ | ✓ | ✓ |
| 16 bit PCM Audio | ✓ | ✓ | ✓ |
| XLR Microphone /Line Input | ✓ | ✓ | ✓ |
| LCD Monitor | 4.3-type (Approx. 2,760,000 dots) | 3.5-type (Approx. 1,150,000 dots ) | 3.5-type (Approx. 1,150,000 dots ) |
| Viewfinder | 0.39-type OLED (Approx. 2,360,000 dots) | 0.39-type OLED (Approx. 2,360,000 dots) | 0.24-type LCD (Approx. 1,560,000 dots) |
| User Buttons | 9 buttons on the body, 4 buttons on the touch screen | 9 buttons on the body, 4 buttons on the touch screen | 9 buttons on the body, 4 buttons on the touch screen |
| ND Filters | ✓ | ✓ | ✓ |
| SDI OUT | ✓ | ✓ | — |
| HDMI OUT | ✓ | ✓ | ✓ |
| TC PRESET | ✓ | ✓ | — |
| USB (HOST/DEVICE) | ✓ | ✓ | ✓ |
| REMOTE | ✓ | ✓ | ✓ |
| iPad Remote | ✓ | ✓ | ✓ |

Applicable function varies depending on the models. Please see page 18 for details.

## 4K lens and 4K Image Sensor

### LEICA DICOMAR 4K Zoom Lens

• **LEICA DICOMAR:** The lenses have passed the stringent quality standards of Leica Camera AG. A multi-coating process minimizes ghosts and flaring.

* Leica is a registered trademark of Leica Microsystems IR GmbH.
* DICOMAR is a registered trademark of Leica Camera AG.
* LEICA DICOMAR products are manufactured using Leica-certified measuring instruments and quality assurance systems based on rigorous quality standards approved by Leica Camera AG.

• **Wide Angle Zoom:** Its enable wide-angle and minimal-distortion shooting without the use of a conversion lens and allows shooting in a vehicle or room. The AG-UX180 achieves 24 mm*1 wide-angle and 20x zoom ratio.

### High Quality 4K Image Sensor

The AG-DVX200 features a 4/3-type, large format MOS sensor. It creates highly attractive Bokeh effects by blending 4K resolution with shallow depth of field. The AG-UX180/UX90 feature a 1.0-type MOS sensor provides an appropriate depth of field and excellent balance between image quality and sensitivity.

### i.Zoom in Super-High Resolution

In FHD shooting modes, the i.Zoom function increases the zooming capability while maintaining high resolution.

### Digital Zoom (2x, 5x or 10x)

Using the optical zoom and i.Zoom*2 (in FHD) together, it gives you supertelephoto magnification without dropping in light intensity.

### Advanced Optical Image Stabilizer (O.I.S.)

The correction area has been expanded to the conventional model. This provides powerful correction even in unstable shooting situations. The ball OIS system reduces wear on the drive section, and greatly improves correction for small amplitude hand-shake.

### 5-Axis Hybrid Image Stabilizer [in FHD]

In HD shooting modes, by using hand-shake correction that combines the effects of both optical and electronic image stabilization, hand-shake in various directions, including the rotary direction, is detected and corrected.

### Manual Three Rings

All models feature manual three rings for Zoom, Focus and Iris control. Precise operation is possible by this function.

## High-Speed AF, Various Picture Adjustment

### High-Speed, High-Precision Intelligent Auto Focus

The Micro Drive Focus unit achieves high focusing speed, tracking performance and stability in 4K.

### Custom AF Function

Auto focus operation can be customised by adjusting the AF Speed, AF Sensitivity and AF Area Width. This function enables the AF to operate exactly as intended by the user in accordance with the subject type or application.

### Focus Assist

• **Expand and Peaking:** Expand (enlargement)*3 or Peaking (colored emphasis of focus point) is displayed to assist manual focusing. Its can also be displayed simultaneously.
• **One-Push AF:** This function temporarily activates Auto Focus when shooting in manual focus mode.
• **Manual Focus Assist*4:** Focus is automatically adjusted after you adjust it with the focus ring. (AG-DVX200/UX180)
• **Focus Transition:** The focus can be shifted to a preset position with a single touch. (AG-DVX200/UX180)
• **Area Function:** Auto Focus, Auto Iris or Brightness Display with just a touch on the LCD panel.

### V-Log L Gamma/8-Mode Gamma

• **V-Log L gamma:** The AG-DVX200 features a 12-stop wide dynamic range of V-Log L gamma that is equivalent to the V-Log and curve characteristics provided on the Cinema VariCam Series.
• **8-Mode gamma:** All models are equipped with eight selectable gamma modes, including Cine-Like Gamma.

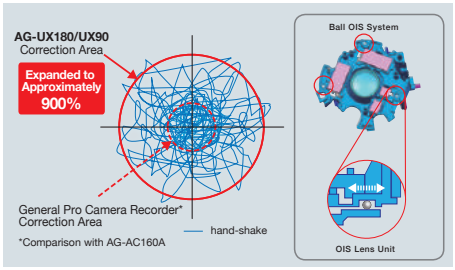
### Creative Image Adjustment Functions

• **16-Axis Independent Color Correction:** It enables color matching of multiple cameras as well as creative image rendering. (AG-DVX200/UX180)
• **Skin Detail:** Makes skin colors appear soft and beautiful.
• **Master Detail:** Adjusts the overall degree of contour enhancement.
• **Scene Files:** Six files preset with picture quality settings are provided as Scene Files. You can change any of the settings as desired and store as Custom Files.

### IR (Infrared) Shooting in Dark Places

IR shooting is possible by turning the IR REC ON*5. Images can be captured in dark places by using an IR light (commercially available). (AG-DVX200/UX180)

An image shot using the wide angle.(AG-UX180/UX90)




Advanced hand-shake correction (AG-UX180/UX90)

## 4K/High Frame Rate Shooting

### 4K/UHD/FHD/SD Multi-Format Recording

MOV (QuickTime), MP4 and AVCHD file formats are supported. The variety of recording modes with selectable image quality, frame rate and bit rate settings respond to a wide range of applications, from cinema production to online distribution.

*Applicable recording modes varies depending on the models.

### High Frame Rate and Variable Frame Rate

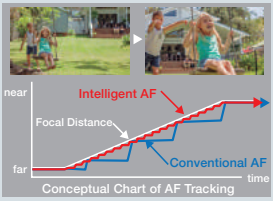
• **AG-DVX200:** High frame rate of up to 60 fps at UHD. Variable frame rate of 2 to 120 fps at FHD.*6
• **AG-UX180:** High frame rate of maximum 120 fps at HD. Variable frame rate of 2 to 60 fps at FHD.*6
• **AG-UX90:** Variable frame rate of 2 to 60 fps at FHD.*6

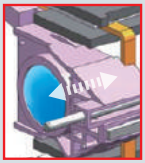
### Double SD Memory Card Slots

Two SD card slots are provided. This enables below recording functions that ensure high operability and high recording reliability.
• **Relay Rec.:** Automatically records continuously*7 "Slot to Slot". Images can be recorded for many hours.
• **Simultaneous Recording:** Identical data is recorded onto cards in both slots.
• **Background Rec.:** Records Rec Start/Stop-controlled data in Slot 1, and records all data, even when Slot 1 is stopped, in Slot 2. (AG-DVX200/UX180)
• **Dual Codec Rec.:** This function records images simultaneously into two different formats, Main (UHD or FHD) and Sub FHD. Sub-recording files can be used for preview, off-line editing and online transmission, thus improving the workflow efficiency. (AG-DVX200/UX180)

### Other Recording Functions

• **Pre Rec:** This function constantly caches few seconds of video and audio data prior to Rec Start, so the data can be recovered in case there is a delay in pressing Rec Start.
• **Interval Rec:** Records intermittently based on a set interval time of 1 sec, 10 sec, 30 sec, 1 minute or 2 minutes.
• **Freeze Frame:** Still Image can be recorded together with audio. This function is convenient when moving the camera to a different location or when shooting a different scene.
• **Time Stamp:** The date and time can be stamped onto recorded images.





Micro Drive Focus Unit

By moving the Micro Drive Focus Unit minutely and quickly, highly precise AF performance is also achieved when shooting in 4K or shooting with a shallow depth of field.

The Micro Drive Focus achieves highly precise AF performance (AG-DVX200/UX180/UX90)

## Professional Function and Design

### 16-bit PCM Professional Audio

• **High-Quality Audio Recording:** All models record two audio channels using either the 16-bit linear PCM (MOV/MP4) or Dolby Audio (AVCHD).
• **XLR AUDIO IN:** Equipped with two channels of XLR audio input (with switchable 48 V phantom power supply, MIC and LINE), manual audio volume and OSD level meter.

### Touch-panel LCD/EVF

•**LCD Monitor:** The monitor LCD built into the handle section can be pulled out and turned 270 degrees in the vertical direction. The touch panel function can be used for menu setting and area functions. It can be display WFM (AG-DVX200/UX180), ZEBRA, Marker (Y Level) and Level Gauge.
• **EVF:** The viewfinder features a high-resolution display for excellent color reproduction.

### Shooting Assist Functions

• **User Buttons:** Any of the various functions can be allocated.
• **ND Filters:** OFF, 1/4, 1/16, 1/64.
• **Gain Selector:** Select from 3-position (L/M/H) allocation.
• **AWB Selector:** Two-value (A/B) memory and presets (3200/5600/VAR) can be selected.

### Professional Interfaces

• **SDI OUT:** Panasonic recorders equipped with SDI input can be linked to the Rec Start/Stop function of the camera. (AG-DVX200/UX180)
• **HDMI OUT:** Digital outputs support 4K/UHD.
• **TC PRESET IN/OUT:** Time code synchronization is possible for two cameras. (AG-DVX200/UX180)
• **USB:** Connection with PC/external storage are possible.
• **REMOTE:** Wired remote operation of iris, focus, zoom and REC start/stop are possible.
• **iPad Remote Control:** The AG ROP app for iPad*8 is available free of charge from the Apple App Store. It enables wireless remote control of Panasonic 4K cameras with installation of a wireless module (optional AJ-WM50 or AJ-WM30).

*1: Equivalent to 35mm, in 4K 24p (17:9 aspect ratio). 25.4 mm in UHD/FHD (16:9 aspect ratio). *2: The higher the magnification, the greater the image quality degradation. *3: The part to be expanded is designated by touching the screen. *4: Not operable in combination with VFR or wired remote controller. *5: When the IR REC is ON, iris, gain, and shutter speed are automatically adjusted. *6: Selective mode differs by product. *7: Recording can continue across multiple SD Memory Cards. However, each time the file reaches 96 GB, it will be split into two files, but the recording continues. If the Relay recording time reaches 10 hours, shooting will temporarily stop, and then automatically restart a few seconds later.
*8: iOS 7.1, iOS 8.1, and iOS 9 are supported.


Double SD Memory Card Slots (an example of AG-DVX200)

# AG-DVX200

## General

| | |
|---|---|
| Power: | DC 7.2 V (when the battery is used)<br>DC 12 V (when the AC adaptor is used) |
| Power Consumption: | 21.7 W |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: Approx. | 2.7 kg (5.95 lb)<br>(body only, excluding lens hood, battery, and accessories)<br>Approx. 3.1 kg (6.84 lb)<br>(including lens hood, battery, and eye cup) |
| Dimensions: | 181 mm (H) x 216 mm (W) x 374 mm (D)<br>(excluding protrusion and eye cup)<br>(7-1/8 inches x 8-1/2 inches x 14-23/32 inches) |

## Camera Unit

| | |
|---|---|
| Pickup Device: | 4/3-type MOS |
| Effective Pixcels: | FHD (1920 x 1080): 15.49 megapixel<br>UHD (3840 x 2160) 59.94p/50.00p: 8.71 megapixel<br>UHD (3840 x 2160) 29.97p/25p.00: 12.89 megapixel<br>4K (4096 x 2160) 24p: 13.35 megapixel |
| Lens: | Optical image stabilizer lens,<br>motorized/manual mode switching, 13x zoom<br>F2.8 to F4.5 (f=12.8 mm to 167 mm)<br>35 mm equivalent:<br>FHD: 28.0 mm to 365.3 mm<br>UHD 59.94p/50.00p: 37.2 mm to 485.1 mm<br>UHD 29.97p/25.00p: 30.6 mm to 398.7 mm<br>4K 24p: 29.5 mm to 384.9 mm |
| Filter Diameter: | 72 mm |
| ND Filter: | OFF, 1/4, 1/16, 1/64 |
| IR Filter: | Incorporates the ON/OFF control function |
| Shortest Shooting Distance (M.O.D.): | Approx. 1.0 m from the front lens |
| Gain Setting: | L/M/H selector switch<br>–6 dB to –1 dB, 0 dB to 24 dB (Adjustable in 1 dB steps. Negative gain values are available only when [EXPAND] is enabled, and the automatic setting can be assigned to L/M/H.) |
| Super Gain: | 30 dB and 36 dB switched<br>(when assigning [S.GAIN] to the USER button) |
| Color Temperature Setting: | ATW, ATW LOCK, Ach, Bch, preset 3200 K/ preset 5600 K/VAR (2000 K to 15000 K) |
| Shutter Speed: | When [SYSTEM MODE] = 59.94 Hz<br>• 60i/60p mode: 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec.,1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec.,1/8000 sec.<br>• 30p mode: 1/30 sec.,1/50 sec.,1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>• 24p mode: 1/24 sec., 1/48 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>When [SYSTEM MODE] = 50 Hz<br>• 50i/50p mode: 1/50 sec., 1/60 sec., 1/100 sec., 1/125 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>• 25p mode: 1/25 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/125 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec. |
| Shutter Speed: (Slow) | When [SYSTEM MODE] = 59.94 Hz<br>• 60i/60p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec., 1/30 sec.<br>• 30p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec.<br>• 24p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec.<br>When [SYSTEM MODE] = 50 Hz<br>• 50i/50p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec., 1/25 sec.<br>• 25p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec. |
| Shutter Speed: (Synchro Scan) | When [SYSTEM MODE] = 59.94 Hz<br>• 60i/60p mode: 1/60.0 sec. to 1/249.8 sec.<br>• 30p mode: 1/30.0 sec. to 1/249.8 sec.<br>• 24p mode: 1/24.0 sec. to 1/249.6 sec.<br>When [SYSTEM MODE] = 50 Hz<br>• 50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>• 25p mode: 1/25.0 sec. to 1/250.0 sec. |
| Shutter Open Angle: | 5.0 deg to 180.0 deg to 360.0 deg<br>(in 0.5 deg steps, angle display) |
| VFR Recording Frame Rate: | When [SYSTEM MODE] = 59.94 Hz<br>• 60p mode: 2, 15, 30, 40, 55, 58, 60, 62, 65, 75, 90, and 120 (frames per second)<br>• 30p mode: 2, 15, 26, 28, 30, 32, 34, 45, 60, 75, 90, and 120 (frames per second)<br>• 24p mode: 2, 12, 18, 20, 22, 24, 26, 28, 30, 36, 48, 60, 72, 84, 96, and 120 (frames per second)<br>When [SYSTEM MODE] = 50 Hz<br>• 50p mode: 2, 12, 25, 33, 45, 48, 50, 52, 55, 62, 75, 100, and 120 (frames per second)<br>• 25p mode: 2, 12, 21, 23, 25, 27, 30, 37, 50, 62, 75, 100, and 120 (frames per second) |
| Sensitivity: | When [HIGH SENS.] mode<br>F11 (2,000 lx, 3,200 K, 89.9 % reflect, 1080/59.94i)<br>F12 (2,000 lx, 3,200 K, 89.9 % reflect, 1080/50i) |
| Minimum Subject Illumination: | 0.2 lx (F2.8, gain 18 dB, [1/2S.],<br>Manual slow shutter, [HIGH SENS.] mode) |
| Digital Zoom: | x2/x5/x10, i.Zoom<br>(1.0x to 1.54x, Variable zoom) |
| Lens Hood: | Hood with lens cover |

## Memory Card Recorder

| | |
|---|---|
| Recording Media*1: | SDHC Memory Card (4 GB to 32 GB),<br>SDXC Memory Card (48 GB to 128 GB),<br>UHS-I supported |
| Recording Slot: | Slot x 2 |
| System Format: | 59.94 Hz / 50 Hz |
| Video Recording Format: | Recording Format: MOV, MP4, AVCHD |
| Recording Mode: | Please see page 22 for the Video record mode table. |
| Recording Time: | Please see page 26 for the Recording Time table. |
| Still Picture Recording Format: | JPEG (DCF/Exif2.2) supported<br>8.8M: 4096 x 2160 (17:9), 8.3M: 3840 x 2160 (16:9),<br>2.1M: 1920 x 1080 (16:9), 0.9M: 1280 x 720 (16:9),<br>0.2M: 640 x 360 (16:9), 0.3M: 640 x 480 (4:3) |

## Digital Video

| | |
|---|---|
| External Output Video Signal*2: | 8 bit 4:2:2/10 bit 4:2:2 (switchable menu) |
| Recording Video Signal: | 8 bit 4:2:0 |
| Video Compression Format: | MPEG-4 AVC/H.264 High Profile<br>(MOV/MP4/AVCHD) |

## Digital Audio

| | |
|---|---|
| Recording Audio Signal: | 48 kHz/16 bit, 2 CH |
| Audio Compression Format: | LPCM (MOV/MP4) Dolby Audio (AVCHD) |
| Headroom: | 12 dB |

## Dual Codec

| | |
|---|---|
| File Format: | MOV, MP4 |
| Video Compression Format: | MPEG-4 AVC/H.264 High Profile |
| Audio Compression Format: | LPCM |
| Recording Format: | When [Dual Codec] = FHD 50 Mbps<br>[Main Recording Side]<br>Recording mode = MOV/MP4<br>•UHD/29.97p/25.00p/23.98p 100 Mbps<br>[Sub Recording Side]<br>Recording mode = Same as the recording mode of the Main Recording Side<br>•FHD/29.97p/25.00p/23.98p 50 Mbps<br>When [Dual Codec] = FHD 8Mbps<br>[Main Recording Side]<br>Recording mode = MOV/MP4<br>•UHD/29.97p/25.00p/23.98p 100 Mbps<br>•FHD/59.94p/50.00p/29.97p/25.00p/23.98p 200 Mbps<br>•FHD/59.94p/50.00p 100 Mbps<br>[Sub Recording Side]<br>Recording mode = MOV<br>•FHD/59.94p/50.00p/29.97p/25.00p/23.98p 8 Mbps |

## Video Input/Output

| | |
|---|---|
| SDI OUT: | BNC x1, 0.8 V [p-p], 75 Ω, 3 G/1.5 G HD SDI, SD-SDI supported<br>Output format:<br>1080/59.94p LEVEL-A/50.00p LEVEL-A, 1080/29.97PsF/25.00PsF/24.00PsF/23.98PsF, 1080/59.94i/50.00i, 720/59.94p/50.00p, 480/59.94i, 576/50.00i |
| VIDEO OUT: | BNC x 1, Composite 1.0 V [p-p], 75 Ω |
| HDMI OUT: | HDMI x 1 (HDMI type A terminal, not compatible with VIERA Link)<br>Output format:<br>2160/59.94p/50.00p/29.97p/25.00p/24.00p/23.98p, 1080/59.94p/50.00p/29.97p/25.00p/24.00p/23.98p/59.94i/50.00i, 720/59.94p/50.00p, 480/59.94p, 576/50.00p |

## Audio Input

| | |
|---|---|
| Built-in Microphone: | Stereo microphone |
| XLR IN: | XLR (3-pin) x 2 (INPUT1, INPUT2)<br>Input high impedance, LINE/MIC/MIC+48 V (switchable SW)<br>LINE: 4 dBu/0 dBu (switchable menu)<br>MIC: –40 dBu/–50 dBu/–60 dBu (switchable menu) |

## Audio Output

| | |
|---|---|
| SDI OUT: | 2 CH (LPCM) switchable gain: 0 dB/–6 dB/–12 dB |
| HDMI OUT: | 2 CH (LPCM) |
| Audio OUT: | 3.5 mm diameter stereo mini jack x 1,<br>Output level: 600 Ω, 316 mV |
| Headphone: | 3.5 mm diameter stereo mini jack x 1 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| CAM REMOTE: | 2.5 mm diameter super mini jack x1 (ZOOM, S/S)<br>3.5 mm diameter mini jack x1 (FOCUS, IRIS) |
| TC PRESET IN/OUT: | BNC x 1,<br>Used as the input and output terminals<br>Input: 1.0 V to 4.0 V [p-p], 10 kΩ<br>Output: 2.0 V ±0.5 V [p-p], low impedance |
| USB HOST: | Type A connector, 9-pin, bus power supported<br>In Recording mode; USB 2.0 compatible (5 V, 0.5 A)<br>In Playback mode; USB 3.0 compatible (5 V, 0.9 A), used for external media device connection*3 |
| USB DEVICE: | Micro-B connector, 10-pin, USB 3.0,<br>Mass storage function (read only) |
| DC IN 12 V: | DC 12 V (11.4 V to 12.6 V), EIAJ type 4 |

## Monitor/Viewfinder

| | |
|---|---|
| LCD Monitor: | 4.3-type HD color monitor (Approx. 2760000 dots) |
| Viewfinder: | 0.39-type OLED (organic EL display)<br>(Approx. 2360000 dots,<br>video display area: Approx. 1770000 dots) |

## Included Accessories

Battery (VW-VBD58), Shoulder strap, Battery charger, Microphone holder, AC adaptor,
Screw for microphone holder (12 mm), Power code x 2, Eye cup, Lens hood, INPUT terminal cap, CD-ROM (Operating Instructions)

*1: An SD Memory Card with a capacity of UHS Speed Class 3 (U3) is required to shoot videos with a bit rate of 100 Mbps or higher. An SDXC Memory Card with a capacity of 64 GB or more and UHS Speed Class 3 (U3) is required to shoot UHD 2160/59.94p/50.00p videos with a bit rate of 150 Mbps or higher.
*2: HDMI output of UHD/59.94p/50.00p becomes 8 bit 4:2:0. Also, when 10 bit 4:2:2 is selected, recording is not possible with the main unit.
*3: *External media device with a capacity of 32 GB or below or a capacity above 2 TB cannot be used.

## Video Recording Mode

### When System Frequency is 59.94 Hz

| Recording Mode | Recording Format | | Bit Rate |
|---|---|---|---|
| MOV/MP4 | 4K | 4096 x 2160/24.00p | 100 Mbps |
| | UHD | 3840 x 2160/59.94p | 150 Mbps |
| | | 3840 x 2160/29.97p/23.98p | 100 Mbps |
| | FHD | 1920 x 1080/59.94p/29.97p/23.98p (ALL-I) | 200 Mbps |
| | | 1920 x 1080/59.94p | 100 Mbps |
| | | 1920 x 1080/59.94p/29.97p/23.98p/59.94i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/59.94p | 25 Mbps |
| | PH | 1920 x 1080/59.94i/23.98p | 21 Mbps |
| | HA | 1920 x 1080/59.94i | 17 Mbps |
| | HE | 1440 x 1080/59.94i | 5 Mbps |
| | PM | 1280 x 720/59.94p | 8 Mbps |
| | SA | 720 x 480/59.94i (SIDE CROP/LETTERBOX/SQUEEZE) | 9 Mbps |

### When System Frequency is 50.00 Hz

| Recording Mode | Recording Format | | Bit Rate |
|---|---|---|---|
| MOV/MP4 | 4K | 4096 x 2160/24.00p | 100 Mbps |
| | UHD | 3840 x 2160/50.00p | 150 Mbps |
| | | 3840 x 2160/25.00p | 100 Mbps |
| | FHD | 1920 x 1080/50.00p/25.00p (ALL-I) | 200 Mbps |
| | | 1920 x 1080/50.00p | 100 Mbps |
| | | 1920 x 1080/50.00p/25.00p/50.00i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/50.00p | 25 Mbps |
| | PH | 1920 x 1080/50.00i | 21 Mbps |
| | HA | 1920 x 1080/50.00i | 17 Mbps |
| | HE | 1440 x 1080/50.00i | 5 Mbps |
| | PM | 1280 x 720/50.00p | 8 Mbps |
| | SA | 720×576/50.00i (SIDE CROP/LETTERBOX/SQUEEZE) | 9 Mbps |

# AG-UX180

## General

| | |
|---|---|
| Power: | DC 7.28 V (when the battery is used)<br>DC 12 V (when the AC adaptor is used) |
| Power Consumption: | 19.7 W (when the LCD monitor is used) |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: | Body: Approx. 2.0 kg (4.41 lb)<br>(body only, excluding lens hood, battery, and accessories)<br>Shooting: Approx. 2.4 kg (5.29 lb)<br>(including lens hood, battery, and eye cup) |
| Dimensions: | 173 mm (W) x 195 mm (H) x 346 mm (D)<br>(6-13/16 inches x 7-11/16 inches x 13-5/8 inches)<br>(excluding protrusion and eye cup)<br>173 mm (W) x 195 mm (H) x 392 mm (D)<br>(6-13/16 inches x 7-11/16 inches x 15-7/16 inches)<br>(including eye cup, excluding protrusion) |

## Camera Unit

| | |
|---|---|
| Pickup Device: | 1.0-type (effective size)<br>MOS solid state image sensor |
| Effective Pixels: | 8.79 megapixel: UHD/FHD 59.94p/29.97p/23.98p<br>9.46 megapixel: 4K 24p |
| Lens: | Optical image stabilizer lens,<br>optical 20x motorized zoom<br>F2.8 to F4.5 (f=8.8 mm to 176 mm)<br>35 mm equivalent:<br>f=25.4 mm to 508.0 mm:<br>UHD/FHD 59.94p/29.97p/23.98p<br>f=24.0 mm to 480.0 mm: 4K24.00p<br>Filter Diameter: 67 mm<br>ND Filter: 4 Positions (OFF, 1/4, 1/16, 1/64)<br>IR Filter: Incorporates the ON/OFF control function<br>Shortest Shooting Distance (M.O.D.):<br>Approx. 1.0 m from the front lens |
| Gain Setting: | L/M/H selector switch<br>Standard mode: 0 dB to 24 dB<br>(Adjustable in 1 dB steps)<br>(Automatic setting can be assigned to L/M/H)<br>Extended ON: –3 dB to 24 dB<br>(Adjustable in 1 dB steps)<br>(Automatic setting can be assigned to L/M/H)<br>30 dB and 36 dB switched<br>(when assigning [S. GAIN] to the USER button) |
| Color Temperature Setting: | ATW, ATW LOCK, Ach, Bch,<br>preset 3200 K/preset 5600 K/VAR<br>(2000 K to 15000 K) |
| Shutter Speed: | When [SYSTEM MODE] = 59.94 Hz<br>60i/60p mode: 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>30p mode: 1/30 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>24p mode: 1/24 sec., 1/48 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>When [SYSTEM MODE] = 50.00 Hz<br>50i/50p mode: 1/50 sec., 1/60 sec., 1/100 sec., 1/125 sec., 1/180 sec.,1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>25p mode: 1/25 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/125 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec. |
| Shutter Speed: (Slow Shutter) | When [SYSTEM MODE] = 59.94 Hz<br>60i/60p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec., 1/30 sec.,<br>30p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec.<br>24p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec.<br>When [SYSTEM MODE] = 50.00 Hz<br>50i/50p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec., 1/25 sec.<br>25p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec. |
| Shutter Speed: (Synchro Scan) | When [SYSTEM MODE] = 59.94 Hz<br>59.94i/59.94p mode: 1/60.0 sec. to 1/249.7 sec.<br>29.97p mode: 1/30.0 sec. to 1/249.7 sec.<br>23.98p mode: 1/24.0 sec. to 1/249.6 sec.<br>24.00p mode: 1/24.0 sec. to 1/249.9 sec.<br>When [SYSTEM MODE] = 50.00 Hz<br>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>25p mode: 1/25.0 sec. to 1/250.0 sec. |
| VFR Recording Frame Rate: | When [SYSTEM MODE] = 59.94 Hz<br>30p mode: 2, 15, 26, 28, 30, 32, 34, 45, 60 (fps)<br>24p mode: 2, 12, 20, 22, 24, 26, 28, 36, 48, 60 (fps)<br>SYSTEM MODE = 50.00, Hz<br>25p mode: 2, 12, 21, 23, 25, 27, 30, 37, 50 (fps) |
| Super-Slow Motion Recording: | When [SYSTEM MODE] = 59.94 Hz<br>Shooting frame rate FHD 120 fps,<br>Slow motion effect 1/4 speed (when 30p mode),<br>1/5 speed (when 24p mode)<br>When [SYSTEM MODE] = 50.00 Hz<br>Shooting frame rate FHD 100fps,<br>Slow motion effect 1/4 speed (when 25p mode) |
| Sensitivity: | When [HIGH SENS.] mode<br>F11 (2000 lx, 3200 K, 89.9 % reflect, 1080/59.94i)<br>F12 (2000 lx, 3200 K, 89.9 % reflect, 1080/50i) |
| Minimum Subject Illumination: | 0.2 lx (F2.8, gain 18 dB, Manual slow shutter 1/2S, When [HIGH SENS.] mode) |
| Digital Zoom: | 2x/5x/10x, i.Zoom (max. 30x) |
| Lens Hood: | Hood with lens cover |

## Memory Card Recorder

| | |
|---|---|
| Recording Media:*1 | SDHC Memory Card (4 GB to 32 GB),<br>SDXC Memory Card (48 GB to 128 GB),<br>UHS-I supported |
| Recording Slot: | Slot x 2 |
| System Format: | 59.94 Hz/50 Hz |
| Motion Picture Recording: | Recording Format: MOV, MP4, AVCHD |
| Recording Mode: | Please see page 24 for the Recording Format table. |
| Recording Time: | Please see page 26 for the Recording Time table. |
| 2 Slot Functions: | Relay, Simultaneous, Background*2, Dual codec |
| Still Picture Recording Mode: | JPEG (DCF/Exif2.2) |
| Still Picture Recording: | Motion Picture Playback:<br>8.8M: 4096 x 2160 (17:9), 8.3M: 3840 x 2160 (16:9),<br>2.1M: 1920 x 1080 (16:9), 0.9M: 1280 x 720 (16:9) |

## Digital Video

| | |
|---|---|
| Video Signal for External Output: | 8bit 4:2:2*3 |
| Recording Video Signal: | 8bit 4:2:0 |
| Video Compression Format: | MPEG-4 AVC/H.264 High Profile<br>(MOV/MP4/AVCHD) |

## Digital Audio

| | |
|---|---|
| Recording Audio Signal: | 48 kHz/16 bit 2CH |
| Audio Signal Format: | LPCM (MOV/MP4), Dolby Audio (AVCHD) |
| Headroom: | 12 dB |

## Dual Codec

| | |
|---|---|
| Recording Method: | MOV, MP4 |
| Video Compression Format: | MPEG-4 AVC/H.264 High Profile |
| Audio Signal Format: | LPCM |
| Recording Format: | Please see page 24 for the Dual Codec Recording table. |
| Recording Time: | FHD 50Mbps / FHD 8Mbps |
| (32 GB) | Approx. 1 hour 20 min. / Approx. 8 hour 30 min. |
| (64 GB) | Approx. 2 hour 40 min. / Approx. 17 hour 10 min. |
| (128 GB) | Approx. 5 hour 20 min. / Approx. 35 hours |

## Video Input/Output

| | |
|---|---|
| SDI OUT: | BNC x 1, 0.8 V [p-p], 75 Ω, 3 G/1.5 G, HD SDI, SD SDI supported<br>Output format:<br>1080/59.94p LEVEL-A/50.00p LEVEL-A, 1080/29.97PsF/25.00PsF/24.00PsF/23.98PsF, 1080/59.94i/50.00i, 720/59.94p/50.00p, 480/59.94i, 576/50.00i |
| VIDEO OUT: | AV connector x 1 |
| HDMI : | Type A connector x 1, VIERA Link not supported<br>Output format:<br>2160/59.94p/50.00p/29.97p/25.00p/24.00p/23.98p, 1080/59.94p/50.00p/29.97p/25.00p/24.00p/23.98p/59.94i/50.00i,<br>720/59.94p/50.00p, 480/59.94p, 576/50.00p |

## Audio Input

| | |
|---|---|
| Built-in Microphone: | Stereo microphone |
| XLR Input: | XLR (3-pin) x 2 (INPUT1, INPUT2)<br>Input high impedance,<br>LINE/MIC/MIC+48V (switchable SW)<br>LINE: +4 dBu/0 dBu (switchable menu)<br>MIC: –40 dBu/–50 dBu/–60 dBu (switchable menu) |

## Audio Output

| | |
|---|---|
| SDI: | 2 ch (LPCM) switchable gain: 0 dB/–6 dB/–12 dB |
| HDMI: | 2 ch (LPCM) |
| AUDIO OUT: | AV connector x 1, Output level: 600 Ω, 251 mV |
| Headphone: | 3.5 mm diameter stereo mini jack x 1 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| Camera Remote: | 2.5 mm diameter super mini jack x1 (ZOOM, S/S)<br>3.5 mm diameter mini jack x1 (FOCUS, IRIS) |
| TC PRESET IN/OUT: | BNC x 1, Used as the input and output terminals<br>Input: 1.0 V to 4.0 V [p-p] 10 KΩ<br>Output: 2.0 V ± 0.5 V [p-p] low impedance |
| USB 3.0 HOST: | Standard-A connector, 9-pin,<br>external media device connection*4,<br>bus power supported |
| USB 3.0 DEVICE: | Micro-B connector,<br>10-pin, Mass storage function (read only) |
| DC IN 12V: | DC 12V (11.4V to 12.6V) EIAJ Type4 |

## Monitor/Viewfinder

| | |
|---|---|
| LCD Monitor: | 3.5 type LCD color monitor, Approx. 1,150,000 dots |
| Viewfinder: | 0.39 type OLED (organic EL display)<br>Approx. 2,360,000 dots,<br>video display area: approx. 1,770,000 dots |

## Included Accessories

Battery (AG-VBR59), Battery charger (AG-BRD50), AC adaptor, Microphone holder kit, AC cable, Eye cup, Lens hood, INPUT terminal cap, Operating instructions

*1: An SD Memory Card with a capacity of UHS Speed Class 3 (U3) is required to shoot videos with a bit rate of 100 Mbps or higher. An SDXC Memory Card with a capacity of 64 GB or more and UHS Speed Class 3 (U3) is required to shoot UHD 2160/59.94p/50.00p videos with a bit rate of 150 Mbps or higher.
*2: It supports in record mode less than 50 Mbps.
*3: Output of UHD/59.94p/50.00p becomes 8 bit 4:2:0.
*4: External media devices with a capacity of below 32 GB or a capacity above 2 TB cannot be used.

## Recording Format

### When System Frequency is 59.94 Hz

| Recording Mode | Recording Format | | Bit Rate |
|---|---|---|---|
| MOV/MP4 | 4K | 4096 x 2160/24.00p | 100 Mbps |
| | UHD | 3840 x 2160/59.94p | 150 Mbps |
| | | 3840 x 2160/29.97p/23.98p | 100 Mbps |
| | FHD | 1920 x 1080/ 59.94p/29.97p/23.98p (ALL-I) | 200 Mbps |
| | | 1920 x 1080/59.94p | 100 Mbps |
| | | 1920 x 1080/ 59.94p/29.97p/23.98p/59.94i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/59.94p | 25 Mbps |
| | PH | 1920 x 1080/59.94i/23.98p | 21 Mbps |
| | HA | 1920 x 1080/59.94i | 17 Mbps |
| | HE | 1440 x 1080/59.94i | 5 Mbps |
| | PM | 1280 x 720/59.94p | 8 Mbps |
| | SA | 720 x 480/59.94i (SIDE CROP/SQUEEZE) | 9 Mbps |

### When System Frequency is 50.00 Hz

| Recording Mode | Recording Format | | Bit Rate |
|---|---|---|---|
| MOV/MP4 | 4K | 4096 x 2160/24.00p | 100 Mbps |
| | UHD | 3840 x 2160/50.00p | 150 Mbps |
| | | 3840 x 2160/25.00p | 100 Mbps |
| | FHD | 1920 x 1080/ 50.00p/25.00p (ALL-I) | 200 Mbps |
| | | 1920 x 1080/50.00p | 100 Mbps |
| | | 1920 x 1080/ 50.00p/25.00p/50.00i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/50.00p | 25 Mbps |
| | PH | 1920 x 1080/50.00i | 21 Mbps |
| | HA | 1920 x 1080/50.00i | 17 Mbps |
| | HE | 1440 x 1080/50.00i | 5 Mbps |
| | PM | 1280 x 720/50.00p | 8 Mbps |
| | SA | 720×576/50.00i (SIDE CROP/SQUEEZE) | 9 Mbps |

## Dual Codec Recording

### When FHD 50 Mbps mode

| Recording Mode | | Recording Format |
|---|---|---|
| Main-Recording | MOV/MP4 | UHD 29.97p/25p/23.98p 100Mbps |
| Sub-Recording | MOV/MP4* | FHD 29.97p/25p/23.98p 50Mbps |

* Same recording mode selected in the main-recording side.

### When FHD 8 Mbps mode

| Recording Mode | | Recording Format |
|---|---|---|
| Main-Recording | MOV/MP4 | UHD 29.97p/25p/23.98p 100 Mbps<br>FHD 59.94p/50p/29.97p/25p/23.98p 200Mbps<br>FHD 59.94p/50p 100Mbps |
| Sub-Recording | MOV | FHD 59.94p/50p/29.97p/25p/23.98p 8Mbps |

# AG-UX90

## General

| | |
|---|---|
| Power: | DC 7.28 V (when the battery is used)<br>DC 12 V (when the AC adaptor is used) |
| Power Consumption: | 12.2 W (when the LCD monitor is used) |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: | Body: Approx. 1.9 kg (4.19 lb)<br>(body only, excluding lens hood, battery, and accessories)<br>Shooting: Approx. 2.3 kg (5.07 lb)<br>(including lens hood, battery, and eye cup) |
| Dimensions: | 169 mm (W) x 195 mm (H) x 340 mm (D)<br>(6-21/32 inches x 7-11/16 inches x 13-3/8 inches)<br>(excluding protrusion and eye cup)<br>169 mm (W) x 195 mm (H) x 382 mm(D)<br>(6-21/32 inches x 7-11/16 inches x 15-1/32 inches)<br>(including eye cup, excluding protrusion) |

## Camera Unit

| | |
|---|---|
| Pickup Device: | 1.0-type MOS solid state image sensor |
| Effective Pixels: | [59.94 Hz model]<br>17.78 megapixel: FHD 59.94p/29.97p/23.98p<br>8.59 megapixel: UHD 29.97p/23.98p<br>[50.00 Hz model]<br>17.78 megapixel: FHD 50.00p/25.00p<br>8.59 megapixel: UHD 25.00p |
| Lens: | Optical image stabilizer lens,<br>optical 15x motorized zoom<br>F2.8 to F4.5 (f=8.8 mm to 132 mm)<br>35 mm equivalent:<br>[59.94 Hz model]<br>f=24.5 mm to 367.5 mm: FHD 59.94p/29.97p/23.98p<br>f=35.4 mm to 531.0 mm: UHD 29.97p/23.98p<br>[50.00 Hz model]<br>f=24.5 mm to 367.5 mm: FHD 50.00p/25.00p<br>f=35.4 mm to 531.0 mm: UHD 25.00p<br>Filter Diameter: 67 mm<br>ND Filter: 4 Positions (OFF, 1/4, 1/16, 1/64)<br>Shortest Shooting Distance (M.O.D.):<br>Approx. 1.0 m from the front lens |
| Gain Setting: | L/M/H selector switch<br>Standard mode: 0 dB to 30 dB<br>(Adjustable in 1 dB steps)<br>(Automatic setting can be assigned to L/M/H)<br>Extended ON: –3 dB to 30 dB<br>(Adjustable in 1 dB steps)<br>(Automatic setting can be assigned to L/M/H)<br>33 dB and 36 dB switched<br>(when assigning [S.GAIN] to the USER button) |
| Color Temperature Setting: | ATW, ATW LOCK, Ach, Bch,<br>preset 3200 K/preset 5600 K/VAR<br>(2000 K to 15000 K) |
| Shutter Speed: | [59.94 Hz model]<br>60i/60p mode: 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>30p mode: 1/30 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>24p mode: 1/24 sec., 1/48 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>[50.00 Hz model]<br>50i/50p mode: 1/50 sec., 1/60 sec., 1/100 sec., 1/125 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec.<br>25p mode: 1/25 sec., 1/50 sec., 1/60 sec., 1/100 sec., 1/125 sec., 1/180 sec., 1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec., 1/1000 sec., 1/1500 sec., 1/2000 sec., 1/3000 sec., 1/4000 sec., 1/8000 sec. |
| Shutter Speed: (Slow Shutter) | [59.94 Hz model]<br>60i/60p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec., 1/30 sec.<br>30p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec.<br>24p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec.<br>[50.00 Hz model]<br>50i/50p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec., 1/25 sec.<br>25p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec. |
| VFR Recording Frame Rate: | [59.94 Hz model]<br>30p mode: 2, 15, 26, 28, 30, 32, 34, 45, 60 (fps)<br>24p mode: 2, 12, 20, 22, 24, 26, 28, 36, 48, 60 (fps)<br>[50.00 Hz model]<br>25p mode: 2, 12, 21, 23, 25, 27, 30, 37, 50 (fps) |
| Minimum Subject Illumination: | [59.94 Hz model]<br>1.3 lx (F2.8, Super Gain 36dB, Manual slow shutter 1/30s)<br>[50.00 Hz model]<br>1.1 lx (F2.8, Super Gain 36dB, Manual slow shutter 1/25s) |
| Digital Zoom: | 2x/5x/10x,<br>i.Zoom: max. 25x (optical zoom + digital zoom) |
| Lens Hood: | Hood with lens cover |

## Memory Card Recorder

| | |
|---|---|
| Recording Media:*1 | SDHC Memory Card (4 GB to 32 GB),<br>SDXC Memory Card (48 GB to 128 GB)<br>UHS-I supported |
| Recording Slot: | Slot x 2 |
| System Format: | [59.94 Hz model]<br>59.94 Hz<br>[50.00 Hz model]<br>50 Hz |
| Recording Format: | MOV, MP4, AVCHD |
| Recording Mode: | Please see page 26 for the Recording Format table. |
| Recording Time: | Please see page 26 for the Recording Time table. |
| 2 Slot Functions: | Relay, Simultaneous |
| Still Picture Recording Mode: | JPEG (DCF/Exif2.2) |
| Still Picture Recording: | Motion Picture Playback:<br>8.3 M: 3840 x 2160 (16:9),<br>2.1 M: 1920 x 1080 (16:9),<br>0.9 M: 1280 x 720 (16:9) |

## Digital Video

| | |
|---|---|
| Video Signal for External Output: | 8 bit 4:2:2 |
| Recording Video Signal: | 8 bit 4:2:0 |
| Video Compression Format: | MPEG-4 AVC/H.264 High Profile<br>(MOV/MP4/AVCHD) |

## Digital Audio

| | |
|---|---|
| Sampling Frequency: | 48 kHz/16 bit 2 ch |
| Audio Signal Format: | LPCM (MOV/MP4), Dolby Audio (AVCHD) |
| Headroom: | 12 dB |

## Video Input/Output

| | |
|---|---|
| VIDEO OUT: | VIDEO OUT connector x 1 |
| HDMI: | Type A connector x 1, VIERA Link not supported<br>[59.94 Hz model]<br>Output format: 2160/29.97p/23.98p, 1080/59.94p/29.97p/23.98p/59.94i, 720/59.94p, 480/59.94p<br>[50.00 Hz model]<br>Output format: 2160/25.00p, 1080/50p/25p/50i, 720/50p, 576/50p |

## Audio Input

| | |
|---|---|
| Built-in Microphone: | Stereo microphone |
| XLR Input: | XLR (3-pin) x 2 (INPUT1, INPUT2)<br>high impedance,<br>LINE/MIC/MIC+48V (switchable SW)<br>LINE: +4 dBu/0 dBu (switchable menu)<br>MIC: –40 dBu/–50 dBu/–60 dBu (switchable menu) |

## Audio Output

| | |
|---|---|
| HDMI: | 2 ch (LPCM) |
| AUDIO OUT: | AUDIO OUT x 2 |
| Headphone: | 3.5 mm diameter stereo mini jack x 1 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| Camera Remote: | 2.5 mm diameter super mini jack x1 (ZOOM, S/S)<br>3.5 mm diameter mini jack x1 (FOCUS, IRIS) |
| USB 3.0 HOST: | Standard-A connector,<br>9-pin, external media device connection*2,<br>bus power supported |
| USB 3.0 DEVICE: | Micro-B connector, 10-pin,<br>Mass storage function (read only) |
| DC IN 12V: | DC 12 V (11.4 V to 12.6 V) EIAJ Type4 |

## Monitor/Viewfinder

| | |
|---|---|
| LCD Monitor: | 3.5-type LCD monitor,<br>Approx. 1,150,000 dots |
| Viewfinder: | 0.24-type EVF,<br>Approx. 1,560,000 dots equivalent |

## Included Accessories

Battery (AG-VBR59), Battery charger (AG-BRD50), AC adaptor, Microphone holder, Screw for microphone holder (12 mm), AC cable x 2, Eye cup, Lens hood, INPUT terminal cap, Operating instructions

*1: An SD Memory Card with a capacity of UHS Speed Class 3 (U3) is required to shoot videos with a bit rate of 100 Mbps or higher.
*2: External media devices with a capacity of below 32 GB or a capacity above 2 TB cannot be used.

## Recording Format

### 59.94 Hz Model

| Recording Mode | Recording Format | | Bit Rate |
|---|---|---|---|
| MOV/MP4 | UHD | 3840 x 2160/29.97p/23.98p | 100 Mbps |
| | FHD | 1920 x 1080/59.94p/29.97p/23.98p/59.94i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/59.94p | 25 Mbps |
| | PH | 1920 x 1080/59.94i/23.98p | 21 Mbps |
| | HA | 1920 x 1080/59.94i | 17 Mbps |
| | HE | 1440 x 1080/59.94i | 5 Mbps |
| | PM | 1280 x 720/59.94p | 8 Mbps |
| | SA | 720 x 480/59.94i (SIDE CROP/SQUEEZE) | 9 Mbps |

### 50.00 Hz Model

| Recording Mode | Recording Format | | Bit Rate |
|---|---|---|---|
| MOV/MP4 | UHD | 3840 x 2160/25.00p | 100 Mbps |
| | FHD | 1920 x 1080/50.00p/25.00p/50.00i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/50.00p | 25 Mbps |
| | PH | 1920 x 1080/50.00i | 21 Mbps |
| | HA | 1920 x 1080/50.00i | 17 Mbps |
| | HE | 1440 x 1080/50.00i | 5 Mbps |
| | PM | 1280 x 720/50.00p | 8 Mbps |
| | SA | 720 x 576/50.00i (SIDE CROP/SQUEEZE) | 9 Mbps |

## Recording Time of AG-DVX200/UX180/UX90

| Recording Format | | Bit Rate | 32 GB | 64 GB | 128 GB |
|---|---|---|---|---|---|
| MOV/MP4 | 4K | 100 Mbps* | Approx. 40 min. | Approx. 1 hour 20 min. | Approx. 2 hours 40 min. |
| | UHD | 150 Mbps* | — | Approx. 55 min. | Approx. 1 hour 50 min. |
| | | 100 Mbps | Approx. 40 min. | Approx. 1 hour 20 min. | Approx. 2 hours 40 min. |
| | FHD | 200 Mbps* | Approx. 20 min. | Approx. 40 min. | Approx. 1 hour 20 min. |
| | | 100 Mbps* | Approx. 40 min. | Approx. 1 hour 20 min. | Approx. 2 hours 40 min. |
| | | 50 Mbps | Approx. 1 hour 20 min. | Approx. 2 hours 40 min. | Approx. 5 hours 20 min. |
| AVCHD | PS | 25 Mbps | Approx. 2 hours 40 min. | Approx. 5 hours 20 min. | Approx. 11 hours |
| | PH | 21 Mbps | Approx. 3 hours | Approx. 6 hours | Approx. 12 hours 30 min. |
| | HA | 17 Mbps | Approx. 4 hours 10 min. | Approx. 8 hours 30 min. | Approx. 17 hours |
| | HE | 5 Mbps | Approx. 13 hours 40 min. | Approx. 27 hours 30 min. | Approx. 56 hours |
| | PM | 8 Mbps | Approx. 8 hours 30 min. | Approx. 17 hours 10 min. | Approx. 35 hours |
| | SA | 9 Mbps | Approx. 8 hours | Approx. 16 hours 30 min. | Approx. 34 hours |

* Not support AG-UX90.

| 4K Camcorder options | | AG-DVX200 | AG-UX180 | AG-UX90 |
|---|---|---|---|---|
| Battery Pack (11,800 mAh) | AG-VBR118G | ✓ | ✓ | ✓ |
| Battery Pack (8,850 mAh) | AG-VBR89G | ✓ | ✓ | ✓ |
| Battery Pack (5,900 mAh) | AG-VBR59 | ✓ | ✓ | ✓ |
| Battery Charger | AG-BRD50 | ✓ | ✓ | ✓ |
| Battery Pack (5,800 mAh) | VW-VBD58 | ✓ | ✓ | ✓ |
| Battery Charger | AG-B23 | ✓ | ✓ | ✓ |
| XLR Microphone | AG-MC200G | ✓ | ✓ | ✓ |
| LED Video Light | VW-LED1 | ✓ | ✓ | ✓ |
| Wireless Module*1 | AJ-WM50 | ✓ | ✓ | ✓ |
| Wireless Module*1 | AJ-WM30 | ✓ | ✓ | ✓ |
| 787.4 mm (31 inches) 4K LCD Monitor | BT-4LH310 | ✓ | ✓ | ✓ |
| microP2 card (B series) | AJ-P2M064BG | ✓ | ✓ | ✓ |
| SD/SDHC/SDXC Memory Card*2 | | ✓ | ✓ | ✓ |

✓: It is possible to use it. *1: Not available in some areas. *2: UHS Speed Class 3 (U3) SD Memory Card is necessary for video recording of 100 Mbps or more. UHS Speed Class 3 (U3) SDXC Memory Card of 64 GB or more is necessary for video recording of UHD2160/59.94p/50.00p 150 M.

**AG-VBR118G**
Battery Pack (11,800 mAh)

**AG-VBR89G**
Battery Pack (8,850 mAh)

**AG-VBR59**
Battery Pack (5,900 mAh)

**AG-BRD50**
Battery Charger

**VW-VBD58**
Battery Pack (5,800 mAh)

**AG-B23**
Battery Charger

**AG-MC200G**
XLR Microphone

**VW-LED1**
LED Video Light

**AJ-WM50**
Wireless Module*5

**AJ-WM30**
Wireless Module*2

**BT-4LH310**
787.4 mm (31 inches)
4K LCD Monitor


**AJ-P2M064BG**
microP2 card B series


SD/SDHC/SDXC Memory Card

*5: Not available in some areas.

## AJ-PX5000G

AVC ULTRA

2/3-type Lens | 2/3-type 3MOS | 24 bit Audio
P2 card slot x 2 | microP2 card slot x 2 | Network

**High-End Camera Recorder with Both High-Quality Shooting and Network Operation.**

- 1080/60p*1 (50p) recording and 3G-SDI output.
- AVC-Intra200 or AVC-LongG high-quality images and dual codec recording of AVC-Proxy.
- Various networks function such as “Wired/wireless LAN**”, “4G/LTE**” and “Bonding Services**” (with LiveU, TVU Networks etc.)
- Clips are automatically uploaded to FTP server while recording (Rec during uploading).
- Robust FHD live streaming by QoS mode.

## AJ-PX800G

AVC ULTRA

**AJ-PX800GH:** Bundled with AG-CVF15G Color LCD Viewfinder
**AJ-PX800GF:** Bundled with AG-CVF15G Color LCD Viewfinder and FUJINON 16x Auto Focus Lens

2/3-type Lens | 2/3-type 3MOS | 24 bit Audio
P2 card slot x 2 | microP2 card supported*3 | Network

**2/3-type Shoulder-Type HD Camera Recorder with Three Image Sensors.**

- Light weight of approx. 2.8 kg (6.2 lb).
- AVC-Intra100 or AVC-LongG high-quality images and dual codec recording of AVC-Proxy.
- Various networks function such as “Wired/wireless LAN**”, “4G/LTE**” and “Bonding Services**” (with LiveU, TVU Networks etc.)
- Clips are automatically uploaded to FTP server while recording (Rec during uploading).
- Robust FHD live streaming by QoS mode.

## AJ-PX380G

AVC ULTRA

**AJ-PX380GF:** Bundled with AG-CVF15G Color LCD Viewfinder and FUJINON 17x Zoom Lens

1/3-type Lens | 1/3-type 3MOS | 24 bit Audio
P2 card slot x 1 | microP2 card slot x 2 | Network

**High Cost-Performance, Lightweight Design with High-Quality Shooting and Network Operation**.**

- 1080/60p*1 (50p) recording and 3G-SDI output.
- AVC-Intra100 or AVC-LongG high-quality images and dual codec recording of AVC-Proxy.
- Various networks function such as “Wired/wireless LAN**”, “4G/LTE**” and “Bonding Services**” (with LiveU, TVU Networks etc.)
- The built-in camera adaptor function provides direct linking for simpler studio camera workflows.
- Clips are automatically uploaded to FTP server while recording (Rec during uploading).
- Robust FHD live streaming by QoS mode.

## AG-HPX610*3

**AG-HPX610PJH/EJH:** Bundled with AG-CVF15G Color LCD Viewfinder
**AG-HPX610PJF/EJF:** Bundled with AG-CVF15G Color LCD Viewfinder and FUJINON 16x Auto Focus Lens

2/3-type Lens | 2/3-type 1MOS
P2 card slot x 2 | microP2 card supported*2

**High Cost-Performance System with Expandable Functions Meets Needs in a Wide Range of Uses.**

- AVC-Intra100/50, DVCPRO (HD/50/25) and DV recording capability.
- Proxy video recording and playlist editing.*4
- Optional production package: Variable frame rate shooting and 24PsF output.
- Wired/wireless LAN** network function.*5

## AJ-PX270

AVC ULTRA

Integrated Lens System | 1/3-type 3MOS | 24 bit Audio | P2 card slot x 1 | microP2 card slot x 2 | Network

**High-Performance, Handheld Shooting with Shoulder-Type Quality and Network Operation.**

- 22x zoom lens with three manual operation rings.
- Switches and controls designed to match shoulder-type usability.
- 600% dynamic range with 1/3-type 3MOS sensors.
- 1080/60p*1 (50p) recording and 3G-SDI output.
- AVC-Intra200 or AVC-LongG high-quality images and dual codec recording of AVC-Proxy.
- Variable Frame Rate Supporting 1080p.
- Various networks function such as “Wired/wireless LAN**”, “4G/LTE**” and “Bonding Services**” (with LiveU, TVU Networks etc.)
- Clips are automatically uploaded to FTP server while recording (Rec during uploading).
- Robust FHD live streaming by QoS mode.

## AJ-PX230*6

AVC ULTRA

Integrated Lens System | 1/3-type 3MOS | 24 bit Audio | microP2 card slot x 2

**Featuring Superb Image Quality, Functionality and Operability Matching Shoulder-Type Cameras.**

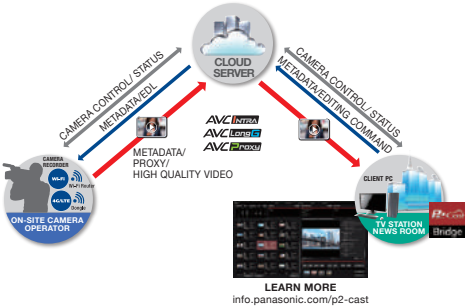
- 22x zoom lens with three manual operation rings.
- Switches and controls designed to match shoulder-type usability.
- 600% dynamic range with 1/3-type 3MOS sensors.
- 1080/60p*1 (50p) recording and 3G-SDI output.
- AVC-Intra200 or AVC-LongG high-quality images.
- Variable Frame Rate Supporting 1080p.

P2Cast

### ENG Workflow Accelerated

- Strong Newsroom Integration
- Near Live Proxy & Highlight Editing
- Powerful Camera Management

http://pro-av.panasonic.net/en/p2cast/




P2 Streaming Server

### Hardware QoS Receiver with web GUI management

- Robust QoS Live Streaming
- Simple Operation
- Flexible Input/Output


**Supported Model:** AJ-PX5000G, AJ-PX800G, AJ-PX380G, AJ-PX270, AJ-PG50

*Pictures are the example of the configuration using options. ** For details, refer to “Notes Regarding Network Functions” on the back page.
*1: 60i, 60p, 24p and 30p are actually recording in 59.94p, 23.98p, 29.97p respectively. *2: Requires the optional AJ-P2AD1G Memory Card Adapter to use the microP2 card. *3: Package model only. *4: Requires the optional AG-SFU604G Upgrade Software Key and AG-YDX600G Video Encoder Board. *5: Requires the activation of bundled AG-SFU601G Upgrade Software Key. *6: *This model is not available in some areas.

## AJ-PD500

AVC ULTRA

P2 card slot x 2 | microP2 card slot x 2 | 24 bit Audio | Network | AVCHD | 3G-SDI I/O | AES/EBU | HDMI OUT | USB 3.0/2.0 | RS-422A | Parallel | AC/DC

**From Mastering to Network Solutions, a Half-Rack Size Recorder for a High-Quality, High-Speed Workflow.**

- AVC-Intra200, AVC-LongG, AVC-Proxy recording and AVCHD*1 playback capability.
- Gigabit-Ethernet-compatible client function.
- Playlist editing via LAN.
- Wide range of interfaces, including USB 3.0, 3G-SDI and HDMI.

## AJ-PG50

AVC ULTRA

P2 card slot x 1 | microP2 card slot x 2 | Network | 24 bit Audio | Analog I/O | 3G-SDI I/O | HDMI I/O | USB 3.0/2.0 | Battery /DC

**High Picture Quality AVC-Intra200 codec, A Compact Field Recorder Realizing Network Workflow.**

- AVC-Intra200 or AVC-LongG high-quality images and dual codec recording of AVC-Proxy.
- Various networks function such as “Wired/wireless LAN**”, “4G/LTE**” and “Bonding Services**” (with LiveU, TVU Networks etc.)
- Clips are automatically uploaded to FTP server while recording (Rec during uploading).
- Robust live streaming with FHD quality by QoS mode.
- Versatile interfaces, including HDMI IN/OUT and 3G-SDI IN/OUT.

## AG-HPD24

P2 card slot x 2 | microP2 card supported*2 | 24 bit Audio | SDI I/O | HDMI OUT | USB 3.0/2.0 | RS-422A | Battery /AC

**A Compact P2 Deck with 24P and 3D Compatibility for Studio Production and On-Air Transmission.**

- AVC-Intra, DVCPRO (HD/50/25) and DV rec/play capability.
- Supports cinema production, 24PsF compatible 1080/24p native recording and HD/SD multi-format.
- Two-unit sync operation records and plays superb 3D images.
- Wide range of interfaces, including USB 3.0, SDI and HDMI.

*Pictures are the example of the configuration using options. ** For details, refer to “Notes Regarding Network Functions” on the back page.
*1: Requires the optional AJ-YCX500G AVCHD Codec Board. *2: Requires the optional AJ-P2AD1G Memory Card Adapter to use the microP2 card.

## AJ-PCD30

P2 card slot x 3 | microP2 card supported*2 | USB 3.0/2.0

High Speed USB 3.0 Interface Boosts Workflows

• Power Source: DC 16 V, 0.6 A with AC adaptor, DC 12 V 0.8 A when PC built-in • AC Adaptor: AC 100 V – 240 V (1.20 A), 50 Hz/60 Hz • Weight: approx. 1.2 kg (2.6 lb) • Dimensions (W x H x D): 148.4 mm x 42.5 mm x 199.5 mm, excluding protruding parts (5-7/8 inches x 1-11/16 inches x 7-7/8 inches)

## AU-XPD1*4

expressP2/P2 card slot x 1 | microP2 card supported*1 | USB 3.0/2.0

This drive supports both of expressP2 card and P2 card. microP2 card is supported with an adaptor AJ-P2AD1G

• Power Source: DC 5 V 1.8 A • Weight: approx. 280 g (0.62 lb) main unit only • AC adapter: AC 100 V, 50 Hz/60 Hz • Dimensions (W x H x D): 97 mm x 33 mm x 155 mm, excluding protruding parts (3-13/16 inches x 1-5/16 inch x 6-1/8 inches)

## AU-XPD3*3 NEW

expressP2/P2 card slot x 1 | microP2 card supported*2 | Thunderbolt™ 3

The expressP2 drive with High-Speed Thunderbolt™ 3 Interface

• Power Source: DC 16 V 3.1 A • Weight: approx. 1.2 kg (2.65 lb) main unit only • AC adapter: Input: AC 100 V – 240 V, 50 Hz/60 Hz, 1.5 A – 0.8 A, Output: DC 16 V 3.75 A • Dimensions (W x H x D): 126 mm x 62 mm x 215.6 mm, excluding protruding parts (4-31/32 inches x 2-7/16 inches x 8-17/32 inches)


AJ-P2E060FG


AJ-P2E030FG

AJ-P2M064BG

AJ-P2M032AG
AJ-P2M064AG


AJ-P2AD1G

## AJ-P2E060FG
## AJ-P2E030FG
**P2 card F series**

## AJ-P2M064BG NEW
**microP2 card B series*5**

## AJ-P2M064AG
## AJ-P2M032AG
**microP2 card A series**

## AJ-P2AD1G
**Memory Card Adapter**

*3: The AU-XPD3 do not support the CPS (Content Protection System). *4: Connection of the AU-XPD1 requires two USB cables. Power supply to be connected with an AC adaptor or USB 3.0 port of PC. *5: Encoding formats cannot be used because the microP2 Card B Series does not support the CPS (Content Protection System). If the card is mistakenly formatted with a P2 device, card access will be temporarily disabled. It's can be recovered by removing a card from P2 equipment.

# Camera Recorder Comparison Table

| | AJ-PX5000G | AJ-PX800G | AJ-PX380G |
|---|---|---|---|
| Lens System (Angle of view, 35 mm equiv.) | 2/3-type B mount lens interchangeable (option) | 2/3-type B mount lens interchangeable (option) | 1/3-type B mount lens interchangeable (option) |
| Digital Zoom | 2x, 3x, 4x | 2x, 4x | 2x, 4x |
| Optical Image Stabilizer | – | – | – |
| Manual Rings | – | – | – |
| Built-in Optical Filters | CC: 3200 K/4300 K/ 5600 K/6300 K ND: CLEAR, 1/4, 1/16, 1/64 | ND: CLEAR, 1/4, 1/16, 1/64 | ND: CLEAR, 1/4, 1/16, 1/64 |
| Image Pick-up Device | 2/3-type 2.2 MP, MOS x 3 | 2/3-type 2.2 MP, MOS x 3 | 1/3-type 2.2 MP, MOS x 3 |
| Scan Reverse | ✓ | ✓ | ✓ |
| CAC | ✓ | ✓ | ✓ |
| FBC | ✓ | ✓ | ✓ |
| DRS | ✓ | ✓ | ✓ |
| Gamma Modes | 7 | 7 | 7 |
| 60 Hz/50 Hz Switchable | ✓ | ✓ | ✓ |
| 24 bit LPCM Recording | ✓ | ✓ | ✓ |
| VFR | – | – | – |
| microP2 card Capability | Native Slot | With Adapter | Native Slot |
| P2 Card Slot | P2 x 2, microP2 x 2 | P2 x 2 | P2 x 1, microP2 x 2 |
| SD Memory Card Slot | SD x 1 | SD x 1 | SD x 1 |
| Relay Recording | ✓ | ✓ | ✓ |
| Simultaneous Recording | ✓ | ✓ | ✓ |
| Background Recording | – | – | – |
| One-Clip Rec | ✓ | ✓ | ✓ |
| Interval Rec/ One-Shot Rec/Loop-Rec | ✓ | ✓ | ✓ |
| Pre-Rec (HD mode) | 8 sec*1 | HD: 3 sec, SD: 7 sec | HD: 3 sec, SD: 7 sec |
| Shot Mark/Text Memo | ✓ | ✓ | ✓ |
| Meta-data Recording | ✓ | ✓ | ✓ |
| Time Stamp Recording | – | – | – |
| Proxy Recording | ✓ | ✓ | ✓ |
| Scene File (Dial) | 4 | 6 | 6 |
| User Buttons | 5 | 3 | 3 |
| Built-in Monitor | 3.45-type LCD (921 K dots) | – | – |
| EVF | Option | Option | Option |
| Waveform Display | ✓ | ✓ | ✓ |
| Vectorscope Display | ✓ | ✓ | ✓ |
| Focus Assist | Focus-In-Red, Expand, Focus Bar | Focus-In-Red, Expand, Focus Bar | Focus-In-Color, Expand, Focus Bar |
| GENLOCK IN | ✓ | ✓ | Switchable to VIDEO OUT |
| TC IN/OUT | ✓ (IN and OUT) | ✓ (Switchable IN/OUT) | ✓ (Switchable IN/OUT) |
| Built-in Microphone | – | – | – |
| XLR AUDIO IN | 3-pin x 2, 5-pin x 1 | 3-pin x 2, 3-pin x 1 | 3-pin x 2, 3-pin x 1 |
| Slot-In Wireless Receiver | ✓ | ✓ | ✓ |
| SDI IN | ✓ (Ret In) | Option (Switchable to SDI OUT) | Switchable to SDI OUT |
| SDI OUT | 2 | 1+1 (Mon Out) | 1+1 (Switchable to SDI IN (Ret In)) |
| HDMI OUT | ✓ | ✓ | ✓ |
| Analog Video Output | ✓ | ✓ (Switchable to Mon Out) | ✓ (Switchable to GENLOCK IN) |
| Down Converter (Aspect Conversion Mode) | Side Crop, Letterbox, Squeeze | Side Crop, Letterbox, Squeeze | Side Crop, Letterbox, Squeeze |
| ECU/ Wired Remote Control Terminals | 10P for ECU | 10P for ECU | 10P for ECU |
| LAN Port | ✓ | ✓ | ✓ |
| USB 3.0 | 1 (Host) | – | – |
| USB 2.0 | 2 (Device/Sub Host) | 3 (Host/Device/Sub Host) | 3 (Host/Device/Sub Host) |
| Wireless LAN Capability*2 | ✓ | ✓ | ✓ |
| 4G/LTE Network Capability*4 | ✓ | ✓ | ✓ |
| Video Streaming | ✓ | ✓ | ✓ |
| P2 ROP APP | ✓ | ✓ | ✓ |
| Rec During Upload | ✓ | ✓ | ✓ |
| LiveU/TVU Networks Bonding*5 | ✓ | ✓ | ✓ |

*1: About 8 seconds at 1080/59.94p mode. About 3 seconds at 50p mode and AVC-Intra100 codec. *2: For a wireless LAN connection, the AJ-WM30 or AJ-WM50 Wireless Module are required. *4: 4G/LTE module is required from a 3rd party. Availability of this function may vary depends on areas.

| AG-HPX610 | AJ-PX270 | AJ-PX230 |
|---|---|---|
| 2/3-type B mount lens interchangeable (option) | Motorized 22x zoom (28 mm – 616 mm) | Motorized 22x zoom (28 mm – 616 mm) |
| 2x, 4x | 2x, 5x, 10x | 2x, 5x, 10x |
| – | ✓ | ✓ |
| – | 3 rings [zoom, focus, iris] | 3 rings [zoom, focus, iris] |
| ND: CLEAR, 1/4, 1/16, 1/64 | ND: OFF, 1/4, 1/16, 1/64 | ND: OFF, 1/4, 1/16, 1/64 |
| 2/3-type MOS | 1/3-type 2.2 MP, MOS x 3 | 1/3-type 2.2 MP, MOS x 3 |
| ✓ | ✓ | ✓ |
| ✓ | – | – |
| ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ |
| 7 | 7 | 7 |
| ✓ | ✓ | ✓ |
| – | ✓ | ✓ |
| Option<br>1080: 1 fps – 30 fps,<br>720: 1 fps – 60 fps | 1080/59.94p: 1 fps – 60 fps<br>1080/50p: 1 fps – 50 fps | 1080/59.94p: 1 fps – 60 fps<br>1080/50p: 1 fps – 50 fps |
| With Adapter | Native Slot | Native Slot |
| P2 x 2 | P2 x 1, microP2 x 2 | microP2 x 2 |
| SD x 1 | SD x 1 | SD x 1 |
| ✓ | ✓ | ✓ |
| – | ✓ | ✓ |
| – | ✓ | ✓ |
| ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ |
| 3 sec | HD: 3 sec, SD: 7 sec | HD: 3 sec, SD: 7 sec |
| ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ |
| – | ✓ | ✓ |
| Option | ✓ | – |
| 6 | 6 | 6 |
| 3 | 8 | 8 |
| – | 3.5-type LCD (1,560 K dots) | 3.5-type LCD (1,560 K dots) |
| Option | 0.5-type OLED (2,360 k dot-equiv.) | 0.5-type OLED (2,360 k dot-equiv.) |
| – | ✓ | ✓ |
| ✓ | ✓ | ✓ |
| Expand, Focus Bar<br>Push Auto (Bundled Lens) | Turbo-Speed One-Push AF, Focus-In-Red, Expand, Focus Bar | Turbo-Speed One-Push AF, Focus-In-Red, Expand, Focus Bar |
| ✓ | Switchable to Video Out | – |
| ✓ | ✓ | – |
| – | Stereo | Stereo |
| 3-pin x 2, 3-pin x 1 | 3-pin x 2 | 3-pin x 2 |
| ✓ | – | – |
| Option<br>(Switchable to SDI OUT) | – | – |
| 1+1 (Mon out) | 1 | 1 |
| ✓ | ✓ | ✓ |
| ✓ (Switchable to Mon Out) | ✓ | – |
| Side Crop, Letterbox, Squeeze | Side Crop, Letterbox, Squeeze | Side Crop, Letterbox, Squeeze |
| 10P for ECU | Zoom, Rec-S/S, Focus, Iris | Zoom, Rec-S/S, Focus, Iris |
| ✓ | ✓ | – |
| – | 1 (Host) | – |
| 3 (Host/Device/Sub Host) | 2 (Device/Sub Host) | 2 (Device/Maintenance) |
| ✓ (Option)*4 | ✓ | – |
| – | ✓ | – |
| ✓ | ✓ | – |
| – | ✓ | – |
| – | ✓ | – |
| – | ✓ | – |

*4: The optional AG-SFU601G Upgrade Software Key is required to use the AJ-WM30 Wireless Module. *5: Connection requires communication devices offered by both LiveU and TVU Networks. For details, please visit the following website. <http://pro-av.panasonic.net/en/sales_o/p2/bonding_devices/index.html> (Connection Confirmed Bonding Devices)

## P2 Triggers a Workflow Revolution.

### AVC-ULTRA Codec Family

AVC-ULTRA is an H.264-based video compression codec featuring high image quality and excellent efficiency.
By selecting the image quality and bit rate, it is possible to respond to various needs of broadcasting and image production, from 4K production to streaming distribution.

AVC ULTRA

| | | | |
|---|---|---|---|
| 4K*1 | AVC-Intra Class4K4:4:4 | 4:4:4 | 12 bit |
| | AVC-Intra Class4K4:2:2 | 4:2:2 | 10 bit |
| 2K | AVC-Intra Class2K4:4:4 | 4:4:4 | 12 bit |
| | AVC-Intra Class2K4:2:2 | 4:2:2 | 10 bit |
| HD | AVC-Intra Class4:4:4 | 4:4:4 | 12 bit |
| | AVC-Intra Class200 | 4:2:2 | 10 bit |
| | AVC-Intra Class100 | | |
| | AVC-Intra Class50 | 4:2:0 | 10 bit |
| | AVC-LongG G50 | 4:2:2 | 10 bit |
| | AVC-LongG G25 | | |
| | AVC-LongG G12 | 4:2:0 | 8 bit |
| Proxy | AVC-Proxy G6 | 4:2:0 | 8 bit |
| | AVC-Proxy G3.5 | | |
| | AVC-Proxy G1.5 | | |
| | AVC-Proxy G0.8 | | |

• **AVC-Intra:** Intra-frame compression attains high, production-level image quality. For HD use, AVC-Intra200, with master grade quality approaching uncompressed levels, has been added to the popular AVC-Intra100/50 codecs. The VariCam 35/LT are equipped with the AVC-Intra4K/2K codec for 4K/2K image use.
• **AVC-LongG:** The codec achieves high-quality HD recording at a low bit rate. The AVC-LongG25 codec operates with high, 10 bit/4:2:2 image quality and a bit rate of approximately 25 Mbps (when using 1080/59.94i).
• **AVC-Proxy:** A dual codec recording function simultaneously records, in addition to the main data, proxy images (Quick Time/H.264)*2 with a low bit rate, high resolution, and high-quality sound. This enables previewing on a wireless device,*3 and data transfer and streaming distribution over the internet. It also includes metadata for efficient offline editing.

QuickTime

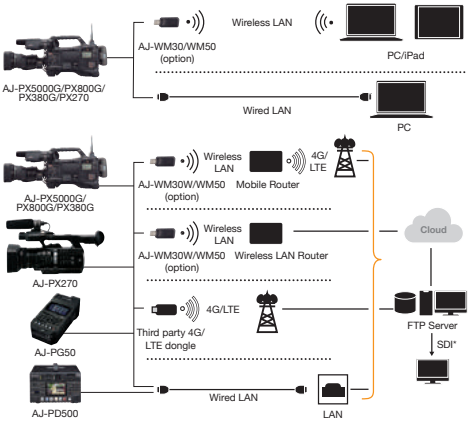
### Evolving P2 Card Series

The P2 card took advantage of its solid-state memory capabilities to provide high reliability and mobility to acquisition under virtually all conditions.


• **expressP2 card*4:** Based on the PC card Type III, the expressP2 card offers a capacity of 512 GB and transfer speed of 10 Gbps. It is well suited to recording 4K images and high-frame-rate images for the VariCam Series.
• **microP2 card:** P2 card was reduced to the size of the SD Memory Card, and its cost was significantly lowered, as broadcast-use medium.

### Wired/Wireless LAN, 4G/LTE Network Functions**

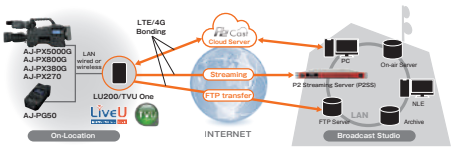
The standard LAN (Ethernet) port allows network connection via a wired LAN. When the optional AJ-WM30 or AJ-WM50 Wireless Module are installed, the camera recorder gains wireless LAN connectivity, enabling access to the functions of Proxy Preview, Camera Remote, Playlist Editing and File Transfer from a network-connected PC/Mac, tablet device or smartphone.*5 4G/LTE connection is also possible.




*Applicable function varies depending on the models.
Please see page 33 to 34 for details.

### LiveU/TVU Networks Bonding Services and Linking*5

IP connection (wired or wireless) to a LiveU or TVU Networks device enables parallel use (bonding) of multiple cell phone lines. Live streaming in QoS mode provides more stable transmission at higher bit rates, and faster FTP transfers with higher stability using the Rec During Uploading function. Combined with the P2 Streaming Server (P2SS) and P2Cast Cloud Service, this offers a comprehensive solution for a variety of broadcast needs.

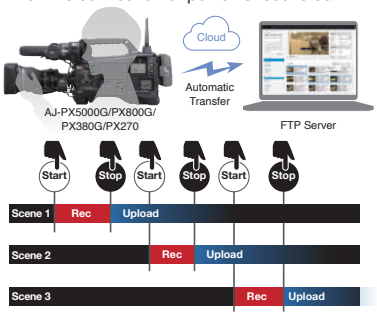


### Full-HD Streaming Supported**

Full-HD (1920 × 1080) proxy video can be streamed via a network connection (wired LAN, wireless LAN, 4G/LTE network) while recording mainstream video. QoS*6 (Quality of Service) streaming modes which prioritize uninterrupted video transmission is supported.*7

### Rec during Uploading Function**

Recorded clips are uploaded directly from the camera recorder to a network*8. The Rec During Upload function automatically uploads files to a network server in the background, and recording/playback continues during the transfer. If the network is disconnected during transfer, or the power of the camera is turned off, transfer resumes when the connection or power is recovered.




### The P2 ROP App for Wireless Control using iPad**

The P2 ROP App (downloadable free of charge from the Apple App Store) for iPad is available.*9 It enables iPad to control functions/setting of the camera recorder remotely via wireless connection.

P2 ROP App can control variety of settings similar to those of the AG-EC4G Extension Control Unit controls, including picture quality settings and REC start/stop.


"P2 ROP App"
Control from iPad

## Features of P2 Cam and P2 Handheld Camera Section.

### Chromatic Aberration Compensation (CAC)

When using a CAC compatible lens, the small amount of circumjacent chromatic aberration (circumjacent blur) that is not corrected by the lens is compensated by this process.

**Simulation Showing the CAC Effect**

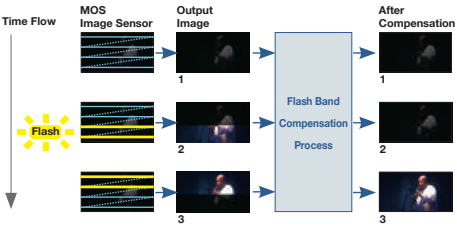
Full screen CAC OFF CAC ON

### Scan Reverse Function

Displays/records images in vertically or horizontally inverted orientation, for use with film lenses.

### Flash Band Compensation (FBC)

High-precision flash band detection and compensation eliminate the flash band effect of MOS imagers.




### Dynamic Range Stretcher (DRS)

When dark, bright, and intermediate shades are all contained in the same scene, such as when panning from indoors to outdoors, the DRS function automatically suppresses blocked shadows and blown highlights.

**Simulation Showing the DRS Function**


*Blown highlights and Blocked shadows are suppressed simultaneously.

** For details, refer to "Notes Regarding Network Functions" on the back page. *1: 4096 x 2160 and 3840 x 2160 *2: Proxy data cannot be recorded when using the Loop Rec or Interval Rec function. Proxy data is low bit rate video and audio data with time code, metadata, and other management data in a file format. *3: Applicable models only. The optional AJ-WM30/WM50 Wireless Module and the Upgrade Software Key are required for wireless connection. *4: expressP2 card can be used with VariCam 35/LT/HS. *5: Connection requires communication devices offered by both LiveU and TVU Networks. For details, please visit the following website. <http://pro-av.panasonic.net/en/sales_o/p2/bonding_devices/index.html> (Connection Confirmed Bonding Devices) *6: P2 Streaming Receiver software (Windows only, not supported by Mac; available free of charge) is required for receiving the QoS mode. Please visit Panasonic website (http://pro-av.panasonic.net/en/download/). *7: The video and audio signals arrive with a delay. The latency varies depending on the network environment and the hardware/software environment of the PC, server, etc. *8: During simultaneous recording, only recorded clips in slot 1 is automatically transferred. Clips of interval recording, loop recording, one-clip recording or one-shot recording are not transferred automatically. The streaming function are disabled, while using the Rec during Uploading function. *9: It supports to iOS7.1 and iOS8.1.

### Gamma Function Further Approaches Film Tone

The new VariCam Series is equipped with a "V-Log" gamma function, featuring a dynamic range that approaches film. This technology and know-how are also applied to other P2 camera recorders, allowing selection of various-model gamma curves, such as Cinema-like Gamma, to easily achieve the most suitable image tone.

**Simulation Showing the Gamma Function**

HD NORM mode

CINE-LIKE D mode

### Digital Super Gain

Digital super gain (frame cumulative mode) records with a high S/N ratio*1 and less of the noise that commonly comes with higher gain. Gain and Digital Super Gain can be flexibly combined to achieve highly sensitive recording to suit various shooting conditions.

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

### Variable Frame Rate (VFR)

This creates a wide range of film-camera-like images, such as overcranking for slow-motion and undercranking for quick-motion effects.

Overcranking
(higher-speed shooting)

Undercranking
(lower-speed shooting)

### Focus Assist Functions

A variety of focus assist functions support quick and accurate focusing in Manual Focus mode.

Expand (AJ-PX270)

Focus-in-Red (AJ-PX270)

- **Expand:** Enlarging the center portion increases visibility.
- **Focus Bar:** This provides a graphical meter display of the focus level.
- **Focus-In-Red Display:** This function emphasizes the image areas in focus by marking the edges in red.
- **Focus-in-Color:** Emphasizes the image areas in focus by marking the edges in red, green or blue.
- **Graph:** Shows the frequency distribution of the incoming signal.
- **One-Push AF:** Pressing the PUSH AUTO button enables focusing.

### User Buttons

Frequently used functions can be allocated to these buttons for one-touch operation. The number of User buttons and the functions that can be allocated to them vary depending on the model.

### Scene File, Scene File Dial

By using preset image quality settings or saving and selecting settings as desired, a film-camera-like tone can quickly be set to suit each shooting situation. It also makes it easy to coordinate the images of several cameras. Some models are equipped with a special Scene File Dial for this purpose.

### Waveform and Vectorscope Display

Simplified waveform and vectorscope display on the LCD monitor and the viewfinder.


Waveform


Vectorscope

## Various Recording Functions of P2 Recorders

### High-Quality 24 bit 4 Channel Audio Recording

AVC-Intra and AVC-LongG modes support 24 bit/48 kHz digital audio recording*2 (16 bit for DVCPRO HD, DVCPRO and DV). All modes have four audio channels.

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

### Recording with two Card Slots

Models that have two P2 card slots or two microP2 card slots are capable of consecutive recording using two of the same type of cards, card select (recording slot switching), and hot swapping (exchanging cards while recording).

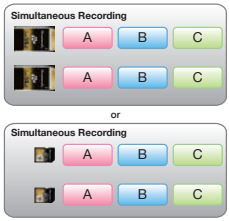

Card Slots (AJ-PX5000G)


Applicable function varies depending on the models. Please see page 33 to 34 for details.

### Simul Recording

Some models are also equipped with a Simul Recording*3 mode that records the same data onto two P2 cards or two microP2 cards for a high level of safety.

*3: Cannot be recorded to microP2 card and P2 card simultaneously.



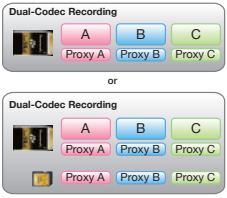

### Background Recording*4

Slot 1 records with the normal Rec Start/Stop control, while slot 2 continues recording even when recording is stopped. This prevents loss of important scenes while recording is stopped.

*4: Can be recorded only to microP2 card slot.

### Dual-Codec Recording

While recording actual data with an AVC-Intra or AVC-LongG codec, you can simultaneously record with the low bit rate AVC-Proxy codec.




### One-Clip Rec Mode

Records up to 99 consecutive cuts as a single clip, which greatly improves the nonlinear editing work that follows. A text memo is automatically attached to the Rec Start point for easy searching for the beginning of the cut.

### Pre Rec

This stores several seconds (varies depending on the model and recording mode) of video and audio data in memory while in standby mode and lets you recover and use the data from the point before you started recording.

### Loop Rec

Repeatedly re-records while maintaining a recording of the most recent, pre-determined period.

### Interval Rec

Automatically records intermittently based on a set interval and recording time.

### One-shot Rec

A frame-shot recording function useful for producing animations.

### Time Stamp

The date and time can be stamped onto recorded images. Commonly used for evidential images.

### Rec Check

This lets you run a quick playback check of the clip-end you have just recorded.

### Last Clip Delete

Deletes the last recorded clip with a single touch.

### Metadata Recording

Shooter's name, Reporter's name, Program name, GPS (built-in or optional) location information, etc., can be recorded as clip metadata. This metadata makes searching or classification easier.

### Text Memo (Bookmark) for Simple Editing

When recording or previewing a clip, press the Text Memo button at any of up to 100 locations and a text memo label, similar to a bookmark, is registered. Using only the P2 cam, you can create a new clip with data copied between text memo labels. A shot mark, which allows convenient OK and NG marking, can also be added to each clip during or after recording.

*Text memos and shot marks cannot be added when the camera is in Loop Rec, Interval Rec, or One-shot Rec mode.

## Camera Remote System

### 10-pin Remote Terminal

A remote terminal is provided for the optional AG-EC4G Extension Control Unit or AJ-RC10G Remote Control Unit, AK-HRP200G Remote Operation Panel. This enables camera settings to be made and recording to be controlled while watching the monitor at the remote end.

*Only functions that are supported by the camera recorder can be controlled.

### Wired LAN Remote

A wired LAN connection allows the camera to be remotely controlled. Remote operation, including fine menu settings, is possible by using the optional AK-HRP200G Remote Operation Panel for studio cameras.

### Camera Studio System

The shoulder-type P2 cam supports the Camera Studio System. The optional camera extension system (AG-CA300G Camera Adapter and AG-BS300 Base Station) support cost-efficient studio integration. Also, built-in camera adaptor model (AJ-PX380G) can directly be connected with base station.

*Only functions that are supported by the camera recorder can be controlled.

# AG-MSU10

**Mobile Storage Unit "P2 MSU"**

P2 card slot x 1 | e-SATA | USB 2.0

Fast Copying from P2 Cards to a Solid-State Drive*1
A Mobile Tool for Speeding Up P2HD Workflow

• Power Source: DC 7.2 V (with battery), DC 7.9 V (with AC adaptor) • Current Consumption: approx. 1.1 A • Weight: AG-MSU10: approx. 770 g (1.69 lb) without SSD and Battery, AG-MBX10G: approx. 135 g (0.3 lb) without SSD • Dimensions (W x H x D): 99 mm x 58 mm x 212 mm , excluding protrusions (3-15/16 inches x 2-5/16 inches x 8-3/8 inches)

*1: The removable SSD is not included with the product. Use a commercially available removable SSD that is recommended by Panasonic. In addition to the removable SSD interface box that comes with the AG-MSU10 as a standard accessory, an additional AG-MBX10 can be purchased as an option. Do not use Hard Disk Drive instead of an SSD. For compatible SSD information, please refer to the following website (http://pro-av.panasonic.net/en/sales_o/p2/ag-msu10/).

# P2 Viewer Plus*2

**Viewing Software**
(Download Free/Optional Functions require Licensing Fees)

Supports P2HD. This Windows/Mac utility makes it easy to view and copy P2 files.

# AJ-SK001G

**Ingesting Function Software Key*3**
(Optional, Subject to Licensing Fee)

The ingesting function copies all clips on P2 cards to a storage medium, such as an HDD. During ingesting, the clips are verified for secure copying, with log files created.

*2: For P2 Viewer Plus download and operating requirement information, see "P2 Viewer Plus" on the Panasonic web site http://pro-av.panasonic.net/en/sales_o/p2/p2viewerplus/

*3: For information on purchasing software keys, see "Service and Support" on the Panasonic web site http://pro-av.panasonic.net/

## Professional Archive System

**Video Ingester**

- Linking with Archiving Software*1 enables tape-recorded footage (HD/SD) to be input for MXF format file conversion, and saving and management on LTO tape or Blu-ray Discs.
- Auto Ingest and Error Rate Monitoring function eliminates the need for physical monitoring while loading and also increases reliability.
- Metadata can be added during ingestion.

*1: Video Ingest Software can be installed on the same PC as the Archiving Software, but ingestion and archiving cannot be done simultaneously.

**Archive**

- Proxy video can be generated and metadata can be edited while archiving.
- Up to 10 copy tasks can be registered for batch execution.
- Direct playback*2 and segmented retrieve*3 are possible from archive data stored on LTO tape.

*2: Tape cueing requires some time when directly playing back LTO tapes.
*3: Partial retrieve is possible only with P2 and XDCAM codecs. Partial retrieve is not possible for content stored on Blu-ray Discs.

### Avid NLE P2 Plug-In Software*

**AJ-PS001G**
Software Key for AVC-Proxy re-link.

**AJ-PS002G**
Software Key for AVC-Intra50/100 P2 file export.

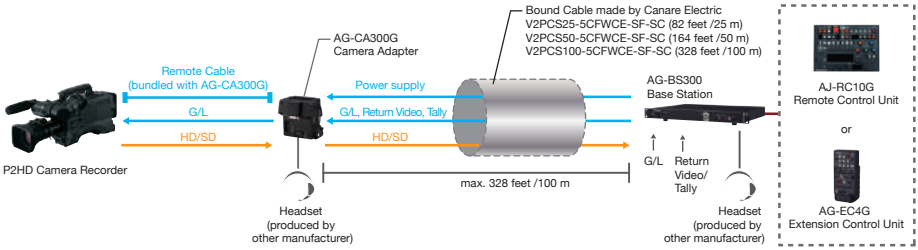
**AJ-PS003G**
Software Key for AVC-LongG P2 file export.

**AJ-PS004G**
Software Key for AVC-LongG file import to edit.

*Please refer to the "service and support" on the Panasonic website (http://pro-av.panasonic.net/).

| Memory Card Camera Recorder Options | | AJ-PX5000G | AJ-PX800G | AJ-PX380G | AG-HPX610 | AJ-PX270 | AJ-PX230 |
|---|---|---|---|---|---|---|---|
| Camera Adapter | AG-CA300G | ✓ | ✓ | ✓ | ✓ | | |
| Base Station | AG-BS300 | ✓ | ✓ | ✓ | ✓ | | |
| Extension Control Unit | AG-EC4G | ✓ | ✓ | ✓ | ✓ | | |
| RCU (Remote Control Unit) | AJ-RC10G | ✓ | ✓ | ✓ | ✓ | | |
| Remote Control Cable (for AJ-RC10G) | AJ-C10050G | ✓ | ✓ | ✓ | ✓ | | |
| Remote Operation Panel (ROP) | AK-HRP200G | ✓ | ✓ | ✓ | | ✓ | |
| Color HD EVF | AG-CVF10G | ✓ | ✓ | ✓ | ✓ | | |
| Color HD EVF | AG-CVF15G | ✓ | ✓ | ✓ | ✓ | | |
| 50.8 mm (2 inches) HD EVF | AJ-HVF21KG | ✓ | ✓ | ✓ | ✓ | | |
| 38.1 mm (1.5 inches) HD EVF | AJ-CVF50G | ✓ | ✓ | ✓ | ✓ | | |
| HD/SD LCD Monitor | BT-LH910G | ✓*1 | ✓*1 | ✓*1 | ✓*1 | | |
| Stereo Microphone | AJ-MC900G | ✓ | | | | | |
| Microphone Kit (monaural) | AJ-MC700P | | ✓ | ✓ | ✓ | | |
| XLR Microphone (monaural) | AG-MC200G | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Tripod Adaptor | SHAN-TM700 | ✓ | ✓ | ✓ | ✓ | | |
| Video Encoder Board | AG-YDX600G | | | | ✓ | | |
| HD/SD SDI Input Board | AG-YA600G | | ✓ | | ✓ | | |
| Wireless Module | AJ-WM50 | ✓ | ✓ | ✓ | | ✓ | |
| Wireless Module | AJ-WM30 | ✓ | ✓ | ✓ | ✓*2 | ✓ | |
| Production Package Upgrade Software Key | AG-SFU602G | | | | ✓ | | |
| LiveU Uplink Solution Upgrade Software Key | AG-SFU603G | | | | ✓ | | |
| Proxy Playlist Editing Upgrade Software Key | AG-SFU604G | | | | ✓*3 | | |
| Battery Pack (11,800 mAh) | AG-VBR118G | | | | | ✓ | ✓ |
| Battery Pack (8,850 mAh) | AG-VBR89G | | | | | ✓ | ✓ |
| Battery Pack (5,900 mAh) | AG-VBR59 | | | | | ✓ | ✓ |
| Battery Charger | AG-BRD50 | | | | | ✓ | ✓ |
| Battery Pack (5,800 mAh) | VW-VBD58 | | | | | ✓ | ✓ |
| Battery Pack (5,400 mAh) | CGA-D54/D54s | | | | | ✓ | ✓ |
| Battery Charger | AG-B23 | | | | | ✓ | ✓ |
| Soft Carrying Case | AJ-SC900 | ✓ | ✓ | ✓ | ✓ | | |
| Rain Cover | SHAN-RC700 | ✓ | ✓ | ✓ | ✓ | | |
| P2 card (F series) | AJ-P2E060FG<br>AJ-P2E030FG | ✓ | ✓ | ✓ | ✓ | ✓ | |
| microP2 card (B series) | AJ-P2M064BG | ✓ | ✓*4 | ✓ | ✓*4 | ✓ | ✓ |
| microP2 card (A series) | AJ-P2M032AG<br>AJ-P2M064AG | ✓ | ✓*4 | ✓ | ✓*4 | ✓ | ✓ |
| SDXC Memory Card | | ✓ | ✓ | ✓ | | ✓ | ✓ |
| SDHC/SD Memory Card | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Memory Card Adapter | AJ-P2AD1G | ✓ | ✓ | | ✓ | | |
| Anton/Bauer Battery | | ✓ | ✓ | ✓ | ✓ | | |
| Anton/Bauer UltraLight | 33012 | ✓ | | | | | |
| Anton/Bauer UltraLight | 33013 | ✓ | ✓ | ✓ | ✓ | | |

✓: It is possible to use it. *A version upgrade may be required for the software version of some camera recorders. For details, please visit the following website. http://pro-av.panasonic.net/en/ (Service and Support) *1: A mounting bracket (purchased separately) is required to mount on a camera recorder.
*2: The bundled AG-SFU601G Upgrade Software Key is required to use the AJ-WM30 Wireless Module. *3: In addition to the AG-SFU604G Upgrade Software Key, the AG-YDX600G Video Encoder Board and bundled AG-SFU601G Upgrade Software Key are required for operation. For a wireless LAN connection, the AJ-WM30 Wireless Module is also required. *4: Memory Card Adapter AJ-P2AD1G is required.




**AG-CA300G**
Camera Adapter

**AG-BS300**
Base Station

**AG-EC4G**
Extension Control Unit

**AJ-RC10G**
RCU (Remote Control Unit)*1
* Not available in some areas.

**AJ-C10050G**
Remote Control Cable

**AK-HRP200G**
Remote Operation Panel (ROP)

**AG-CVF10G**
87.6 mm (3.45 inches)
Color HD EVF

**AG-CVF15G**
87.6 mm (3.45 inches)
Color HD EVF

**AJ-HVF21KG**
50.8 mm (2 inches) HD EVF
* Not available in some areas.

**AJ-CVF50G**
38.1 mm (1.5 inches) HD EVF

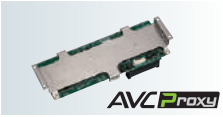
**BT-LH910G**
228.6 mm (9 inches)
HD/SD LCD monitor

**AJ-MC900G**
Stereo Microphone

**AJ-MC700P**
Microphone Kit

**AG-MC200G**
XLR Microphone

**SHAN-TM700**
Tripod Adaptor




**AG-YDX600G**
Video Encoder Board

**AG-YA600G**
HD/SD SDI Input Board

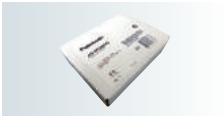
*1: Only functions that are supported by the camera can be controlled by the AJ-RC10G.

**AJ-WM50**
Wireless Module
* Not available in some areas.

**AJ-WM30**
Wireless Module
* Not available in some areas.

**AG-SFU602G**
Production Package Upgrade Software Key

**AG-SFU603G**
LiveU Uplink Solution Upgrade Software Key



**AG-SFU604G**
Proxy Playlist Editing Upgrade Software Key

**AG-VBR118G**
Battery Pack (11,800 mAh)

**AG-VBR89G**
Battery Pack (8,850 mAh)

**AG-VBR59**
Battery Pack (5,900 mAh)

**AG-BRD50**
Battery Charger

**VW-VBD58**
Battery Pack (5,800 mAh)

**CGA-D54/CGA-D54s**
Battery Pack (5,400 mAh)

**AG-B23**
Battery Charger

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

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

| Memory Card Recorder, Memory Card Portable Recorder, Mobile Storage Unit options | | AJ-PD500 | AJ-PG50 | AG-HPD24 | AG-MSU10 |
|---|---|---|---|---|---|
| AVCHD Codec Board | AJ-YCX500G | ✓ | | | |
| Battery Pack (11,800 mAh) | AG-VBR118G | | ✓ | | |
| Battery Pack (8,850 mAh) | AG-VBR89G | | ✓ | | |
| Battery Pack (5,9000 mAh) | AG-VBR89G | | ✓ | | |
| Battery Charger | AG-BRD50 | | ✓ | ✓ | ✓ |
| Battery Pack (5,800 mAh) | VW-VBD58 | | ✓ | | |
| Battery Pack (5,400 mAh) | CGA-D54<br>CGA-D54s | | ✓ | ✓ | ✓ |
| Battery Charger | AG-B23 | | ✓ | | |
| Removable Interface Box | AG-MBX10G | | | | ✓ |
| Wireless Module | AJ-WM50 | | ✓ | | |
| Wireless Module | AJ-WM30 | | ✓ | | |
| P2 card (F series) | AJ-P2E060FG<br>AJ-P2E030FG | ✓ | ✓ | ✓ | ✓ |
| microP2 card (B series) | AJ-P2M064BG | ✓ | ✓ | ✓ | |
| microP2 card (A series) | AJ-P2M032AG<br>AJ-P2M064AG | ✓ | ✓ | ✓ | |
| SDXC Memory Card | | ✓ | ✓ | | |
| SDHC/SD Memory Card | | ✓ | ✓ | ✓ | |
| Memory Card Adapter | AJ-P2AD1G | ✓*1 | ✓*1 | ✓ | |

✓: It is possible to use it. *A version upgrade may be required for the software version of some recorders. For details, please visit the following website. http://pro-av.panasonic.net/en/ (Service and Support) *1: "AVC-Intra100 of 1080/59.94p,50p recording" and "AVC-Intra200 recording" is not supported.

**AJ-YCX500G**
AVCHD Codec Board

**AG-MBX10G**
Removable Interface Box

**AJ-WM50**
Wireless Module
* Not available in some areas.

**AJ-WM30**
Wireless Module
* Not available in some areas.

**AG-VBR118G**
Battery Pack (11,800 mAh)

**AG-VBR89G**
Battery Pack (8,850 mAh)

**AG-VBR59**
Battery Pack (5,900 mAh)

**AG-BRD50**
Battery Charger

**VW-VBD58**
Battery Pack (5,800 mAh)

**AG-B23**
Battery Charger

**CGA-D54/**
**CGA-D54s**
Battery Pack (5,400 mAh)

## Operation-Verified 3rd Party Devices

2/3-type CAC Applicable Lenses
The use of Canon, Fujinon and Angenieux lenses with CAC (Chromatic Aberration Compensation) is recommended.
* For the latest information on CAC applicable lenses, see "Support & Download" on the Panasonic website (http://pro-av.panasonic.net/). The installation of CAC data might be required depending on the lens. Some Angenieux lenses do not support CAC operation. Be sure to specify CAC applicability when purchasing lenses.

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

**[Canare]**

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

Power Cable for Camera Studio System
(Between AG-BS300 and AG-CA300G)

**[Canare]**

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

Anton/Bauer Dionic Battery
Anton/Bauer Hytron Battery

**33012/33013**
Anton/Bauer UltraLight 2

**LiveU LU200**
LiveU Portable Uplink Unit

**TVU One**
TVU Networks Mobile Video Transmission System

Canare Electric CO., Ltd. http://www.canare.co.jp/oversea/mainmenu.html
Contract with LiveU is required separately. LiveU: http://www.liveu.tv
Contact: info_us@liveu.tv (US & Americas), info@liveu.tv (International)

As of September, 2017

## AVC-ULTRA Partners


## P2 Partners


AVC-ULTRA Partners are committed to continue expanding support as Panasonic introduces additional compression modes with AVC-ULTRA. And P2 Partners are committed to support the P2 format, including AVC-Intra100 and AVC-Intra50. Panasonic joins with its partners to offer new production workflows for the networking age.

## Recording Codec Specifications

| Recording Codecs | Digital Video | | | Digital Audio | | Recording Times*2 |
|---|---|---|---|---|---|---|
| | Sampling Frequency | Quantizing | Video Compression | Recording Audio Signal*1 | Headroom | Card x 1 (64 GB) |
| AVC-Intra200 | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 10 bit | MPEG-4 AVC/ H.264 Intra Profile | 48 kHz/24 bit, 16 CH<br>48 kHz/24 bit, 4 CH | 12 dB*3/ 18 dB/ 20 dB | Approx. 32 min. |
| AVC-Intra100 | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 10 bit | MPEG-4 AVC/ H.264 Intra Profile | 48 kHz/16 bit, 8 CH<br>48 kHz/16 bit, 4 CH<br>48 kHz/24 bit, 8 CH<br>48 kHz/24 bit, 4 CH | | Approx. 64 min. |
| AVC-Intra50 | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 10 bit | MPEG-4 AVC/ H.264 Intra Profile | 48 kHz/16 bit, 8 CH<br>48 kHz/16 bit, 4 CH<br>48 kHz/24 bit, 8 CH<br>48 kHz/24 bit, 4 CH | | Approx. 128 min. |
| AVC-LongG50 | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 10 bit | MPEG-4 AVC/H.264 | 48 kHz/24 bit, 8 CH<br>48 kHz/24 bit, 4 CH | | Approx. 128 min. |
| AVC-LongG25 | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 10 bit | MPEG-4 AVC/H.264 | 48 kHz/24 bit, 8 CH | | Approx. 220 min. |
| | | | | 48 kHz/24 bit, 4 CH | | Approx. 256 min. |
| AVC-LongG12 | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 8 bit | MPEG-4 AVC/H.264 | 48 kHz/24 bit, 4 CH | | Approx. 480 min. |
| DVCPRO HD | (59.94 Hz) Y: 74.1758 MHz PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz PB/PR: 37.1250 MHz | 8 bit | DV-Based compression (SMPTE370M) | 48 kHz/16 bit, 8 CH<br>48 kHz/16 bit, 4 CH | | Approx. 64 min. |
| DVCPRO 50 | Y: 13.5 MHz<br>PB/PR: 6.75 MHz | 8 bit | DV-Based compression (SMPTE314M) | 48 kHz/16 bit, 8 CH<br>48 kHz/16 bit, 4 CH | | Approx. 128 min. |
| DVCPRO | Y: 13.5 MHz<br>PB/PR: 3.375 MHz | 8 bit | DV-Based compression (SMPTE314M) | 48 kHz/16 bit, 4 CH<br>48 kHz/16 bit, 2 CH | | Approx. 256 min. |
| DV | Y: 13.5 MHz<br>PB/PR: 3.375 MHz | 8 bit | DV Compression (IEC 61834-2) | 48 kHz/16 bit, 4 CH<br>48 kHz/16 bit, 2 CH | | Approx. 256 min. |

*Each recording codecs differ for every model. Please look at the following table for details. Depending on a model and a codec, upgrade is required. Please go to the Product Information on the Panasonic web page (http://pro-av.panasonic.net/) *1: Each recording audio signal differ for every model. Eight-channel record is impossible for a camera recorder all model. *2: For 1080/60p and 1080/50p, the recording times become 1/2 of those shown above. All of the times apply when single clips are recorded continuously one after the other onto a P2 card. Depending on the number of clips to be recorded, the recordable time may be shorter than the times given. *3: This mode can be chosen only from the AJ-PX270/PX230/PD500/PG50/HPD24.

## Supported Recording Codec by Model

| Recording Codecs | AJ-PX5000G | AJ-PX800G | AJ-PX380G | AG-HPX610 |
|---|---|---|---|---|
| AVC-Intra200 | ✓ | | | |
| AVC-Intra100 | ✓ | ✓ | ✓ | ✓ |
| AVC-Intra50 | ✓ | ✓ | ✓ | ✓ |
| AVC-LongG50 | ✓ | ✓ | ✓ | |
| AVC-LongG25 | ✓ | ✓ | ✓ | |
| AVC-LongG12 | ✓ | ✓ | ✓ | |
| DVCPRO HD | ✓ | ✓ | ✓ | ✓ |
| DVCPRO 50 | ✓ | ✓ | ✓ | ✓ |
| DVCPRO/DV | ✓ | ✓ | ✓ | ✓ |
| AVCHD | | | | |

## Supported AVC-Proxy Recording Mode by Model

| Recording Mode | AJ-PX5000G | AJ-PX800G | AJ-PX380G | AG-HPX610 |
|---|---|---|---|---|
| AVC-G6 2CH MOV | ✓ | ✓ | ✓ | |
| SHQ 2CH MOV | ✓ | ✓ | ✓ | ✓ *2 |
| HQ 4CH MOV | ✓ | | | ✓ *2 |
| HQ 2CH MOV | ✓ | ✓ | ✓ | ✓ *2 |
| LOW 2CH MOV* | ✓ | ✓ | ✓ | ✓ *2 |
| STD 2CH MP4 | ✓ | | | ✓ *2 |

*Each Recording modes differ for every model.
*1: Requires the optional AJ-YCX500G AVCHD codec board. *2: Requires the optional AG-YDX600G video encoder board.

## AVC-Proxy Recording Mode Specifications

| Recording Mode | Resolution | Video | | Audio | | |
|---|---|---|---|---|---|---|
| | | Codec | Bit Rate | Codec | CH | Bit Rate/1CH |
| AVC-G6 2CH MOV | 1080i mode: 1920 × 1080<br>720p mode: 1280 × 720 | H.264<br>High Profile | 6 Mbps | AAC-LC | 2 CH | 64 kbps |
| SHQ 2CH MOV | 960 x 540 | H.264<br>High Profile | 3500 kbps | Linear PCM | 2 CH | 768 kbps |
| HQ 4CH MOV | 640 x 360 | H.264<br>High Profile | 1500 kbps | AAC-LC | 4 CH | 64 kbps |
| HQ 2CH MOV | 640 x 360 | H.264<br>High Profile | 1500 kbps | AAC-LC | 2 CH | 64 kbps |
| LOW 2CH MOV* | 1080i mode: 480 x 270<br>480 59.94i mode: 352 x 240 (SIF_NTSC)<br>576 50i mode: 352 x 288 (SIF_PAL)<br>1080 60/50p mode: 320 x 180<br>1080 30/25/24p mode: 480 x 270<br>720 60/50p mode: 320 x 180<br>720 30/25/24p mode: 480 x 270 | H.264<br>Baseline<br>Profile 800 | 800 kbps | AAC-LC | 2 CH | 64 kbps |
| STD 2CH MP4 | 320 x 240 (QVGA) | MPEG-4<br>Simple Profile | 1500 kbps | AAC-LC | 2 CH | 64 kbps |

Each Recording modes differ for every model.

## Streaming Mode Specifications (AJ-PX5000G/PX800G/PX380G/PX270/PG50)

| Mode | Resolution | Frame Rate | Bit Rate | Codec*1 |
|---|---|---|---|---|
| AVC-G6 | 1920 x 1080*2 | 30 fps/25 fps | 6 Mbps | H.264 High Profile |
| | 1280 x 720*3 | 60 fps/50 fps | | |
| HQ | 640 x 360 | 30 fps/25 fps | 1,500 kbps | |
| LOW | 480 x 270 | 30 fps/25 fps | 800 kbps | H.264 Baseline Profile |
| AVC-G (QoS)*4 | 1920 x 1080*2 | 30 fps/25 fps | Variable depending on the communication bandwidth<br>Maximum 9 Mbps | H.264 High Profile |
| | 1280 x 720*3 | 60 fps/50 fps | | |
| SHQ (QoS)*4 | 960 x 540 | 30 fps/25 fps | Variable depending on the communication bandwidth<br>Maximum 6 Mbps | H.264 High Profile |

*1: The audio codec is AAC LC 2ch in all streaming mode. *2: When only the record signal is 1080/59.94i or 1080/50i. *3: When only the record signal is 720/59.94p or 720/50p. *4: The AJ-PX800G/PG50 does not support QoS modes..

| AJ-PX270 | AJ-PX230 | AJ-PD500 | AJ-PG50 | AG-HPD24 |
|---|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ | |
| ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | |
| ✓ | ✓ | ✓ | ✓ | |
| ✓ | ✓ | ✓ | ✓ | |
| ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ |
| | | Playback only*1 | | |

| AJ-PX270 | AJ-PX230 | AJ-PD500 | AJ-PG50 | AG-HPD24 |
|---|---|---|---|---|
| ✓ | | ✓ | ✓ | |
| ✓ | | ✓ | ✓ | |
| | | ✓ | | |
| ✓ | | ✓ | ✓ | |
| ✓ | | ✓ | ✓ | |
| | | ✓ | | |

# AJ-PX5000G

## General

| | |
|---|---|
| Power Supply: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 29 W<br>(body only, 1080/59.94i, AVC-Intra100 standard recording status, LCD ON)<br>70 W<br>(with all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (relative humidity) |
| Storage Temperature: | –20°C to 60 °C (–4°F to 140°F) |
| Weight: | Approx. 3.4 kg (7.5 lbs.)<br>(body only, excluding the battery and accessories) |
| Dimensions: | 147 mm (W) x 267 mm (H) x 342 mm (D)<br>(5-25/32 inches x 10-1/2 inches x 13-15/32 inches)<br>Body only, excluding protrusion |

## Camera Section

| | |
|---|---|
| Pickup Device: | 2/3-type, 2.2 million pixels, MOS x 3 |
| Lens Mount: | 2/3-type bayonet |
| CC Filter: | A: 3200 K, B: 4300 K, C: 5600 K, D: 6300 K |
| ND Filter: | CLEAR, 1/4, /16, 1/64 |
| Gain Setting: | NORMAL mode:<br>–3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB, 21 dB, 24 dB, 27 dB, 30 dB<br>HIGH SENS mode:<br>–6 dB, –3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB, 21 dB, 24 dB, 27 dB, 30 dB |
| Digital Super Gain (DS.GAIN): | Selectable from 6 dB, 10 dB, 12 dB, 15 dB, 20 dB, 24 dB, 28 dB, 34 dB |
| Super Gain (S.GAIN): | Selectable from 30 dB, 36 dB, 42 dB |
| Shutter Speed: (Preset) | [59.94 Hz]<br>60i/60p mode: 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF<br>30p mode: 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF<br>24p mode: 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF<br>180.0 deg, 172.8 deg, 144.0 deg,<br>120.0 deg, 90.0 deg, 45.0 deg<br>[50 Hz]<br>50i, 50p mode: 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF<br>25p mode: 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., HALF<br>180.0 deg, 172.8 deg, 144.0 deg,<br>120.0 deg, 90.0 deg, 45.0 deg |
| Shutter Speed: (Synchro Scan) | 1/60.1 sec. to 1/7200 sec.<br>(1080/59.94i, 1080/59.94p, 480/59.94i)<br>1/50.1 sec. to 1/6000 sec.<br>(1080/50i, 1080/50p, 576/50i)<br>1/30.1 sec. to 1/3600 sec.<br>(1080/29.97p, 480/29.97p)<br>1/24.1 sec. to 1/2880 sec.<br>(1080/23.98p, 480/23.98p)<br>1/25.1 sec. to 1/3000 sec.<br>(1080/25p, 576/25p) |
| Shutter Open Angle: | Configurable between 3 deg and 359.5 deg<br>(in 0.5 deg steps) |
| Sensitivity: | NORMAL mode:<br>F9 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F10 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i)<br>HIGH SENS mode:<br>F12 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F13 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i) |
| Minimum Subject Illumination: | Approx. 0.004 lx<br>(F1.4, +42 dB (S.GAIN), +34 dB (DS.GAIN)) |
| Image S/N: | 62 dB (standard) |
| Horizontal Resolution: | 1000 TV or higher (center) |

## Memory Card Recorder Section

| | |
|---|---|
| Recording Media: | P2 card, microP2 card |
| System Format: | 1080/59.94p, 1080/59.94i, 1080/23.98PsF, 720/59.94p, 480/59.94i, 1080/50p, 1080/50i, 720/50p, 576/50i |
| Recording Format: | AVC-Intra200/AVC-Intra100/AVC-Intra50/ AVC-LongG50/AVC-LongG25/AVC-LongG12/ DVCPRO HD/DVCPRO50/DVCPRO/DV formats switchable |
| Recording Video Signal: | 1080/59.94p, 1080/59.94i, 1080/29.97pN, 1080/23.98pN, 720/59.94p, 720/29.97pN, 720/23.98pN, 480/59.94i, 1080/50p, 1080/50i, 1080/25pN, 720/50p, 720/25pN, 576/50i |

*Please see 45 – 46 page for Digital Video, Digital Audio and Proxy Specifications.

## Video Input/Output

| | |
|---|---|
| SDI IN: | BNC x 1<br>HD SDI: 3 G: 0.8 V [p-p], 75 Ω<br>1.5 G: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω<br>Switch the menu to use as <VIDEO IN> terminal/return video input terminal/ <GENLOCK IN> terminal |
| SDI OUT1: | BNC x 1<br>HD SDI: 3 G: 0.8 V [p-p], 75 Ω,<br>1.5 G: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω, |
| SDI OUT2: | BNC x 1<br>HD SDI: 3 G: 0.8 V [p-p], 75 Ω,<br>1.5 G: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω |
| VIDEO OUT: | BNC x 1<br>Composite: 1.0 V [p-p], 75 Ω |
| HDMI OUT: | HDMI x 1 (HDMI type A terminal, not compatible with VIERA Link) |

## Audio Input/Output

| | |
|---|---|
| AUDIO IN: (CH1/CH2) | XLR x 2, 3-pin, LINE/MIC/MIC +48 V switchable type<br>LINE: 4 dBu (–3 dBu/0 dBu/4 dBu selectable menu)<br>MIC: –60 dBu (–60 dBu/–50 dBu selectable menu)<br>MIC+48 V: Phantom +48 V supported, –60 dBu (–60 dBu/–50 dBu selectable menu) |
| MIC IN: | XLR x 1, 5-pin<br>Phantom +48 V (selectable menu),<br>–40 dBu (–50 dBu/–40 dBu selectable menu) |
| Wireless Slot: | 25-pin, D-SUB, –40 dBu, 2 CH supported |
| AUDIO OUT: (CH1/CH2) | XLR x 1, 5-pin, equilibrium low impedance<br>4 dBu (–3 dBu/0 dBu/4 dBu selectable menu) |
| PHONES Out: | Stere o mini jack x 2 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| GENLOCK IN: | BNC x 1, 1.0 V [p-p], 75 Ω |
| TC IN: | BNC x 1, 0.5 V [p-p] to 8 V [p-p], 10 kΩ |
| TC OUT: | BNC x 1, 2.0 V [p-p] ±0.5 V [p-p], low impedance |
| DC IN: | XLR x 1, 4-pin, DC 12 V (DC 11.0 V to 17.0 V) |
| DC OUT: | 4-pin, DC 12 V (DC 11.0 V to 17.0 V),<br>maximum output current 1.5 A |
| REMOTE: | 10-pin |
| LENS: | 12-pin |
| VF: | 20-pin |
| LAN: | 100BASE-TX/10BASE-T |
| USB 2.0 (Device): | Type B connector, 4-pin |
| USB 3.0 (Host): | Type A connector, 9-pin |
| USB 2.0 (Host): | Type A connector, 4-pin |
| LIGHT: | 2-pin, DC 12 V (DC 11.0 V to 17.0 V),<br>maximum output current 4.5 A<br>(up to 50 W equivalent) |
| LCD Monitor: | 8.76 cm (3.45 inches) LCD monitor,<br>approx. 921,000 dots (16:9) |

## Included Accessories

Shoulder strap, Mount cap

# AJ-PX800G

## General

| | |
|---|---|
| Power Supply: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 22 W (body + AG-YA600G) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Approx. 2.8 kg (6.2 lbs.)<br>body only, excluding the battery and accessories |
| Dimensions: | 144 mm (W) x 267 mm (H) x 350 mm (D)<br>(5-21/32 inches x 10-1/2 inches x 13-25/32 inches)<br>body only, excluding protrusion |

## Camera Section

| | |
|---|---|
| Pickup Device: | 2/3-type 2.2 million pixels, MOS x 3 |
| Lens Mount: | 2/3-type bayonet |
| ND Filter: | CLEAR, 1/4, 1/16, 1/64 |
| Gain Setting: | NORMAL mode:<br>–3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB, 21 dB, 24 dB, 27 dB, 30 dB<br>HIGH SENS mode:<br>–6 dB, –3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB, 21 dB, 24 dB, 27 dB, 30 dB |
| Super Gain (S.GAIN): | Selectable from 30 dB, 36 dB, 42 dB |
| Shutter Speed: (Preset) | 60i/60p mode: 1/60 (OFF) sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>30p mode: 1/30 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.<br>24p mode: 1/24 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.<br>50i/50p mode: 1/50 (OFF) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>25p mode: 1/25 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec. |
| Shutter Speed: (Synchro Scan) | 60i/60p mode: 1/60.0 sec. to 1/250.0 sec.<br>30p mode: 1/30.0 sec. to 1/250.0 sec.<br>24p mode: 1/24.0 sec. to 1/250.0 sec.<br>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>25p mode: 1/25.0 sec. to 1/250.0 sec. |
| Shutter Speed: (Slow) | 60i/60p mode: 1/15 sec., 1/30 sec.<br>30p mode: 1/15 sec.<br>24p mode: 1/12 sec.<br>50i/50p mode: 1/12.5 sec., 1/25 sec.<br>25p mode: 1/12.5 sec. |
| Shutter Open Angle: | 3.0 deg to 360.0 deg<br>(in 0.5 deg steps, angle display) |
| Sensitivity: | NORMAL mode:<br>F9 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F10 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i)<br>HIGH SENS mode:<br>F12 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F13 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i) |
| Minimum Subject Illumination: | Approx. 0.22 lx (F1.4, +42 dB (S.GAIN)) |
| Image S/N: | 62 dB (standard) |
| Horizontal Resolution: | 1000 TV or higher (center) |

## Memory Card Recorder Section

| | |
|---|---|
| Recording Media: | P2 card (for microP2 card: adaptor is required) |
| System Format: | 1080/59.94i, 1080/23.98psF, 720/59.94p, 480/59.94i, 1080/50i, 720/50p, 576/50i |
| Recording Format: | AVC-Intra100/AVC-Intra50/AVC-LongG50/ AVC-LongG25/AVC-LongG12/DVCPRO HD/ DVCPRO50/DVCPRO/DV formats switchable |
| Recording Video Signal: | 1080/59.94i, 1080/29.97pN, 1080/23.98pN, 720/59.94p, 720/29.97pN, 720/23.98pN, 480/59.94i, 480/29.97p, 1080/50i, 1080/25pN, 720/50p, 720/25pN, 576/50i, 576/25p |

*Please see 45 – 46 page for Digital Video, Digital Audio and Proxy Specifications.

## Video Input/Output

| | |
|---|---|
| SDI OUT/IN*: | BNC x 1<br>1.5 G HD SDI: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω |
| MON OUT: | BNC x 1<br>(Can be switched to HD SDI/SD SDI/ analog composite on SmartUI.)<br>1.5 G HD SDI: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω<br>Composite: 1.0 V [p-p], 75 Ω |
| HDMI OUT: | HDMI x 1 (HDMI type A terminal, not compatible with VIERA Link) |

## Audio Input/Output

| | |
|---|---|
| Audio IN: | XLR x 2, 3-pin<br>LINE/MIC (switch selection)<br>LINE: 0 dBu<br>MIC: –50 dBu/–60 dBu (menu selection),<br>+48 V ON/OFF (switch selection)<br>MIC IN: XLR x 1, 5-pin |
| MIC IN: | XLR x1, 3-pin<br>+48 V supported (selectable menu)<br>–40 dBu/–50 dBu/–60 dBu (selectable menu) |
| Wireless IN: | 25-pin, D-SUB, –40 dBu, 2 CH supported |
| Audio OUT: | Pin jack x 2 (CH1, CH2),<br>Output level: 600 Ω, 316 mV |
| Phones OUT: | 3.5 mm diameter stereo mini jack x1 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| GENLOCK IN: | BNC x 1, 1.0 V [p-p], 75 Ω |
| TC IN/OUT: | BNC x 1, IN/OUT switch selection<br>IN: 0.5 V [p-p] to 8 V [p-p], 10 kΩ<br>OUT: 2.0 V [p-p] ±0.5 V [p-p], Low impedance |
| DC IN: | XLR x1, 4-pin, DC 12 V (DC 11.0 V to 17.0 V) |
| DC OUT: | 4-pin, DC 12 V (DC 11.0 V to 17.0 V),<br>maximum output current 1.5 A |
| REMOTE: | 10-pin |
| Lens: | 12-pin |
| VF: | 20-pin |
| LAN: | 100BASE-TX/10BASE-T |
| USB 2.0 (Host): | Type A connector, 4-pin |
| USB 2.0 (Device): | Type B connector, 4-pin |
| USB 2.0 (Sub Host): | Type A connector, 4-pin<br>(exclusively for wireless module AJ-WM30) |

## Included Accessories

Shoulder strap, Mount cap

* The optional AJ-YA600G SDI board is required.

# AJ-PX380G

## General

| | |
|---|---|
| Power: | DC 12 V (11.0 V – 17.0 V) |
| Power Consumption: | 19 W (body only, 1080/60i, AVC-Intra 100 standard recording status, LCD ON)<br>58W (with all optional accessories connected and maximum power supplied from each output terminal) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (relative humidity) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Approx. 2.7 kg (6.0 lb)<br>body only, excluding the battery and accessories |
| Dimensions: | 144 mm (W) × 267 mm (H) × 348 mm (D)<br>(5-21/32 inches × 10-1/2 inches × 13-11/16 inches)<br>body only, excluding protrusion |

## Camera Unit

| | |
|---|---|
| Pickup Device: | 1/3-type 2.2 million pixels, MOS × 3 |
| Lens Mount: | 1/3-type bayonet |
| ND Filter: | 1CLEAR, 1/4ND, 1/16ND, 1/64ND |
| Gain Setting: | NORMAL mode:<br>0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB<br>HIGH SENS mode:<br>–3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 15 dB, 18 dB |
| Super Gain (S.GAIN): | Selectable from 24 dB, 30 dB, 36 dB |
| Shutter Speed: | 60i/60p mode: 1/60 (OFF) sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>30p mode: 1/30 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.<br>24p mode: 1/24 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.<br>50i/50p mode: 1/50 (OFF) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>25p mode: 1/25 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec. |
| Shutter Speed: (Synchro Scan) | 60i/60p mode: 1/60.0 sec. to 1/249.8 sec.<br>30p mode: 1/30.0 sec. to 1/249.8 sec.<br>24p mode: 1/24.0 sec. to 1/249.8 sec.<br>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>25p mode: 1/25.0 sec. to 1/250.0 sec. |
| Shutter Speed: (Slow) | 60i/60p mode: 1/15 sec., 1/30 sec.<br>30p mode: 1/15 sec.<br>24p mode: 1/12 sec.<br>50i/50p mode: 1/12.5, 1/25 sec.<br>25p mode: 1/12.5 sec. |
| Shutter Open Angle: | 3.0 deg to 360.0 deg<br>(in 0.5 deg steps, angle display) |
| Sensitivity: | NORMAL mode:<br>F8 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F9 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i)<br>HIGH SENS mode:<br>F11 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F12 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i) |
| Horizontal Resolution: | 1000 TV or higher (center) |

## Memory Card Recorder

| | |
|---|---|
| Recording Media: | P2 card x 1, microP2 card x 2 |
| System Format: | 1080/59.94p, 1080/59.94i, 1080/23.98psF, 720/59.94p, 480/59.94i, 1080/50p, 1080/50i, 720/50p, 576/50i |
| Recording Format: | AVC-Intra100/AVC-Intra50/AVC-LongG50/ AVC-LongG25/ AVC-LongG12/DVCPRO HD/ DVCPRO50/DVCPRO/DV formats switchable |
| Recording Video Signal: | 1080/59.94p, 1080/59.94i, 1080/29.97pN, 1080/23.98pN, 720/59.94p, 720/29.97pN, 720/23.98pN, 480/59.94i, 480/29.97p, 1080/50p, 1080/50i, 1080/25pN, 720/50p, 720/25pN, 576/50i, 576/25p |

*Please see 45 – 46 page for Digital Video, Digital Audio and Proxy Specifications.

## Video Input/Output

| | |
|---|---|
| SDI OUT1: | BNC×1<br>HD SDi (3 G/1.5 G), SD SDI: 0.8 V [p-p], 75 Ω |
| SDI OUT2/IN: | BNC ×1, SDI OUT2, SDI IN (menu selection)<br>(Can be switched to HD SDI/SD SDI on SmartUI.)<br>HD SDi (1.5 G), SD SDI: 0.8 V [p-p], 75 Ω |
| GL IN/VIDEO OUT: | BNC ×1, GENLOCK IN,<br>VIDEO OUT (menu selection)<br>GENLOCK IN: 1.0 V [p-p], 75 Ω<br>VIDEO OUT: Composite, 1.0 V [p-p], 75 Ω |
| HDMI OUT: | HDMI × 1 (HDMI type A terminal,<br>not compatible with VIERA Link) |

## Audio Input/Output

| | |
|---|---|
| Audio IN CH1/3, AUDIO IN CH2/4: | XLR (3-pin) × 2, LINE/MIC (switch selection)<br>LINE: 0 dBu<br>MIC: –50 dBu/–60 dBu (menu selection),<br>+48 V ON/OFF (switch selection) |
| MIC IN: | XLR (3-pin) × 1,<br>+48 V supported (selectable menu)<br>–40 dBu/–50 dBu/–60 dBu (selectable menu) |
| Wireless IN: | 25-pin, D-SUB, –40 dBu, 2 CH supported |
| Audio OUT: | Pin jack x 2 (CH1, CH2),<br>Output level: 600 Ω, 316 mV |
| Phones OUT: | 3.5 mm diameter stereo mini jack ×1 |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| TC IN/OUT: | BNC×1, IN/OUT (menu selection)<br>IN: 0.5 V [p-p] to 8 V [p-p], 10 kΩ<br>OUT: 2.0 V [p-p] ±0.5 V [p-p], Low impedance |
| LAN: | 100BASE-TX/10BASE-T |
| USB2.0 (device): | Type B connector, 4-pin |
| USB2.0 (host): | Type A connector, 4-pin |
| USB2.0 (sub host): | Type A connector, 4-pin<br>(exclusively for wireless module AJ-WM30) |
| DC IN: | XLR × 1, 4-pin, DC 12 V (DC 11.0 V to 17.0 V) |
| DC OUT: | 4-pin, DC 12 V (DC 11.0 V to 17.0 V),<br>maximum output current 1.5 A |
| REMOTE: | 10-pin |
| Lens: | 12-pin |
| EVF: | 20-pin |

## Included Accessories

Shoulder strap, Mount cap

# AG-HPX610

## General

| | |
|---|---|
| Power Supply: | DC 12 V (DC 11.0 V – 17.0 V) |
| Power Consumption: | 18 W (body only)<br>22 W (with AG-YDX600G and AG-YA600G) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 85 % (no condensation) |
| Storage Temperature: | –20°C to 60°C (–4°F to 140°F) |
| Weight: | Approx. 2.8 kg (6.2 lb)<br>body only, excluding the battery and accessories |
| Dimensions: | 144 mm (W) x 267 mm (H) x 350 mm (D)<br>(5-21/32 inches x 10-1/2 inches x 13-25/32 inches)<br>excluding prominent parts |

## Camera Section

| | |
|---|---|
| Pickup Device: | 2/3-type MOS x 1 |
| Lens Mount: | 2/3-type bayonet type |
| ND Filter: | CLEAR, 1/4, 1/16, 1/64 |
| Gain Selection*1: | –3 dB, 0 dB, 3 dB, 6 dB, 9 dB, 12 dB, 18 dB<br>(18 dB: USER SW allocation) |
| Color Temperature Settings: | ATW, ATW LOCK, A CH, B CH,<br>Preset 3200 K/Preset 5600 K/VAR<br>(2400 K to 9900 K) |
| Shutter Speed:<br>(Preset) | [59.94 Hz]<br>60i/60p mode: 1/60 (OFF) sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>30p mode: 1/30 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.<br>24p mode: 1/24 (OFF) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.<br>[50 Hz]<br>50i/50p mode: 1/50 (OFF ) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>25p mode: 1/25 (OFF ) sec., 1/50 sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec. |
| Shutter Speed:<br>(Syncro Scan) | [59.94 Hz]<br>60i/60p mode: 1/60.0 sec. to 1/249.8 sec.<br>30p mode: 1/30.0 sec. to 1/249.8 sec.<br>24p mode: 1/24.0 sec. to 1/249.8 sec.<br>[50 Hz]<br>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>25p mode: 1/25.0 sec. to 1/250.0 sec. |
| Shutter Speed:<br>(Slow) | [59.94 Hz]<br>60i/60p mode: 1/15 sec., 1/30 sec.<br>30p mode: 1/15 sec.<br>24p mode: 1/12 sec.<br>[50 Hz]<br>50i/50p mode: 1/12.5 sec., 1/25 sec.<br>25p mode: 1/12.5 sec. |
| Shutter Open Angle: | SCENE FILE VFR = OFF<br>3 deg to 360 deg, 0.5 deg step select<br>SCENE FILE VFR = ON*2<br>(FRAME RATE 12p or more)<br>3 deg to 360 deg, 0.5 deg step select<br>SCENE FILE VFR = ON*2<br>(Less than FRAME RATE 12p)<br>3 deg to 22.5 deg, 0.5 deg step select<br>45 deg, 90 deg, 180 deg, 360 deg |
| Frame Rates*2:<br>(59.94 Hz mode) | 1080: 1/2/4/6/9/12/15/18/20/21/22/24/25/26/27/28/30 fps (frames per second) 17 steps<br>720: 1/2/4/6/9/12/15/18/20/21/22/24/25/26/27/28/30/32/34/36/40/44/48/54/60 fps<br>(frames per second) 25 steps |
| Frame Rates*2:<br>(50 Hz mode) | 1080: 1/2/4/6/9/12/15/18/20/21/22/23/24/25 fps<br>(frames per second) 14 steps<br>720: 1/2/4/6/9/12/15/18/20/21/22/23/24/25/26/27/28/30/32/34/37/42/45/48/50 fps<br>(frames per second) 25 steps |
| Sensitivity*3: | F12 (2000 lx, 3200 K, 89.9 % reflect, 1080/59.94i)<br>F13 (2000 lx, 3200 K, 89.9 % reflect, 1080/50i) |
| Video S/N*3: | 59 dB (standard) |
| Digital Zoom: | 2x, 4x |

## Memory Card Recorder Section

| | |
|---|---|
| Recording Media: | P2 card |
| System Formats: | 1080/59.94i, 1080/23.98PsF*2, 720/59.94p, 480/59.94i, 1080/50i, 720/50p, 576/50i |
| Recording Formats: | AVC-Intra100/AVC-Intra50/DVCPRO HD/ DVCPRO 50/DVCPRO/DV formats switchable |
| Recording Video Signal: | 1080/59.94i, 1080/29.97p, 1080/29.97pN, 1080/23.98p, 1080/23.98pA, 1080/23.98pN, 1080/50i, 1080/25p, 1080/25pN, 720/59.94p, 720/29.97p, 720/29.97pN, 720/23.98p, 720/23.98pN, 720/50p, 720/25p, 720/25pN, 480/59.94i, 480/29.97p, 480/23.98p, 480/23.98pA, 576/50i, 576/25p |

*Please see 45 – 46 page for Digital Video and Digital Audio Specifications.

## Video Input/Output

| | |
|---|---|
| SDI OUT/IN (OP)*4: | BNC x 1<br>HD SDI: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω |
| MON OUT: | BNC x 1,<br>HD SDI/SD SDI/VBS (Analog Composite) can be switched on SmatUI<br>HD SDI: 0.8 V [p-p], 75 Ω<br>SD SDI: 0.8 V [p-p], 75 Ω<br>VBS: 1.0 V [p-p], 75 Ω |
| HDMI OUT: | HDMI x 1 (HDMI TypeA terminal),<br>VIERA Link not supported |

## Audio Input/Output

| | |
|---|---|
| AUDIO IN: | XLR x 2, 3-pin<br>LINE/MIC switchable, high impedance,<br>LINE: 0 dBu<br>MIC:–50 dBu/–60 dBu (switching via menu)<br>MIC +48 V ON/OFF (switchable) |
| MIC IN: | XLR x 1, 3-pin<br>+MIC/+48 V switchable,<br>–40 dBu/–50 dBu/–60 dBu (switching via menu) |
| WIRELESS IN: | 25-pin, D-SUB, –40 dBu 2 CH supported |
| AUDIO OUT: | Pin jack x 2 (CH1/CH2), Output: 316 mV, 600 Ω |
| PHONES OUT: | ø3.5 mm stereo mini jack x 1 |
| Speaker: | 20 mm diameter x 1 |

## Other Input/Output

| | |
|---|---|
| GENLOCK IN: | BNC x 1, 1.0 V [p-p], 75 Ω |
| TC IN/OUT: | IN: BNC x 1, 0.5 V [p-p] to 8 V [p-p], 10 kΩ<br>OUT: BNC x 1, 2.0 V [p-p] ±0.5 V [p-p],<br>low impedance (IN/OUT switching via menu) |
| DC IN: | XLR x 1, 4-pin, DC 12 V (DC 11.0 V to 17.0 V ) |
| DC OUT: | 4-pin, DC 12 V (DC 11.0 V to 17.0 V ), Max. 1.5 A |
| REMOTE: | 10-pin |
| LENS: | 12-pin |
| VF: | 20-pin |
| LAN*5: | 100BASE-TX/10BASE-T |
| USB 2.0 (Host): | Type-A, 4-pin |
| USB 2.0 (Device): | Type-B, 4-pin |
| USB 2.0 (Host)*5: | Type-A, 4-pin (for Wireless Module AJ-WM30 or for UPLINK USB cable) |

## Included Accessories

Shoulder strap, Mount cap*6, CD-ROM

*1: When SHOOTING MODE is NORMAL on SYSTEM SETUP MENU, –3 dB setting is treated as 0dB and 18dB setting can not be active.
*2: AG-SFU602 Upgrade Software Key is required.
*3: When SHOOTING MODE is LOW LIGHT on SYSTEM SETUP MENU
*4: Mounting the optional AG-YA600G HD/SD SDI Input Board makes this system SDI Input. (SDI OUT/IN switching via menu)
*5: When Upgrade Software Key AG-SFU601 is installed, the network function of cable LAN and wireless LAN becomes effective.
*6: It is attached to the main body.

# AJ-PX270

## General

| | |
|---|---|
| Power Supply: | DC 7.2 V (when the battery is used)<br>DC 12 V (when the AC adaptor is used) |
| Power Consumption: | 19.5 W (when the LCD monitor is used) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: | Approx. 2.2 kg (4.9 lbs.) body only,<br>excluding lens hood, battery, and accessories<br>Approx. 2.6 kg (5.7 lbs.) including lens hood,<br>supplied battery, and microphone holder |
| Dimensions: | 176 mm(H) x 171 mm(W) x 329 mm (D)<br>(6-15/16 inches x 6-23/32 inches x 12-15/16 inches)<br>(excluding protrusion) |

## Camera Section

| | |
|---|---|
| Pickup Device: | 1/3-type 2.2 million pixels,<br>MOS solid state image sensor x 3 |
| Lens: | Optical image stabilizer lens,<br>optical 22x motorized zoom<br>F1.6 to F3.2 (f=3.9 mm to 86 mm)<br>35 mm conversion: 28 mm to 616 mm (16:9) |
| Filter Diameter: | 72 mm |
| Optical System: | Prism system |
| ND Filter: | CLEAR, 1/4, 1/16, 1/64 |
| Shortest Shooting Distance: | 1.1 m from the front lens (M.O.D.)<br>Approx. 0.06 m from front lens<br>(When Macro=On, at wide-end) |
| Gain Setting: | L/M/H selector switch–3 dB to 18 dB (in 1 dB steps)<br>(Negative value of gain is only in [HIGH SENS.] mode.)<br>(When assigning [S.GAIN] to the USER button:<br>Switching between 24 dB, 30 dB, and 36 dB) |
| Color Temperature Setting: | ATW, ATW LOCK, A CH, B CH,<br>preset 3200 K/preset 5600 K/VAR<br>(2000 K to 15000 K) |
| Shutter Speed: (Preset) | [59.94 Hz]<br>60i/60p mode: 1/60 (shutter off) sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>30p mode: 1/30 sec., 1/50 (shutter off) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>24p mode: 1/24 sec., 1/50 (shutter off) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>[50 Hz]<br>50i/50p mode: 1/50 (shutter off) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec.<br>25p mode: 1/25 sec., 1/50 (shutter off) sec., 1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec. |
| Shutter Speed: (Synchro Scan) | [59.94 Hz]<br>60i/60p mode: 1/60.0 sec. to 1/249.8 sec.<br>30p mode: 1/30.0 sec. to 1/249.8 sec.<br>24p mode: 1/24.0 sec. to 1/249.8 sec.<br>[50 Hz]<br>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>25p mode: 1/25.0 sec. to 1/250.0 sec. |
| Shutter Speed: (Slow) | Setting is possible when [VFR]=[OFF]<br>[59.94 Hz]<br>60i/60p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/15 sec., 1/30 sec.<br>30p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6sec., 1/15 sec.<br>24p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/12 sec.<br>[50 Hz]<br>50i/50p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/12 sec., 1/25 sec.<br>25p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/12 sec. |
| Shutter Open Angle: | 3.0 deg to 180.0 deg to 360.0 deg<br>(in 0.5 deg steps, angle display) |
| Frame Rate: | 1080/59.94p: 1/2/4/6/ 9/12/15/18/20/21/22/24/ 25/26/27/28/30/32/34/36/40/44/48/54/60 fps<br>(frames per second) 25 steps<br>1080/50p: 1/2/4/6/9/12/15/18/20/21/22/23/ 24/25/26/27/28/30/32/34/37/42/45/48/50 fps<br>(frames per second) 25 steps |
| Sensitivity: | [HIGH SENS.] mode<br>F11 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F12 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i) |
| Minimum Subject Illumination: | 0.02 lx<br>(F1.6, gain 18 dB, [1S.EXP.], [HIGH SENS.] mode) |
| Digital Zoom: | 2x, 5x, 10x |
| Lens Hood: | Hood with lens cover |

## Memory Card Recorder Section

| | |
|---|---|
| Recording Media: | microP2 card, P2 card |
| Recording Slot: | microP2 card slot x 2, P2 card slot x 1 |
| System Format: | 1080/59.94p, 1080/59.94i, 1080/23.98PsF,<br>720/59.94p, 480/59.94i,<br>1080/50p, 1080/50i, 720/50p, 576/50i |
| Recording Format: | AVC-Intra200/AVC-Intra100/AVC-Intra50/<br>AVC-LongG50/AVC-LongG25/AVC-LongG12/<br>DVCPRO HD/DVCPRO50/DVCPRO/DV formats |
| Recording Video Signal: | 1080/59.94p, 1080/59.94i, 1080/29.97pN,<br>1080/23.98pN, 720/59.94p, 720/29.97pN,<br>720/23.98pN, 480/59.94i, 480/29.97p<br>1080/50p, 1080/50i, 1080/25pN,<br>720/50p, 720/25pN, 576/50i, 576/25p |

*Please see 45 – 46 page for Digital Video, Digital Audio and Proxy Specifications.

## Video Input/Output

| | |
|---|---|
| SDI OUT: | BNC x 1, HD (3 G/1.5 G), SD: 0.8 V [p-p], 75 Ω |
| VIDEO OUT: | BNC x 1, Also used as the GENLOCK IN,<br>IN/OUT switch selection<br>Composite: 1.0 V [p-p], 75 Ω |
| HDMI OUT: | HDMI x 1 (HDMI type A terminal,<br>not compatible with VIERA Link) |

## Audio Input

| | |
|---|---|
| Built-in Microphone: | Supports stereo microphone |
| AUDIO INPUT 1/AUDIO INPUT 2: | XLR x 2, 3-pin.Input high impedance,<br>LINE/MIC switch selection<br>LINE: 4 dBu/0 dBu (selectable menu)<br>MIC: –40 dBu/–50 dBu/–60 dBu (selectable menu),<br>+48 V ON/OFF (switch selection) |

## Audio Output

| | |
|---|---|
| AUDIO OUT: | 3.5 mm diameter stereo mini jack x 1,<br>Output level: 600 Ω, 316 mV |
| Headphones: | 3.5 mm diameter stereo mini jack x 1<br>100 Ω, –16 dBV<br>(32 Ω load, at maximum output level) |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| CAM REMOTE: | 2.5 mm diameter super mini jack x 1 ZOOM S/S<br>3.5 mm diameter mini jack x 1 FOCUS IRIS |
| GENLOCK IN: | BNC x 1, also used as the VIDEO OUT,<br>IN/OUT switch selection, 1.0 V [p-p], 75 Ω |
| TC IN/OUT: | BNC x 1, Used as the input and output terminals,<br>IN/OUT switch selection<br>Input: 1.0 V [p-p] to 4.0 V [p-p], 10 kΩ<br>Output: 2.0 V [p-p] ±0.5 V [p-p], low impedance |
| LAN: | 100BASE-TX/10BASE-T |
| USB 2.0 (Device): | Type miniB connector, 4-pin |
| USB 3.0 (Host): | Type A connector, 9-pin |
| USB 2.0 (Sub-Host): | Type A connector, 4-pin<br>(exclusively for wireless module AJ-WM30) |
| DC IN 12 V: | DC 12 V (DC 10.5 V – 13.5 V), EIAJ type 4 |

## Monitor and Viewfinder

| | |
|---|---|
| LCD Monitor: | 3.5-type QHD color monitor (Approx. 1560000 dots) |
| Viewfinder: | 0.5-type OLED (organic EL display)<br>(Approx. 2360000 dots, video display area:<br>Approx. 1770000 dots) |

## Included Accessories

Battery (VW-VBD58), Shoulder strap, Battery charger, AC adaptor, Microphone holder, Screw for microphone holder (12 mm), Power code x 2, Eye cup, Lens hood, Grip belt

# AJ-PX230

## General

| | |
|---|---|
| Power Supply: | DC 7.2 V (when the battery is used)<br>DC 12 V (when the AC adaptor is used) |
| Power Consumption: | 19.5 W (when the LCD monitor is used) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: | Approx. 2.2 kg (4.9 lbs.) body only,<br>excluding lens hood, battery, and accessories<br>Approx. 2.6 kg (5.7 lbs.) including lens hood,<br>supplied battery, and microphone holder |
| Dimensions: | 176 mm (H) x 171 mm (W) x 329 mm (D)<br>(6-15/16 inches x 6-23/32 inches x 12-15/16 inches)<br>(excluding protrusions) |

## Camera Section

| | |
|---|---|
| Pickup Device: | 1/3-type 2.2 megapixels,<br>MOS solid state image sensor x3 |
| Lens: | Optical image stabilizer lens,<br>optical 22x motorized zoom<br>F1.6 to F3.2 (f=3.9 mm to 86 mm)<br>35 mm conversion: 28 mm to 616 mm (16:9) |
| Filter Diameter: | 72 mm |
| Optical System: | Prism system |
| ND Filter: | OFF, 1/4, 1/16, 1/64 |
| Shortest Shooting Distance: | 1.1 m from the front lens (M.O.D.)<br>Approx. 0.06 m from front lens<br>(When Macro=On, at wide-end) |
| Gain Setting: | L/M/H selector switch–3 dB to 18 dB (in 1 dB steps)<br>(Negative value of gain is only in [HIGH SENS.] mode.)<br>(When assigning [S.GAIN] to the USER button:<br>Switching between 24 dB, 30 dB, and 36 dB) |
| Color Temperature Setting: | ATW, ATW LOCK, A ch, B ch,<br>preset 3200 K/preset 5600 K/VAR<br>(2000 K to 15000 K) |
| Shutter Speed:<br>(Preset) | [59.94 Hz]<br>60i/60p mode: 1/60 (shutter off) sec.,<br>1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec.,<br>1/1000 sec., 1/2000 sec.<br>30p mode: 1/30 sec., 1/50 (shutter off) sec.,<br>1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec.,<br>1/1000 sec., 1/2000 sec.<br>24p mode: 1/24 sec., 1/50 (shutter off) sec.,<br>1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec.,<br>1/1000 sec., 1/2000 sec.<br>[50 Hz]<br>50i/50p mode: 1/50 (shutter off) sec., 1/60 sec.,<br>1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec.,<br>1/2000 sec.<br>25p mode: 1/25 sec., 1/50 (shutter off) sec.,<br>1/60 sec., 1/120 sec., 1/250 sec., 1/500 sec.,<br>1/1000 sec., 1/2000 sec. |
| Shutter Speed:<br>(Synchro Scan) | [59.94 Hz]<br>60i/60p mode: 1/60.0 sec. to 1/249.8 sec.<br>30p mode: 1/30.0 sec. to 1/249.8 sec.<br>24p mode: 1/24.0 sec. to 1/249.8 sec.<br>[50 Hz]<br>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.<br>25p mode: 1/25.0 sec. to 1/250.0 sec. |
| Shutter Speed:<br>(Slow) | Setting is possible when [VFR]=[OFF]<br>[59.94 Hz]<br>60i/60p mode: 1/1 sec., 1/2 sec., 1/4 sec.,<br>1/6 sec., 1/15 sec., 1/30 sec.<br>30p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6sec.,<br>1/15 sec.<br>24p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec.,<br>1/12 sec.<br>[50 Hz]<br>50i/50p mode: 1/1 sec., 1/2 sec., 1/4 sec.,<br>1/6 sec., 1/12 sec., 1/25 sec.<br>25p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec.,<br>1/12 sec. |
| Shutter Open Angle: | 3.0 deg to 180.0 deg to 360.0 deg<br>(in 0.5 deg steps, angle display) |
| Frame Rate: | 1080/59.94p: 1/2/4/6/ 9/12/15/18/20/21/22/24/<br>25/26/27/28/30/32/34/36/40/44/48/54/60 fps<br>(frames per second) 25 steps<br>1080/50p: 1/2/4/6/9/12/15/18/20/21/22/23/<br>24/25/26/27/28/30/32/34/37/42/45/48/50 fps<br>(frames per second) 25 steps |
| Sensitivity: | [HIGH SENS.] mode<br>F11 (2000 lx, 3200 K, 89.9 % reflection, 1080/59.94i)<br>F12 (2000 lx, 3200 K, 89.9 % reflection, 1080/50i) |
| Minimum Subject Illumination: | 0.02 lx<br>(F1.6, gain 18 dB, [1S.EXP.], [HIGH SENS.] mode) |
| Digital Zoom: | 2x, 5x, 10x |
| Lens Hood: | Hood with lens cover |

## Memory Card Recorder Section

| | |
|---|---|
| Recording Media: | microP2 card |
| Recording Slot: | microP2 card slot x 2 |
| System Format: | 1080/59.94p, 1080/59.94i, 1080/23.98PsF,<br>720/59.94p, 480/59.94i,<br>1080/50p, 1080/50i, 720/50p, 576/50i |
| Recording Format: | AVC-Intra200/AVC-Intra100/AVC-Intra50/<br>AVC-LongG50/AVC-LongG25/AVC-LongG12/<br>DVCPRO HD/DVCPRO50/DVCPRO/DV formats |
| Recording Video Signal: | 1080/59.94p, 1080/59.94i, 1080/29.97pN,<br>1080/23.98pN, 720/59.94p, 720/29.97pN,<br>720/23.98pN, 480/59.94i, 480/29.97p<br>1080/50p, 1080/50i, 1080/25pN,<br>720/50p, 720/25pN, 576/50i, 576/25p |

*Please see 45 – 46 page for Digital Video and Digital Audio Specifications.

## Video Input/Output

| | |
|---|---|
| SDI OUT: | BNC × 1, HD (3 G/1.5 G), SD: 0.8 V [p-p], 75 Ω |
| HDMI OUT: | HDMI × 1 (HDMI type A terminal, not compatible<br>with VIERA Link) |

## Audio Input

| | |
|---|---|
| Built-in Microphone: | Supports stereo microphone |
| AUDIO INPUT 1/AUDIO INPUT 2: | XLR x 2, 3-pin.Input high impedance,<br>LINE/MIC switch selection<br>LINE: 4 dBu/0 dBu (selectable menu)<br>MIC: –40 dBu/–50 dBu/–60 dBu (selectable menu),<br>+48 V ON/OFF (switch selection) |

## Audio Output

| | |
|---|---|
| Headphones: | 3.5 mm diameter stereo mini jack x 1<br>100 Ω, –16 dBV<br>(32 Ω load, at maximum output level) |
| Speaker: | 20 mm diameter, round x 1 |

## Other Input/Output

| | |
|---|---|
| CAM REMOTE: | 2.5 mm diameter super mini jack x 1 ZOOM S/S<br>3.5 mm diameter mini jack x 1 FOCUS IRIS |
| USB 2.0 (Device): | Type miniB connector, 4-pin |
| USB 2.0 (Sub-Host): | Type A connector, 4-pin<br>(exclusively for maintenance) |
| DC IN 12 V: | DC 12 V (DC 10.5 V – 13.5 V), EIAJ type 4 |

## Monitor and Viewfinder

| | |
|---|---|
| LCD Monitor: | 3.5-type QHD color monitor (Approx. 1560000 dots) |
| Viewfinder: | 0.5-type OLED (organic EL display)<br>(Approx. 2360000 dots, video display area:<br>Approx. 1770000 dots) |

## Included Accessories

Battery (VW-VBD58), Shoulder strap, Battery charger, AC adaptor, Microphone holder, Screw for microphone holder (12 mm), Power code x 2, Eye cup, Lens hood, Grip belt

# AJ-PD500

## General

| | |
|---|---|
| Power Source: | AC 100 – 240 V, 50 Hz/60 Hz, 45 W<br>DC 12 V, 3.6 A (included option) |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Storage Temperature: | –20°C to 50°C (–4°F to 122°F) |
| Weight: | Approx. 3.65 kg (8.05 lbs) (main unit only) |
| Dimensions: | 210 mm (W) x 125.5 mm (H) x 253 mm (D)<br>(8-9/32 inches x 4-15/16 inches x 9-31/32 inches)<br>(not including the Handle, set foot,<br>knob and terminal) |
| Recording Media: | P2 card, microP2 card |
| Recording Formats: | AVC-Intra200/AVC-Intra100/AVC-Intra50/<br>AVC-LongG50/AVC-LongG25/AVC-LongG12/<br>DVCPRO HD/DVCPRO50/DVCPRO/DV<br>(selectable) |
| Proxy: | File Format:<br>MP4 (ISO/IEC14496 standard),<br>MOV (QuickTime format)<br>Video Compression Formats:<br>MPEG4 Simple Profile,<br>H.264/AVC Baseline Profile,<br>H.264/AVC High Profile<br>Audio:<br>AAC-LC, Linear PCM |
| Video Recording Signals: | 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i,<br>1080/29.97PsF, 1080/25PsF,<br>1080/24PsF, 1080/23.98PsF,<br>720/59.94p, 720/50p, 480/59.94i, 576/50i |
| Audio Recording Signals: | AVC-Intra200/AVC-LongG50/AVC-LongG25:<br>48 kHz, 24 bit, 8 CH<br>AVC-LongG12: 48 kHz, 16 bit, 4 CH<br>AVC-Intra100/AVC-Intra50:<br>48 kHz, 24 bit, 8 CH<br>48 kHz, 16 bit, 8 CH<br>DVCPRO HD: 48 kHz, 16 bit, 8 CH<br>DVCPRO 50: 48 kHz, 16 bit, 4 CH<br>DVCPRO/DV: 48 kHz, 16 bit, 4 CH |

## Video Specification (Digital Video)

| | |
|---|---|
| Sampling Frequency: | AVC-Intra200/AVC-Intra100/AVC-LongG50/<br>AVC-LongG25/DVCPRO HD:<br>(59.94 Hz) Y: 74.1758 MHz, PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz, PB/PR: 37.1250 MHz<br>AVC-Intra100/AVC-LongG25<br>(1080/59p) Y: 148.3516 MHz, PB/PR: 74.1758 MHz<br>(1080/50p) Y: 148.5000 MHz, PB/PR: 74.2500 MHz<br>DVCPRO50: Y: 13.5 MHz, PB/PR: 6.75 MHz<br>DVCPRO: Y: 13.5 MHz, PB/PR: 3.375 MHz |
| Quantizing: | AVC-Intra200/AVC-Intra100/AVC-Intra50/<br>AVC-LongG50/AVC-LongG25: 10 bit<br>AVC-LongG12/DVCPRO HD/<br>DVCPRO50/DVCPRO/DV: 8 bit |
| Video Compression Methods: | AVC-Intra200/AVC-Intra100/AVC-Intra50:<br>MPEG-4 AVC/H.264 Intra Profile<br>AVC-LongG50/AVC-LongG25/AVC-LongG12/:<br>MPEG-4 AVC/H.264 High Profile<br>DVCPRO HD:<br>DV-Based Compression (SMPTE ST 370)<br>DVCPRO50/DVCPRO:<br>DV-Based Compression (SMPTE ST 314)<br>DV:<br>DV Compression (IEC 61834-2) |
| Color Sampling: | AVC-Intra200/AVC-Intra100/<br>AVC-LongG50/AVC-LongG25:<br>Y: PB: PR = 4: 2: 2 |
| Resolution: | AVC-Intra100/AVC-LongG25/AVC-LongG12:<br>1920×1080 (1080/59.94p, 1080/50p)<br>AVC-Intra200/AVC-Intra100/AVC-LongG50/<br>AVC-LongG25/AVC-LongG12:<br>1920 x 1080 (1080/59.94i, 1080/50i),<br>1280 x 720 (720/59.94p, 720/50p)<br>AVC-Intra50:<br>1440×1080 (1080/59.94i, 1080/50i)<br>960×720 (720/59.94p, 720/50p) |

## Audio Specification (Digital Audio)

| | |
|---|---|
| Sampling Frequncy: | 48 kHz (synchronized with video) |
| Quantizing: | AVC-Intra200/AVC-LongG50/AVC-LongG25:<br>24 bit<br>AVC-Intra100/AVC-Intra50:<br>24 bit/16 bit (selectable)<br>AVC-LongG12/DVCPRO HD/DVCPRO50/<br>DVCPRO/DV:<br>16 bit |
| Headroom: | 12 dB/18 dB/20 dB (selectable) |
| De-emphasis: | T1 = 50 µs, T2 = 15 µs (ON/OFF auto) |

## Video Input

| | |
|---|---|
| Reference Input: | BNC x 1,<br>Auto switching of black burst/HD 3-value sync |
| SDI Input: | BNC x 1 |

## Video Output

| | |
|---|---|
| Monitor Output: | BNC x 1, SD analog composite |
| Reference through Output: | BNC x 1 |
| SDI Output: | BNC x 2 (HD/SD switchable) |
| SDI Monitor Output: | BNC x 1 (HD/SD switchable) |
| HDMI Output*1: | HDMI x 1 (HDMI TypeA terminal),<br>VIERA Link not supported |

## Audio Input

| | |
|---|---|
| Analog Input: | XLR x 2 (CH1, CH2) |
| Digital Input: | BNC x 2 (CH1/2, CH3/4), AES/EBU Format |
| SDI Input: | BNC x 1 |

## Audio Output

| | |
|---|---|
| SDI Output: | BNC x 3 |
| Analog Output: | XLR x 2 (CH1, CH2),<br>Monitor Output (L/R) switchable |
| Digital Output: | BNC x 2 (CH1/2, CH3/4), AES/EBU Format |
| Headphone Output: | φ3.5 mm Stereo Mini Jack x 1,<br>8 Ω, variable level |
| HDMI Output: | 2 channels (Linear PCM) |
| Internal Speaker: | Round x 1 (monaural) |

## Other Input/Output

| | |
|---|---|
| Time Code Input: | BNC x 1, 0.5 V [p-p] to 8.0 V [p-p], 10 kΩ |
| Time Code Output: | BNC x 1, low impedance, 2.0 V [p-p] ±0.5 V [p-p] |
| REMOTE: | D-SUB 9-pin x 1, RS-422A Interface |
| PARALLEL REMOTE: | D-SUB 15-pin x 1 |
| LAN: | RJ-45 x 1, 1000BASE-T/100BASE-TX/10BASE-T |
| USB Host: | USB 3.0 HOST (TYPE A) x 1 |
| USB Device: | USB 2.0 DEVICE (TYPE B) x 1 |
| Keyboard*2: | USB 2.0 (TYPE A) x 1 (maximum 100 mA) |

## Standard Accessories

AC cable, CD-ROM (Manuals)

*1: HDMI output does not support 480/59.94i and 576/50i. Convert to 480/59.94p and 576/50p for output.

*2: This port is intended for keyboard connection. If the keyboard draws more than 100 mA, a protective circuit may shut down the unit.

# AJ-PG50

## General

| | |
|---|---|
| Power Supply: | DC 7.2 V (during battery use)<br>DC 12 V (during AC Adaptor use) |
| Power Consumption: | 21.4 W |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 80 % (non-condensing) |
| Storage Temperature: | –20°C to 50°C (–4°F to 122°F) |
| Weight: | 1.1 kg (2.4 lbs) |
| Dimensions: | 108 mm (W) x 85 mm (H) x 217 mm (D)<br>(4-1/4 inches x 3-3/8 inches x 8-9/16 inches)<br>(Excluding the foot parts and protrusions such as the cap) |
| Recording Media: | P2 card, microP2 card |
| Recording Formats: | AVC-Intra200/AVC-Intra100/AVC-Intra50/<br>AVC-LongG50/AVC-LongG25/AVC-LongG12/<br>DVCPRO HD/DVCPRO50/DVCPRO/DV<br>formats selectable |
| Proxy: | File Formats:<br>MOV (QuickTime format)<br>Video Compression Formats:<br>H.264/AVC Baseline Profile,<br>H.264/AVC High Profile<br>Audio:<br>AAC-LC, Linear PCM |
| Video Recording Signals: | 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i,<br>720/59.94p, 720/50p, 480/59.94i, 576/50i |
| Audio Recording Signals: | AVC-Intra200/AVC-LongG50/AVC-LongG25:<br>48 kHz, 24 bit, 4 CH<br>AVC-Intra100/AVC-Intra50:<br>48 kHz, 24 bit, 4 CH<br>48 kHz, 16 bit, 4 CH<br>AVC-LongG12: 48 kHz, 16 bit, 4 CH<br>DVCPRO HD: 48 kHz, 16 bit, 4 CH<br>DVCPRO 50: 48 kHz, 16 bit, 4 CH<br>DVCPRO/DV: 48 kHz, 16 bit, 4 CH |

## Video Specification (Digital Video)

| | |
|---|---|
| Sampling Frequencies: | AVC-Intra200/AVC-Intra100/AVC-LongG50/<br>AVC-LongG25/DVCPRO HD:<br>(59.94 Hz) Y: 74.1758 MHz, PB/PR: 37.0879 MHz<br>(50 Hz) Y: 74.2500 MHz, PB/PR: 37.1250 MHz<br>AVC-Intra100/AVC-LongG25:<br>(1080/59.94p) Y: 148.3516 MHz, PB/PR: 74.1758 MHz<br>(1080/50p) Y: 148.5000 MHz, PB/PR: 74.2500 MHz<br>DVCPRO50: Y: 13.5 MHz, PB/PR: 6.75 MHz<br>DVCPRO: Y: 13.5 MHz, PB/PR: 3.375 MHz |
| Quantization: | AVC-Intra200/AVC-Intra100/AVC-Intra50/<br>AVC-LongG50/AVC-LongG25: 10 bit<br>AVC-LongG12/DVCPRO HD/DVCPRO50/<br>DVCPRO/DV: 8 bit |
| Video Compression Methods: | AVC-Intra200/AVC-Intra100/AVC-Intra50:<br>MPEG-4 AVC/H.264 Intra Profile<br>AVC-LongG50/AVC-LongG25/AVC-LongG12:<br>MPEG-4 AVC/H.264 High Profile<br>DVCPRO HD:<br>DV-Based Compression (SMPTE ST 370) |
| Color Sampling: | AVC-Intra200/AVC-Intra100/AVC-LongG50/<br>AVC-LongG25: Y:PB:PR = 4:2:2 |
| Resolution: | AVC-Intra100/AVC-LongG25/AVC-LongG12:<br>1920 x 1080 (1080/59.94p, 1080/50p)<br>AVC-Intra200/AVC-Intra100/AVC-LongG50/<br>AVC-LongG25/AVC-LongG12:<br>1920 x 1080 (1080/59.94i, 1080/50i)<br>1280 x 720 (720/59.94p, 720/50p)<br>AVC-Intra50:<br>1440 x 1080 (1080/59.94i, 1080/50i)<br>960 x 720 (720/59.94p, 720/50p) |

## Audio Specification (Digital Audio)

| | |
|---|---|
| Sampling Frequency: | 48 kHz (synchronized with video) |
| Quantization: | AVC-Intra200/AVC-LongG50/AVC-LongG25:<br>24 bit<br>AVC-Intra100/AVC-Intra50:<br>24 bit/16 bit (selectable)<br>AVC-LongG12/DVCPRO HD/DVCPRO50/<br>DVCPRO/DV:<br>16 bit |
| Headroom: | 12 dB/18 dB/20 dB (selectable) |
| De-emphasis: | T1=50 µs, T2=15 µs (ON/OFF auto select) |

## Video Input

| | |
|---|---|
| SDI Input: | BNC x 1 |
| HDMI Input: | HDMI x 1 (HDMI TYPE A connector)<br>(VIERA Link not supported, HDCP supported) |

## Video Output

| | |
|---|---|
| SDI Output: | BNC x 1 |
| HDMI Output*: | HDMI x 1 (HDMI Type A)<br>(VIERA link not supported) |

## Audio Input

| | |
|---|---|
| Analog Input: | XLR x 2 (CH1, CH2) |
| SDI Input: | BNC x 1 |
| HDMI Input: | 2 channels (Linear PCM), 16 bit |

## Audio Output

| | |
|---|---|
| SDI Output: | BNC x 1 |
| Analog Output (monitor (L/R)): | Stereo mini jack (3.5 mm (1/8 inchs) dia.) |
| Headphone Output: | Stereo mini jack (3.5 mm (1/8 inchs) dia.), variable level |
| HDMI Output: | 2 channels (Linear PCM), 16 bit |
| Internal Speaker: | Round x 1 (monaural) |

## Other Input/Output

| | |
|---|---|
| Time Code Input: | BNC x 1, 0.5 V [p-p] to 8.0 V [p-p], 10 kΩ |
| LAN: | RJ-45 x 1, 100BASE-TX/10BASE-T |
| USB HOST: | USB 3.0 Host (Type A) x 1 |
| USB Device: | USB 2.0 Device (Type B) x 1 |

## Standard Accessories

Battery pack, AC adaptor/AC cable, Battery charger/AC cable

*When "VIDEO" – "INPUT SEL" is set to "HDMI", video, audio, and other signals from the HDMI output connector will not be output.

# AG-HPD24

## General

| | |
|---|---|
| Power Source: | 7.2 V DC / 7.9 V DC |
| Power Consumption: | 19.8 W |
| Operating Temperature: | 0°C to 40°C (32°F to 104°F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Storage Temperature: | –20°C to 50°C (–4°F to 122°F) |
| Weight: | Approx. 2 kg (4.41 lb) (without battery)<br>Approx. 2.3 kg (5.07 lb) (with supplied battery) |
| Dimensions: | 214 mm (W) x 88 mm (H) x 200 mm (D)<br>(8-7/16 inches x 3-7/16 inches x7-7/8 inches)<br>(not including the support legs) |
| Recording Media: | P2 card |
| Recording Formats*1: | AVC-Intra100/AVC-Intra50/DVCPRO HD/<br>DVCPRO50/DVCPRO/DV (selectable) |
| Video Recording Signals: | 1080/59.94i, 1080/50i, 1080/23.98p, 1080/24p,<br>720/59.94p, 720/50p, 480/59.94i, 576/50i |
| Audio Recording Signals: | AVC-Intra100/50:<br>48 kHz, 16 bit, 8 CH/24 bit, 4 CH (selectable)<br>DVCPRO HD:<br>48 kHz, 16 bit, 8 CH<br>DVCPRO50:<br>48 kHz, 16 bit, 4 CH<br>DVCPRO/DV:<br>48 kHz, 16 bit, 2 CH/4 CH selectable |

## Video Specification (Digital Video)

| | |
|---|---|
| Sampling Frequencies: | AVC-Intra100/DVCPRO HD (59.94 Hz):<br>Y: 74.1758 MHz, PB/PR: 37.0879 MHz<br>AVC-Intra100/DVCPRO HD (50 Hz):<br>Y: 74.2500 MHz, PB/PR: 37.1250 MHz<br>DVCPRO50: Y: 13.5 MHz, PB/PR: 6.75 MHz<br>DVCPRO: Y: 13.5 MHz, PB/PR: 3.375 MHz |
| Quantization: | AVC-Intra100/AVC-Intra50: 10 bit<br>DVCPRO HD/DVCPRO50/DVCPRO/DV: 8 bit |
| Video Compression Methods: | AVC-Intra100/50:<br>MPEG-4 AVC/H.264 Intra Profile<br>DVCPRO HD:<br>DV-based Compression (SMPTE 370M)<br>DVCPRO50/DVCPRO:<br>DV-based Compression (SMPTE 314M)<br>DV:<br>DV Compression (IEC61834-2) |
| Color Sampling: | AVC-Intra100: Y: PB: PR = 4:2:2 |
| Resolution: | AVC-Intra100:<br>1920 x 1080 (1080/59.94i, 1080/50i)<br>1280 x 720 (720/59.94p, 720/50p)<br>AVC-Intra50:<br>1440 x 1080 (1080/59.94i, 1080/50i)<br>960 x 720 (720/59.94p, 720/50p) |

## Audio Specification (Digital Audio)

| | |
|---|---|
| Sampling Frequency: | 48 kHz (synchronized with video) |
| Quantization: | AVC-Intra100/AVC-Intra50: 16 bit/24 bit<br>(selectable)<br>DVCPRO HD/DVCPRO50/DVCPRO/DV: 16 bit |
| Headroom: | 12 dB/18 dB/20 dB (selectable) |
| De-emphasis: | T1 = 50 µs, T2 = 15 µs (ON/OFF auto) |

## Video Input

| | |
|---|---|
| Reference Input: | BNC x 1,<br>Auto switching of black burst/HD tri-level sync |
| SDI Input: | BNC x 1 |

## Video Output

| | |
|---|---|
| Video Output: | BNC x 1, SD Analog Composite |
| SDI Output: | BNC x 1, HD SDI/SD SDI switchable |
| HDMI Output: | HDMI x 1 (HDMI type A),<br>3D supported (VIERA link not supported)<br>When 59.94 Hz of system frequency<br>1080/59.94i Frame Packing /<br>Side-by-Side selectable (3D only),<br>720/59.94p Frame Packing /<br>Side-by-Side selectable (3D only),<br>1080/59.94i, 720/59.94p, 480/59.94p<br>When 50 Hz of system frequency<br>1080/50i Frame Packing /<br>Side-by-Side selectable (3D only),<br>720/50p Frame Packing /<br>Side-by-Side selectable (3D only),<br>1080/50i, 720/50p, 576/50p<br>When 23.98 Hz of system frequency<br>1080/23.98p Frame Packing /<br>Side-by-Side selectable (3D only),<br>1080/23.98p<br>When 24 Hz of system frequency<br>1080/24p Frame Packing /<br>Side-by-Side selectable (3D only),<br>1080/24p |

## Audio Input

| | |
|---|---|
| Analog Inputs: | XLR x 2 (CH1, CH2) |
| SDI Input: | BNC x 1 |

## Audio Output

| | |
|---|---|
| SDI Output: | BNC x 1 |
| Monitor Outputs: | Pin jacks x 2, –10 dBV, 600 Ω |
| Headphone Output: | Stereo mini jack (3.5 mm dia.), 8 Ω, variable level |
| HDMI Output: | 2 channels (Linear PCM) |
| Internal Speaker: | Round x 1 (monaural) |

## Other Input/Output

| | |
|---|---|
| Time Code Input: | BNC x 1, 0.5 V [p-p] to 8.0 V [p-p], 10 kΩ |
| Time Code Output: | BNC x 1, low impedance, 2.0 V [p-p] ±0.5 V [p-p] |
| RS-422A Input/Output: | 9-pin D-SUB x 1, RS-422A interface |
| USB 3.0 (Host): | Type A x 1 |
| USB 2.0 (Device): | Type B x 1 |
| For connection of 3D REC/PB or SYNC PB modes: | 9-pin D-SUB x 1, RS-422A interface<br>USB 2.0 Devices (Type A) x 1 |
| Keyboard: | USB 2.0 (Type A) x 1 (maximum 100 mA) |

## Monitor

| | |
|---|---|
| LCD Monitor: | 87.63 mm (3.45 inches), approx. 921,000 pixels |

## Included Accessories:

Battery (5400 mAh), Battery charger, AC adaptor,
3D connection label and Software CD-ROM

*1: 3D recording and playback is possible only in the AVC-Intra codec.
*2: Multi Media Cards cannot be used.

## AVCHD Memory Card Camera Recorder

AVCHD Progressive HDMI SDXC DOLBY AUDIO

# AG-AC30

*This model is not available in some areas.

**Memory Card Camera Recorder**

1/3.1-type 1MOS | PS/PH Mode | SD Memory Card slot x 2

**Geared for the Mobile Shooter**
**A New Dimension in Low-Light Shooting and Professional Functions.**

- Built-in LED video light with a diffusion filter and a color conversion filter.
- 29.5 mm wide-angle* and 20x zoom lens.
- 5-axis hybrid O.I.S.+ (Optical Image Stabilizer).
- Intelligent AF achieves superior focus speed, excellent stability and high tracking performance.
- 3.0-type slide-retractable LCD with touch operation.
- Supports AVCHD progressive recording PS mode.
- Supports MP4/MOV FHD 50Mbps high bit rate recording.
- Dual SD Memory Card slots achieves relay and simultaneous recording to dual memory cards.
- Professional designed of sturdy handle, tiltable viewfinder with eyecup and three manual rings.
- Two-channel XLR audio input terminals.

* 35mm camera equivalent

## HD Camcorder Optional Accessories

### AG-AC30, AG-UMR20 and AG-MDR25

**AG-VBR89G**
Battery Pack (8,850 mAh)

**AG-VBR59**
Battery Pack (5,900 mAh)

**AG-BRD50**
Battery Charger

**VW-VBD58**
Battery Pack
• 7.2 V 5,800 mAh

**AG-B23**
Battery Charger

SDHC/SDXC Memory Card

### AG-AC30

**AG-MC200G**
XLR Microphone

### AG-UMR20 and AG-MDR25

**AG-VBR118G**
Battery Pack (11,800 mAh)

**AG-C20003G** 3 m (9.84 ft)
**AG-C20020G** 20 m (65.62 ft)
Camera Head Option Cable

## Portable Recorder System

AVCHD Progressive HDMI SDXC DOLBY AUDIO

# AG-UMR20

**Memory Card Portable Recorder**

### "New POVCAM" with a Compact, Lightweight, Free Style Shooting and IP Networking Capability

- Light weight, handy size. Improved recorder operation with a touch-panel monitor and large buttons.
- Capable of battery drive and DC12V power supply. (Equipped with an AC adaptor.)
- LAN terminal for IP streaming and IP control. Recorded image files can be transferred to an FTP server.
- High quality FHD/4K (UHD)*1 image acquisition are supported.
- Equipped with double SD Memory Card Slots, enabling Relay Recording with two memory cards to extend the recording time (SDHC/SDXC Memory Card supported).
- Two remote terminals provide fingertip control of Rec Start/Stop, Zoom, focus and iris.
- 3G-SDI input/output, HDMI output and a USB 2.0 connector.
- Time stamp and repeat playback.
- Waveform Monitor (WFM) and Vector Scope display (LCD only).

POVCAM

# AG-UCK20GJ

**Compact Camera Head (Special Option for the AG-UMR20)**

### Angle Free, High Quality Shooting with 29.5 mm Wide-Angle Optical 20x Zoom Lens

- The Camera Head inherits its compact size from the 1st-generation POVCAM.
- By enabling remote operation*2 from the AG-UMR20 Memory Card Portable Recorder, flexible installation and operation are possible.
- Equipped with a 29.5 mm wide-angle 20x optical zoom lens.
- 16-axis independent color correction function allows the fine color adjustment required in image production applications.
- Five-axis hybrid (optical and electronic) image stabilizer (HD mode only).
- The optical ND filter can be manually switched.
- Equipped with an Infrared (IR) Shooting mode.
- Equipped with a built-in microphone for recording both images and sounds.
- Scan Reverse mode (horizontal/vertical inversion) is equipped for shooting with a ceiling-mount.

## Surgical Image Recording System (medical specifications)

*The cable is optional.

POVCAM

AVCHD Progressive HDMI SDXC DOLBY AUDIO

# AG-MDR25

**Memory Card Portable Recorder**

# AG-MDC20GJ

**Compact Camera Head (Special Option for the AG-MDR25)**

### Compact Portable Recorder System Suitable for Recording High-Quality Medical Video

- Compact, lightweight, free-style shooting inherited from the 1st generation POVCAM.
- Excellent network operation through IP remote and IP streaming.
- High-quality, high-resolution image production for medical recording.

### Medical Functions (add with full functions of black model AG-UMR20/UCK20GJ)

- Recorder controls are covered with a membrane sheet for easy cleaning with an ethanol disinfectant.
- Surgical light mode for recording under surgical lamps, and 16-axis independent color correction function.
- Optical ND filter ideal for bright surgical lights (manual switchable).
- Lens protector (MC Protector/Accessory) for the front panel Compact Camera Head is included.

*1: 4K acquisition is possible only when connected to Compact Camera Head. 4K refers to UHD (3840 x 2160) resolution. The maximum resolution in 4K shooting mode via HDMI/SDI output is FHD (1920 x 1080) 59.94i/50i. *2: Requires the Camera Head Option Cable AG-C20003G/C20020G.

# AG-AC30

## General

| | |
|---|---|
| Power Supply: | DC 7.2 V (Battery) / DC12 V (AC Adaptor) |
| Power Consumption: | 11.7 W (Recording) / 27.4 W (Charging) |
| Weight: | Approx. 1500 g (3.31 lb)<br>without battery and SD Memory Cards |
| Dimensions: | 170 mm (W) x 170 mm (H) x 335 mm (D)<br>(6.69 inches x 6.69 inches x 13.2 inches) |

## Lens

| | |
|---|---|
| F Value: | F1.8 (WIDE)/F3.6 (TELE) |
| Zoom: | Optical Zoom: 20x<br>Intelligent Zoom OFF: 20x, ON: 40x |
| Digital Zoom: | 2x / 5x / 10x |
| Focal Length: | 4.08 mm to 81.6 mm |
| 35 mm Film Camera Equivalent: (Motion Image/Still Image) | 29.5 mm to 612 mm [16:9] |
| Filter Diameter: | 49 mm |

## Camera Section

| | |
|---|---|
| Image Sensor: | 1/3.1-type BSI MOS Sensor<br>Effective Pixels: 6.03 megapixels [16:9] |
| Standard Illumination: | 1,400 lx |
| Minimum Illumination: | |
| [59.94 Hz model] | 1.4 lx (Super Gain 36 dB, Shutter 1/30) |
| [50 Hz model] | 1.2 lx (Super Gain 36 dB, Shutter 1/25) |
| White Balance: | Auto/3200 K/5600 K/VAR (2000 K to 15000 K)/<br>Ach Fixed / Bch Fixed |
| Shutter Speedt: | |
| [59.94 Hz model] | 60p/60i: 1/8 to 1/8000<br>23.98p: 1/6 to 1/8000<br>Super Slow: 1/120 to 1/8000 |
| [50 Hz model] | 50p/50i: 1/6 to 1/8000<br>Super Slow: 1/100 to 1/8000 |
| Super Slow Recording: | |
| [59.94 Hz model] | Shooting Frame Rate: FHD 120 fps,<br>Slow Motion Effect: 1/2 speed, 1/4 speed, 1/5 speed |
| [50 Hz model] | Shooting Frame Rate: FHD 100 fps,<br>Slow Motion Effect: 1/2 speed, 1/4 speed |

## Recording Section

| | |
|---|---|
| Recording Media: | SDHC/SDXC Memory Card |
| Recording Format: | MOV/MP4/AVCHD: AVCHD Progressive |
| Video Compression: | MPEG-4 AVC/H.264 |
| Audio Compression: | MOV: LPCM (2 ch)/MP4: LPCM (2 ch)/<br>AVCHD: Dolby Digital (2 ch) |
| Thumbnail Display: | 20 thumbnails/page, 9 thumbnails/page,<br>1 thumbnail/page |
| Microphone: | Stereo Microphone |
| Speaker: | Dynamic Type |

## Still Image Section

| | |
|---|---|
| Recording Format: | JPEG (DCF/Exif2.2) |
| Recording Image Size: | • Recording Mode<br>[16:9] 2.1 megapixels (1920 x 1080),<br>0.2 megapixels (640 x 360)<br>[4:3] 0.3 megapixels (640 x 480)<br>• Playback Mode<br>[16:9] 2.1 megapixels (1920 x 1080),<br>0.9 megapixels (1280 x 720) |

## Interface

| | |
|---|---|
| AV OUT: | Yes |
| HDMI OUT: | Type A |
| XLR IN: | XLR (3-pin) x 2, Line: 0 dBu/+4 dBu,<br>Mic: -40 dBu/-50 dBu/-60 dBu |
| Headphone: | 3.5 mm stereo mini |
| USB: | Micro-B: USB 2.0 Hi-Speed,<br>Mass Storage Function (read only)<br>Type A: USB 2.0 Hi-Speed, for External Media<br>Device Connection*, Bus Power Supply |
| Camera Remote: | 2.5 mm super mini jack x 1 (ZOOM S/S)<br>3.5 mm mini jack x 1 (FOCUS/IRIS) |

## Monitor

| | |
|---|---|
| Monitor: | 3.0-inch (3.0-type) Wide LCD monitor<br>(Approx. 460 K dots) |
| Viewfinder: | 0.24-inch (0.24-type) Wide EVF<br>(Approx. 1,555 K dots equivalent) |

## LED Video Light

| | |
|---|---|
| Average Illumination: | Approx. 300 lx (1.0 m) |
| Irradiation Angle: | Approx. 30° |
| Color Temperature: | Approx. 5000 K |
| Average Illumination with Diffusion Filter: | Approx. 70 lx (1.0 m) |
| Color Temperature with Color Conversion Filter: | Approx. 3000 K |

## Standard Accessory

AC Adaptor, AC Cable, Rechargeable Battery Pack (2,900 mAh), AV Cable, Microphone Holder, Microphone Holder Screws (x2), Input Terminal Cap (x2), Eye Cup, Lens Cap, LED Light Filter (Diffusion Filter / Color Conversion Filter)

* External media device with a capacity of 32 GB or less, or more than 2 TB, cannot be used.

## Recording Mode of 59.94 Hz Model

| Recording Mode | | Recording Video Format | Bit Rate |
|---|---|---|---|
| MOV/MP4 | FHD | 1920 x 1080/59.94p/29.97p/23.98p/59.94i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/59.94p | 25 Mbps |
| | PH | 1920 x 1080/59.94i/23.98p | 21 Mbps |
| | HA | 1920 x 1080/59.94i | 17 Mbps |
| | HE | 1440 x 1080/59.94i | 5 Mbps |
| | PM | 1280 x 720/59.94p | 8 Mbps |
| | SA | 720 x 480/59.94i (SIDE CROP/SQUEEZE) | 9 Mbps |

## Recording Mode of 50 Hz Model

| Recording Mode | | Recording Video Format | Bit Rate |
|---|---|---|---|
| MOV/MP4 | FHD | 1920 x 1080/50.00p/25.00p/50.00i | 50 Mbps |
| AVCHD | PS | 1920 x 1080/50.00p | 25 Mbps |
| | PH | 1920 x 1080/50.00i | 21 Mbps |
| | HA | 1920 x 1080/50.00i | 17 Mbps |
| | HE | 1440 x 1080/50.00i | 5 Mbps |
| | PM | 1280 x 720/50.00p | 8 Mbps |
| | SA | 720 x 576/50.00i (SIDE CROP/SQUEEZE) | 9 Mbps |

## Recording Time

| Recording Mode | | Bit Rate | 32 GB Memory Card* | 64 GB Memory Card* | 128 GB Memory Card* |
|---|---|---|---|---|---|
| MOV/MP4 | FHD | 50 Mbps | Approx. 1 hour 20 min. | Approx. 2 hours 40 min. | Approx. 5 hours 20 min. |
| AVCHD | PS | 25 Mbps | Approx. 2 hours 40 min. | Approx. 5 hours 20 min. | Approx. 11 hours |
| | PH | 21 Mbps | Approx. 3 hours | Approx. 6 hours | Approx. 12 hours 30 min. |
| | HA | 17 Mbps | Approx. 4 hours 10 min. | Approx. 8 hours 30 min. | Approx. 17 hours |
| | HE | 5 Mbps | Approx. 13 hours 40 min. | Approx. 27 hours 30 min. | Approx. 56 hours |
| | PM | 8 Mbps | Approx. 8 hours 30 min. | Approx. 17 hours 10 min. | Approx. 35 hours |
| | SA | 9 Mbps | Approx. 8 hours | Approx. 16 hours 30 min. | Approx. 34 hours |

•These times are approximations. *A Class 4 or higher SDXC/SDHC Memory Card is required for AVCHD recording. A Class 10 or higher, or UHS Speed Class 1 or higher SDXC/SDHC Memory Card is required for MP4/MOV 50Mbps recording. A UHS Speed Class 3 or higher SDXC/SDHC Memory Card is required for Super Slow recording. (The use of a Panasonic SDXC/SDHC Memory Card is recommended.)

# AG-UMR20/AG-MDR25

## General

| | |
|---|---|
| Power: | DC 7.28 V (with battery),<br>DC 12 V (with AC adaptor) |
| Power Consumption: | In standalone condition:<br>1.1 A (with battery), 0.7 A (with AC adaptor)<br>With the optional Camera Head*1:<br>2.2 A (with battery), 1.4 A (with AC adaptor) |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: | Approx. 590 g (1.3 lbs) |
| Dimensions: | 100 mm (W) x 53.5 mm (H) x104 mm (D)<br>(excluding protrusion)<br>(3-15/16 inches x 2-3/32 inches x 5-1/2 inches) |

## Memory Card Recorder

| | |
|---|---|
| Recording Media: | SDHC Memory Card (4 GB to 32 GB) ,<br>SDXC Memory Card (48 GB to 128 GB)<br>MP4: more than Class10,<br>AVCHD: more than Class4 |
| Recording Slot: | 2 Slots |
| System Format: | 59.94 Hz / 50.00 Hz |
| Motion Recording: | Recording system: MP4, AVCHD<br>Recording mode/Recording time:<br>Please see page 61 for the “Recording Format” table |
| Still Picture Recording: | Recording system: JPEG (DCF/Exif2.2) |

## Digital Video/Digital Audio

| | |
|---|---|
| Output Video Signal: | 8 bit 4:2:2 |
| Recording Video Signal: | 8 bit 4:2:0 |
| Video Compression: | MP4: MPEG-4, AVCHD: AVC/H.264 High Profile |
| Recording Audio Signal: | 48 kHz/16 bit 2 CH |
| Audio Compression: | MP4: LPCM, AVCHD: Dolby Audio |
| Headroom: | 12 dB |

## Video Input/Output

| | |
|---|---|
| SDI IN: | BNC x 1, 0.8 V [p-p],<br>75 Ω, 3 G/1.5 G HD SDI supported<br>Input format:<br>1080/59.94p LEVEL-A/LEVEL-B,<br>1080/50p LEVEL-A/LEVEL-B,<br>1080/29.97PsF/25PsF/23.98PsF,<br>1080/59.94i/50i, 720/59.94p/50p |
| SDI OUT: | BNC x 1, 0.8 V [p-p],<br>75 Ω, 3 G/1.5 G HD SDI supported<br>Output format: same as input format |
| HDMI OUT: | Type A connector x 1, VIERA Link not supported<br>Output format:<br>2160/29.97p/25p/23.98p, 1080/59.94p/50p/<br>29.97p/25p/23.98p/59.94i/50i, 720/59.94p/50p,<br>480/59.94p, 576/50p |

## Audio Input/Output

| | |
|---|---|
| MIC/LINE IN: | 3.5 mm diameter,<br>stereo mini jack (MIC IN and LINE IN)<br>MIC: –60 dBV (sensitivity –40 dB equivalent,<br>0 dB=1 V/Pa 1 kHz), plug in power supported<br>LINE : –10 dBV |
| SDI OUT: | 2 CH (LPCM),<br>switchable gain: 0 dB/–6 dB/–12 dB |
| HDMI OUT: | 2 CH (LPCM) |
| Headphone: | 3.5 mm diameter, stereo mini jack x 1 |
| Speaker: | 20 mm diameter, round x 1 |

## External Terminal

| | |
|---|---|
| CAMERA: | 20 pin dedicated interface*1 |
| LAN: | IP control LAN connector (RJ-45)<br>Straight/cross cable auto-detect function |
| REMOTE: | 2.5 mm diameter stereo mini jack x 1 (ZOOM, S/S)<br>3.5 mm diameter mini jack x 1 (FOCUS, IRIS) |
| USB 2.0: | Type Mini-B connector, mass storage (read/write) |
| DC IN 12 V: | DC 12 V (11.4 V to 12.6 V) EIAJ Type4 |

## Monitor

| | |
|---|---|
| LCD Monitor: | 3.5-type LCD monitor, approx. 1,150,000 dots |

## Network

| | |
|---|---|
| Video Compression: | Motion JPEG<br>MP4:MPEG-4, AVCHD:AVC/H.264 High Profile |
| Audio Compression: | AAC-LC (48kHz, 16 bit, 2 CH, 128 kbps) |
| Transfer Mode: (JPEG) | Resolution 640 x 360:<br>Frame rate (59.94 Hz) : 30 fps, 15 fps, 5 fps<br>Frame rate (50.00 Hz) : 25 fps, 12.5 fps, 5 fps |
| Transfer Mode*2: (H.264) | Resolution 3840 x 2160/640 x 360:<br>Frame rate (59.94 Hz) : 30 fps, 15 fps, 5 fps<br>Frame rate (50.00 Hz) : 25 fps, 12.5 fps, 5 fps<br>Resolution 1920 x 1080/1280 x 720:<br>Frame rate (59.94 Hz) : 60 fps, 30 fps, 15 fps, 5 fps<br>Frame rate (50.00 Hz) : 50 fps, 25 fps, 12.5 fps, 5 fps |
| Supported Protocol: | TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP,<br>RTP/RTCP, FTP, DHCP, DNS, NTP, IGMP,<br>UPnP, ICMP, ARP, RTSPoverTCP, RTSPoverHTTP,<br>SSL (TLS) , MultiCast/UniCast |
| IP Connector Cable: | LAN cable*3 (moer than category 5) max. 100 m |

## Supported OS

| | |
|---|---|
| Windows: | Microsoft® Windows 10 (32 bit/64 bit) ,<br>Internet Explorer 11<br>Microsoft® Windows 7 (32 bit/64 bit) SP1,<br>Internet Explorer 11 |
| Mac: | MacOS v10.12 Safari10, OS X v10.11 Safari10 |

## Supported Browser

| | |
|---|---|
| iOS Device: | iPhone/iPad/iPod touch,<br>iOS 10, standard browser |
| Android: | Android OS 4.4, standard browser |

## Supported Controller

| | |
|---|---|
| Controller*4: | AW-RP50, AW-RP120G, AK-HRP200G |

## AC Adapter

| | |
|---|---|
| Rated Input Voltage: | AC 100 V – 240 V, 50 Hz/60 Hz, 1.2 A |
| Input Capacitance: | 79 VA (AC 100 V) , 99 VA (AC 240 V) |
| Rated Output: | DC 12 V, 3.0 A |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 90 % (no condensation) |
| Weight: | Approx. 225 g (0.496 lbs) |
| Dimensions: | 115 mm (W) x 37 mm (H) x 57 mm (D)<br>(excluding DC code)<br>(4-1/2 inches × 1-7/16 inches × 2-1/4 inches) |

*1: AG-UMR20 option camera head is AG-UCK20GJ. AG-MDR25 option Camera head is AG-MDC20GJ.

*2: By the conditions, the frame rate is lower than setting.

*3: STP (Shielded Twisted Pair) recommend.

*4: Depending on a model, upgrade is required.

# AG-UCK20GJ/AG-MDC20GJ

## General

| | |
|---|---|
| Power: | DC 9 V (supplied from the Portable Recorder)<br>*AG-UCK20GJ is supplied from AG-UMR20.<br>*AG-MDC20GJ is supplied from AG-MDR25. |
| Power Consumption: | 0.6 A |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 80 % (no condensation) |
| Weight: | AG-UCK20GJ/AG-MDC20GJ:<br>approx. 325 g (0.717 lbs)<br>AG-MDC20GJ (including protector):<br>approx. 333 g (0.734 lbs) |
| Dimensions: | AG-UCK20GJ/AG-MDC20GJ<br>(excluding protrusion):<br>64 mm (W) x 72 mm (H) x 131 mm (D)<br>(2-17/32 inches x 2-27/32 inches x 5-5/32 inches)<br>AG-MDC20GJ (including lens protector):<br>64 mm (W) x 72 mm (H)x 134.5 mm (D)<br>(2-17/32 inches x 2-27/32 inches x 5-9/32 inches) |

## Camera

| | |
|---|---|
| Pickup Device: | 1/2.3-type MOS MOS solid state image sensor<br>(Total pixels: approx. 12.76 megapixels) |
| Lens: | Zoom: optical 20x motorized zoom<br>Fvalue: F1.8 to F3.6,<br>Focal length: f= 4.08 mm to 81.6 mm<br>35 mm conversion: 29.5 mm to 612.0 mm<br>(Hybrid O.I.S mode “OFF”)<br>Filter diameter: 49 mm,<br>ND filter: CLEAR, 1/4, 1/16, 1/64 (built-in)<br>Shortest shooting distance:<br>1.5 m (4.9 ft) at zoom range,<br>3 cm (0.1 ft) at wide angle<br>IR cut filter:<br>incorporates the ON/OFF control function |
| Zoom: | i. Zoom: x30 (HD), x22 (4K)<br>Digital zoom: x1.4, x2, x4, x6, x8 |
| Image Stabilizer: | Optical image stabilizer (HD/4K)<br>5-Axis hybrid image stabilizer (HD) |
| Gain Setting: | Automatic, manual 0 dB to 30 dB(1 dB step),<br>Super Gain 33 dB, 36 dB<br>*At auto mode, 3 dB to 30 dB (3 dB steps) can be selected with AGC limit setting. |
| White balance: | ATW, ATW LOCK, AWB A, AWB B,<br>P3200K, P5600K, VAR (2000 K to 15000 K) |
| Shutter speed: | 59.94i/59.94p mode:<br>1/60 sec., 1/100 sec., 1/120 sec., 1/180 sec.,<br>1/250 sec., 1/350 sec., 1/500 sec., 1/750 sec.,<br>1/1000 sec., 1/1500 sec., 1/2000 sec.,<br>1/3000 sec., 1/4000 sec., 1/8000 sec.<br>29.97p mode:<br>1/30 sec., 1/50 sec., 1/60 sec., 1/100 sec.,<br>1/120 sec., 1/180 sec. to 1/8000 sec.<br>(same as above)<br>23.98p mode:<br>1/24 sec., 1/48 sec., 1/50 sec., 1/60 sec.,<br>1/100 sec., 1/120 sec., 1/180 sec. to 1/8000 sec.<br>(same as above)<br>50i/50p mode:<br>1/50 sec., 1/60 sec., 1/100 sec.,<br>1/125 sec., 1/180 sec. to 1/8000 sec.<br>(same as above)<br>25.00p mode:<br>1/25 sec., 1/50 sec., 1/60 sec., 1/100 sec.,<br>1/125 sec., 1/180 sec. to 1/8000 sec.<br>(same as above) |
| Slow shutter: | 59.94i/59.94p mode:<br>1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec., 1/30 sec.<br>29.97p mode:<br>1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec.<br>23.98p mode:<br>1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec.<br>50i/50p mode:<br>1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec., 1/25 sec.,<br>25.00p mode:<br>1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec. |
| Synchro scan: | 59.94i/59.94p mode: 1/60.0 sec. to 1/285.6 sec.<br>29.97p mode: 1/30.0 sec. to 1/206.5 sec.<br>23.98p mode: 1/24.0 sec. to 1/280.1 sec.<br>50i/50p mode: 1/50.0 sec. to 1/209.2 sec.<br>25p mode: 1/25.0 sec. to 1/224.3 sec. |
| Minimum illumination: | 0.2 lx (slow shutter: 1/2 sec., gain: +36 dB) |
| Horizontal resolution: (Typ, Center) | 1,300 TV (HDMI output 2160/29.97p, when 25.00p playback)<br>1,000 TV (HDMI output 1080/59.94p, when 50.00p playback) |

## Input/Output

| | |
|---|---|
| AUDIO IN: | Built-in microphone (2 CH stereo) |
| Connecter: | 20 pin dedicated interface<br>*AG-UCK20GJ is connected with AG-UMR20.<br>*AG-MDC20GJ is connected with AG-MDR25. |

## Recording Format (AG-UMR20/AG-MDR25 Memory Card Portable Recorder)

| Recording Mode | | Image Size | Bit Rate | Frame Rate | | Audio | Recording Time (128 GB) |
|---|---|---|---|---|---|---|---|
| | | | | 59.94 Hz | 50.00 Hz | | |
| MP4* | 4K | 3840 x 2160 | 50 Mbps (VBR) | 29.97p<br>23.98p | 25p | LPCM<br>1.5Mbps | Approx. 5 hour 20 min. |
| AVCHD | PS | 1920 x 1080 | 25 Mbps (VBR) | 59.94p | 50p | Doiby Audio<br>384kbps | Approx. 11 hours |
| | PH | | 21 Mbps (VBR) | 59.94i<br>23.98p | 50i | | Approx. 12 hour 30 min. |
| | HA | | 17 Mbps (VBR) | 59.94i | 50i | Doiby Audio<br>256kbps | Approx. 17 hours |
| | HE | 1440 x 1080 | 5 Mbps (VBR) | 59.94i | 50i | | Approx. 56 hours |
| | PH | 1280 x 720 | 21 Mbps (VBR) | 59.94p | 50p | Doiby Audio<br>384kbps | Approx. 12 hour 30 min. |
| | PM | | 8 Mbps (VBR) | 59.94p | 50p | Doiby Audio<br>256kbps | Approx. 35 hours |

*When using optional Camera Head.

As of September, 2017


LED

## BT-4LH310

789 mm (31.1 inches)

4K PROFESSIONAL

**A Reference Monitor Supporting 4K Image Production and 2K/HD Operation**

Connector: SDI (3G) 1/2/3/4 | Display Port 1/2 | HDMI 1/2 | GPI | RS-232C | RS-485 | HEADPHONE

Power: AC | DC

HDMI

- Supports both 4K (4096 x 2160) and QFHD (3840 x 2160) resolution.
- Three types of 4K video input: 3G-SDI (4 lines or 2 lines), DisplayPort (2 lines or 1 line) and HDMI (2 lines or 1 line).
- LUT (look-up table) upload function.
- HDR (High Dynamic Range) compatibility.
- Compatibility with BT.2020 color space.


WXGA LED

## BT-LH910G

230 mm (9 inches)

**High-Resolution Meets the Needs of Acquisition, OB Van Installation and Live Broadcasting.**

Connector: SDI 1(3G)*1 | SDI 2 | VIDEO | HDMI | VF | YPBPR | GPI | RS-485 | HEADPHONE

Power: DC | BATTERY

HDMI

- WXGA (1280 x 768) resolution IPS panel.
- 15-pin viewfinder terminal can be used as a viewfinder for camera recorders.
- Various professional functions, including 3D*2 shooting assist.
- DC operation (Anton Bauer/DC IN).

*1: 3G-SDI supports 1080/50p, 1080/59.94p, and 1080/60p of the SMPTE ST 425-A standard.
*2: These functions assist 3D shooting with a 2D image display. The BT-LH910G does not display 3D images.

**US Only Model**


FULL HD LED

## BT-LH1770P

NEW

420 mm (16.5 inches)

**From the Studio to Live Broadcasting — High-Quality, Full-HD, 16.5-inch Model**

Connector: SDI 1/2 (3G) | VBS | HDMI | AUDIO IN | HEADPHONE

Power: AC | DC

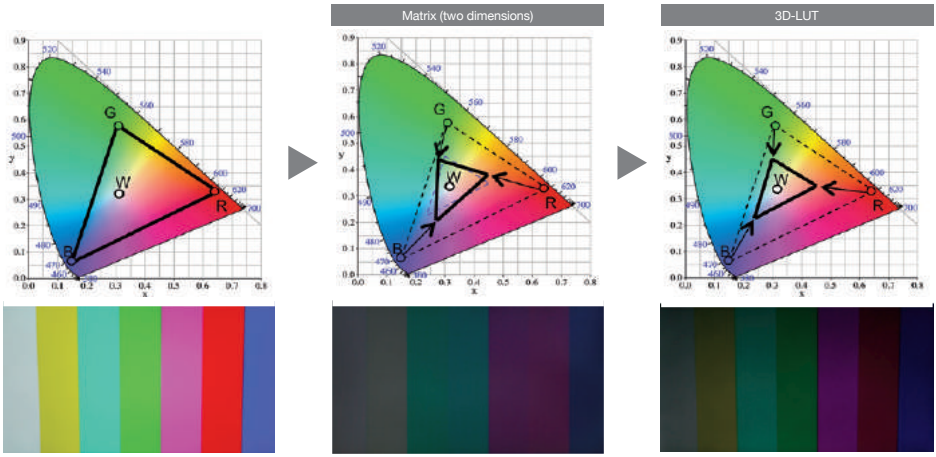
HDMI

- High-contrast 1500:1, 10-bit display with high-quality IPS LCD panel for Full-HD resolution.
- Equipped with convenient external USB Memory function for setting data and screen captures.
- Functions such as adjustment assist, versatile display functions, and USB mouse operation.
- Mountable in a 19” rack. Tilt-type stand/ bracket (optional) are also available.

## BT-4LH310/LH910G Features and Functions Comparison Table

*For details, see page 65 to 68.

| | | BT-4LH310 | BT-LH910G |
|---|---|---|---|
| 1 | 3D-LUT & 6-Axis Color Correction | ✓ | ✓ |
| 2 | HDR (High Dynamic Range) compatibility | ✓ | – |
| 3 | Compatibility with BT.2020 color space | ✓ | – |
| 4 | I/P Conversion Circuit for Motion Response Latency Less than 1 Field | ✓ | ✓ |
| 5 | Diagonal Line Compensation | ✓ | ✓ |
| 6 | Gradation & RGB Manual Control | ✓ | ✓ |
| 7 | High-Speed Response | ✓ | ✓ |
| 8 | Wide Viewing Angle | 178˚ | 176˚ |
| 9 | VariCam Cine gamma Compensation | ✓ | ✓ |
| 10 | Black Mode | ✓ | ✓ |
| 11 | Calibration Function | ✓ | ✓ |
| 12 | Various Markers | ✓ | ✓ |
| 13 | Cross Hatch Overlay | ✓ | ✓ |
| 14 | Waveform Monitoring | Y/R/G/B | Y/R/G/B |
| 15 | Vectorscope Display | ✓ | ✓ |
| 16 | Pixel-to-Pixel Display | ✓ | ✓ |
| 17 | Zoom Display | ✓ | – |
| 18 | Focus-in-Red Display | ✓ | ✓ |
| 19 | Y Map Display | ✓ | – |
| 20 | Still Frame Display (Frame Grab) | ✓ | ✓ |
| 21 | Quad Display (2K/HD) | ✓ | – |
| 22 | Error Indication Display | ✓ | – |
| 23 | Audio Level Meter | ✓ (color) | ✓ (color) |
| 24 | Time Code Display | ✓ | ✓ |
| 25 | Closed Caption Display | 8 Windows | 8 Windows |
| 26 | HV Delay Display and B/W Mode | MONO Mode only | ✓ |
| 27 | Function Keys | 5 | 3 |
| 28 | Diverse 3D Camera Assist Functions | – | ✓ |
| 29 | External Remote Compatibility | RS-232C/ GPI/RS-485 | RS-232C/ GPI |
| 30 | Tally Lamp | Front | Front/Rear |
| 31 | Power Save Mode | ✓ | ✓ |
| 32 | Key Lock | ✓ | ✓ |
| 33 | Rugged Frame Structure | Aluminum Frame | Magnesium Diecast Frame |
| 34 | AC/DC Power Supply | AC/DC 24 V | DC 12 V |
| 35 | Wall/Rack Mounting (with Option) | Wall Mounting | Rack Mounting |
| 36 | Fanless | ✓ | ✓ |
| 37 | Mercury Free, LED Backlight | ✓ | ✓ |
| 38 | Speakers and Headphone Jack | ✓ | Headphone Jack only |




When the luminance levels of input signal is 100%

When the luminance levels of input signal is 10%

When the luminance levels of input signal is 10%

### [1] 3D-LUT Color Correction and 6-Axis Color Correction

The color space on LCD displays tends to narrow when the luminance level drops, and it's often accompanied by color phase shifts that cause colors to drift. 3D-LUT (Look Up Table) Color Correction on the LH Series LCD monitors includes a look up table for each luminance level, and applies 10 bit image processing to each RGB color to balance the six coordinate axes of the three primary colors (RGB) and their complementary colors (CMY). This solves the problem of color drifting at low luminance levels, and keeps colors natural.
In addition to enhancing low luminance areas, 3D-LUT Color Correction helps to produce finely nuanced intermediate hues. Based on color measurements in the intermediate color parts of the image, this function applies smooth correction processing while balancing the six coordinates of the three primary colors (RGB) and their complementary colors (CMY), resulting in beautifully smooth gradation. It keeps the intermediate shades of extremely fine colors vibrant and lifelike.

3-Axis (RGB) Coordinate Correction

6-Axis (RGB/CMY) Coordinate Correction

### [2] HDR (High Dynamic Range) Support [BT-4LH310]

"HDR" is added to the gamma selection menu. The HDR mode provides a high dynamic range in compliance with SMPTE's FOTF standard, ST 2084. This mode provides rich gradation to contrast, color and shadow in dark image areas that could not previously be reproduced due to blackout, thus resulting in more realistic image display.

* The peak brightness of the product is clipped at 450 cd/m2 in the HDR mode. However, the displayable range can be varied by adjusting the contrast and brightness, so that the clipped high-brightness or low-brightness image sections can be checked.

### [3] Compatibility with BT.2020 Color Space [BT-4LH310]

"ITU-2020 emu" is added to the color space selection menu. This mode enables an emulation display to support the wide color gamut of the ITU-R BT.2020 standard.

* The display color space of the BT-4LH310 does not completely comply with BT.2020. The BT-4LH310 shifts the color balance of the displayed image to correspond with the BT.2020 color gamut.

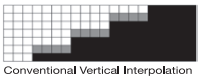
### [4] I/P Conversion Circuit for Motion Response

A circuit delay time (not including panel delay) of approximately 5 msec* is achieved by incorporating an I/P converter circuit that converts SD and HD interlace signals with high precision and generates a progressive signal without causing field-length delay. Minimizing the delay between the input signal and monitor output enables the user to confirm footage without any incongruity.

* Differs slightly depending on the signal format.

### [5] Diagonal Line Compensation

Jagged noise on diagonal lines in moving images is a common problem. These LCD monitors solve this by detecting correlations in the diagonal direction, resulting in smooth, precise reproduction of moving images.

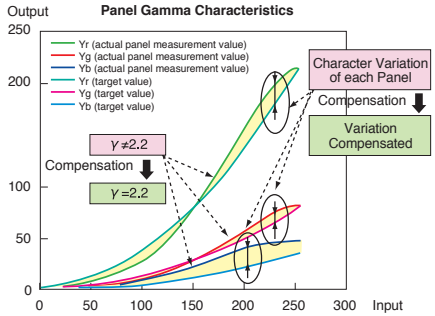


Conventional Vertical Interpolation

New Diagonal Interpolation

### [6] Ideal Gradation for Broadcast Applications, and Selectable Color Temperature

In order to optimize the LCD monitor for professional broadcasting applications, compensation is conducted for each monitor in 256 discrete RGB steps, rated gamma properties (gamma = 2.2) are reproduced, and gradation suitable for broadcasting is achieved. The BT-4LH310's color temperature of 9300 K/6500 K/6300 K/6000 K/5600 K can be selected with the variable setting.
The BT-LH910G's color temperature of 9300 K/6500 K/5600 K and 3000 K to 9300 K can also be selected with the variable setting.




### [7] High-Speed Response

All models feature an overdrive circuit to improve response in intermediate gradations.

### [8] Wide Viewing Angle

By using a high-intensity, high-contrast IPS LCD panel, a wide viewing angle is achieved. Easy viewing is ensured by reducing color changes due to the viewing angle.

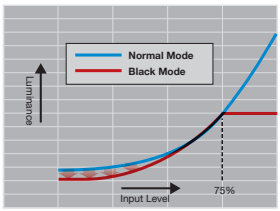
### [9] Cine Gamma Compensation

The cine-gamma (F-REC) compensation function enables compatibility as a monitor for a VariCam Camcorder. This function supports the production of movies, film-like HDTV programs, and TV commercials.

### [10] Black Mode

All models are equipped with a black mode that also makes dark image areas in low-gradation scenes easier to see. It helps for producing movies as well as film-like HD programs and commercials.

Black Mode ON




*Pictures simulated.

### [11] Calibration Function

Pre-installed software allows calibration without using a PC, by simply connecting a manufacturer-designated display color analyzer and measurement probe to the monitor.

*Konica Minolta CA-310 Display Color Analyzer with CA-PU32/PU35 or CA-PSU32/PSU35 Standard Measurement Probe. For more information about the Konica Minolta calibration system, please see the following website. <http://www.konicaminolta.com/instruments/index.html>.

### [12] Various Markers

**Aspect Marker (17:9*, 16:9):** All models have seven modes of 4:3, 13:9, 14:9, CNSCO 2.39, CNSCO 2.35, 2:1 and VISTA, with background brightness control of Black (0%), Half (50%) or Normal (100%).

**Safe Area Marker:**
All models have five modes of 95%, 93%, 90%, 88% or 80%. In addition, the BT-4LH310 has USER, DOT, LINE, or VAR marker (selectable). In 16:9 mode, a superimposed safe area marker can display, corresponding to the aspect marker's angle of view.

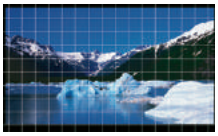
4:3 Aspect and 80%Safe Area Marker

**Center Marker:** Can be displayed together with another marker, as shown in the example at the right above.

Safe Area and Center Marker

### [13] Cross Hatch Overlay

A simple cross hatch overlay can be displayed to check the tilt of the camera.
* Intervals vary depending on the model.



Cross Hatch ON

### [14] Waveform Monitoring

The built-in waveform monitoring function displays a waveform in a sub-screen. You can select the signal to be displayed from Y, R, G or B.

Waveform Monitoring

### [15] Vectorscope Display

All lines of the input signal via SDI are displayed as a vectorscope, and can be positioned in any of the four corners of the screen.

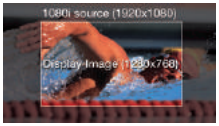
Vectorscope Display

### [16] Pixel-to-Pixel Display

This function displays video pixels without any resizing.

• **BT-4LH310:** Displays images with the same number of pixels as the source images.

• **BT-LH910G:** With 1080/60i input signals, you can check the zoom-in image with a screen width equivalent to 342.9 mm (13.5 inches).



BT-LH910G Pixel-to-Pixel Display Image

### [17] Zoom [BT-4LH310]

Enlarges the center section of the image or one of the quarter sections and displays it on the full screen for accurate, easy focusing.


Enlarges the center section of the image or one of the quarter sections


Zoom Display (Center)

### [18] Focus-in-Red

This function emphasizes the sharply focused area of the image by showing it in an easily visible red.


Focus-in-Red ON

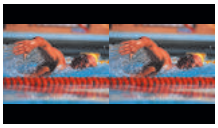
### [19] Y Map Display [BT-4LH310]

This function allows quick visual confirmation of scene luminance levels via means of assigning a simple color code for each luminance step.


Y MAP

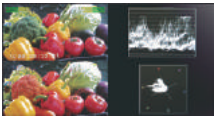
### [20] Still Frame Display (Frame Grab)

A frame of video can easily be frozen and displayed as a still image. The BT-4LH310 displays on the full-screen, for comparing camera angles or colors between takes or scenes. The BT-LH910G displays on the left side of the screen to match a live camera with a frame of video shot at an earlier time or with a different camera.


Still Video Monitor
FULL mode (4:3)

### [21] Quad Display (2K/HD) [BT-4LH310]

The Quad Display function displays a waveform monitor (WFM) and a vector scope (VSC) as well as one of the Focus-in-Red, Y Map and Zebra assist functions simultaneously with a full-pixel image from a 2K (2048 x 1080) or HD input source. This function also allows a single monitor to be used as four 2K/HD monitors. It displays full-pixel images without resizing.


Input source image (upper left), Focus-in-Red (lower left), WFM (upper right) and VSC (lower right)


Four-Window Display

### [22] Error Indication [BT-4LH310]

Transmission and other errors are detected during SDI input, and the error status is displayed and logged.

### [23] Audio Level Meter

Both models are equipped with a color audio level meter. This meter displays the level of embedded audio (3G SDI, SDI, HDMI*1, Display Port*2) input. Reference point setting, peak hold and overrange display are also possible. The display mode can be selected from 2-channel, 4-channel, 8-channel or OFF.


BT-LH910G Color Audio Level Meter


8ch Audio Level Meter

*1: 2-channel display for HDMI input.
*2: BT-4LH310 only. 2-channel display for Display Port input.

### [24] Time Code Display

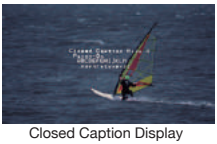
With HD SDI input, this function displays the value of the VITC, LTC or UB time code.

* In the BT-4LH310, this function is supported only in the 2K/HD mode.


Time Code Display

### [25] Closed Caption Display

Both models can display closed captions with an SDI or VIDEO input, on up to eight windows simultaneously.
The BT-LH910G support the EIA-708 HD SDI CC standard (EIA-608 SD SDI CC standard).
The BT-4LH310 supports the EIA/CEA-708 HD SDI CC standards.
* In the BT-4LH310, this function is supported only in the 2K/HD mode.


Closed Caption Display

### [26] HV Delay Display and Mono Mode

The HV Delay function that displays the video blanking period, and the Mono mode that switches the display to black-and-white, can be assigned to function keys for quick access.
* In the BT-4LH310, this function is supported only in the MONO mode.

### [27] Function Keys

Each of the function keys on the front panel can be assigned a function selected from various display and switchover functions* to enable one-touch display ON/OFF or mode change.
* Assignable functions vary depending on the model.

### [28] Diverse 3D Camera Assist Functions [BT-LH910G]

You can check 3D images using the left-eye and right-eye video signals from a 3D camera.
• **MIRROR:** With the L (left-eye) and R (right-eye) images displayed side-by-side, the right images can be independently flipped in the horizontal or vertical direction.
• **SHIFT:** The R image can be moved horizontally or vertically in the overlay display.
• **COMPARISON:** Simplifies checking for differences in the frame edges of the L and R images. In addition to side-by-side display, a top & bottom display is now possible.
• **CONVERGENCE:** Switches L or R images displayed on the full screen (manually or automatically).
• **COLOR:** Combines L and R images and displays them in a checkerboard pattern to check brightness and color variance.
• **ZOOM FOCUS:** Enlarges and displays L and R images side-by-side to check variance in focus and zoom. A new dual-window focus-in-red display is also provided.
• **VERTICAL:** A horizontal line marker allows inspection of vertical misalignment between the L and R images.
• **OVERLAY:** Left-right disparity can be checked by superimposing a marker on the overlay display.
The BT-LH910G has two overlay modes: normal or difference B/W.

### [29] External Remote Compatibility

The standard RS-232C (9-pin) and GPI (9-pin) remote input terminals allow the monitor to be operated by an external device. The BT-4LH310 is also equipped with RS-485 (RJ-45) serial remote terminals. Up to 32 monitors can be connected and controlled in a loop-through configuration.

### [30] Tally Lamps

The front panel has red, green and amber tally lamps.
The BT-LH910G also has a rear tally lamp.

### [31] Power Save Mode

When no signal is received for 60 continuous seconds, the BT-4LH310's Power Save mode is activated to minimize power consumption.

### [32] Key Lock Function

This disables front panel operation/control functions, except for the power switch, menu operation, GPI control and sound level adjustment.

### [33] Rugged Frame Structure

The BT-4LH310 features an aluminum frame.
The the BT-LH910G has a magnesium diecast frame.
These rugged structures provide the toughness required in professional field work.


Aluminum frame (BT-4LH310)

### [34] AC/DC Power Supply Compatibility

The BT-4LH310 supports a 28 V DC power supply.
The BT-LH910G support a 12 V DC power supply.
Both models support battery use.

### [35] Wall Mounting/Rack Mounting

The BT-4LH310 allows wall mounting of this thin, lightweight LCD monitors, with optional wall mounting hardware. The BT-LH910G is rack mountable.

### [36] Fanless Quiet Operation

All models are ideal for use in studios, on production sets or in edit rooms.

### [37] Mercury Free, LED Backlight

In all models, the LED backlight contains no mercury as an environmental protection measure.

### [38] Speakers and Headphone Jack

The BT-4LH310 is equipped with speakers and a headphone jack on the front panel. The BT-LH910G is equipped with a headphone jack on the front panel.

# BT-4LH310

## General

| | |
|---|---|
| Power Requirement: | AC 100 V – 240 V, 50 Hz/60 Hz,<br>1.71 A – 0.67 A,<br>DC 28 V (23.4 V – 30.0 V), 4.59 A |
| Operating Temperature: | 5 °C to 35 °C (41 °F to 95 °F)<br>(up to 2 000 m above sea level) |
| Operating Humidity: | 20% to 80% (non-condensing) |
| Storage Temperature: | –20 °C to 60 °C (–4 °F to 140 °F) |
| Weight: | Approx. 20.0 kg (44.1 lbs)<br>(including stand)<br>Approx. 18.5 kg (40.8 lbs)<br>(unit only, not including stand) |
| Dimensions: | 758 mm (W) × 495 mm (H) × 258 mm (D)<br>(including stand)<br>(29-13/16 inches × 19-1/2 inches × 10-3/16 inches)<br>758 mm (W) × 474 mm (H) × 132 mm (D)<br>(unit only, not including stand)<br>(29-13/16 inches × 18-5/8 inches × 5-3/16 inches) |

## LCD Panel

| | |
|---|---|
| Panel Size: | 789 mm (31.1 inches) (effective display area) |
| Aspect Ratio: | 17:9 |
| Resolution: | 4096 pixels × 2160 pixels |
| Display Colors: | Approx. 1,070,000,000 |
| Viewing Angle: | 178° both horizontal and vertical (contrast >10:1) |

## Connectors

| | |
|---|---|
| Video Input: | SDI Input:<br>BNC x 4,<br>SMPTE ST424/425-1/372/274/296 compliant,<br>embedded audio supported<br>3G-SDI:<br>SMPTE ST299 compliant,<br>48 kHz, 16 CH, synchronous supported,<br>HD SDI:<br>SMPTE ST299 compliant,<br>48 kHz, 8 CH, synchronous supported,<br>HDMI:<br>HDMI x 2 (TypeA), HDCP supported,<br>embedded audio supported,<br>VIERA Link not supported<br>DisplayPort:<br>DisplayPort x 2, HDCP supported,<br>embedded audio supported |
| Video Output: | SDI:<br>BNC x 4, with active through-out |
| External DC Power Input: | Speaker output: 0.5 W, Monaural<br>Head phone output: 32 Ω, Variable Level |
| Headphone Output: | M3 stereo mini jack x 1 |
| Remote: | GPI: D-SUB, 9-pin,<br>RS-232C: D-SUB, 9-pin<br>RS-485: RJ-45 x 2 (Input, Output) |
| External DC Power Input: | XLR, 4 pin |

## Signal Level

| | |
|---|---|
| Audio: | Speaker output: 0.5 W, Monaural<br>Head phone output: 32 Ω, Variable Level |

## Others

| | |
|---|---|
| Supplied Accessories: | Power cord, Stand, Stand screw,<br>Protective panel screw |

## 4K (3840 x 2160 Resolution) Video Inputs

| Color Space | YCbCr 4:2:2 | | | | | | YCbCr 4:4:4 / RGB 4:4:4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Max. Bit | 8 bit | | 10 bit | | 12 bit | | 8 bit | | 10 bit | |
| Frame Frequency (Hz) | 24, 25, 30 | 50, 60 | 24, 25, 30 | 50, 60 | 24, 25, 30 | 50, 60 | 24, 25, 30 | 50, 60 | 24, 25, 30 | 50, 60 |
| HDMI | ✓ (1) | ✓ (2) | | | ✓ (1) | ✓ (2) | ✓ (1) | ✓ (1) | | |
| DisplayPort | | | | | | | ✓ (1) | ✓ (2) | ✓ (1) | ✓ (2) |
| 3G-SDI | ✓ (4/2*1) | ✓ (4) | ✓ (4/2*1) | ✓ (4) | ✓ (4) | | ✓ (4) | | ✓ (4) | |

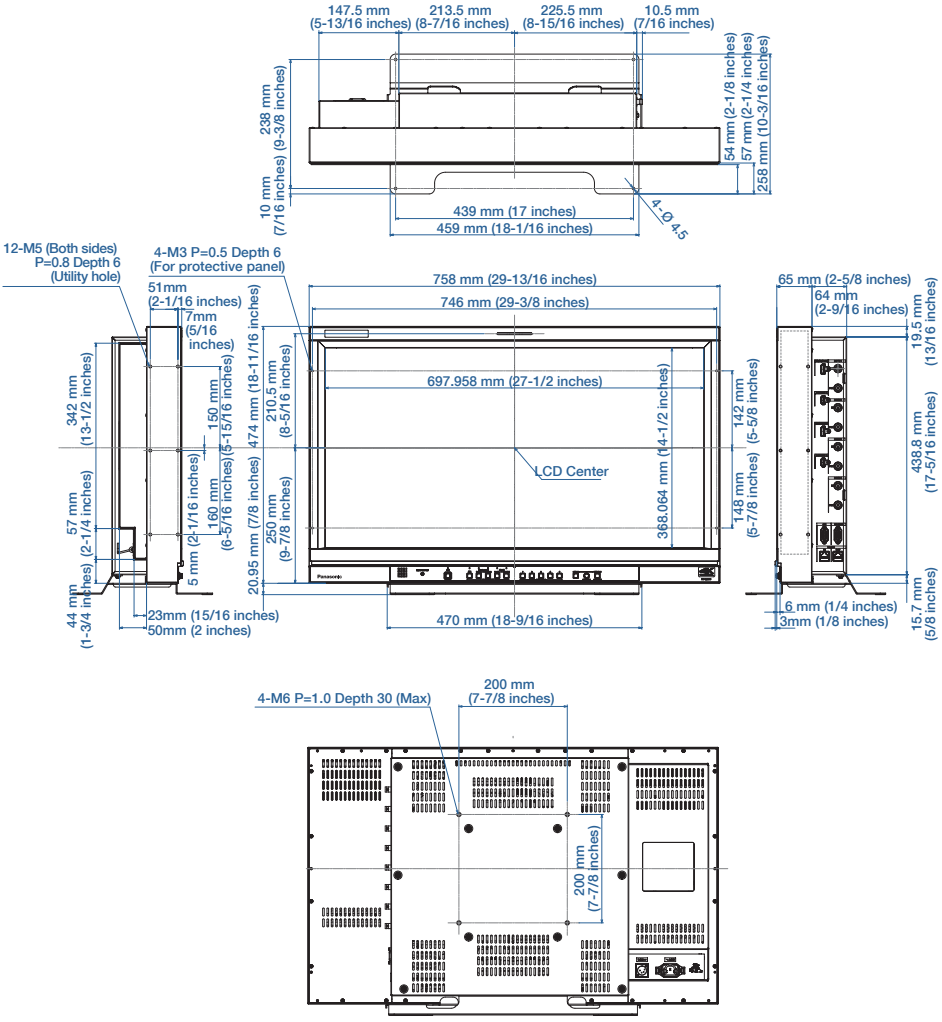
## 4K (4096 x 2160 Resolution) Video Inputs

| Color Space | YCbCr 4:2:2 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Max. Bit | 8 bit | | | 10 bit | | | 12 bit | | |
| Frame Frequency (Hz) | 24 | 25 | 50, 60 | 24 | 25 | 50, 60 | 24 | 25 | 50, 60 |
| HDMI | ✓ (1) | | ✓ (2) | | | | ✓ (1) | | ✓ (2) |
| DisplayPort | | | | | | | | | |
| 3G-SDI | ✓ (4/2*1) | ✓ (4/2*1) | ✓ (4) | ✓ (4/2*1) | ✓ (4/2*1) | ✓ (4) | ✓ (4) | ✓ (4) | |

| Color Space | YCbCr 4:4:4 / RGB 4:4:4 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Max. Bit | 8 bit | | | 10 bit | | | 12 bit | | |
| Frame Frequency (Hz) | 24 | 25 | 50, 60 | 24 | 25 | 50, 60 | 24 | 25 | 50, 60 |
| HDMI | ✓ (1) | | ✓ (2) | | | | | | |
| DisplayPort | ✓ (1) | | ✓ (2) | ✓ (1) | | ✓ (2) | | | |
| 3G-SDI | ✓ (4) | ✓ (4) | | ✓ (4) | ✓ (4) | | ✓ (4) | ✓ (4) | |

*The numerical value in a parenthesis shows the number of the cables simultaneously connected to each terminal. *1: The connection of dual link (3G Level B-DS) is possible.

## Dimensions


147.5 mm (5-13/16 inches)
213.5 mm (8-7/16 inches)
225.5 mm (8-15/16 inches)
10.5 mm (7/16 inches)
238 mm (9-3/8 inches)
10 mm (7/16 inches)
54 mm (2-1/8 inches)
57 mm (2-1/4 inches)
258 mm (10-3/16 inches)
439 mm (17 inches)
459 mm (18-1/16 inches)
4-Ø4.5
12-M5 (Both sides) P=0.8 Depth 6 (Utility hole)
4-M3 P=0.5 Depth 6 (For protective panel)
51mm (2-1/16 inches)
7mm (5/16 inches)
758 mm (29-13/16 inches)
746 mm (29-3/8 inches)
697.958 mm (27-1/2 inches)
LCD Center
368.064 mm (14-1/2 inches)
65 mm (2-5/8 inches)
64 mm (2-9/16 inches)
19.5 mm (13/16 inches)
438.8 mm (17-5/16 inches)
15.7 mm (5/8 inches)
6 mm (1/4 inches)
3mm (1/8 inches)
342 mm (13-1/2 inches)
150 mm (5-15/16 inches)
474 mm (18-11/16 inches)
210.5 mm (8-5/16 inches)
142 mm (5-5/8 inches)
148 mm (5-7/8 inches)
57 mm (2-1/4 inches)
5 mm (2-1/16 inches)
160 mm (6-5/16 inches)
250 mm (9-7/8 inches)
20.95 mm (7/8 inches)
44 mm (1-3/4 inches)
23mm (15/16 inches)
50mm (2 inches)
470 mm (18-9/16 inches)
4-M6 P=1.0 Depth 30 (Max)
200 mm (7-7/8 inches)
200 mm (7-7/8 inches)

# BT-LH910G

## General

| | |
|---|---|
| Power Requirement: | DC 12 V (11.0 V – 17.0 V), 1.9 A |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 10 % to 85 % (no condensation) |
| Storage Temperature: | –20 °C to 60 °C (–4 °F to 140 °F) |
| Weight: | Approx. 2.4 kg (5.3 lbs) (including stand)<br>Approx. 1.7 kg (3.7 lbs) (unit only, not including stand) |
| Dimensions: | 230 mm (W) x 214.5 mm (H) x 170 mm (D) (including stand)<br>(9-1/16 inches x 8-7/16 inches x 7-11/16 inches)<br>230 mm (W) x 183 mm (H) x 78.5 mm (D) (unit only, not including stand)<br>(9-1/16 inches x 7-13/64 inches x 3-1/16 inches) |

## LCD Panel

| | |
|---|---|
| Panel Size: | 230 mm (9 inches) of effective display area |
| Aspect Ratio: | 15:9 |
| Resolution: | 1280 pixels x 768 pixels (WXGA) |
| Display Colors: | Approx. 16,770,000 colors |
| Viewing Angle: | 176° both of horizontal and vertical |

## Connectors

| | |
|---|---|
| Video Input: | Video:<br>BNC x 1, (shares with Analog component Y)<br>YPBPR/RGB:<br>BNC x 3, (Y shares with Video)<br>SDI:<br>BNC x 2,<br>SMPTE274M/296M/259M-C/ITU-R BT.656-4 compliant,<br>embedded audio supported |
| Video Input: | HD SDI:<br>SMPTE299M compliant, 48 kHz, 8 CH, synchronous/asynchronous supported<br>SD SDI:<br>SMPTE272M compliant, 48 kHz, 4 CH synchronous supported<br>HDMI:<br>HDMI x 1 (TypeA), HDCP supported, embedded audio supported,<br>VIERA Link not supported<br>VF:<br>D-SUB, 15-pin x 1 |
| Video Output: | SDI:<br>BNC x 2, through-out |
| Headphone Output: | M3 stereo mini jack x 1 |
| Remote: | GPI: D-SUB, 9-pin<br>RS-232C: D-SUB, 9-pin |
| External DC Power Input: | XLR, 4 pin |

## Signal Level

| | |
|---|---|
| Audio: | Head phone output: 32 Ω, Variable Level |

## Others

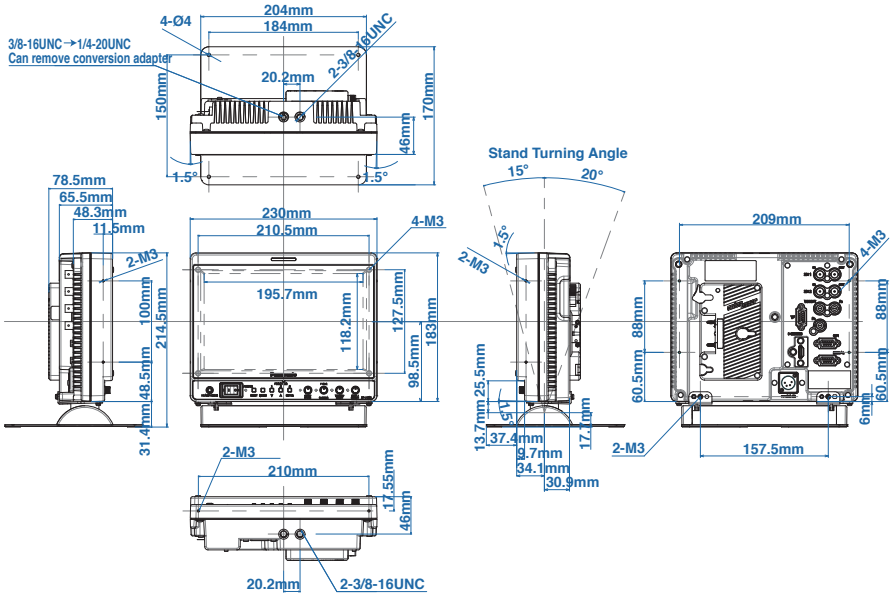
| | |
|---|---|
| Supplied Accessories: | Battery holder for Anton/Bauer battery (pre installed) |
| Optional Accessories: | AC adapter, VF cable, Rack mount adaptor, Battery |

## Supported Video Input Formats

| | VIDEO | VF-VIDEO | VF-YPBPR | YPBPR | SDI 1 (3G-SDI) | SDI2 | HDMI |
|---|---|---|---|---|---|---|---|
| NTSC | ✓ | ✓ | | | | | |
| PAL | ✓ | ✓ | | | | | |
| 640 x 480 (59.94 Hz) | | | | | | | ✓ |
| 640 x 480 (60 Hz) | | | | | | | ✓ |
| 480/59.94i | | | ✓ | ✓ | ✓ | ✓ | |
| 480/59.94p | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 576/50i | | | ✓ | ✓ | ✓ | ✓ | |
| 576/50p | | | ✓ | ✓ | | | ✓ |
| 720/50p | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 720/59.94p | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 720/60p | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1035/59.94i | | | ✓*1 | ✓*1 | ✓*1 | ✓*1 | ✓*1 |
| 1035/60i | | | ✓*2 | ✓*2 | ✓*2 | ✓*2 | ✓*2 |
| 1080/23.98PsF | | | ✓ | ✓ | ✓ | ✓ | |
| 1080/24PsF | | | ✓ | ✓ | ✓ | ✓ | |
| 1080/25PsF | | | ✓*3 | ✓*3 | ✓*3 | ✓*3 | |
| 1080/23.98p | | | | | ✓ | ✓ | ✓ |
| 1080/24p | | | | | ✓ | ✓ | ✓ |
| 1080/25p | | | | | ✓ | ✓ | ✓ |
| 1080/29.97p | | | | | ✓ | ✓ | ✓ |
| 1080/30p | | | | | ✓ | ✓ | ✓ |
| 1080/50i | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1080/50p | | | | | ✓ | | ✓ |
| 1080/59.94i | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1080/60i | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| 1080/59.94p | | | | | ✓ | | ✓ |
| 1080/60p | | | | | ✓ | | ✓ |

✓: Supported *1: When a 1035/59.94i signal is input, images are displayed in 1080/59.94i. In that case, the displayed markers are for 1080/59.94i.
*2: When 1035/60i signal is input, images are displayed in 1080/60i. In that case, the displayed markers are for 1080/60i. *3: 1080/25PsF input is displayed as 1080/50i.

## Dimensions




# Optional Accessories

## Optional Accessories for BT-LH910G

**AW-PS551***
AC Adaptor

**AW-PS550N***
AC Adaptor

**BT-CS910G**
VF Cable

* Not available in some areas.

## Operation-Verified 3rd Party Devices for BT-LH910G

**HYTRON 50**
**DIONIC HC**
Anton/Bauer Battery

**E-HL9/HL9S**
IDX Li-ion Battery
ENDURA

# BT-LH1770P

**US Only Model**

## General

| | |
|---|---|
| Power Requirement: | AC 100 V—120 V ±10%, 50 Hz/60 Hz<br>AC 200 V—240 V ±10%, 50 Hz/60 Hz<br>DC 10.5 V—18 V |
| Operating Temperature: | 0 °C to 40 °C (32 °F to 104 °F) |
| Operating Humidity: | 20 % to 85 % (no condensation) |
| Storage Temperature: | –20 °C to 60 °C (–4 °F to 140 °F ) |
| Weight: | Approx. 5.8 kg (12.8 lbs)<br>(unit only, not including stand) |
| Dimensions: | 428 mm (W) x 301 mm (H) x 80 mm (D)<br>(16-7/8 inches x 11-7/8 inches x 3-1/8 inches)<br>(unit only, not including stand) |

## LCD Panel

| | |
|---|---|
| Panel Size: | 420 mm (16.5 inches) of effective display area |
| Aspect Ratio: | 16:9 |
| Resolution: | 1920 pixels x 1080 pixels (WUXGA) |
| Display Colors: | Approx. 1,073,741,824 colors<br>(8 bit + 2 bit FRC) |
| Viewing Angle: | 178° both of horizontal and vertical<br>(more than 10:1 of contrast) |

## Connectors

| | |
|---|---|
| Video Input: | Video:<br>BNC x 1 (loop-through),<br>NTSC composite signal: SMPTE170M<br>PAL composite signal: EBU<br>SDI:<br>BNC x 2*, SMPTE425M-A/B/299M/272M compliant, embedded audio supported<br>3G-SDI:<br>SMPTE425M-A/B compliant,<br>HD SDI:<br>SMPTE292M compliant, 48 kHz, 8 CH<br>SD SDI (4:2:2):<br>SMPTE259M compliant, 48kHz, 4 CH<br>HDMI:<br>HDMI x 1 (TypeA), HDCP supported, embedded audio supported |
| Video Output: | SDI: BNC x 2*, active through |
| Audio Input: | Stereo mini jack, analog audio input |
| Headphone Output: | M3 stereo mini jack x 1 |

## Signal Level

| | |
|---|---|
| Audio: | Head phone output: 32 Ω, variable level<br>Speaker output: more than 1W (1.5 % distortion) |

## Others

| | |
|---|---|
| Supplied Accessories: | AC power cord, Stand, Stand screw,<br>Parallel remote connector |
| Optional Accessories: | Tiltable stand, Rack mount bracket,<br>Tiltable rack mount bracket, |

*The two outputs can be used as two inputs depending on the setting.

## Supported Video Input Formats

| Video Input Signal | VIDEO | SDI | HDMI |
|---|---|---|---|
| NTSC | ✓ | | |
| PAL | ✓ | | |
| 480/59.94i | | ✓ | ✓ |
| 480/59.94p | | | ✓ |
| 576/50i | | ✓ | ✓ |
| 720/23.98p | | ✓ | ✓ |
| 720/24p | | ✓ | ✓ |
| 720/25p | | ✓ | ✓ |
| 720/29.97p | | ✓ | ✓ |
| 720/30p | | ✓ | ✓ |
| 720/50p | | ✓ | ✓ |
| 720/59.94p | | ✓ | ✓ |
| 720/60p | | ✓ | ✓ |
| 1035/59.94i | | ✓ | |
| 1035/60i | | ✓ | |
| 1080/23.98PsF | | ✓ | ✓ |
| 1080/24PsF | | ✓ | ✓ |
| 1080/25PsF | | ✓ | ✓ |
| 1080/29.97PsF | | ✓ | ✓ |
| 1080/30PsF | | ✓ | ✓ |
| 1080/50i | | ✓ | ✓ |
| 1080/59.94i | | ✓ | ✓ |
| 1080/60i | | ✓ | ✓ |
| 1080/23.98p | | ✓ | ✓ |
| 1080/24p | | ✓ | ✓ |
| 1080/25p | | ✓ | ✓ |
| 1080/29.97p | | ✓ | ✓ |
| 1080/30p | | ✓ | ✓ |
| 1080/50p | | ✓ | ✓ |
| 1080/59.94p | | ✓ | ✓ |
| 1080/60p | | ✓ | ✓ |

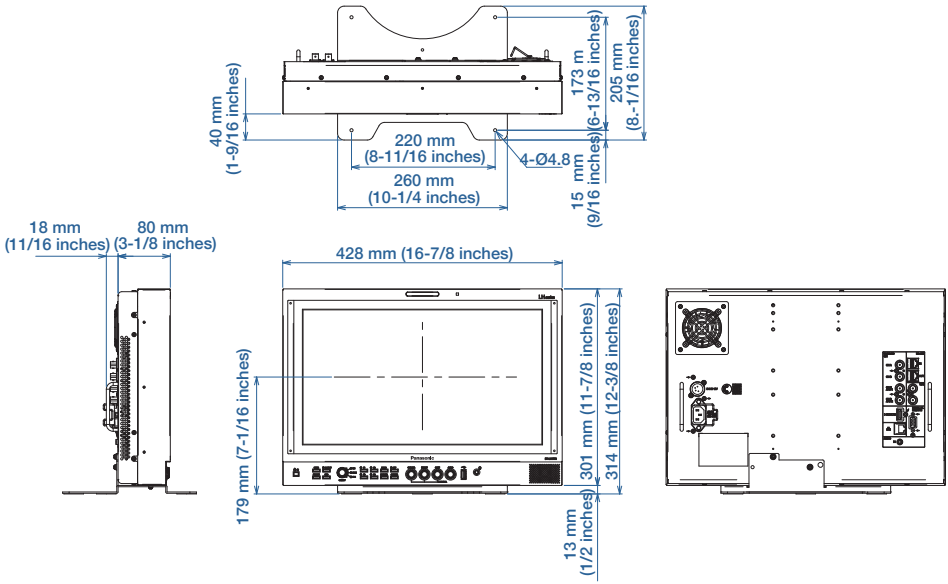
✓: Supported

## Supported PC Input Signal

| Input Signal | HDMI Input |
|---|---|
| VGA (640 x 480) | ✓ |
| SVGA (800 x 600) | ✓ |
| XGA (1024 x 768) | ✓ |
| WXGA (1280 x 768) | ✓ |
| SXGA (1280 x 1024) | ✓ |
| UXGA (1600 x 1200) | ✓ |
| WUXGA (1920 x 1200) | ✓ |

✓: Supported *Not all frequencies are supported.

## Dimensions




# Optional Accessories

## Optional Accessories for BT-LH1770P

**BT-MA1772G**
Tilt Stand

**BT-MA1773G**
Rack Mount Bracket

**BT-MA1774G**
Rack Mount Bracket
(with Tilt Fanction)

***NOTES REGARDING THE HANDLING OF P2 FILES USING A PC**

### Mounting and Transferring Files

The PC must be installed with the included P2 driver in order to recognize, copy and transfer P2 files. This driver is also necessary when using the PC card slot and when handling P2 files stored on a hard-disk device, such as P2 store. For other operating requirements, refer to the P2 installation manual. The P2 driver and the P2 installation manual can be downloaded free from a Panasonic website. Visit <http://pro-av.panasonic.net/en/download/>

### Preview and Nonlinear Editing

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

### ** Notes Regarding Network Functions

•**For 4G/LTE connection:** 4G/LTE module is required from a 3rd party. Availability of this function may vary depends on areas. For details, please visit Panasonic website <http://pro-av.panasonic.net/en/sales_o/p2/server/4glte.html>.
•**For wireless LAN connection:** Wireless module (optional, AJ-WM30) is required. For the OS, browser, device compatibility information, see “Service and Support” on the Panasonic website <http://pro-av.panasonic.net/>. Some functions are not supported by some devices.
•**For iPad remote control:** The P2 ROP App (downloadable free of charge from the Apple App Store) is required. For details, please visit Panasonic website <http://pro-av.panasonic.net/en/sales_o/p2/ver_up/p2rop_app.html>.
•**For streaming:** Transfers only to a designated server (one server). The proxy image cannot be recorded while streaming. The streaming function cannot be used together with dual codec recording and simultaneous recording, or with the Rec during Uploading function. For details on downloading and the operating environment of video streaming compatible application software, see “Support & Download” on the Panasonic website <http://pro-av.panasonic.net/>. For streaming, 4G/LTE USB modem and PC must be able to access directly each other by Public IP (Global IP). Please contact your provider to get Public IP (Global IP). To display the streaming video using P2 browser, player is required (VLC MEDIA PLAYER for Windows PC, QuickTime Player for Mac). P2 Streaming Receiver software (Windows only, not supported by Mac; available free of charge) is required for receiving the QoS mode. Please visit Panasonic website <http://pro-av.panasonic.net/en/download/>.
•**For LiveU and TVU bonding services:** Connection requires communication devices offered by both LiveU and TVU Networks. For details, please visit the following website. <http://pro-av.panasonic.net/en/sales_o/p2/bonding_devices/index.html> (Connection Confirmed Bonding Devices)

**Note Regarding 24 bit Audio**

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

**Precautions When Using SDHC/SDXC Memory Cards with the AJ-P2AD1G Memory Card Adapter**

•Only the DV, DVCPRO, DVCPRO50, and AVC-Intra50 recording formats can be used when using the Memory Card Adapter on P2 Series products. Memory cards of Class 10 or higher are recommended, but recording may not be possible with some cards. •DVCPRO HD and AVC-intra100 cannot be used. •Memory card data capacity must be 4 GB to 128 GB. •Interval Rec, One-Shot Rec, Loop Rec, or One-Clip Rec cannot be used. •If the reading performance is insufficient during playback, frames might be skipped (Best-effort playback). •When copying clips that extend over two SDHC/SDXC memory cards onto another SDHC/SDXC memory card, the connecting relationship between the cards will not be saved. Under certain conditions, the connecting relationship between original and copied SDHC/SDXC memory cards is saved.



*Specifications are subject to change without notice.

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Factories of AVC Networks Company have received ISO14001:2004-the Environmental Management System certification.
(Except for 3rd party’s peripherals.)

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15K201709ZP-1 Printed in Japan