

# Panasonic

# AG-DVX200

Memory Card Camera Recorder



## AG-DVX200

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# OPENING NEW PATHS TO VIDEO PRODUCTION WITH 4K QUALITY AND MOBILITY

The AG-DVX200 debuts as the world's first\*<sup>1</sup> 4/3-type large format camcorder with integrated zoom lens. Combining digital video technology that Panasonic has developed over its long history of producing broadcast equipment with its expertise in professional camera recorder, the AG-DVX200 blazes an entirely new trail in video production.

This new camera recorder captures stunning images with the shallow focus and attractive Bokeh effect of its 4/3-type large-format sensor, and the latitude made possible by the 12-stop V-Log L processing inherited. High-speed processing of these high resolution images by a new 4K engine enables high-quality, multi-format (4K/24p, UHD/60p, FHD/60p) recording.

The AG-DVX200 also features a number of high-end functions to meet video production needs, including Full-HD, 120 fps Variable Frame Rate (VFR) shooting and dual codec recording. And it integrates a newly developed LEICA DICOMAR 4K 13x zoom lens. High-speed, high-precision full-auto functions and professional-level manual functions provide operating ease and mobility that are possible only from a lens-integrated body.

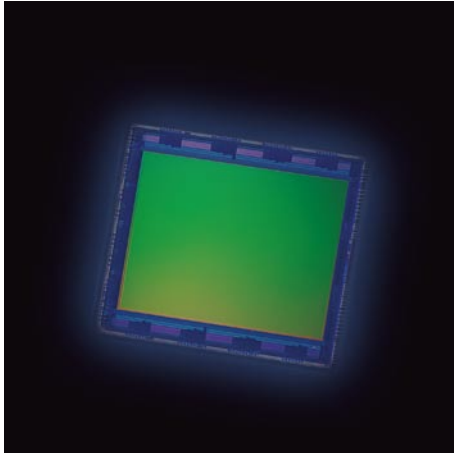
The crimson red coloring and stylish carbon-black textured body form a highly impressive and innovative design, in response to the artistic sensibility of video creators. This color scheme also reflects the expressive capability of the AG-DVX200's vividly detailed 4K images together with its superb mobility and intuitively easy operation, supporting the everyday demands of active professionals.



\*The microphone shown in the photo is an option.

\*1: For a lens-integrated 4K/60p camera recorder with a 4/3-type sensor. (As of March 2016, according to a Panasonic survey.)

# RICH EXPRESSION FROM A 4/3-TYPE SENSOR AND 4K ENGINE



## New 4/3-type Sensor for Beautiful Bokeh Effects and 4K Resolution

NEW

The AG-DVX200 features a 4/3-type, large-format image sensor. It creates highly attractive Bokeh effects by blending 4K resolution with shallow depth of field. It also lets you capture clear images with minimal noise when shooting in dimly lit locations.



## LEICA DICOMAR 4K Lens

NEW

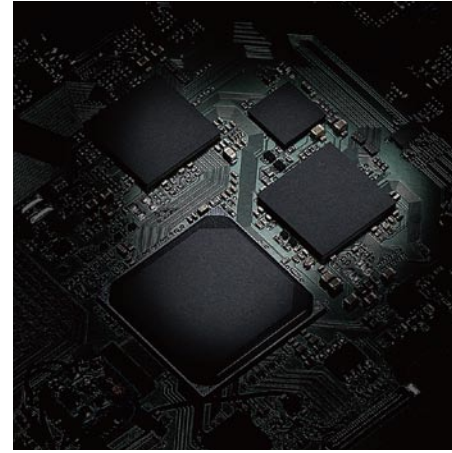
LEICA  
DICOMAR

The high-performance LEICA DICOMAR 4K lens has passed the stringent quality standards of Leica Camera AG. A multi-coating process minimizes ghosts and flaring, while the use of a low-dispersion glass suppresses chromatic aberration. This results in especially clear images with very little color bleeding.

\* 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 DICOMAR AG.



## 4K Engine with High-Speed Processing on a New LSI

NEW

The 4K engine, which is mounted on the AG-DVX200's newly developed LSI, quickly processes the massive amount of 4K data. A new noise reduction function also minimizes noise when shooting dark scenes with increased gain.



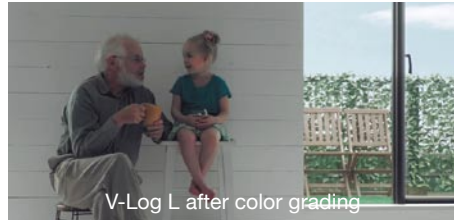
\* picture simulated

## UHD/60p High-Resolution Recording

Recording at a maximum 60p (60 fps) is possible with UHD (3840 x 2160) resolution. It produces smooth, high-resolution images from fast-moving scenes. This is important due to the recent announcement of UHD 59.94 native acquisition.



\* picture simulated



\* Images captured from actual footage shot on AG-DVX200 and graded for printing.



**HDMI**



\* Image captured from actual footage shot on AG-DVX200 and graded for printing.

### Variable Frame Rate HD Recording at Max. 120 fps

When recording at high Full-HD (1920 x 1080) resolution, the frame rate can be varied from 2 fps to 120 fps.\* Slow-motion images can be achieved by shooting at up to 12x normal speed (in 24p mode), and quick-motion images can be produced by dropping frames.

\* When shooting from 2 fps to 96 fps, 28.0mm can be achieved at the wide-angle end, but this is limited to 35.2mm when shooting at 100 fps or 120 fps.

### 12 stops of Latitude from V-Log L

The AG-DVX200 features a V-Log L function that is equivalent to the V-Log and curve characteristics provided on the new VariCam Series. Its 12-stop wide dynamic range accommodates cinema production work requiring post-process color gradation.

In addition to this, gamma curves can be selected from 8 modes, including CINE-LIKE V, CINE-LIKE D, FILMLIKE 1/2/3, HD and SD.

\* The VariCam 35 and VariCam LT V-Log has 14+ stops.

### High-Quality 4K (UHD) 10 bit 4:2:2 Image Output

The HDMI output terminal enables camera-through output of 4K (4096 x 2160)/24p and UHD (3840 x 2160)/30p images. This allows uncompressed recording of 10 bit 4:2:2 image quality by external recorders.\*

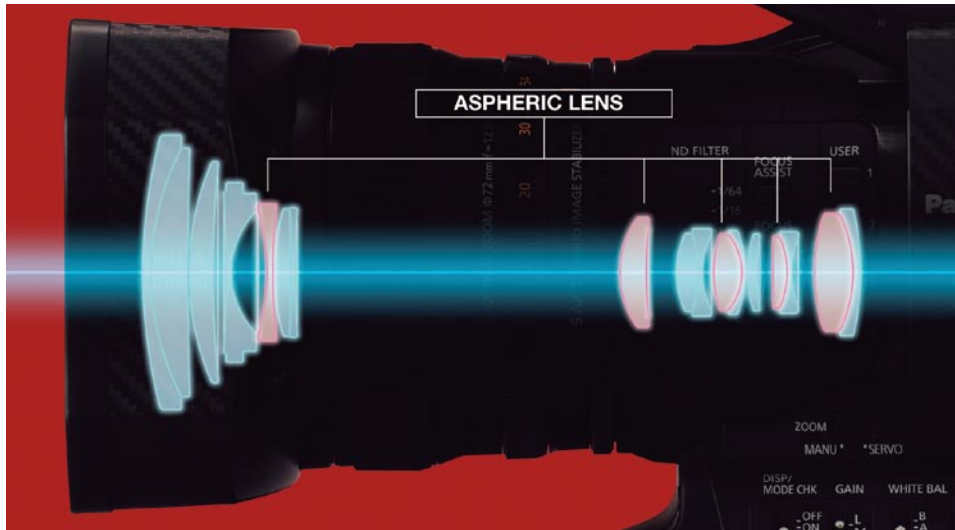
\*When HDMI / HD SDI is set to 10 bits, all internal recordings are disabled.

### Infrared Shooting Function

The AG-DVX200 has an integrated, detachable IR filter. Its IR mode enables it to record 4K images in the dark. Shooting and recording are possible in a zero-lux environment, such as unlighted nightscapes, animals in nature, and event sites before the lights are turned on.

\* An optional IR light is required separately.

# NIMBLE MOBILITY WITH AN INTEGRATED OPTICAL 13X ZOOM LENS AND INTELLIGENT FULL-AUTO FUNCTIONS



\* picture simulated

## Newly Developed Integrated Optical 13x Zoom Lens NEW

This 13x zoom lens comprises 17 lenses in 11 groups, including 5 aspheric lenses. It offers a level of mobility that is possible only with an integrated lens, extending from 28 mm wide-angle (in FHD mode)\*<sup>1</sup> to a wide zoom range with F2.8 brightness (at the wide-angle end), for news gathering and video production. The i.Zoom\*<sup>2</sup> function increases the zooming capability to a maximum of approximately 20x, while maintaining high resolution.

\*1: 35 mm film equivalent. Varies depending on the video recording format. FHD: 28 mm, 4K/24p: 29.5 mm, UHD/30p: 30.6 mm, UHD/60p: 37.2 mm

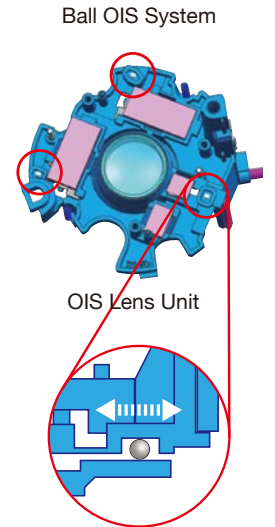
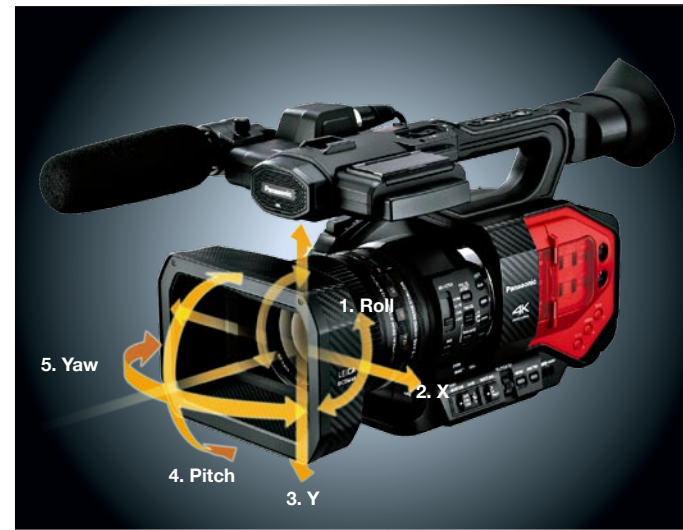
\*2: Cannot be used in 4K/UHD shooting modes.

## Intelligent AF NEW

The AG-DVX200 features a high-speed, high-precision Intelligent AF system. Its new micro-drive focus unit provides the focus lens with an extremely fine, continuous drive, to quickly trace your subject's movements. The excellent focusing speed, tracking performance and stability of this AF system strongly support the detailed 4K images and shallow focus.

## Custom AF NEW

Auto focus operation can be customized by adjusting the AF Speed, AF Sensitivity and AF Area Width.



## Advanced Hand-Shake Correction

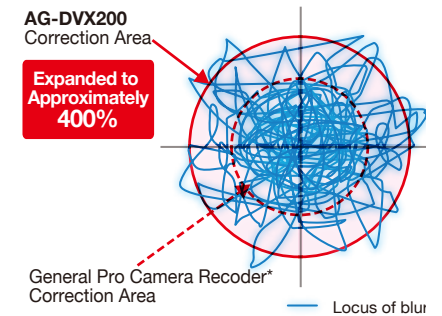
### • Advanced Optical Image Stabilizer (OIS):

The correction area has been dramatically increased in the newly developed lens. This provides powerful correction even in unstable shooting situations, such as low-angle or high-angle shots. The OIS lens drive mechanism has also been changed to a ball system. The ball OIS system reduces wear on the drive section, and greatly improves correction for small-amplitude hand-shake.

### • 5-Axis Hybrid Image Stabilizer\*:

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.

\* Cannot be used in 4K/UHD shooting modes.



\*Comparison with AG-AC160A

### Triple Manual Ring

NEW

The AG-DVX200 features three manual rings for mechanical (cam-driven) Zoom, Focus and Iris control. This manual operation offers a highly familiar, professional feel.

### ND Filters, Gain, White Balance

- **ND Filters:** OFF, 1/4, 1/16, 1/64 ND filters built-in.
- **Gain Selector:** Negative gain is added.\*<sup>3</sup> Select from -6 dB to 24 dB or 0 dB to 24 dB gain for 3-position (L/M/H) allocation.
- **AWB Selector:** Two-value (A/B) memory and presets (3200/5600/VAR) can be selected.

\*3: To be supported by firmware upgrade in April 2016. For details, please visit Panasonic website. (<http://pro-av.panasonic.net/>).



# 4K/FHD MULTI-CODEC RECORDING AND DOUBLE-SLOT RELIABILITY

## Multi-Format/Multi-Codec Recording

The MP4/MOV codec provides 4K (4096 x 2160)/24p, UHD (3840 x 2160)/60p, and FHD (1920 x 1080) high-bit-rate recording, and the AVCHD codec supports low-bit-rate HD/SD recording. Being able to select from a variety of recording modes, each with a different image quality, frame rate, and bit rate, meets a wide range of applications, from cinema production to Internet distribution.

(See below table for more details.)

\* The use of DCF Technologies is under license from Multi-Format, Inc.

## SD Memory Card U3 Standard for 4K Acquisition

The AG-DVX200 records onto SDHC/SDXC memory cards. Supporting the UHS Speed Class 3 for high-speed data transfer, this enables 4K/24p, UHD/60p, and VFR recording. Approximately 160 minutes of 4K/24p data can be recorded onto a 128 GB SD memory card, or a scene of about 110 minutes of UHD/60p data. (A 64 GB SD memory card will hold approximately 80 minutes of 4K/24p data, or about 55 minutes of UHD/60p data.)



### Video Recording Mode (when System Frequency is 59.94 Hz)

Recording Mode	Recording Format	Bit Rate
MOV/MP4	4K	4096 x 2160/24.00p <b>FastScan</b> 100 Mbps
	UHD	3840 x 2160/59.94p <b>FastScan</b> 150 Mbps
		3840 x 2160/29.97p/23.98p 100 Mbps
		1920 x 1080/59.94p/29.97p/23.98p (ALL-I) 200 Mbps
	FHD	1920 x 1080/59.94p 100 Mbps
		1920 x 1080/59.94p/29.97p/23.98p/59.94i 50 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

### Video Recording Mode (when System Frequency is 50.00 Hz)

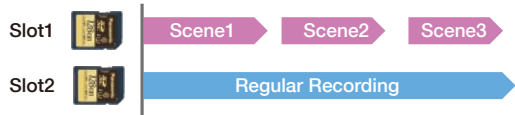
Recording Mode	Recording Format	Bit Rate
MOV/MP4	4K	4096 x 2160/24.00p <b>FastScan</b> 100 Mbps
	UHD	3840 x 2160/50.00p <b>FastScan</b> 150 Mbps
		3840 x 2160/25.00p 100 Mbps
		1920 x 1080/50.00p/25.00p (ALL-I) 200 Mbps
	FHD	1920 x 1080/50.00p 100 Mbps
		1920 x 1080/50.00p/25.00p/50.00i 50 Mbps
1920 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 x 576/50.00i (SIDE CROP/LETTERBOX/SQUEEZE) 9 Mbps

\*24.00p of 59.94 Hz and 50.00 Hz is the same recording format.

**FastScan**: The distortion in fast-moving subjects can be reduced by selecting FastScan mode when using 4K/24p, UHD/29.97p, UHD/23.98p or UHD/25p. However, angle of the view narrows.



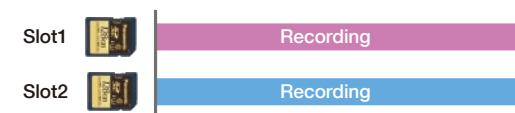
### Background Recording



### Relay Recording



### Simultaneous Recording



### Double SD Memory Card Slot Boosts Recording Reliability

Two SD memory card slots allow dual-codec recording, and enable various recording formats to raise recording reliability.

- **Background Recording:** Records ordinary Rec Start/Stop-controlled data in Slot 1, and records all data, even when the AG-DVX200 is stopped, in Slot 2.
- **Relay Recording:** Automatically records continuously from Slot 1 to Slot 2.
- **Simultaneous Recording:** Identical data is recorded onto cards in both slots in this highly redundant recording mode.
- **SD Memory Card Copy:** Recorded data is copied between the two slots.

### UHD/FHD Dual Codec Recording

UHD/FHD Dual Codec Recording (when FHD 50 Mbps mode)

	Recording Mode	Recording Format
Main-Recording side	MOV/MP4	UHD/29.97p/25.00p/23.98p 100 Mbps
Sub-Recording side	MOV/MP4*	FHD/29.97p/25.00p/23.98p 50 Mbps

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

UHD/FHD or FHD/FHD Dual Codec Recording (when FHD 8 Mbps mode)

	Recording Mode	Recording Format
Main-Recording side	MOV/MP4	UHD/29.97p/25.00p/23.98p 100 Mbps FHD/59.94p/50.00p/29.97p/25.00p/23.98p 200 Mbps FHD/59.94p/50.00p 100 Mbps
Sub-Recording side	MOV	FHD/59.94p/50.00p/29.97p/25.00p/23.98p 8 Mbps

### UHD/FHD Dual Codec Recording NEW

This function allows the image to be simultaneously recorded into two different, Main and Sub, formats.\* An efficient workflow can be achieved by using the UHD (3840 x 2160) file for the main recording and the FHD Sub Rec file for tasks such as previews, offline editing, and Internet data transfers. Dual Codec Recording is provided with two modes, an FHD 50M mode and an FHD 8M mode.(See the table above.)

\* Different frame rates cannot be selected.

### Other Recording Functions

- **Pre Rec:** This function constantly caches approximately 4 seconds of video and audio data in MOV/MP4 format, or approximately 3 seconds in AVCHD format, 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.
- **Freeze Frame:** Images can be recorded as still images together with audio.
- **Rec Check:** This lets you check the end of the most recently recorded clip with one-touch ease.



### Digital Audio 2-Channel Recording

Two-channel audio is recorded with the high sound quality of the Linear PCM format (MOV/MP4) or Dolby Digital format (AVCHD). The built-in mic, mic input, or line input can be selected for each channel, and the sound level can be manually adjusted.

# FLEXIBLE OPERATIONS THAT ASSIST PROFESSIONAL CAMERA WORK



\* picture simulated



\* picture simulated

## High-Quality OLED EVF

The viewfinder features a high-resolution OLED display (approximately 2,360,000 dots, with an image display area of approximately 1,770,000 dots) for excellent color reproduction. The EVF provides the ability to critically focus even in 4K.

## 4.3-type Touch Panel LCD

The integrated, large-screen, high-resolution (approximately 2,760,000 dots) 4.3-type LCD HD monitor provides easy viewing for previews and focusing. Equipped with a touch panel, it allows use of area functions, such as Touch Focus, and enables an Icon Touch function for various settings and operations.



Expand and Peaking



WAVE (Waveform)

## Focus Assist Functions

A wide variety of Focus Assist functions support quick and accurate manual focusing.

- **Expand:** Visibility can be enhanced by expanding the display of any desired part of the screen.\*

\* The part to be expanded is designated by touching the screen.

- **Peaking:** The contours of subjects in focus are colored for display emphasis.

- **One-Push AF:** This function temporarily activates Auto Focus when shooting in Manual mode.

- **Focus Transition:** The focus can be shifted to a preset focus position (focal distance) with a single touch. Up to three focus positions can be preset.

- **Area Function:** Auto Focus is activated for a subject that is touched on the LCD panel. In addition to focusing, changes can be made to Auto Iris and Brightness Display.

- **MF Assist:** Focus is automatically adjusted after you adjust it with the focus ring in Manual Focus Mode.

## LCD/EVF Displays That Assist Shooting

- **Waveform and Vectorscope Display:** WAVE (Waveform) and VECTOR (Vectorscope) can be easily displayed on a subscreen of the LCD monitor.

- **Level Gauge:** Horizontal or vertical tilting of the camcorder can be checked on the LCD and viewfinder.

- **ZEBRA:** Two zebra patterns are integrated, from 50% to 105% in 5% steps.

- **Marker (Y Level):** The brightness level in the center of the screen is displayed in percentage.

- A Safety Zone Marker and Center Marker can be displayed.

- **Picture Quality Settings:** Detail, Skintone, Chroma Level, Chroma Phase, Color Correction, Master pedestal level, Gamma and Knee can be set.

## Scene Files, User Files

Six files preset with picture quality settings are provided as Scene Files (1: Standard, 2: Shooting under fluorescent lights, 3: Extra Color & Detail, 4: Enhanced gradation of luminance in low-light scenes, 5: Cine-Like setting shifted to prioritize contrast, and 6: Cine-Like setting shifted to prioritize dynamic range). You can change any of the settings as desired and store one set as a Custom File in the AG-DVX200, and up to eight sets on a SD memory card. The User File lets you store one file with camcorder function settings in the AG-DVX200, and up to eight files on a SD memory card.

## User Buttons

Any of the below listed 40 functions can be allocated to the User Buttons. There are a total of 12 User Buttons: Eight on the AG-DVX200 body, and four on the LCD Touch Panel. The AWB button can also be used as a User Button.\*

### Assignable Functions

Focus Assist, Backlight, Spotlight, Black Fade, White Fade, ATW, ATW Lock, Digital Zoom, Histogram Display, Rec Check, Last Scene Delete, DRS, Freeze Frame, Super Gain, Area Function, Focus Transition, Capture, EVF/LCD Detail, IR Shooting, Level Gauge, Background, Flash Band Correction, PRE-REC, WFM, FAST ZOOM, EVF ON/OFF, Auto Iris Level, Zebra, Image Stabilizer, Scene File, Auto Rec, Area Width Adjust, VFR Mode, Focus Macro, i.Zoom, V-Log View Assist, Menu, LCD/EVF output, Push Auto\*, and Card Slot Selection\*.

\*To be supported by firmware upgrade in April 2016. For details, please visit Panasonic website. (<http://pro-av.panasonic.net/>).



\* picture simulated

# OTHER FUNCTIONS, SPECIFICATIONS, AND INTERFACES



Side Terminal

## HDMI/SDI/VIDEO Image Outputs

- **HDMI OUT:** Outputs images up to 4K/24p and UHD/60p.\* **HDMI**
- **SDI OUT:** Outputs HD SDI or SD SDI. Panasonic recorders equipped with SDI input can be linked to the Rec Start/Stop function of the AG-DVX200.
- **VIDEO OUT:** Outputs composite images.

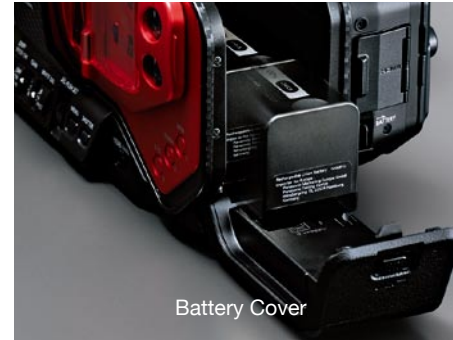
\* Images output during UHD/60p recording are FHD.



Rear Terminal

## XLR Mic/Audio Input (2 Channels)

The AG-DVX200 features +48 V phantom power supply XLR mic and audio input terminals (2 channels). The front mic terminal is positioned behind the mic mount to prevent problems such as obstruction when the mic is used at the side of the camcorder. The rear external audio terminal is positioned on the right side for situations where shoulder-type shooting is required. This also simplifies removal while holding the camcorder in shooting position.



Battery Cover

## USB3.0 HOST/DEVICE

- **USB HOST:** SD memory card data files can be copied onto external media, such as a USB hard disk or USB memory device. Data copied onto a USB hard disk or USB memory device can also be reproduced.
- **USB DEVICE:** The AG-DVX200 can be connected to a PC or Mac, and SD memory card files can be transferred for linear editing.

## Other Interfaces and Equipment

- **TC PRESET IN/OUT:** Time code synchronization is possible for two AG-DVX200 camcorders.
- **Camera Remote:** Focus, Iris, Zoom, Rec Start/Stop.
  - Equipped with an audio output terminal (Stereo Mini Jack x 1).
  - Equipped with a headphone terminal (Stereo Mini Jack x 1).



Lens Cover

## Various Covers to Increase Mobility and Safety

- **Battery Cover:** A hatch-type cover protects the battery. This new design provides safety and stability.
- **Terminal Cover:** The terminal block is covered to protect it from dust and impacts.
- **Lens Cover:** A lens cover is built into the lens hood to increase safety during travel.

## Wireless Remote Control from an iPad

**NEW**

The AG-JJLAGRP1G AG ROP app for iPad\*1 is available free of charge from the Apple App Store. It enables wireless remote control of the AG-DVX200\*2. The control screen of the AG ROP app displays large numerals and provides upper and lower touch keys for easy understanding and use. In addition to a multitude of control functions,



AG ROP control screen

\* picture simulated



such as camera settings, picture quality adjustment, REC start/stop and menu setting, the AG ROP app allows control of the AG-DVX200's internal lens for remote operation of the i.Zoom, zoom and focus. This provides extra versatility when, for example, the AG-DVX200 is set up on a crane. It also displays a thumbnail view and a preview view, so clips<sup>\*3</sup> recorded in dual codec recording mode can be displayed as thumbnails and previewed on an iPad.

\*For details, please visit Panasonic website. (<http://pro-av.panasonic.net/>).

\*1 iOS 7.1, iOS 8.1, and iOS 9 are supported.

\*2 Installation of a wireless module (AJ-WM50/AJ-WM30 (sold separately)) is required. The firmware in the camera recorder may need to be updated to the newest version.

\*3 Only sub-recording (8 Mbps) of dual codec recording is supported. Other data is not displayed in the thumbnail view.

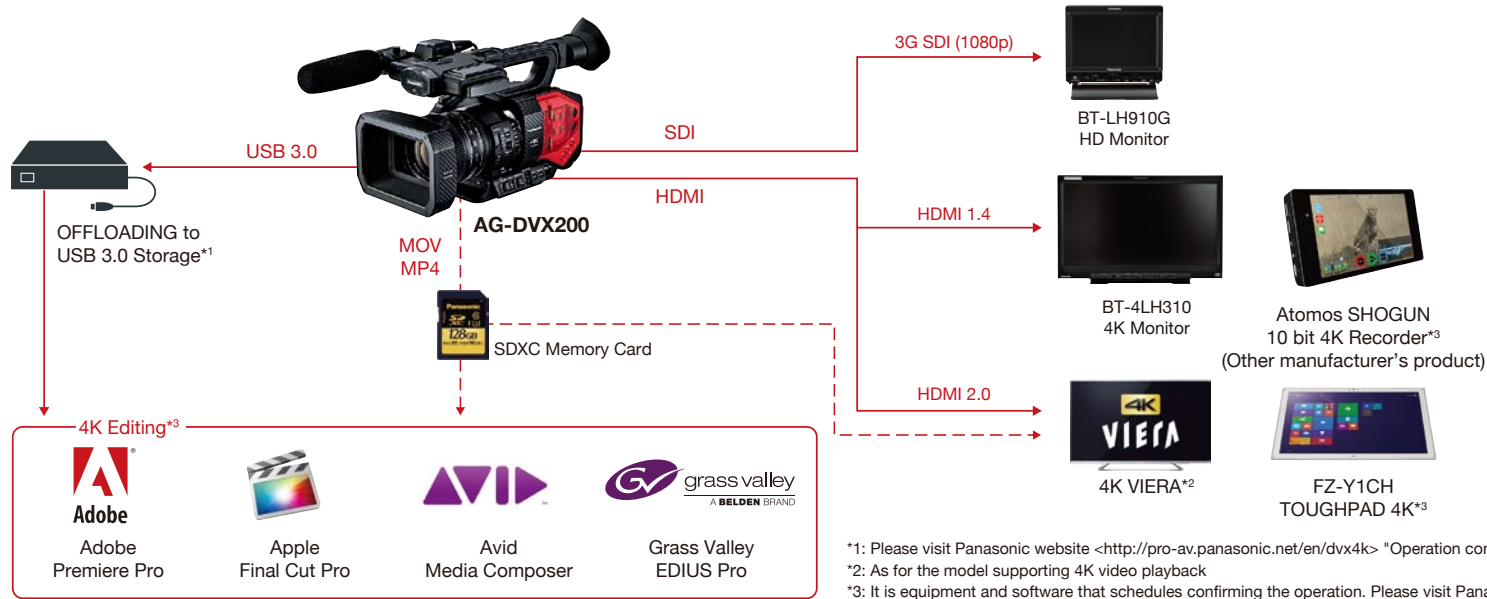
- App Store is a service mark of Apple Inc.
- Apple, the Apple logo, and iPad are trademarks of Apple Inc., registered in the U.S. and other countries.



# Workflow & Options

As of April, 2016

## Example of 4K workflow



## Options



**AG-VBR59** **NEW**  
Lithium Ion Battery (59,00 mAh)

**AG-VBR89G**  
Lithium Ion Battery (8,850 mAh)

**AG-VBR118G**  
Lithium Ion Battery (11,800 mAh)

\*Not available in some areas.



**AG-BRD50** **NEW**  
Battery Charger  
Quick-charge for the AG-VBR59/89G/118G new series battery packs  
\*Not available in some areas.



**VW-VBD58**  
Lithium Ion Battery (5,800 mAh)

**AG-B23**  
Battery Charger



**AJ-WM50** **NEW**  
Wireless Module  
\*Not available in some areas

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



**AG-MC200G**  
XLR Microphone



**BT-4LH310**  
787.4 mm (31 inches) LCD Monitor  
DCI 4K/IPS LCD panel,  
DCI 4K/QFHD/2K/HD/SD Display  
Input: 3G-SDI x4, HDMI 1.4 x 2,  
Display Port x2, AC/DC

# Specifications

As of April, 2016

## General

Power:	DC 7.2 V (when the battery is used) 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 % RH to 80 % RH (no condensation)
Weight:	Approx. 2.7 kg (5.95 lb) (body only, excluding lens hood, battery, and accessories) Approx. 3.1 kg (6.84 lb) (including lens hood, battery, and eye cup)
Dimensions:	181 mm (W) x 216 mm (H) x 374 mm (D) (excluding protrusion and eye cup) (7-1/8 inches x 8-1/2 inches x 14-23/32 inches)

## Camera Unit

Pickup Device:	4/3-type MOS solid state image sensor
Effective Pixels:	FHD (1920 x 1080): 15.49 megapixel UHD (3840 x 2160) 59.94p/50.00p: 8.71 megapixel UHD (3840 x 2160) 29.97p/25p.00: 12.89 megapixel 4K (4096 x 2160) 24p: 13.35 megapixel
Lens:	Optical image stabilizer lens, optical 13x motorized zoom F2.8 to F4.5 (f=12.8 mm to 167 mm) 35 mm equivalent: FHD: 28.0 mm to 365.3 mm UHD 59.94p/50.00p: 37.2 mm to 485.1 mm UHD 29.97p/25.00p: 30.6 mm to 398.7 mm 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 -6 dB to 24 dB (Adjustable in 1dB 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 (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 <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> </ul> When [SYSTEM MODE] = 50.00 Hz <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>
Slow Shutter Speed:	When [SYSTEM MODE] = 59.94 Hz <ul style="list-style-type: none"> <li>60i/60p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec., 1/30 sec.</li> <li>30p mode: 1/2 sec., 1/4 sec., 1/8 sec., 1/15 sec.</li> <li>24p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec.</li> </ul> When [SYSTEM MODE] = 50.00 Hz <ul style="list-style-type: none"> <li>50i/50p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec., 1/25 sec.</li> <li>25p mode: 1/2 sec., 1/3 sec., 1/6 sec., 1/12 sec.</li> </ul>

Synchro Scan Shutter:	When [SYSTEM MODE] = 59.94 Hz <ul style="list-style-type: none"> <li>60i/60p mode: 1/60.0 sec. to 1/249.8 sec.</li> <li>30p mode: 1/30.0 sec. to 1/249.8 sec.</li> <li>24p mode: 1/24.0 sec. to 1/249.6 sec.</li> </ul> When [SYSTEM MODE] = 50.00 Hz <ul style="list-style-type: none"> <li>50i/50p mode: 1/50.0 sec. to 1/250.0 sec.</li> <li>25p mode: 1/25.0 sec. to 1/250.0 sec.</li> </ul>
Shutter Open Angle:	5.0 deg to 180.0 deg to 360.0 deg (in 0.5 deg steps, angle display)
VFR Recording Frame Rate:	When [SYSTEM MODE] = 59.94 Hz <ul style="list-style-type: none"> <li>60p mode: 2, 15, 30, 40, 55, 58, 60, 62, 65, 75, 90, and 120 fps</li> <li>30p mode: 2, 15, 26, 28, 30, 32, 34, 45, 60, 75, 90, and 120 fps</li> <li>24p mode: 2, 12, 18, 20, 22, 24, 26, 28, 30, 36, 48, 60, 72, 84, 96, and 120 fps</li> </ul> When [SYSTEM MODE] = 50 Hz <ul style="list-style-type: none"> <li>50p mode: 2, 12, 25, 33, 45, 48, 50, 52, 55, 62, 75, 100, and 120 fps</li> <li>25p mode: 2, 12, 21, 23, 25, 27, 30, 37, 50, 62, 75, 100, and 120 fps</li> </ul>
Sensitivity:	When [HIGH SENS.] mode F11 (2,000 lx, 3,200 K, 89.9% reflect, 1080/59.94i) F12 (2,000 lx, 3,200 K, 89.9% reflect, 1080/50i)
Minimum Subject Illumination:	0.2 lx (F2.8, gain 18 dB, [1/2 sec.], [HIGH SENS.] mode)
Digital Zoom:	2x/5x/10x, i.Zoom (1.0x to 1.54x, variable zoom)
Lens Hood:	Hood with lens cover

## Memory Card Recorder

Recording Media:	SDHC memory card (4 GB to 32 GB), SDXC memory card (48 GB to 128 GB), UHS-I supported *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.
Recording Slot:	Slot x 2
System Format:	59.94 Hz / 50 Hz
Motion Picture Recording:	Recording Format: MOV, MP4, AVCHD Recording Mode: *Please see the Video record mode table.
Still Picture Recording:	JPEG (DCF/Exif2.2) supported 8.8M: 4096 x 2160 (17:9), 8.3M: 3840 x 2160 (16:9), 2.1M: 1920 x 1080 (16:9), 0.2M: 640 x 360 (16:9), 0.3M: 640 x 480 (4:3)

## Digital Video

Video Signal for External Output:	8 bit 4:2:2/10 bit 4:2:2 (switchable menu) *Output of UHD/59.94p/50.00p becomes 8 bit 4:2:0. When 10 bit 4:2:2 is selected, recording is not possible with the main unit.
Recording Video Signal:	8 bit 4:2:0
Video Compression Format:	MPEG-4 AVC/H.264 High Profile (MOV/MP4/AVCHD)

## Digital Audio

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

## Dual Codec

Recording Method:	MOV, MP4
Video Compression Format:	MPEG-4 AVC/H.264 High Profile
Audio Compression Format:	LPCM
Recording Format:	When [Dual Codec] = FHD 50 Mbps [Main Recorder] Recording mode = MOV/MP4 <ul style="list-style-type: none"> <li>UHD/29.97p/25.00p/23.98p 100 Mbps</li> </ul> [Sub Recorder] Recording mode = Same as the recording mode and the frame rate of the main recorder <ul style="list-style-type: none"> <li>FHD/29.97p/25.00p/23.98p 50Mbps</li> </ul>

Recording Format:	When [Dual Codec] = FHD 8 Mbps [Main Recorder] Recording mode = MOV/MP4 <ul style="list-style-type: none"> <li>UHD/29.97p/25.00p/23.98p 100 Mbps</li> <li>FHD/59.94p/50.00p/29.97p/25.00p/23.98p 200 Mbps</li> <li>FHD/59.94p/50.00p 100 Mbps</li> </ul> [Sub Recorder] Recording mode = MOV <ul style="list-style-type: none"> <li>FHD/59.94p/50.00p/29.97p/25.00p/23.98p 8 Mbps</li> </ul>
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## Video Input/Output

SDI OUT:	BNC x1, 0.8 V [p-p], 75 Ω, 3 G/1.5 G HD SDI, SD SDI supported Output format: 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) Output format: 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:	Supports stereo microphone
Audio Input1/Audio Input2:	XLR x 2, 3-pin Input high impedance, LINE/MIC/MIC+48 V (switchable SW) LINE: 4 dBu/0 dBu (switchable menu) MIC: -40 dBu/-50 dBu/-60 dBu (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, 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) 3.5 mm diameter mini jack x1 (FOCUS, IRIS)
TC PRESET IN/OUT:	BNC x 1, Used as the input and output terminals Input: 1.0 V to 4.0 V [p-p], 10 kΩ Output: 2.0 V ±0.5 V [p-p], low impedance
USB HOST:	Type A connector, 9-pin, bus power supported In Recording mode; USB2.0 compatible (5 V, 0.5 A) In Playback mode; USB 3.0 compatible (5 V, 0.9 A), used for external media device connection *External media device with a capacity of 32 GB or below or a capacity above 2 TB cannot be used
USB DEVICE:	Micro-B connector, 10-pin, USB 3.0, Mass storage function (read only)
DC IN:	DC 12 V (11.4 V to 12.6 V), EIAJ type 4
Monitor/Viewfinder	
LCD Monitor:	4.3 type HD color monitor, Approx. 2,760,000 dots
Viewfinder:	0.39 type OLED (organic EL display) Approx. 2,360,000 dots, video display area: approx. 1,770,000 dots

## Included Accessories

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

Weight and dimensions are approximate.  
Specifications are subject to change without notice.  
\*A part of functions are scheduled to be released soon. For details, please visit Panasonic website. (<http://pro-av.panasonic.net/>).  
\*Not available in some areas.

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