

CX SERIES

Preliminary



AVC ULTRA HDR 4K PROFESSIONAL

## AJ-CX4000GJ **NEW** Memory Card Camera Recorder

Scheduled for release  
in December 2019

2/3-type Lens Large size 4.4K 1 MOS 24 bit Audio  
expressP2 card slot x 1 microP2 card slot x 2 Network

### Next-Generation ENG Shoulder Camcorder Supporting 4K/HDR and IP Connection

- Depth of field secured with the B4 lens mount and 2/3-in. image circle.
- Two filter wheels (ND and CC).
- Includes a newly developed large 4.4K image sensor. Sampling exceeding 4K is used to achieve a resolution of 2000 TV lines.
- F10 (60 Hz)/F11 (50 Hz) sensitivity in High Sens. mode.
- Supports HDR (High Dynamic Range)<sup>\*1</sup> image acquisition and outputs SDR<sup>\*2</sup> while acquiring HDR.
- Multi-formats: MOV (4K/HD) and P2 MXF<sup>\*3</sup> (HD only).
- New HEVC Codec 100 Mbps mode for ENG (4K 60p 4:2:0 10-bit).
- 4:2:2 10-bit recording: 4K up to 30p/25p and HD up to 60p/50p (H.264/AVC, AVC-Intra and AVC-LongG).
- Four-channel 24-bit LPCM audio recording.
- The express P2 card offers ultra high speed offloading.
- Lower running cost media: microP2 card/SDXC memory card.
- Light weight: 7.5 lbs./3.4kg (body only) and excellent weight balance.
- Offers the Direct Streaming function compatible with RTSP, RTMP and RTMPS.<sup>\*4</sup>
- 4K 60p/50p 4:2:2 10-bit output via 12G-SDI out and HDMI out.
- Newly developed built-in LCD monitor of HD720p resolution with touch panel function.
- Newly developed High-contrast monochrome OLED display for the timecode and audio level indicator.
- Includes various network connections: Gigabit Ethernet with locking connector, wireless LAN (option) and USB 3.0 connector.
- NDI|HX compatibility (requires license purchase).<sup>\*5</sup>
- Wireless remote from an ROP App (iOS/Android).<sup>\*6</sup>

CX SERIES



AVC ULTRA HDR 4K PROFESSIONAL

## AG-CX350 **NEW** Memory Card Camera Recorder

Integrated Lens System (Optical 20x Zoom) 1.0-type MOS  
24 bit Audio SD Memory Card Slot x 2 Network

### High-End Handheld Camcorder Supporting 4K/HDR, IP Control and Streaming.

- Wide angle 24.5 mm, 20x optical zoom lens with three manual rings.
- New high-definition, high-sensitivity 1.0-type 15M MOS sensor.
- Supports HDR (High Dynamic Range)<sup>\*1</sup> image acquisition and outputs SDR<sup>\*2</sup> while acquiring HDR.
- New HEVC Codec 100 Mbps mode for ENG (4K 60p 4:2:0 10-bit).<sup>\*3</sup>
- Multi-formats: MOV (4K/HD), AVCHD (HD/SD) and P2 MXF<sup>\*3</sup> (HD).
- 4:2:2 10-bit recording: 4K up to 30p/25p and HD up to 60p/50p (H.264/AVC, AVC-Intra and AVC-LongG).
- Variable frame rate up to 120 fps (100 fps) of FHD, 60 fps (50 fps) of 4K.
- New microdrive focus unit provides a high-speed, high-precision Intelligent AF.
- Advanced hand-shake correction with ball OIS system, and 5-axis Hybrid Image Stabilizer. (FHD only)
- Two memory card slots boost recording reliability: Background Recording, Relay Recording, Simultaneous Recording.
- Offers the Direct Streaming function compatible with RTSP, RTMP and RTMPS.<sup>\*4</sup>
- NDI|HX compatibility (requires license purchase).<sup>\*5</sup>
- Broadcast-grade picture adjustment functions, such as 16-axis independent color correction.
- Parallel output of SDI, HDMI and LCD and individual HDR/SDR setting.
- Four-channel 24-bit LPCM Audio recording.
- Simultaneous display on high-brightness, high-definition LCD and high-resolution OLED EVF.
- Wireless remote from an ROP App (iOS/Android).<sup>\*6</sup>

<sup>\*1</sup>: The HLG specification was developed jointly by Japanese broadcaster NHK and the BBC in the UK. It is defined in ARIB STD-B67 and ITU Rec. 2100.  
<sup>\*2</sup>: SDR image is output with monitor gamma. <sup>\*3</sup>: To be supported within 2019. <sup>\*4</sup>: P2 Network Setting Software is required for using the RTMP and RTMPS functions. See the "Connectivity-verified live video services" section for live video streaming services with confirmed compatibility.

New CX Series Delivers Next-Generation Creativity and Connectivity



HDR (High Dynamic Range) Image

4K/HDR Image Acquisition

Equipped with a new, high-definition, high-sensitivity MOS sensor, the CX Series supports multi-formats, such as 4K (UHD: 3840x2160), FHD, HD, and SD. It also features HLG (Hybrid Log Gamma)<sup>\*1</sup> to support HDR (High Dynamic Range) image acquisition. When shooting in HLG, it can be used to monitor and output SDR images.

Easy IP Connection, NDI |HX Compatibility

The CX Series is the industry's first camcorder to support NDI |HX.<sup>\*5</sup> Equipped with an NDI |HX mode, it allows video transmission and camera control via IP connection, without using an external converter. When connected to a system configured with PTZ cameras, it enables end-to-end video production of live events and web distribution.

RTSP/RTMP/RTMPS-Compatible HD Streaming

HD streaming is possible while images are being acquired,<sup>\*7</sup> and RTSP, RTMP and RTMPS streaming methods are compatible.<sup>\*4</sup> Facebook, YouTube, and other streaming services are also supported. This allows the CX Series to be used for live coverage of concerts and sports events as well as for live streaming of breaking news. Multicast streaming is also supported.<sup>\*3</sup>

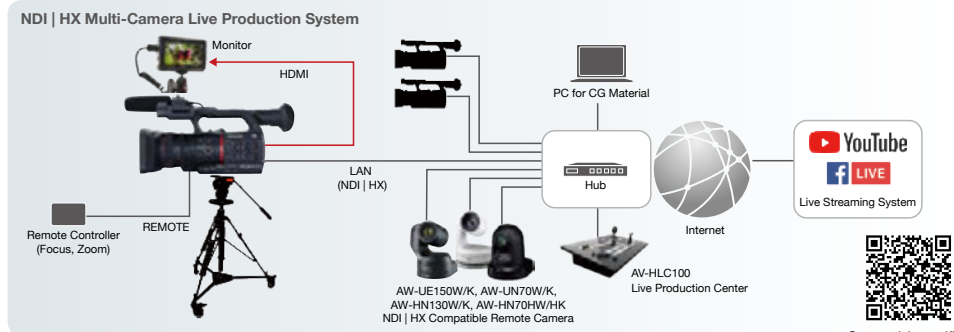
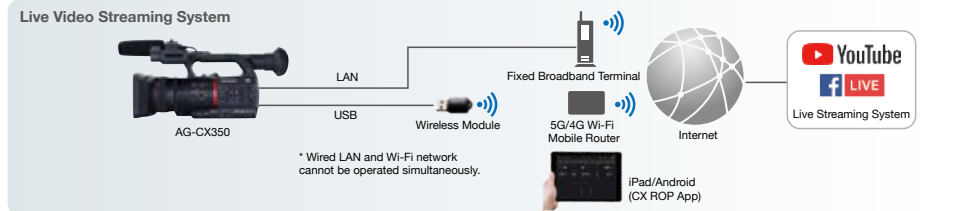


MOV/P2 MXF File Formats Supported

The CX Series records MOV files that are highly compatible and easy to use. It also supports the MXF P2 file format for broadcasting, enabling AVC-Intra or AVC-LongG HD recording.<sup>\*3</sup>

10-bit 4:2:2 Recording or New HEVC Codec

The CX Series is capable of recording in various formats at different compression rates (see the table below). It can record high-image-quality 10-bit 4:2:2, 4K 30p/25p, and HD 60p/50p. The new HEVC Codec achieves high-quality 4K 60p/50p, 10-bit 4:2:0 at a bit rate of 100 Mbps for playback using the free VLC Media Player or QuickTime Player on a notebook PC or MacBook.<sup>\*8</sup>



Connectivity-verified Live Video Services



Operating Instruction Manual

\*5: 4K image output not supported in NDI |HX mode. To use this function, an activation keycode from NewTek is required. Keycodes can be purchased from the following website: [http://new.tk/ndi\\_panasonic](http://new.tk/ndi_panasonic) \*6: iPad: iOS 9 or later is supported. Android devices: Android 5.0 or later is supported. Wireless module (sold separately): AJ-WM50/WM50G or recommended third-party Wi-Fi dongle) is required. \*7: There are some conditions under which streaming is not possible, such as when recording in UHD format or using NDI|HX mode. Please see the Operating Instruction Manual for details. \*8: To be supported within 2019. AVC-Intra200/100/50 codec will be supported in the future. Use a microP2 card for recording in P2 format.\*9: Playback may lack smoothness depending on the PC environment, such as storage and memory devices.

# CX series Recording Format

## AG-CX350 Recording Format

| Recording Format |     | Pixels              | Color Sampling | Bit Depth                             | Bit Rate | File Format    | VFR*2                               | Audio   |
|------------------|-----|---------------------|----------------|---------------------------------------|----------|----------------|-------------------------------------|---|
| MOV<br>(HEVC)    |     | HEVC LongGOP 200M   | 3840 x 2160    | 4:2:0                                 | 10 bit   | 200 Mbps (VBR) | 59.94p, 50p                         | 24 bit<br>LPCM  |
|                  |     | HEVC LongGOP 150M   | 3840 x 2160    | 4:2:0                                 | 10 bit   | 150 Mbps (VBR) | 29.97p, 25p, 23.98p                 |   |
|                  |     | HEVC LongGOP 100M*1 | 3840 x 2160    | 4:2:0                                 | 10 bit   | 100 Mbps (VBR) | 59.94p, 50p                         |   |
| MOV<br>(AVC)     | UHD | 422ALL-I 400M       | 3840 x 2160    | 4:2:2                                 | 10 bit   | 400 Mbps (VBR) | 29.97p, 25p, 23.98p                 | 1 to 30 fps [25 fps]  |
|                  |     | 422LongGOP 150M     | 3840 x 2160    | 4:2:2                                 | 10 bit   | 150 Mbps (VBR) | 29.97p, 25p, 23.98p                 | 1 to 30 fps [25 fps]  |
|                  |     | 420LongGOP 150M     | 3840 x 2160    | 4:2:0                                 | 8 bit    | 150 Mbps (VBR) | 59.94p, 50p                         | 1 to 60 fps [50 fps]<br>(Max. 150 Mbps)                                     |
|                  |     | 420LongGOP 100M     | 3840 x 2160    | 4:2:0                                 | 8 bit    | 100 Mbps (VBR) | 29.97p, 25p, 23.98p                 | 1 to 60 fps [50 fps]<br>(Max. 150 Mbps)                                     |
|                  | FHD | 422ALL-I 200M       | 1920 x 1080    | 4:2:2                                 | 10 bit   | 200 Mbps (VBR) | 59.94p, 50p                         | 1 to 60 fps [50 fps]<br>Super Slow:<br>120 fps [100 fps]<br>(Max. 400 Mbps) |
|                  |     | 422ALL-I 100M       | 1920 x 1080    | 4:2:2                                 | 10 bit   | 100 Mbps (VBR) | 29.97p, 25p, 23.98p,<br>59.94i, 50i | 1 to 60 fps [50 fps]<br>Super Slow:<br>120 fps [100 fps]<br>(Max. 200 Mbps) |
|                  |     | 422LongGOP 100M     | 1920 x 1080    | 4:2:2                                 | 10 bit   | 100 Mbps (VBR) | 59.94p, 50p                         | 1 to 60 fps [50 fps]<br>Super Slow:<br>120 fps [100 fps]<br>(Max. 200 Mbps) |
| AVCHD            |     | PS                  | 1920 x 1080    | 4:2:0                                 | 8 bit    | 25 Mbps (VBR)  | 59.94p, 50p                         | Dolby<br>Audio  |
|                  |     | PH                  | 1920 x 1080    | 4:2:0                                 | 8 bit    | 21 Mbps (VBR)  | 23.98p, 59.94i, 50i                 |   |
|                  |     | HA                  | 1920 x 1080    | 4:2:0                                 | 8 bit    | 17 Mbps (VBR)  | 59.94i, 50i                         |   |
|                  | HD  | PM                  | 1280 x 720     | 4:2:0                                 | 8 bit    | 8 Mbps (VBR)   | 59.94p, 50p                         |   |
|                  |     | SD                  | SA             | 720 x 480 (59.94i)<br>720 x 576 (50i) | 4:2:0    | 8 bit          | 9 Mbps (VBR)                        |   |
| P2*1<br>(MXF)    | FHD | AVC-Intra422*1      | 1920 x 1080    | 4:2:2                                 | 10 bit   | 200 Mbps (CBR) | 59.94p, 50p                         | 24 bit<br>LPCM  |
|                  |     | AVC-LongG50*1       | 1920 x 1080    | 4:2:2                                 | 10 bit   | 50 Mbps (VBR)  | 59.94i, 50i                         |   |
|                  |     | AVC-LongG25*1       | 1920 x 1080    | 4:2:2                                 | 10 bit   | 25 Mbps (VBR)  | 59.94p, 50p, 59.94i,<br>50i         | 16 bit<br>LPCM  |
|                  |     | AVC-LongG12*1       | 1920 x 1080    | 4:2:0                                 | 8 bit    | 12 Mbps (VBR)  | 59.94p, 50p, 59.94i,<br>50i         |   |
|                  | HD  | AVC-LongG50*1       | 1280 x 720     | 4:2:2                                 | 10 bit   | 50 Mbps (VBR)  | 59.94p, 50p                         |   |
|                  |     | AVC-LongG25*1       | 1280 x 720     | 4:2:2                                 | 10 bit   | 25 Mbps (VBR)  | 59.94p, 50p                         | 24 bit<br>LPCM  |
|                  |     | AVC-LongG12*1       | 1280 x 720     | 4:2:0                                 | 8 bit    | 12 Mbps (VBR)  | 59.94p, 50p                         | 16 bit<br>LPCM  |

\*1: To be supported within 2019.

\*2: VFR is supported only in Progressive mode. Square brackets [ ] indicate a system frequency of 50.00 Hz.

AG-CX350 Options



**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



**AJ-P2M064BG**  
Memory Card  
"microP2 card B series"



SDXC/SDHC/SD Memory Card\*1



**AJ-WM50**  
**AJ-WM50G** **NEW**  
Wireless Module\*2  
\* Not available in some areas.



Connection Confirmed  
Wireless Module\*2  
(including third-party products)



\*2: A version upgrade may be required for the software version of the camera recorder. For details please visit Panasonic website ([https://pro-av.panasonic.net/en/sales\\_o/p2/server/wireless\\_module.html](https://pro-av.panasonic.net/en/sales_o/p2/server/wireless_module.html))

\*1: 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 Mbps.

AG-CX350 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.

AG-CX350 Available Memory Card

| Format | Memory Card Type                           | Bit Rate / Recording Function                     | Speed Class  |
|--------|--|---|--|
| MOV    | SDXC memory card/<br>microP2 card B series | 400 Mbps  | Video Speed Class V60 or faster  |
|        |  | FHD ALL-I VFR mode                                |  |
|        |  | 200 Mbps  | Video Speed Class V30<br>UHS Speed Class 3 or faster                   |
|        |  | 150 Mbps  |  |
|        |  | 100 Mbps  |  |
|        |  | FHD LongG VFR mode                                |  |
|        | microP2 card A series<br>(64 GB)           | 50 Mbps   | Video Speed Class V10<br>UHS Speed Class 1<br>Speed Class 10 or faster |
| AVCHD  | SDHC/SDXC memory card/microP2 card         | All   | Speed Class 4 or faster  |
| P2*    | microP2 card                               | All P2 recording modes supported by the AG-CX350* | —  |

\*To be supported within 2019.

## AG-CX350

### General

|                        |   |
|------------------------|---|
| Power:                 | DC 7.28 V (when the battery is used)<br>DC 12 V (when the AC adaptor is used)   |
| Power Consumption:     | 17 W (when the LCD monitor is used)<br>11.5 W (1080i / 422ALL-I 100M recording, when the LCD monitor is used, no external device connection)  |
| 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) (body only, excluding lens hood, battery, and accessories)<br>Shooting: approx. 2.3 kg (5.07 lb) (including lens hood, battery, and microphone holder) |
| Dimensions:            | 180 mm (W) x 173 mm (H) x 311 mm (D)<br>(7-1/8 inches x 6-13/16 inches x 12-1/4 inches) (excluding protrusion and eye cup)  |

### Camera Unit

|                               |  |
|-------------------------------|--|
| Pickup Device:                | 1.0-type (effective size)<br>MOS solid state image sensor  |
| Effective Pixels:             | 15,030,000 pixel   |
| Lens:                         | Optical image stabilizer lens, optical 20x motorized zoom<br>F value: F2.8 to F4.5<br>Focal length: f=8.8 mm to 176 mm<br>35 mm equivalent: 24.5 mm to 490 mm<br>Filter Diameter: 67 mm<br>ND Filter: Clear, 1/4, 1/16, 1/64<br>IR Filter: Incorporates the ON/OFF control function<br>Shortest Shooting Distance (M.O.D.):<br>Approx. 10 cm (W), 1.0 m (T) from the front lens  |
| Gain Setting:                 | L/M/H selector switch<br>-3 dB to 18 dB (Adjustable in 1 dB steps)<br>24dB, 30 dB, 36 dB switched<br>(when assigning [S. GAIN] to the USER button)   |
| 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:                | When [SYSTEM MODE] = 59.94 Hz<br><ul style="list-style-type: none"> <li>59.94i/59.94p mode: <ul style="list-style-type: none"> <li>1/60 sec. (shutter off), 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/8000 sec., 1/10000 sec.</li> <li>29.97p mode: <ul style="list-style-type: none"> <li>1/30 sec., 1/50 sec. (shutter off), 1/60 sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/8000 sec., 1/10000 sec.</li> <li>23.98p mode: <ul style="list-style-type: none"> <li>1/24 sec., 1/48 sec., 1/50 sec. (shutter off), 1/60 sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/8000 sec., 1/10000 sec.</li> </ul> </li> </ul> </li> <li>50i/50p mode: <ul style="list-style-type: none"> <li>1/50 sec. (shutter off), 1/60 sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/8000 sec., 1/10000 sec.</li> <li>25p mode: <ul style="list-style-type: none"> <li>1/25 sec., 1/50 sec. (shutter off), 1/60 sec., 1/100 sec., 1/120 sec., 1/250 sec., 1/500 sec., 1/1000 sec., 1/2000 sec., 1/4000 sec., 1/8000 sec., 1/10000 sec.</li> </ul> </li> </ul> </li> </ul> </li></ul> |
| Shutter Speed: (Slow Shutter) | When [SYSTEM MODE] = 59.94 Hz<br><ul style="list-style-type: none"> <li>59.94i/59.94p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/15 sec., 1/30 sec.</li> <li>29.97p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/15 sec.</li> <li>23.98p mode: <ul style="list-style-type: none"> <li>1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/12 sec.</li> </ul> </li> </ul> When [SYSTEM MODE] = 50.00 Hz<br><ul style="list-style-type: none"> <li>50i/50p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/12 sec., 1/25 sec.</li> <li>25p mode: 1/1 sec., 1/2 sec., 1/4 sec., 1/6 sec., 1/12 sec.</li> </ul>  |

|                               |   |
|-------------------------------|---|
| Shutter Speed: (Synchro Scan) | When [SYSTEM MODE] = 59.94 Hz<br><ul style="list-style-type: none"> <li>59.94i/59.94p mode: 1/60.0 sec. to 1/7200 sec.</li> <li>29.97p mode: 1/30.0 sec. to 1/7200 sec.</li> <li>23.98p mode: 1/24.0 sec. to 1/7200 sec.</li> </ul> When [SYSTEM MODE] = 50.00 Hz<br><ul style="list-style-type: none"> <li>50i/50p mode: 1/50.0 sec. to 1/7200 sec.</li> <li>25p mode: 1/25.0 sec. to 1/7200 sec.</li> </ul> |
| Shutter Open Angle:           | 3.0 deg to 180.0 deg to 360.0 deg<br>(in 0.5 deg steps)   |
| VFR Recording Frame Rate:     | When [SYSTEM MODE] = 59.94 Hz<br>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>When [SYSTEM MODE] = 50.00 Hz<br>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)  |
| Super Slow Recording:         | When [SYSTEM MODE] = 59.94 Hz<br>1920 x 1080 (FHD): shooting frame rate 120 fps<br>When [SYSTEM MODE] = 50.00 Hz<br>1920 x 1080 (FHD): shooting frame rate 100 fps  |
| Sensitivity:                  | When [HIGH SENS.] mode<br>F12 (2000 K, 3200 K, 89.9 % reflect, 2160/59.94p, 1080/59.94i)<br>F13 (2000 K, 3200 K, 89.9 % reflect, 2160/50p, 1080/50i)  |
| Horizontal Resolution:        | 2000 TV or higher (UHD: center)<br>1000 TV or higher (FHD: center)  |
| i.Zoom:                       | x 32 (FHD), x 24 (UHD)  |
| Digital Zoom:                 | x 2 / x 5 / x 10  |
| Lens Hood:                    | Hood with lens cover  |

### Memory Card Recorder

|                              |  |
|------------------------------|--|
| Recording Media:             | SDHC memory card (4 GB to 32 GB), SDXC memory card (32 GB to 128 GB)<br>UHS-I/UHS-II UHS Speed Class3 supported, Video Speed Class V90 supported<br>microP2 card (A series, B series)<br>Please see 36 page for the "Available Memory Card" table. |
| Recording Slot:              | microP2/SDXC UHS-II card slot x 2  |
| Recording Pixels:            | 3840 x 2160 (UHD), 1920 x 1080 (FHD), 1280 x 720 (HD), 720 x 480 (SD), 720 x 576 (SD)  |
| System Frequency:            | 59.94 Hz/50.00 Hz  |
| Recording File Format:       | MOV (AVC), MOV (HEVC), AVCHD, P2 MXF*1   |
| Recording Format:            | Please see page 35 for the "Recording Format" table.   |
| Recording Time:              | Please see page 38 for the "Recording Format" table.   |
| 2 Slot Functions:            | Relay Rec, Simultaneous Rec, Background Rec  |
| Special Recording Functions: | Pre Rec, Interval Rec, Time Stamp  |

### Digital Video

|                           |   |
|---------------------------|---|
| Quantization:             | MOV: 4:2:2 10 bit/4:2:0 8 bit/4:2:0 10 bit (HEVC)<br>AVCHD: 4:2:0 8 bit<br>P2*1: 4:2:2 10 bit/4:2:0 8 bit (AVC-LongG12)   |
| Video Compression Format: | MOV: H.264/MPEG-4 AVC High Profile, H.265/MPEG-H HEVC Main10 Profile<br>P2*1: AVC-Intra422/AVC-LongG 50/ AVC-LongG25/<br>AVC-LongG12: MPEG-4 AVC/H.264 High Profile |

### Digital Audio

|                         |  |
|-------------------------|--|
| Recording Audio Signal: | MOV: 48 kHz/24 bit, 2 ch, Linear PCM<br>AVCHD: 48 kHz/16 bit, 2 ch, Dolby Audio™<br>P2*1: 48 kHz/24 bit, 4 ch, Linear PCM<br>(In AVC-LongG12, 48 kHz/16 bit, 4 ch) |
| Headroom:               | 12 dB/18 dB/20 dB switchable (menu)  |

## Live Streaming

|                           |  |
|---------------------------|--|
| Video Compression Format: | H.264/MPEG-4 AVC Main Profile, High Profile  |
| Video Resolution:         | 1920 x 1080 (FHD), 1280 x 720 (HD),<br>640 x 360, 360 x 180  |
| Streaming Method:         | Unicast, Multicast**   |
| Frame Rate:               | System frequency = 59.94 Hz: 30 fps, 60 fps<br>System frequency = 50.00 Hz: 25 fps, 50 fps                             |
| Bit Rate:                 | 24 Mbps, 20 Mbps, 16 Mbps, 14 Mbps, 8 Mbps,<br>6 Mbps, 4 Mbps, 3 Mbps, 2 Mbps, 1.5 Mbps,<br>1 Mbps, 0.7 Mbps, 0.5 Mbps |
| Audio Compression Format: | AAC-LC, 48 kHz/16 bit, 2 ch  |
| Network Protocol:         | RTSP/RTP/RTMP/RTMPS  |

## Video Output

|                       |  |
|-----------------------|--|
| SDI OUT:              | BNC x 1, SDI REC REMOTE supported<br>HD: 0.8 V [p-p], 75 Ω SD: 0.8 V [p-p], 75 Ω,<br>Output format (4:2:2 10 bit):<br>• 1920 x 1080: 59.94p, 50p, 59.94i, 50i,<br>29.97Psf, 25Psf, 23.98Psf<br>• 1280 x 720: 59.94p, 50p<br>• 720 x 480: 59.94i • 720 x 576: 50i |
| HDMI OUT : supported, | HDMI x 1, Type A, HDMI REC REMOTE<br><br>VIERA Link not supported<br>Output format (4:2:2 10 bit):<br>• 3840 x 2160: 59.94p, 50p, 29.97p, 25p,   |
| 23.98p                | • 1920 x 1080: 59.94p, 50p, 59.94i, 50i, 29.97p,   |
| 25p, 23.98p           | • 1280 x 720: 59.94p, 50p<br>• 720 x 480: 59.94p • 720 x 576: 50p  |
| VIDEO OUT:            | 3.5 mm diameter mini jack,<br>composite 1.0 V [p-p], 75 Ω  |

## Audio Input/Output

|                      |   |
|----------------------|---|
| Build-in Microphone: | Stereo microphone   |
| Input 1/2:           | XLR (3-pin) x 2 (INPUT1, INPUT2)<br>Input high impedance,<br>LINE/MIC/MIC+48V (switchable SW)<br>MIC: -40 dBu/-50 dBu/-60 dBu (switchable menu)<br>LINE: +4 dBu/0 dBu (switchable menu) |
| SDI OUT:             | Linear PCM 4 ch   |
| HDMI OUT:            | Linear PCM 2 ch   |
| Headphone:           | 3.5 mm diameter stereo mini jack x 1  |
| AV OUT:              | 3.5 mm diameter stereo mini jack x 1,<br>Output level: 600 Ω, 316 mV  |
| Speaker:             | 20 mm diameter, round x 1   |

## Recording Time

| Recording Format |              | 64 GB Memory Card | 128 GB Memory Card       |
|------------------|--------------|-------------------|--------------------------|
| MOV (AVC, HEVC)  | UHD          | 400 Mbps          | Approx. 20 min.          |
|                  |              | 200 Mbps          | Approx. 40 min.          |
|                  |              | 150 Mbps          | Approx. 55 min.          |
|                  |              | 100 Mbps          | Approx. 1 hour 20 min.   |
|                  | FHD          | 100 Mbps          | Approx. 1 hour 20 min.   |
|                  |              | 50 Mbps           | Approx. 2 hours 40 min.  |
| AVCHD            | PS           | 25 Mbps           | Approx. 5 hours 20 min.  |
|                  | PH           | 21 Mbps           | Approx. 6 hours          |
|                  | HA           | 17 Mbps           | Approx. 8 hours 30 min.  |
|                  | PM           | 8 Mbps            | Approx. 17 hours 10 min. |
|                  | SA           | 9 Mbps            | Approx. 16 hours 30 min. |
| P2*              | AVC-Intra422 | 200 Mbps          | Approx. 32 min.          |
|                  | AVC-LongG50  | 50 Mbps           | Approx. 2 hours 8 min.   |
|                  | AVC-LongG25  | 25 Mbps           | Approx. 4 hours 16 min.  |
|                  | AVC-LongG12  | 12 Mbps           | Approx. 8 hours          |

\*To be supported within 2019.

## Other Input/Output

|                 |   |
|-----------------|---|
| TC IN/OUT:      | BNC x 1,<br>Used as the input and output terminals<br>(switchable menu)<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   |
| REMOTE:         | 2.5 mm diameter super mini jack   |
| LAN:            | RJ-45: 1000BASE-T/100BASE-TX/10BASE-T<br>NDI   HX supported*<br>*To use this function, an activation keycode from NewTek is required. Keycodes can be purchased from the following website: <a href="http://new.tk/ndi_panasonic">http://new.tk/ndi_panasonic</a> |
| USB 2.0 HOST:   | Type-A,<br>4-pin (5 V, 0.5 A) for Wireless Module (option)  |
| USB 3.0 DEVICE: | USB 3.1 GEN1 Type-C,<br>USB Mass storage function<br>No USB bus power function  |
| DC IN 12V:      | DC 12 V EIAJ Type 4   |

## Monitor/Viewfinder

|              |  |
|--------------|--|
| LCD Monitor: | 3.5 type TFTLCD color monitor (3:2),<br>approx. 1,620,000 dots, Touch panel<br>video display (16: 9) area:<br>Approx. 1,370,000 dots |
| Viewfinder:  | 0.39 type OLED (organic EL display),<br>approx. 2,360,000 dots,<br>video display (16: 9) area:<br>approx. 1,770,000 dots             |

## Included Accessories

Battery (AG-VBR59), Battery charger (AG-BRD50), AC adaptor, AC cable, Microphone holder kit, Shoulder strap, Eye cup, Lens hood\*, Grip belt\* and Operating Instructions (Items marked by an asterisk (\*) come already attached to the camera)

\*To be supported within 2019.