Panasonic

4K Camcorder
ULTRA HD

Panasonic
www.panasonic.com

HC-X1000 4K Ultra High Definition Camcorder

Preliminary

4K ULTRA HD LEICA DICOMAR

Be Ready for 4K

Actual Size

4K Ultra High Definition Video Recording with Mobility

The HC-X1000 is the world's first* camcorder capable of recording 4K 60p/50p images onto an SD card. It supports various recording formats, like 4K/Cinema 4K/Full-HD, frame rates including 60p/50p/24p and a host of professional functions. Its 4K resolution produces stunning, lifelike images, and its compact body adds agile mobility. Ideal for professionals shooting documentaries and events.
Are you ready to enter the 4K era? Here's the perfect way to do it!

*As of September 3rd, 2014

High Performance 4K 60p/50p Video Recording

4K Video Recording

With four times the resolution of Full-HD, the HC-X1000 records in 4K (3,840 x 2,160) and Cinema 4K (4,096 x 2,160) formats. This delivers true-to-life images for a wide variety of shooting situations, in extremely high detail.

Full-HD Resolution

4K Resolution

4K 60p/50p Video Recording

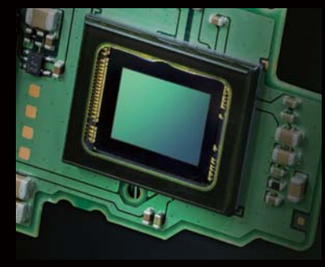
Incredible 4K image quality is achieved at 60p/50p. Using 60p/50p the video frame rate has double the information compared to 30p/25p, meaning smoother motion.

* Microphone is an optional accessory.

Leica Dicomar Lens

This high-performance lens has passed the stringent inspection standards of Leica Camera AG for aspects such as resolution and contrast. In addition to rendering sharp, crisp images, it produces the distinctive nuances and subtle shading that Leica lenses are renowned for.

1/2.3" BSI Sensor



Increasing the readout speed has made it possible to handle large-volume 4K data at a fast 60 fps/50 fps. This suppresses the rolling shutter distortion that often occurs when shooting moving subjects.

Crystal Engine Pro 4K

This high-speed LSI processes the massive volume of 4K data quickly and accurately. A new noise reduction system achieves clear images with minimal noise even in darkness.

High-Bit-Rate Recording for Both 4K and Full-HD

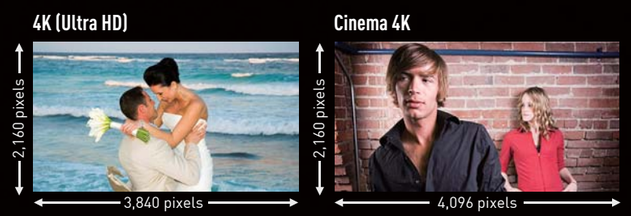
Versatile recording formats and bit rates prepare the HC-X1000 for use in a wide range of applications. The AVCHD recording format is joined by MOV and MP4 for quick and easy editing. Full-HD recording employs ALL-Intra compression for a maximum bit rate of 200 Mbps. This brings outstanding quality to image production.

	Recording Size	Frame Rate	Bit Rate	Compression	Sound	Time Code	Format	
							MOV	MP4
Cinema 4K	4,096 x 2,160	24.00p	100Mbps*1	IPB	LPCM	Yes	✔*2	✔
4K	3,840 x 2,160	59.94p / 50.00p	150Mbps*1				✔*2	✔
		29.97p / 25.00p / 23.98p	100Mbps*1				✔*2	✔
		29.97p / 25.00p			AAC	—	—	✔
High Bit-Rate Full-HD	1,920 x 1,080	59.94p / 50.00p	200Mbps*1	ALL-Intra	LPCM	Yes	✔	✔
		29.97p / 25.00p / 23.98p					✔	✔
		59.94p / 50.00p	100Mbps*1	IPB			✔	✔
			50Mbps				✔	✔
		29.97p / 25.00p / 23.98p					✔	✔
		59.94i / 50.00i					✔*2	✔*2
		59.94p / 50.00p			AAC	—	—	✔

*1 Use SDXC/SDHC Memory Card compatible with UHS Speed Class 3 (U3) when using high bitrate video recording mode of 100 Mbps or greater.
*2 Compatibility will be increased by a firmware update

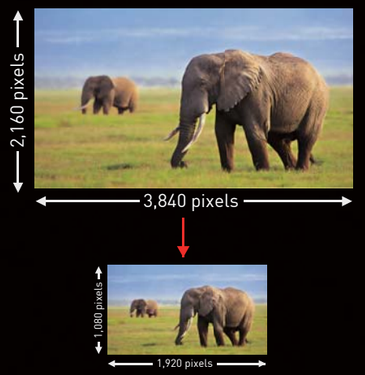
Cinema 4K Recording

The HC-X1000 also meets cinematographer needs because its 4K video supports not only 4K (Ultra HD) resolution (3,840 x 2,160) for TV broadcasting, but also Cinema 4K resolution (4,096 x 2,160) for movie production.



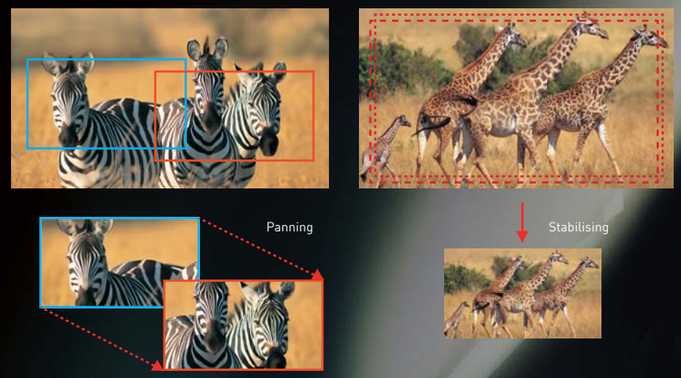
Benefits of Editing from 4K

More Details than Full-HD



4K delivers a far more intense viewing experience than you have seen before. Its native resolution of 3,840 x 2,160 pixels is four times larger than Full-HD, resulting in a much higher level of detail. Even if you export your footage filmed in 4K to Full-HD, the video files will have even better definition and crisper details than those filmed in Full-HD.

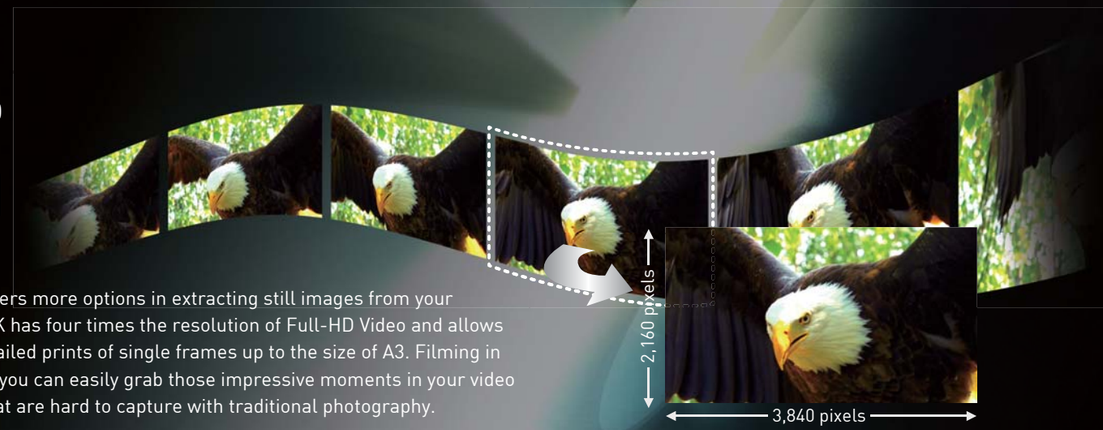
4K Video Editing



Sometimes after filming a great scene we later wish we would have framed our shots a little differently. 4K allows you to crop your composition and choose the perfect frame. You can zoom up to 200 % while maintaining HD picture quality, turn stationary footage into a panning shot, tilt and level your footage and easily stabilise your video. Cropping, zooming, panning, tilting, stabilising — new options in editing 4K footage.

4K Photo

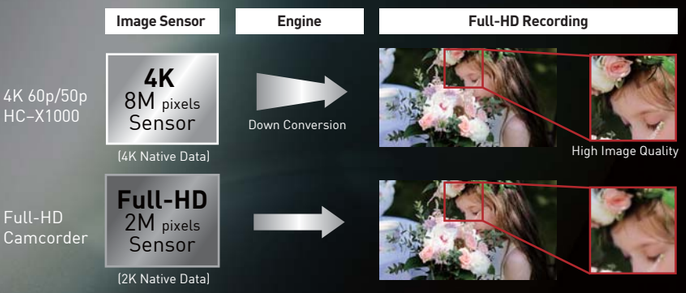
4K PHOTO



4K also offers more options in extracting still images from your footage. 4K has four times the resolution of Full-HD Video and allows sharp, detailed prints of single frames up to the size of A3. Filming in 4K means you can easily grab those impressive moments in your video footage that are hard to capture with traditional photography.

High-Quality Full-HD Video Recording

Full-HD video recording is processed by a 4K 8 megapixels sensor. Compared to the 2 megapixels sensor used on ordinary Full-HD camcorders, this renders high-quality images right down to the finest details, with minimal blurring.



Great Functions for Professional Needs

Compact Body

The low-profile and lightweight unit with XLR terminals located at two different positions, maintains compactness even when mounted with external microphones.

Illuminating LED Ring

The illuminating LED ring allows people to verify more easily that recording is in progress, making the shooting smoother. The user can turn the illumination on or off.

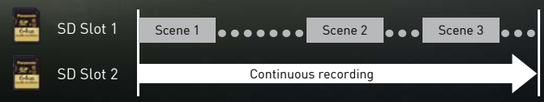
Standby Recording

Operability

Operating ease is enhanced by a host of conveniences, including ergonomic design, covers to prevent operating errors while shooting, and a button layout that's designed for easy use.

Dual SD Card Slot

Background Recording (Full-HD only)



The user can set the SD card in Slot 2 to record continuously from the moment a recording event starts, and record only necessary scenes onto the SD card in Slot 1 by turning REC on and off. This eliminates the worry of not recording important scenes that take place while the REC switch is turned off.

Simultaneous Recording (4K/Full-HD)

Two SD card slots allow to record data at the same time onto both SD cards, so you do not have to worry about losing data.

Auto-Switch Recording (4K/Full-HD)*

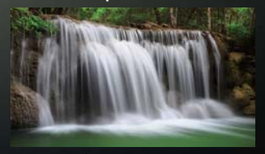
When the first card reaches full capacity, the system automatically and seamlessly switches to the second card.

* The voice is interrupted for approximately one second during device switching.

ND Filter

ND filters are built into the lens to suppress the amount of incident light. The filters can be selected (1/4, 1/16, 1/64, or OFF) to match the shooting environment. This is convenient, for example, when you want to shoot at a slow shutter speed in bright daylight. Also, when opening the aperture, you can attain high resolution and a shallow depth of field.

Slow Shutter Speed



ND Filter 1/64

High-resolution Image

ND Filter 1/16, F2.8

Focus Assist Functions

Focus Expand

This function increases the magnification range up to 10x with multi-function dial control.

Focus Peaking

The focus peak is displayed in colour while manually focusing, for easy, highly detailed focusing. Choose the peaking colour from red, blue, yellow, or white, and set the peaking level in three steps. Used together with Focus Expand, you can check the image areas that are in focus at a glance.

Area Mode Function

You can choose the focus area by touching any part of the screen. AE/AF operation continues at the selected position.

Triple Manual Rings

In spite of the HC-X1000's compact body, features such as a focus ring, zoom ring, and iris ring on the lens barrel meet professional needs. This enables speedy and intuitive camera work.

Tiltable Viewfinder with Eyecup

The 1,226K-dot-equivalent colour viewfinder can be tilted for added convenience. The large eyecup fits either eye comfortably.

2-Channel XLR Audio Input Terminals

The HC-X1000 comes with 2-channel XLR audio input terminals for external mic or line recording. It also has a +48 V phantom power supply. This enables the use of professional-spec, high-performance microphones for recording high-quality sound.

3.5" Slide-Retractable LCD with Touch Operation

This versatile LCD serves as a high-definition, 1,152K-dot monitor and menu-setting touch panel. When not in use, it slides into the front handle for extra mobility and safety. It also rotates 270 degrees vertically for easy high-angle, low-angle and self-interview shooting.

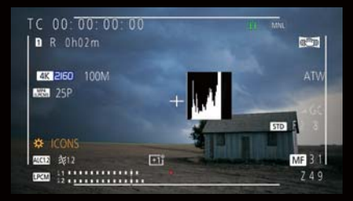
High-Speed, High-Precision AF Technology

Comfortable, higher-quality 4K recording is achieved by maintaining the AF drive frequency at 60 Hz/50 Hz to improve focus speed, stability and tracking performance.

Versatile Functions for Extraordinary Video Performance

Professional Assist Functions

Histogram Display

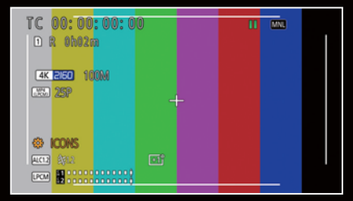


Displays a graph with brightness indicated on the horizontal axis and the number of pixels expressing that brightness level on the vertical axis. More precise exposure adjustment can be made by viewing the histogram.

Zebra-Pattern

A striped pattern appears over excessively bright areas in the viewfinder and LCD, warning you to adjust lighting or exposure.

Colour Bar Monitor



The built-in colour bar monitor enables you to control the colour accuracy. For editing reference, the bar can be included in the recording.

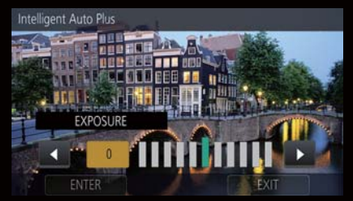
Picture Adjustment

Picture adjustment is possible in many ways — contrast, chroma level, exposure, sharpness etc. This creates natural colouring and delicate nuances.

Level Gauge

Allows camera tilt to be checked by an on screen display on the LCD monitor. This makes it easy to keep the camera level even during handheld, low-angle, and high-angle shooting.

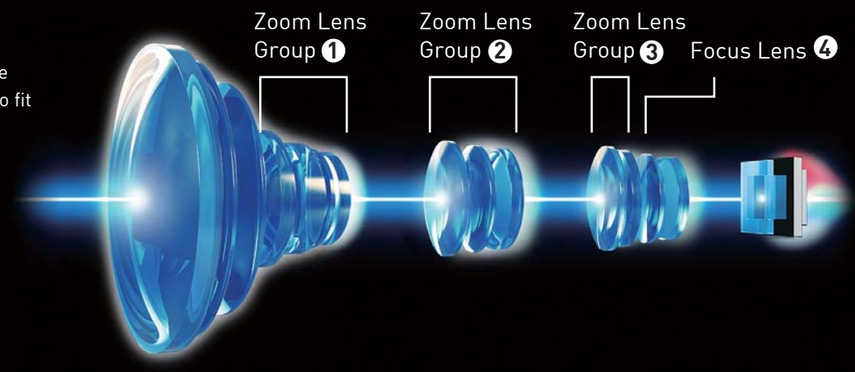
iA/iA Plus



Detects the shooting scene and automatically selects the appropriate scene mode (Landscape, Spotlight, Low Light, or Normal). Using iA Plus also allows brightness and colour adjustment whilst still selecting the appropriate scene mode for you.

20x Optical Zoom with 4-Drive Lens System

Compact lenses and a space-saving drive range are achieved by driving each of the four lens groups separately, to fit a 20x optical zoom in such a compact body. This clearly shows in professional applications, such as sports scenes, captured in 4K detail with the 20x optical zoom.



Wi-Fi Functions with Near Field Communication (NFC)

Remote Shooting

Control and monitor the HC-X1000 in real time from a distance by using the Panasonic Image App on a smartphone or tablet device. This will expand the possibilities of your recording in many ways.

One-touch Connection (NFC)

A simple touch is all it takes to connect your HC-X1000 with your smart device thanks to the NFC standard.

Easy QR Code Connection

QR codes are also provided for use by those who don't have an NFC compatible phone.

POWER O.I.S. for 4K

The gyro sensors detect hand-shake up to 4,000 times/sec to enable the lens to compensate. It offers powerful correction for the slow hand-shake (low-frequency vibration) that is caused by breathing while zooming. This keeps your subject sharp and clear when shooting with the 20x zoom at 4K resolution.

POWER O.I.S. Off

POWER O.I.S. On

5-Axis HYBRID O.I.S. + (Full-HD only)

HYBRID O.I.S. + uses five-axis correction to thoroughly suppress blurring all the way from wide-angle to powerful zoom shots. This lets you capture crisp, clear images, without blurring, in almost every shooting situation.

0 Lux Night Mode

Infrared rays and IR-LED lighting let you shoot in the dark (0 lux). You can shoot clear images even when observing animals at night.

High-Speed HDMI Cable Included

Display high-resolution 4K 60p/50p videos on a 4K VIERA TV by simply connecting the provided high-speed HDMI cable.

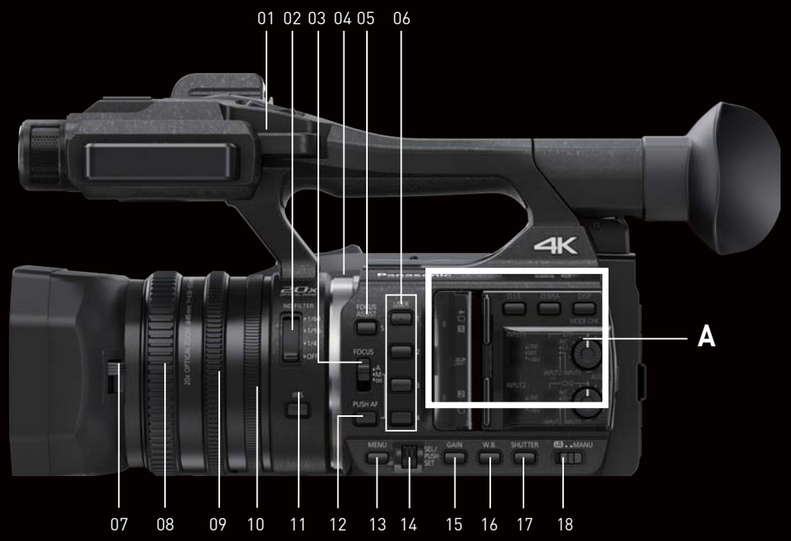
* With HDMI connection to a Full-HD TV, the HC-X1000 can supply down-converted signals.

Downloadable Editing Software (HD-Writer XE2.0)

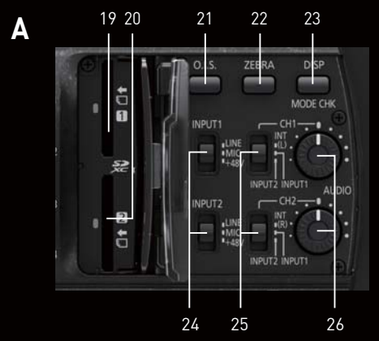
The 4K images that are taken by the HC-X1000 are compatible with a wide variety of nonlinear editing software, such as Apple FinalCutPro X, that is available in the market, but a special software for editing and file management can also be downloaded.

Main Parts and Controls

LEFT

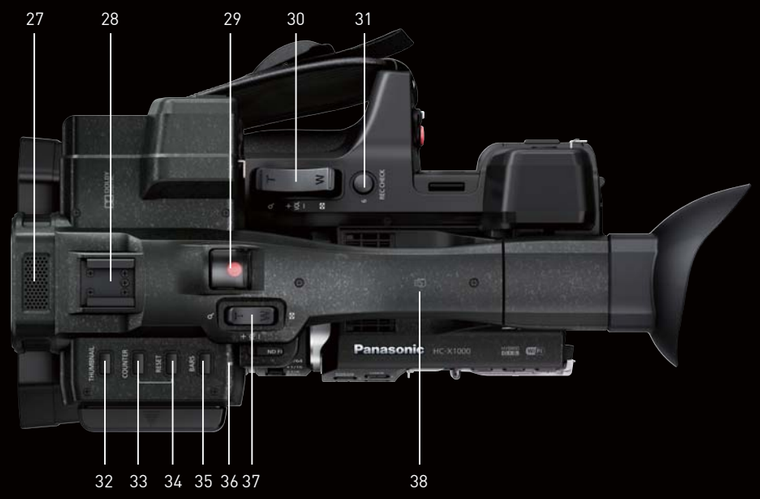


01. Shoulder Strap Fixture
02. ND Filter Switch (1/64, 1/16, 1/4, OFF)
03. Focus Auto/Manual/∞ Switch
04. LED Ring
05. Focus Assist Button/User Button 5
06. User Button 1/2/3/4
07. Lens Cover Open/Close Switch
08. Focus Ring
09. Zoom Ring
10. Iris Ring
11. Iris Button
12. Push AF Button
13. Menu Button
14. Multi-function Dial
15. Gain Button
16. White Balance Button
17. Shutter Button
18. iA/Manual Switch



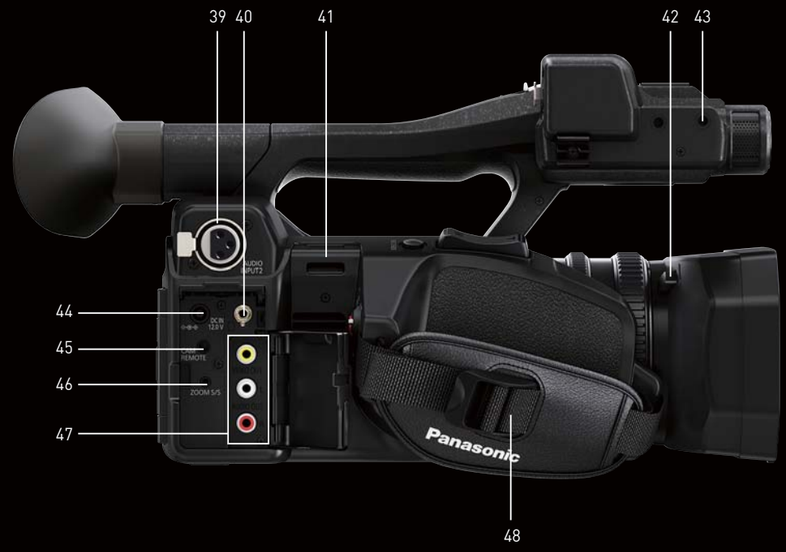
19. SD Card Slot 1
20. SD Card Slot 2
21. O.I.S. Button
22. Zebra Pattern Button
23. Display/Mode Check Button
24. Line/Mic Switches
25. Audio Input Select Switches
26. Audio Control Knobs

TOP



27. Internal Microphones
28. Accessory Shoe
29. Sub Recording Start/Stop Button
30. Zoom Lever (In Recording Mode)
    Volume Lever/Thumbnail Display Switch
    (In Playback Mode)
31. Rec Check Button/User Button 6
32. Thumbnail Button
33. Counter Button
34. Counter Reset Button
35. Colour Bar Monitor Button
36. Recording Lamp (Rear)
37. Sub Zoom Lever
38. NFC Touch Area

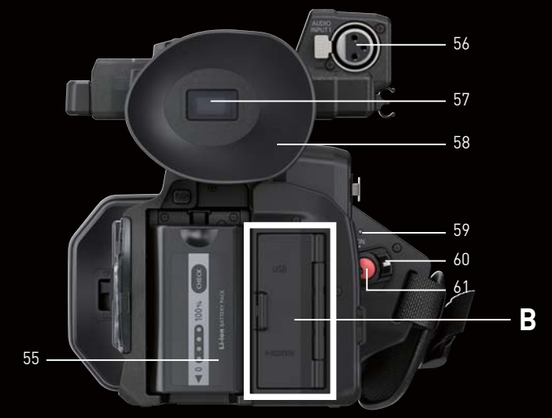
RIGHT

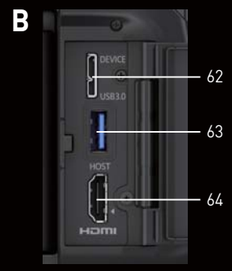


39. XLR Terminal (Audio Input 2)
40. Headphone Terminal
41. Shoulder Strap Fixture
42. Lens Hood Release Button
43. Microphone Holder Attachment Part
44. DC Input Terminal
45. Camera Remote Jack
    (3.5mm mini jack)
46. Zoom Start/Stop Jack
    (2.5 mm super mini jack)
47. Video Out/Audio Out
48. Grip Belt

FRONT & REAR

49. Infrared Light
50. Recording Lamp (Front)
51. Speaker
52. LCD Monitor (Touch Screen)
53. LEICA Dicomar Lens with Lens Cover
54. Lens Hood

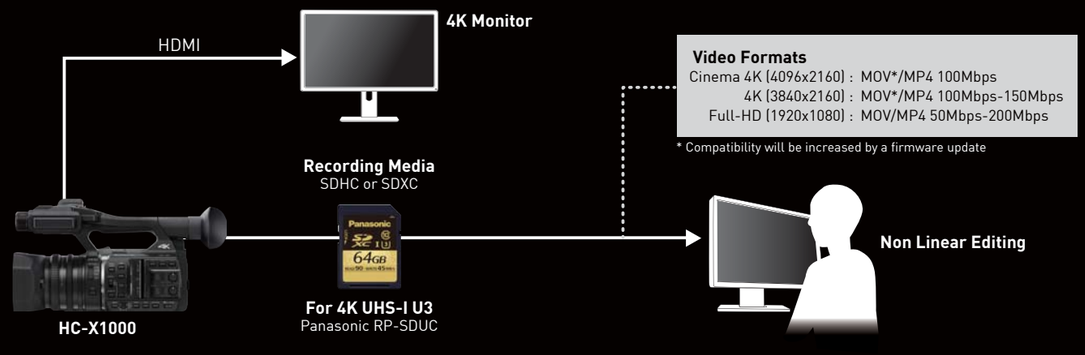




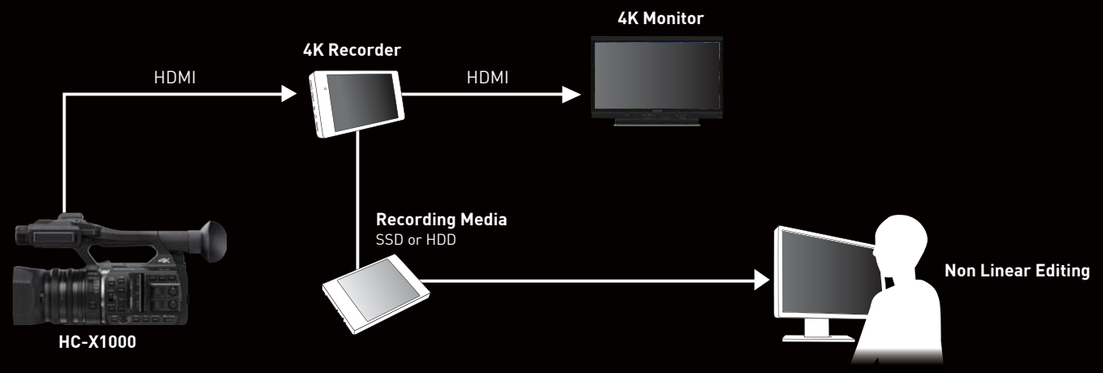
55. Battery
56. XLR Terminal (Audio Input 1)
57. Viewfinder
58. Eye Cup
59. Status Indicator
60. Power Switch
61. Recording Start/Stop Button
62. USB Terminal (USB 3.0 DEVICE)
63. USB Terminal (USB 3.0 HOST)
64. HDMI Connector

4K Workflow Examples

Simple 4K/Full-HD Production



High Picture Quality 4K Production (4K/24p, 25p, 30p)



Optional Accessories

High Capacity Battery Pack

VW-VBD58

CGA-D54 also compatible.

LED Video Light

VW-LED1

Battery Charger

AG-B23

XLR Microphone

AG-MC200G

4K Video Ready SD Memory Card

64GB: RP-SDUC64GAK
32GB: RP-SDUC32GAK
16GB: RP-SDUC16GAK

UHS-I U3 / CLASS 10
Read: up to 90MB/s
Write: up to 45MB/s

•The UHS Speed Class3 (U3) mode write speed is only possible when using with the U3 compliant host devices. •MB/s = 1,000,000 byte/s
•SDHC, SDXC Logos are trademarks of SD-3C,LLC.

Specifications

SENSOR SECTION

Image Sensor	1/2.3-type MOS Sensor (For Europe) 1/2.3" MOS Sensor (For North America / Asia)
Total Pixels	18.47 megapixels
Effective Pixels	8.85 megapixels [17:9], 8.29 megapixels [16:9]

LENS SECTION

F Value	F1.8 — F3.6
Optical Zoom	20x
Focal Length	4.08 — 81.6 mm
35 mm Film Camera Equivalent (Motion Image/Still Image)	29.5 — 600 mm [17:9], 30.8 — 626 mm [16:9]
Filter Diameter	49 mm
Lens Brand	Leica Dicomar Lens

CAMERA SECTION

Standard Illumination		1400 lx
Minimum Illumination		4 lx (Super Gain 30dB, Shutter 1/30)
Focus		Auto / Manual
Zoom	Intelligent Zoom OFF	20x
	Intelligent Zoom ON	40x*
	Digital Zoom	2x / 5x / 10x
ND Filter		1/4, 1/16, 1/64, OFF
White Balance		Auto / 3200K / 5600K / VAR (2400K—9900K) / Ach Fixed / Bch Fixed
Image Stabilizer		C4K/4K: POWER O.I.S. Full-HD or lower: 5-axis HYBRID O.I.S.+ with Active Mode

RECORDING SECTION

Recording Media		SDHC/SDXC Memory Card
Recording Format		MOV (LPCM) / MP4 (LPCM) / MP4 AVCHD: AVCHD Progressive
Video Compression Method		MPEG-4 AVC/H.264
Audio Compression Method		MOV: LPCM (2ch) MP4: LPCM / AAC (2ch) AVCHD: Dolby Digital (2ch)
System Frequency		59.94 Hz / 50.00 Hz
Recording / Playback Mode	MP4	C4K 24p 100M: 4096x2160, Average 100Mbps (VBR), LPCM 4K 60p/50p 150M: 3840x2160, Average 150Mbps (VBR), LPCM 4K 30p/25p 100M: 3840x2160, Average 100Mbps (VBR), LPCM or AAC 4K 24p 100M: 3840x2160, Average 100Mbps (VBR), LPCM FHD 60p/50p 200M (ALL-Intra): 1920x1080, Average 200Mbps (VBR), LPCM FHD 60p/50p 100M: 1920x1080, Average 100Mbps (VBR), LPCM FHD 60p/50p 50M: 1920x1080, Average 50Mbps (VBR), LPCM or AAC FHD 30p/25p 200M (ALL-Intra): 1920x1080, Average 200Mbps (VBR), LPCM FHD 30p/25p 50M: 1920x1080, Average 50Mbps (VBR), LPCM FHD 24p 200M (ALL-Intra): 1920x1080, Average 200Mbps (VBR), LPCM FHD 24p 50M: 1920x1080, Average 50Mbps (VBR), LPCM
	MOV	FHD 60p/50p 200M (ALL-Intra): 1920x1080, Average 200Mbps (VBR), LPCM FHD 60p/50p 100M: 1920x1080, Average 100Mbps (VBR), LPCM FHD 60p/50p 50M: 1920x1080, Average 50Mbps (VBR), LPCM FHD 30p/25p 200M (ALL-Intra): 1920x1080, Average 200Mbps (VBR), LPCM FHD 30p/25p 50M: 1920x1080, Average 50Mbps (VBR), LPCM FHD 24p 200M (ALL-Intra): 1920x1080, Average 200Mbps (VBR), LPCM FHD 24p 50M: 1920x1080, Average 50Mbps (VBR), LPCM
	AVCHD	PS 1080 60p/50p: 1920x1080, Average 28Mbps (VBR) PH 1080 60i/50i: 1920x1080, Average 24Mbps (VBR) HA 1080 60i/50i: 1920x1080, Average 17Mbps (VBR) HE 1080 60i/50i: 1440x1080, Average 5Mbps (VBR) PM 720 60p/50p: 1280x720, Average 8Mbps (VBR)

Thumbnail Display	20 thumbnails/page, 9 thumbnails/page, 1 thumbnail/page
Microphone	Stereo Microphone
Speaker	Dynamic type

STILL IMAGE SECTION

Recording Format	JPEG (DCF/Exif2.2)
Recording Image Size	[17:9] 8.8 megapixels (4,096 x 2,160) [16:9] 8.3 megapixels (3,840 x 2,160), 2.1 megapixels (1,920 x 1,080)

GENERAL SECTION

Power Supply		7.2V (Battery) / 12V (AC Adaptor)
Power Consumption		15.4W (LCD Monitor) / 14.3W (Viewfinder)
Dimensions (W x H x D)		Approx. 160 x 170 x 315 mm (6.3 x 6.69 x 12.4 inch)
Weight (w/o Battery and SD Card)		Approx. 1550g (3.42 lb)
LCD Monitor		8.83 cm (3.5") Wide LCD monitor (1,152,000 dots) (For Europe) 3.5" Wide LCD monitor (1,152,000 dots) (For North America / Asia)
Viewfinder		1.15 cm (0.45") Wide EVF (1,226,880 dots) (For Europe) 0.45" Wide EVF (1,226,880 dots) (For North America / Asia)
Manual Ring		Focus / Zoom / Iris
Interface	AV	Yes
	HDMI	Type A
	XLR Input	XLR (3 pins) x 2 Line:0dBu/+4dBu, Mic:-40dBu/-50dBu/-60dBu
	Headphone	Yes (3.5mm stereo mini)
	USB	Micro-B: USB 3.0 SuperSpeed Type A: USB 3.0 SuperSpeed, Host (for USB HDD**), Bus Power Supply
	Camera Remote	2.5mm super mini jack x 1 (ZOOM S/S) 3.5mm mini jack x 1 (FOCUS/IRIS)
Accessory Shoe		Yes

Wi-Fi

Standard	IEEE 802.11b/g/n
Frequency	2.4 GHz band
NFC	Yes

STANDARD ACCESSORY

AC Adaptor	Yes
AC Cable	Yes (2 Cables)
Rechargeable Battery Pack	Yes (5,800mAh)
Battery Charger	Yes
HDMI Cable	Yes (High Speed HDMI Cable)
USB Cable	Yes
Microphone Holder	Yes
Microphone Holder Screws	Yes (2 Screws)
Input Terminal Cap	Yes (2 Caps)
Shoulder Strap	Yes
Eye Cap	Yes
Editing Software	HD Writer XE2.0 (Downloadable)

* For recording formats with 1,920 x 1,080 resolution or lower. ** USB hard disks with a capacity of 32 GB or less, or more than 2 TB, cannot be used.

AVCHD

• AVCHD is a standard for recording HD signals onto memory cards, DVD discs, and hard disks. It uses the H.264 standard to achieve more than twice the compression of conventional MPEG-2 and MPEG-4 standards. • AVCHD motion images recorded onto an SD Memory Card or a DVD disc cannot be played from a device that does not support the AVCHD standard. • Do not insert a disc containing AVCHD-recorded images into a device that does not support the AVCHD standard. The disc cannot be played on such a device, and it may not be possible to remove the disc once inserted.

Mac Works with Final Cut Pro X

• Weight and dimensions shown are approximate. • Design, functions, and specifications are subject to change without notice. • All monitor and TV pictures are simulated. • 1 GB = 1 billion bytes. Usable capacity will be less. • You are not allowed to reproduce (copy), or transfer to a network, any part of the software applications supplied with this product for commercial purposes without written authorization. • Panasonic will in no way be liable for any damages sustained directly or indirectly from the use of this product or from any trouble occurring therein. • Panasonic will also in no way be liable for any losses of data caused by this product. • SDXC Logo is a trademark. • SDHC Logo is a trademark. • SD Logo is a trademark. • Leica is a registered trademark of Leica Microsystems IR GmbH. • Dicomar is a registered trademark of Leica Camera AG. • The Works with Final Cut Pro X logo is a trademark of Apple Inc. • Other names of systems and products mentioned in this brochure are generally the registered trademarks or trademarks of the manufacturers who developed the system or product concerned. • All other company and product names are trademarks of their respective corporations.