SONY

PXW-X400

XDCAM XAVC Memory Camcorder

Optimal Weight-balanced Advanced Shoulder-mount Simple, Quality Networked ENG Solution

XDCAM XAVC MPEG HD422 MPEG HD MPEG IMX DVCAM Exmor

User-oriented Advanced Shoulder-mount Camcorder

Sony proudly introduces a new solid-state memory shoulder-mount camcorder, the PXW-X400. With its sophisticated three-chip 2/3-inch Exmor™ CMOS image sensors, this camcorder offers stunning high picture quality and an extremely high S/N ratio. The PXW-X400 camcorder supports XAVC™ up to 1080/59.94p and 50p recording, in addition to conventional MPEG and DVCAM formats.

The hallmark of this new camcorder is its optimized, user-oriented weight balance. Never before has there been such a well-balanced camcorder body with an installed lens; the ingenious new design greatly reduces the burden of shouldering this camcorder. Another convenient feature is a built-in wireless function. In combination with the optional PWS-100RX1 Network RX Station, this camcorder enables simple, high-quality wireless ENG workflow, providing QoS (Quality of Service)-based live streaming that will save you considerable time and cost.

The PXW-X400 camcorder provides a variety of AV and IT interfaces including two HD/SD-SDI, HDMI, composite outputs, RJ-45, and USB3.0. An HD/SD-SDI input supporting a pool-feed function is also available.

This powerful user-oriented XDCAM Series camcorder meets a broad variety of ENG and studio applications.

Exmor

Stunning Picture Quality

Incorporating three 2/3-inch Full-HD Exmor CMOS sensors (1920 x 1080), this camcorder achieves high resolution, high sensitivity (F12 at 60 Hz / F13 at 50 Hz), low noise (62 dB), and a wide dynamic range to give more freedom of expression for creative shooting.

XAVC

Multiple-format Recording – XAVC long 4:2:2 50p/59.94p

The PXW-X400 offers a wide array of recording formats for a variety of applications including ENG, EFP, and studio use.
XAVC is a codec that Sony has developed based on the MPEG-4 AVC/H.264 compression codec. It provides cost-efficient support for the Full HD format of XAVC long 4:2:2 1080/50p and 59.94p formats.

XAVC Intra 4:2:2	1080/59.94i, 50i, 29.97p, 23.98p, 25p, 720/59.94p, 50p
XAVC Long 4:2:2	1080/59.94p, 50p, 59.94i, 50i, 29.97p, 23.98p, 25p, 1280 x 720/59.94p, 50p
MPEG HD422	1080/59.94i, 50i, 29.97p, 23.98p, 25p, 720/59.94p, 50p, 29.97p, 23.98p, 25p
MPEG HD (420)	1080/59.94i, 50i, 29.97p, 23.98p, 25p, 720/59.94p, 50p, 1440 x 1080/59.94i, 50i
MPEG IMX	720 x 480/59.94i, 720 x 576/50i
DVCAM	720 x 480/59.94i, 720 x 570/50i

Variety of Network Functions

Built-in Wireless Module and ONLINE Button

Wireless communication in news production is rapidly becoming ubiquitous. Immediacy and mobility demands have made wireless communication indispensable. To support effective wireless news production workflows, the PXW-X400 incorporates a built-in wireless capability. It also provides an 'ONLINE' button, located on the inside panel. This button lets you instantly switch the following functions on and off: Network Client Mode, Auto Proxy Upload, and Live Streaming.

CBK-WA02 wireless LAN adaptor attached to the PXW-X400

ONLINE button

Embedded RJ-45 Connector

This Ethernet connector provides robust and fast connection to the network. It can be utilized for file transfer, live streaming, and camera control from a web browser.

NFC (Near Field Communication) for Easy Wireless LAN Connection*

An NFC function supports easy connection for launching the CBM (Content Browser Mobile) application on a smartphone or tablet.
This means you can skip cumbersome setup procedures.

* The NFC function will be available in June, 2016.

Discover Optimized Weight Balance

Never before will you have held a camcorder that feels so lightweight on your right hand. This minimizes your physical stress even during the longest shooting operations. The camcorder's center of gravity has been moved to the back of the body to achieve optimized weight balance and stable image shooting.

Low Power Consumption

With an improved inside circuitry design, the PXW-X400 achieves power consumption as low as 22 W in normal recording mode*. This enables continuous recording operation for approximately 240 minutes with Sony's BP-GL95A optional standard-type battery.

* With XAVC recording, the color LCD is ON.

Supports Full HD OLED Viewfinder

Equipped with two types of connectors for a viewfinder interface, the PXW-X400 supports a variety of Sony's viewfinders, including the Full HD OLED HDVF-EL30* and HDVF-EL20*, as well as the QHD LCD CBK-VF02.
The HDVF-EL30 has a 960x540 resolution sub-LCD panel.

HDVH-EL30
Inside

HDVH-EL30
Outside

HDVH-EL20
Outside

CBK-VF02
Outside

Versatile Output/Input Interfaces

In addition to common interfaces, the PXW-X400 includes versatile I/O interfaces such as:

- Dual 3G-SDI output which enables simultaneous output of up to two 1080 50p / 59.94p signals
- Multi-purpose audio input that accepts both analog audio signals and AES/EBU digital audio signals
- SDI input for pool-feed operation, so you can input and record 1.5G HD/SD-SDI distributed signals from another camera

Each connector is located separately and – as there's no need for you to switch between input and output – you can use these connectors simultaneously.

Camcorder Lineup

There are three different products to choose from in the PXW-X400 camcorder lineup:

PXW-X400KC
20x Manual Focus Zoom Lens Kit

3.5" LCD VF
Stereo Microphone
IFU-WLM3 (Wireless LAN Dongle)
Shoulder Strap

PXW-X400KF
16x Auto Focus Zoom Lens Kit*

3.5" LCD VF
Stereo Microphone
IFU-WLM3 (Wireless LAN Dongle)
Shoulder Strap

* Auto focus capability will be available in June 2016.

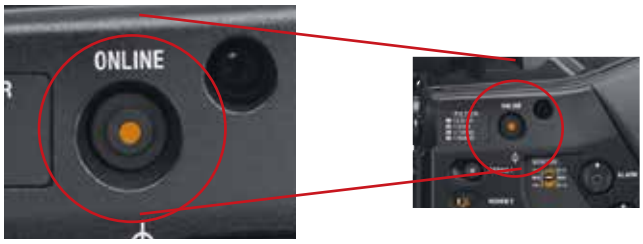
PXW-X400
Body only (no lens or viewfinder)

User-customizable with a high-end lens, user-owned B4 lens, and/or viewfinder

IP-based Simple, Sophisticated, Quality ENG Workflow

ONLINE Button for Easy Network Connection

The PXW-X400 camcorder is equipped with a dedicated ONLINE button on the inside panel. This delivers simple one-touch operation of ON/OFF switching for three network connection functions.



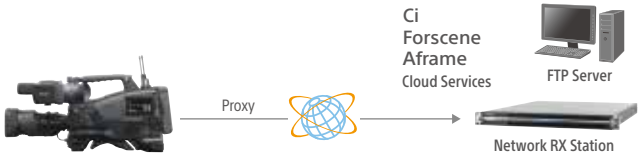
Network Client Mode

You can connect Sony's PWS-100RX1 Network RX Station to send proxy clips* or live streaming with Sony's QoS technology. The PXW-X400 can also be controlled remotely by the RX station.

* Planned to be available with a future upgrade.

Auto Upload (Proxy)

Clip files recorded on the camcorder can be transmitted via a network automatically when the recording is finished. XAVC 4:2:0 Long GOP clips are supported.



Live Streaming

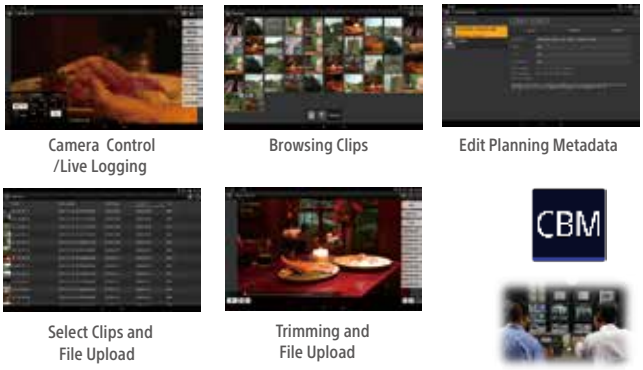
This camcorder can transfer MPEG2-TS (UDP/RTP) to a third-party decoder.

Three-color LED Indicator

The ONLINE button indicates the status (Disabled, Ready, Enabled) in three ways (off, orange, blue).

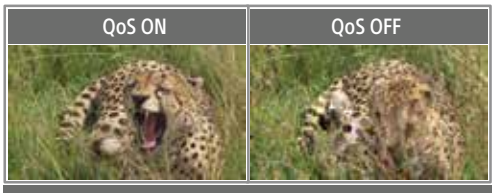
Content Browser Mobile (CBM)

CBM application software controls the PXW-X400 remotely. This software is available on both Android and iOS.



Sony's QoS Technology

It's a fact that packet loss during streaming is difficult to avoid. You always run the risk of image quality degradation and image freeze or audio disruption. Sony's unique QoS (Quality of Service) technology minimizes these challenges and helps to maintain video and audio integrity during communications.
The PWS-100RX1 comes with Sony-original algorithms that automatically adjust bandwidths and buffer sizes to match the characteristics of wireless communications.



Example above shows live stream transmission with and without QoS while the network is affected with a 15% packet loss.

* QoS on/off images

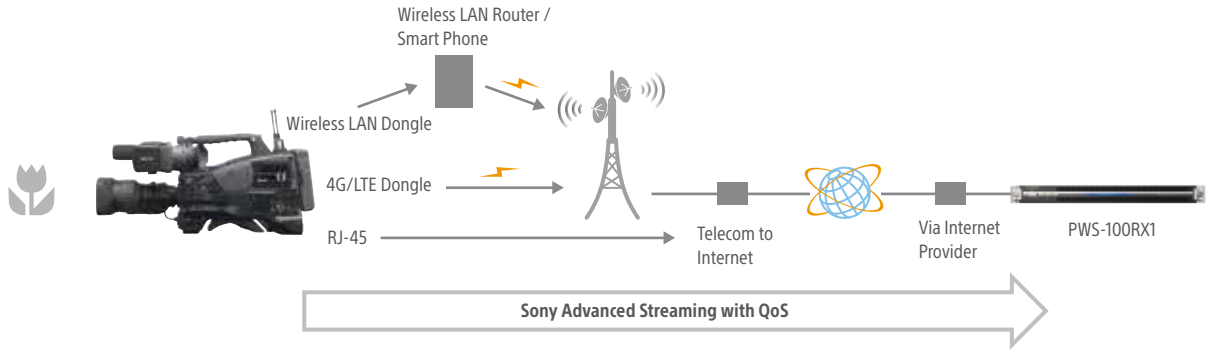
Transmission Mode	random packet loss ratio available to recover	Bitrate
Low mode (1.5sec latency)	15%	2M - 6Mbps
Middle mode (3.0sec latency)	30%	2M - 6Mbps

I case the network condition of lost ratio after recovery : Video Frame Loss Rate < around 10^{-5}

Sony PXW-X400 Wireless ENG Workflow

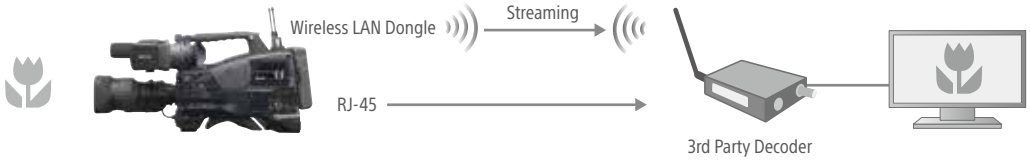
Sony advanced streaming with QoS

Sony developed unique QoS technology that dramatically improves the clarity that's possible on a single, affordable 3G/4G/LTE cellular channel or your own Wireless LAN network, or limited communication band of Ethernet. You get better pictures, even given the limitations of real-world networks. The endpoint of Sony's QoS streaming is the versatile PWS-100RX1 receiver. (Cellular streaming requires appropriate carrier dongle and service.



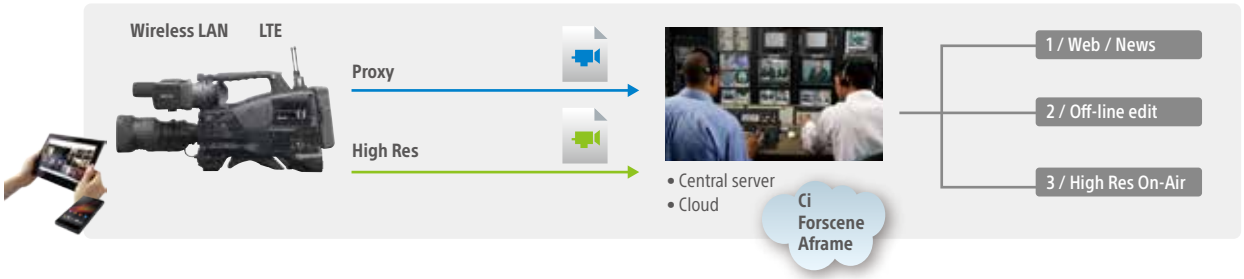
Conventional MPEG2-TS streaming

For maximum flexibility, Sony's XDCAM® wireless solutions also support conventional MPEG-TS streaming. This means you can stream to a wide range of receivers, including compatible third-party receivers and decoders. Sony wireless solutions will stream over a Wireless LAN network or over a 3G/4G/LTE cellular network, with the appropriate carrier dongle and service. You can also enjoy wired streaming over Ethernet, using the embedded RJ-45 connector, via a router/hub.



Flexible file transfers

If you're out in the field shooting news or other time-sensitive content, you can transfer files wirelessly. So there's no need to wait for the delivery of physical media. The receiving server gets a bit-for-bit clone of the original camera file, with all the original audio, video and metadata!



Simultaneous Recording on Two SxS Cards

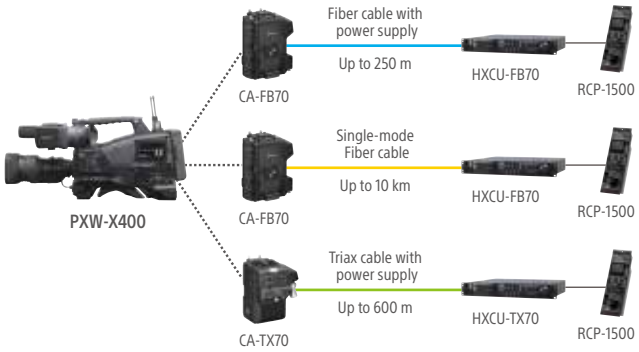
The PXW-X400 offers a simultaneous recording capability for peace-of-mind productions. Simultaneous recording is available on both SxS cards as a backup measure. This is within the same codec and with the same operating point in the following recording formats; XAVC-Intra, XAVC-Long, MPEG HD422, or MPEG HD (420). You can also achieve simultaneous recording with a proxy file in all combinations with the above formats using SD cards.

Flexible Camera System Operation

The CA-FB70 Optical Fiber Camera Adaptor or the CA-TX70 Digital Triax Camera Adaptor can be attached to the PXW-X400 for live camera operation. The CA-FB70 enables the PXW-X400 to transmit signals via an optical fiber cable up to 250 m between the CA-FB70 and HXCU-FB70 Optical Fiber Camera Control Unit (CCU) with power and signal transmission. The CA-TX70 transmits signals via triax cable up to 600 m* between the CA-TX70 and HXCU-TX70 Digital Triax Camera Control Unit.

* Using a ø 8.5 mm cable.

PXW-X400 Integration with optional fiber cables



RGB Color LCD Display

The PXW-X400 is equipped with an RGB color LCD display on the inside panel. In addition to thumbnail and menu displays, you can see and monitor video reproduction in QHD (960 x 540 pixels) resolution.

GPS Functionality

When you activate this function, the built-in GPS receiver module records GPS data in an MXF file and a proxy file, and automatically superimposes this on the live streaming signal. As well as being very useful for tracking shooting locations in post-production, this GPS function is great when station-based staff need to map a crew's location with the PWS-100RX1 for streaming.

* This function is available for recording in XAVC formats. Future support is planned for other HD formats.

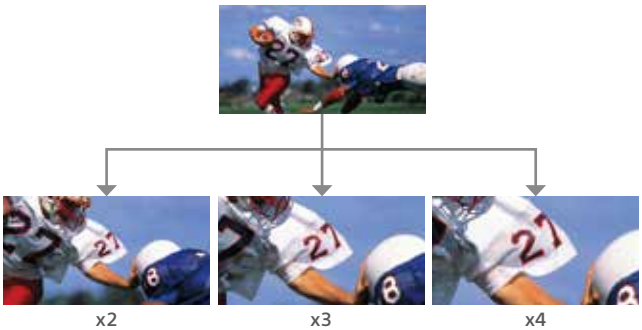
PWS-100RX1

Other Features:

- Newly developed ALAC (Automatic Lens Aberration Compensation) feature which drastically decreases specific patterns of chromatic aberration caused by the lens
- User gamma support
- Focus Assist function for easier focusing on the viewfinder; provides a graphic bar indicator; also, the viewfinder can indicate Waveform, Vector Scope, or Histogram
- Digital Extender function** enables images to be digitally expanded two to four times in size without any loss of F-drop image sensitivity

** Using the Digital Extender function reduces image resolution.

Digital Extender function



Simulated Images

Simulated Images

Selectable Slot-in Audio Wireless Receiver

For assured audio quality and cost-efficient performance, you'll appreciate the flexibility of this camcorder. Simply install your choice of Sony's optional compact audio wireless receivers; these are designed to fit Sony's camcorder range, including the PXW-X400.

PXW-X400 with URX-S03D

URX-S03D 2-channel Slot-in Portable Wireless Receiver

- True diversity reception for stable RF transmission
- High-quality sound with digital audio processing
- Easy channel setting with a clear channel scan function
- Well-fitting to Sony XDCAM and HDCAM camcorders
- Compatible with UWP/UWP-D/800 Series wireless microphone system

DWR-S02D 2-channel Slot-in Portable Digital Wireless Receiver

- Superb sound quality with digital wireless transmission
- True diversity reception for stable RF transmission
- Status monitoring and transmitter control via Sony's camcorder view finder
- Simultaneous multi-channel operation
- Easy channel setting with a clear channel scan function
- Full dot-matrix OLED display

Optional Accessories

SBP-256D/ SBS-128G1B
SxS Pro+/SxS Pro/ SxS-1 memory

MEAD-SD02
SD card adaptor

QDA-EX1
XQD adaptor

HDVF-20A
2.0-inch* CRT B/W Viewfinder

HDVF-200
2.0-inch* CRT B/W Viewfinder

HDVF-EL20
0.7-inch* OLED Viewfinder

HDVF-EL30
0.7-inch* OLED Viewfinder

CBK-VF02
3.5-inch* LCD color Viewfinder

HDVF-L750
7-inch* LCD color Viewfinder

BKW-401
Viewfinder rotation bracket

CAC-12
Mic holder

ECM-680S/678/674
Shotgun-type electret condenser microphone

DWR-S02D
Digital wireless receiver

URX-S03D
Wireless receiver

DWA-01D
Wireless adaptor

VCT-14/U14
Tripod adaptor

LC-H300
Hard carrying case

LC-DS300SFT
Soft Carrying case

CA-FB70
Optical fiber Camera adaptor

CA-TX70
Digital triax Camera adaptor

BP-GL95A/GL65A
Lithium-ion Battery pack

BP-L80S/L60S
Lithium-ion Battery pack

BP-FL75
Lithium-ion Battery pack

No image

BP-FLX75
Lithium-ion Battery pack

BC-L500
Battery charger

BC-L160/L70
Battery charger

No image

BC-L70A
Battery charger

AC-DN10
AC adaptor

AC-DN2B
AC adaptor

RM-B170
Remote control unit

RCP-1000/ 1500/1530
Remote control panel

EC-0.5X3F5M
3P-5P conversion

IFU-WLM3
Wireless LAN dongle

CBK-WA02
5GHz Wireless LAN dongle

PWS-100RX1
Network RX station

CBK-SP01
Soft shoulder pad

SBAC-US30/UT100
SxS memory card USB reader/writer

Specifications

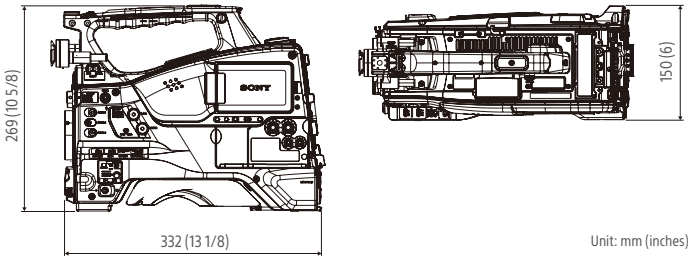
	PXW-X400/PXW-X400KC/PXW-X400KF*1
General	
Mass	Approx. 3.6 kg (body only without lens, VF, Mic) Approx. 7 lb 15 oz (body only without lens, VF, Mic)
Dimensions (W x H x D)	150 x 269 x 332 mm (excluding protrusions, body only) 6 x 10 5/8 x 13 1/8 inches (excluding protrusions, body only)
Power Requirements	DC 12 V (11 V to 17.0 V)
Power Consumption	Approx. 22 W (while XAVC recording, color LCD on) Approx. 24 W (while XAVC recording, CBK-VF02 viewfinder and color LCD on)
Operating Temperature	0° C to 40° C (32° F to 104° F)
Storage Temperature	-20°C to +60°C (-4°F to +140°F)
Continuous Operating Time	Approx. 240 min with BP-GL95
Camera Section	
Imager	3-chip 2/3-type "Exmor" Full HD CMOS
Effective Picture Elements	1920 (H) x 1080 (V)
Optical System	F1.4 prism system
Built-in Optical Filters	1: Clear, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND
Shutter Speed (Time)	1/60 sec to 1/2,000 sec + ECS (Extended Clear Scan)
Shutter Speed (Slow Shutter (SLS))	2, 3, 4, 5, 6, 7, 8, 16-frame accumulation
Slow & Quick Motion	720p: Frame rate selectable from 1 fps to 60 fps 1080p: Frame rate selectable from 1 fps to 60 fps
Sensitivity (2000 lx, 89.9% reflectance)	F12 (typical) (1920 x 1080/59.94i mode) F13 (typical) (1920 x 1080/50i mode)
Minimum illumination	0.013 lx (typical) (1920 x 1080/59.94i mode, F1.9, +42 dB gain, with 64-frame accumulation)
White Balance	Preset (3200K), Memory A, Memory B/ATW
Gain Selection	-3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42 dB
S/N Ratio	62 dB (Y) (Noise Suppression On)
Horizontal Resolution	1,000 TV lines or higher (1920 x 1080i mode)
Digital Extender	x2, x3, x4
Audio	
Frequency Response	20 Hz to 20 kHz (±3 dB or less)
Dynamic Range	90 dB (typical)
Distortion	0.08% or lower (-40 dBu input level)
Headroom	20 dB (factory default) (20, 18, 16, 12 dB), EBUL
Recording format (Video)	
XAVC Intra (XAVC-I mode):	- 1920 × 1080: 59.94i, 50i, 29.97p, 25p, 23.98p - 1280 × 720: 59.94p, 50p
XAVC Long (XAVC-L 50 mode):	- 1920 × 1080: 59.94p, 50p, 59.94i, 50i, 29.97p, 25p, 23.98p - 1280 × 720: 59.94p, 50p
XAVC Long (XAVC-L 35 mode):	- 1920 × 1080: 59.94p, 50p, 59.94i, 50i, 29.97p, 25p, 23.98p
XAVC Long (XAVC-L 25 mode):	- 1920 × 1080: 59.94i, 50i
MPEG HD422:	- 1920 × 1080: 59.94i, 50i, 29.97p, 25p, 23.98p - 1280 × 720: 59.94p, 50p, 29.97p, 25p, 23.98p
MPEG HD420:	- 1920 × 1080: 59.94i, 50i, 29.97p, 25p, 23.98p - 1440 × 1080: 59.94i, 50i - 1280 × 720: 59.94p, 50p
MPEG IMX:	- 720 × 486: 59.94i - 720 × 576: 50i
DVCAM:	- 720 × 480: 59.94i - 720 × 576: 50i
Recording Format (Audio)	
XAVC Intra:	LPCM 24 bits, 48 kHz, 4 channels
XAVC Long:	LPCM 24 bits, 48 kHz, 4 channels
MPEG HD422:	LPCM 24 bits, 48 kHz, 4 channels
MPEG HD:	LPCM 16 bits, 48 kHz, 4 channels
MPEG IMX:	LPCM 16/24 bits, 48 kHz, 4 channels *2
DVCAM:	LPCM 16 bits, 48 kHz, 4 channels
Recording Format (Proxy Video)	
XAVC Proxy:	AVC/H.264 Main Profile 4:2:0 Long GOP, VBR 1280 × 720, 9 Mbps (Target Rate) 1280 × 720, 6 Mbps (Target Rate) 640 × 360, 3 Mbps (Target Rate) 480 × 270, 1 Mbps, 500 kbps (Target Rate)
Recording Format (Proxy Audio)	
XAVC Proxy:	AAC-LC, 128 kbps, 2 channels
Input/Output	
Genlock Input	BNC (x1), 1.0 Vp-p, 75 Ω, unbalanced
Timecode Input	BNC (x1), 0.5 V to 18 Vp-p, 10 kΩ
SDI Input	SMPTE ST292/ST259 standard compliant, 4-channel audio 1.5G Poolfeed Recording (upto 1080 59.94i)
Audio Input	CH1/CH2: XLR-type 3-pin (female) (x2), Line/Mic/Mic/+48V selectable LINE: +4, 0, -3 dBu AES/EBU: AES3 compliant MIC: -70 dBu to -30 dBu

	PXW-X400/PXW-X400KC/PXW-X400KF*1
Mic Input	XLR-type 5-pin, female: -70 dBu to -30 dBu
WRR (Wireless Microphone Receiver)	D-sub 15-pin Analog CH1: -40 dBu Digital CH1/CH2: -40 dBFS
SDI Output	Output 1/2: BNC (x2), 0.8 Vp-p, unbalanced, 3G HD/1.5G HD/SD selectable, SMPTE ST424/ST425 Level-A/B, ST292/ST259 standard compliant, 4-channel audio
Video Output	BNC, SD analog composite/HD-Y selectable
Audio Output	XLR-type 5-pin, male, +4/0/-3 dBu (balanced)
Timecode Output	BNC, 1.0 Vp-p, 75 Ω
Earphone Output	Stereo mini jack (x1) -11 dBu reference level output, maximum monitor volume, 16 Ω load
Speaker Output	Monaural, 300 mW output
DC Input	XLR-type 4-pin, male, 11 V to 17 V DC
DC Output	Round type 4-pin, 11 V to 17 V DC, 1.8 A maximum rated current
Lens	12-pin, lens power source (11 V to 17 V DC, 1.0 A maximum rated current)
Remote	8-pin
Light	2-pin
Camera Adaptor	D-sub, 50-pin (x1)
Ethernet	RJ-45 (x1), 100BASE-TX: IEEE 802.3u, 10BASE-T: IEEE 802.3
USB	USB 3.0/2.0 4-pin (type A), USB2.0 4-pin (type B), USB2.0 4-pin (type-A)
HDMI	A type, 19-pin (x1)
Viewfinder	20-pin IF for HDVF Series Viewfinder, and 26-pin IF for CBK-VF02, HDVF-L750
Monitoring	
Viewfinder	PXW-X400: Option PXW-X400KC/PXW-X400KF: 3.5-inch*2 type color LCD monitor: 960 (H) x 540 (V), Quarter HD Size*4
Built-in LCD Monitor	Color LCD, Screen size: 8.8 cm (3.5 inch) diagonal, Aspect ratio: 16:9, Number of pixels: 960 (H) × 540 (V) for Video display, Audio level, TC, battery and media remaining capacity
Other Functions	
Built-in Speaker	(x1)
Media SxS Card Slots	Form factor: Express Card/34, Number of slots: 2, Connector: PCMCIA Express Card compliant, Write rate: 50 Mbps or higher, Read rate: 50 Mbps or higher
Media SD Card Slots	Proxy (1), Utility (1)
GPS	Yes
Built-in Network Module	Yes
NFC*3	Yes
Media	
High resolution Video/Audio	SxS card XQD card (with XQD ExpressCard Adapter, QDA-EX1) SDXC card (with XQD ExpressCard Adapter, MEAD-SD02)
Proxy Video/Audio and Utility	SDXC/SDHC
Supplied Accessories	
	Shoulder strap (1) Cold shoe kit (1) Operation Guide (1) Operation Manual (CD-ROM) (1) USB wireless LAN module (IFU-WLM3) (1)
PXW-X400KC/PXW-400KF only:	Viewfinder (1) Stereo microphone (1) Wind-screen (1) Lens mount cap (1) Flange back adjustment chart (1) PXW-X400KC: Manual focus lens (1) PXW-X400KF: Auto focus lens (1)

*1: PXW-X400KF Auto focus capability will be available in June, 2016.
*2: Viewable area, measured diagonally.
*3: NFC (Near Field Communication) will be supported with future firmware upgrading.
*4: Equivalent to CBK-VF02.

	PXW-X400KC	PXW-X400KF
Lens		
Lens Mount	Sony 2/3-inch type bayonet mount	Sony 2/3-inch type bayonet mount
Zoom Ratio	20x (optical), servo/manual (AF lens for PXW-X400KC)	16x (optical), servo/manual (AF lens for PXW-X400KF)
Focal Length	f = 8.2 - 164 mm (35mm equivalent: f=xx.x - xxx mm)	f = 8 - 128 mm (35mm equivalent: f=31.5 - 503 mm)
Iris	F1.9 to F16 and Close, Auto/Manual selectable	F1.9 to F16 and Close, Auto/Manual selectable
Focus Range	AF/MF/Full MF selectable 900 mm to ∞ (MACRO OFF) 10 mm to ∞ (MACRO ON, Wide)	AF/MF/Full MF selectable 800 mm to ∞ (MACRO OFF) 50 mm to ∞ (MACRO ON, Wide)
Filter Diameter	M82 mm, pitch 0.75 mm (on lens)	M82 mm, pitch 0.75 mm (on lens)

Dimensions



Unit: mm (inches)

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