

# PMW-400

Solid-State Memory Camcorder

SONY

The PMW-400K (2/3-inch HD lens package) and the PMW-400L have now joined the XDCAM™ HD422 family, equipped with three 2/3-inch-type Full-HD Exmor™ CMOS sensors that provide high picture quality and an extremely high S/N ratio. These camcorders support MPEG HD422™, MPEG HD™, MPEG IMX™, DVCAM™, and also XAVC™\*1 in the HD domain for future expansion of the broadcasting workflow. Two SxS™ card slots provide a wide range of AV and IT interfaces including two HD/SD-SDI, HDMI, i.LINK™, and composite outputs. The PMW-400 Series also supports wireless operation using an optional adapter, the CBK-WA101. This enables easy and quick clip data transmission to broadcast stations using cloud services, saving the time and transportation cost of shot clip delivery.



\*1 Requires firmware upgrade, planned in 2014. 4K not supported.

## Features

### High Picture Quality

The PMW-400 Series incorporate three 2/3-inch-type Full-HD Exmor CMOS sensors (1920 x 1080) to achieve high resolution, high sensitivity (F12 at 60 Hz / F13 at 50 Hz), low noise (60 dB), and a wide dynamic range to give more freedom of expression for creative shooting.

### Three-dimensional Noise Reducer

In addition to existing noise reduction features, the PMW-400 Series also includes a three-dimensional noise reducer. This not only detects vertical and horizontal direction in a frame picture but also noise components in a time axis, utilizing correlation characteristics between video frames. Using this feature, the S/N ratio is improved to 60 dB which is the highest level of noise reduction in a 2/3-inch-type Full-HD shoulder camcorder.

### Selectable Format and Bit Rates

The PMW-400 Series provide a wide variety of codec operation points. Users can record Full-HD video (1920 x 1080) at up to 50 Mbps using MPEG HD422 as well as MPEG HD at 35 Mbps\*2 / 25 Mbps, MPEG IMX at 50 Mbps, and DVCAM at 25 Mbps in an MXF file, as standard supported formats. These camcorders also incorporate XAVC\*3 in the HD domain at a 100-Mbps data rate, enabling the creation of rich content with 10-bit quality.

\*2 Requires firmware upgrade, planned in October, 2013.

\*3 Requires firmware upgrade, planned in 2014. 4K not supported.

### 3.5-inch Color LCD Viewfinder

With a large, easy-to-read 3.5-inch QHD color LCD viewfinder as a standard accessory, the PMW-400 Series offer outstanding resolution of 960 x 540 pixels, strongly supporting critical focus control during HD shooting. The viewfinder cover can be flipped up to enhance visibility when the camera is set on a tripod.

### Various Conveniences via a Wireless Adapter

The PMW-400 Series are designed to support wireless operation using an optional wireless adapter, the CBK-WA101\*4. Using this adapter, the user can stream out pictures to a mobile tablet, enabling crews to check shooting images live in the field. After shooting, proxy files created on the CBK-WA101 can be immediately transmitted to the broadcasting station. The adapter also provides remote control of the PMW-400 with mobile application software.

\*4 Requires firmware upgrade, planned in October, 2013.

### Enhanced Flash Band Reducer

Incorporating a newly developed algorithm, the PMW-400 Series detects and processes flash banding inside its hardware before recording begins\*5. This provides greater flexibility in reducing flash banding across different shooting environments. This feature can be disabled from the menu if the users wants to use Content Browser for flash band reduction after shooting. The user is free to choose when to reduce the flash band, either before or after shooting according to varying circumstances.

\*5 Requires firmware upgrade, planned in October, 2013

### Variety of Interfaces

The PMW-400 Series offers two lines of SDI output connection enabling, for example, the director and camera operator to concurrently check shot content via two separate monitors. Also, for monitoring purposes these camcorders can be connected via HDMI to professional displays as well as domestic-use TVs with an HDMI connector. The i.LINK connector can be used for HDV when SP 1440 (FAT) mode is selected, and for DV when DVCAM (FAT) mode is selected, for both input and output signal flows.



XDCAM HD

Exmor  
FULL HD 3CMOS

XAVC

MPEG HD422

MPEG HD

MPEG IMX

DVCAM

SxS

# Specifications

	PMW-400K	PMW-400L
<b>General</b>		
Mass	Approx. 3.4 kg (body only without lens, V.F. Mic)	
Dimensions *1	124 x 269 x 332 mm (5 x 10 5/8 x 13 1/8 inches) (excluding protrusions, body only)	
Power Requirements	DC 12 V	
Power Consumption	Approx. 26 W (with viewfinder, lens and microphone while recording)	
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. 180 min with BP-L80S	
Recording Format (Video)	XAVC (future upgrade) MPEG-2 Long GOP - HD 422 mode: CBR, 50 Mbps max., MPEG-2 422P@HL - HQ mode: VBR, 35 Mbps max., MPEG-2 MP@HL - SP mode: CBR, 25 Mbps, MPEG-2 MP@H-14 - SD mode: MPEG IMX, DVCAM	
Recording Format (Audio)	<UDF> - HD 422 50 mode: LPCM 24 bits, 48 kHz, 4 channels - HD 420 HQ mode: LPCM 16 bits, 48 kHz, 4 channels - SD MPEG IMX mode: LPCM 16/24 bits, 48 kHz, 4 channels - SD DVCAM mode: LPCM 16 bits, 48 kHz, 4 channels <FAT> - HD mode: LPCM 16 bits, 48 kHz, 4 channels - SD DVCAM mode: LPCM 16 bits, 48 kHz, 2 channels	
Recording/Playback Time (MPEG HD)	<UDF Mode> HD 422 50/SD MPEG IMX Mode: *2 - Approx. 120 min with SBS-64G1A (64 GB) memory card - Approx. 60 min with SBP-32/SBS-32G1A (32 GB) memory card - Approx. 30 min with SBP-16 (16 GB) memory card HD 420 HQ Mode: - Approx. 180 min with SBS-64G1A (64 GB) memory card - Approx. 90 min with SBP-32/SBS-32G1A (32 GB) memory card - Approx. 45 min with SBP-16 (16 GB) memory card SD DVCAM Mode: (option) - Approx. 220 min with SBS-64G1A (64 GB) memory card - Approx. 110 min with SBP-32/SBS-32G1A (32 GB) memory card - Approx. 55 min with SBP-16 (16 GB) memory card <FAT Mode> *2 - HD HQ Mode: - Approx. 200 min with SBS-64G1A (64 GB) memory card - Approx. 100 min with SBP-32/SBS-32G1A (32 GB) memory card - Approx. 50 min with SBP-16 (16 GB) memory card HD SP Mode: - Approx. 280 min with SBS-64G1A (64 GB) memory card - Approx. 140 min with SBP-32/SBS-32G1A (32 GB) memory card - Approx. 70 min with SBP-16 (16 GB) memory card SD DVCAM Mode: (option) - Approx. 260 min with SBS-64G1A (64 GB) memory card - Approx. 130 min with SBP-32/SBS-32G1A (32 GB) memory card - Approx. 65 min with SBP-16 (16 GB) memory card	
Recording Frame Rate	<UDF> HD 422 50 Mode: MPEG-2 422P@HL, 50 Mbps/CBR - 1920 x 1080/59.94i, 50i, 29.97p, 25p, 23.98p - 1280 x 720/59.94p, 50p, 29.97p, 25p, 23.98p HD 420 HQ Mode: MPEG-2 MP@HL, 35 Mbps/VBR - 1920 x 1080/59.94i, 50i, 29.97p, 25p, 23.98p (Version Up) - 1440 x 1080/59.94i, 50i, 29.97p, 25p, 23.98p - 1280 x 720/59.94p, 50p, 23.98p (2-3 pull down) SD MPEG IMX Mode: - 720 x 486/59.94i, 29.97PsF - 720 x 576/50i, 25PsF SD DVCAM Mode: - 720 x 486/59.94i, 29.97PsF - 720 x 576/50i, 25PsF <FAT> HD HQ 1920 Mode: MPEG-2 MP@HL, 35 Mbps/VBR - 1920 x 1080/59.94i, 50i, 29.97p, 25p, 23.98p HD HQ 1440 Mode: MPEG-2 MP@HL, 35 Mbps/VBR - 1440 x 1080/59.94i, 50i, 29.97p, 25p, 23.98p HD HQ 1280 Mode: MPEG-2 MP@HL, 35 Mbps/VBR - 1280 x 720/59.94p, 50p, 29.97p, 25p, 23.98p HD SP 1440 Mode: MPEG-2 MP@H-14, 25 Mbps/CBR - 1440 x 1080/59.94i, 50i, 23.98p (2-3 pull down) SD DVCAM Mode: - 720 x 486/59.94i, 29.97PsF - 720 x 576/50i, 25PsF	

	PMW-400K	PMW-400L
<b>Lens</b>		
Lens Mount	Sony 2/3-inch type bayonet mount	
Zoom Ratio	16x (optical), servo/manual (AF lens for PMW-400K)	
Focal Length	f = 8 mm to 128 mm (equivalent to 31.5 mm to 503 mm on 35 mm lens)	
Iris	F1.9 to F16 and Close, Auto/Manual selectable	
Focus	AF/MF/Full MF selectable	
Focus	800 mm to ∞ (MACRO OFF)	
Focus	50 mm to ∞ (MACRO ON, Wide)	
Focus	732 mm to ∞ (MACRO ON, Tele)	
Filter Diameter	M82 mm, pitch 0.75 mm (on lens)	
<b>Input/Output</b>		
Genlock Input	BNC (x1)	
Timecode Input	BNC (x1)	
Audio Input	XLR-type 3-pin (female) (x2), Line/Mic/Mic +48 V selectable	
Mic Input	XLR-type 5-pin	
SDI Output	BNC (x2), HD/SD/SDI selectable	
Video Output	BNC (x1) HD-Y or Analog composite	
Audio Output	XLR-type 5-pin	
Timecode Output	BNC (x1)	
Earphone Output	Stereo mini jack (x1)	
Speaker Output	Manual	
DC Input	XLR-type 4-pin	
DC Output	4-pin	
Lens	12-pin	
Remote	8-pin	
Light	2-pin	
i.LINK	IEEE 1394, 6-pin (x1), HDV (HDV 1080i)/DVCAM stream input/output *3, S400	
USB	USB device B Type (x1), host A Type (x1)	
HDMI	A type (x1)	
<b>Camera Section</b>		
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, 32, 64-frame accumulation	
Slow & Quick Motion Function	720p: Frame rate selectable from 1 fps to 60 fps 1080p: Frame rate selectable from 1 fps to 30 fps	
Sensitivity (2000 lx, 89.9% reflectance)	F12 (typical) (1920 x 1080/59.94i mode) F13 (typical) (1920 x 1080/50i mode)	
Minimum Illumination	0.006 lx (typical) (1920 x 1080/59.94i mode), 0.003 lx (typical) (1920 x 1080/59.94i mode, F1.9, +42 dB gain, with 64-frame accumulation)   0.003 lx (typical) (1920 x 1080/59.94i mode, F1.4, +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	60 dB (V), (typical)	
Horizontal Resolution	1,000 TV lines or more (1920 x 1080i mode)	
<b>Viewfinder</b>		
Viewfinder	3.5-inch **4 type color LCD monitor: 960 (H) x 540 (V), Quarter HD Size	
<b>Other Equipment</b>		
Built-in LCD Monitor	Black & White LCD (Audio level, TC, battery and media remaining capacity)	
Built-in Speaker	1	
<b>Supplied Accessories</b>		
Viewfinder (1)	Shoulder strap (1)	Viewfinder (1)
Shoulder strap (1)	Stereo microphone (1)	Shoulder strap (1)
Stereo microphone (1)	Wind-screen (1)	Stereo microphone (1)
Wind-screen (1)	Cold shoe kit (1)	Wind-screen (1)
Cold shoe kit (1)	Lens mount cap (1)	Cold shoe kit (1)
Lens mount cap (1)	Flange back adjustment chart (1)	Lens mount cap (1)
Flange back adjustment chart (1)	Auto focus lens (1)	Flange back adjustment chart (1)
Auto focus lens (1)	Before Using this Unit (1)	Before Using this Unit (1)
Before Using this Unit (1)	CD-ROM	CD-ROM
CD-ROM	Operating Instructions	Operating Instructions
Operating Instructions		

\* The specifications are measured with supplied lens of PMW-400K.

\*1: The values for dimensions are approximate.

\*2: Recording/Playback time may vary according to the encoding or memory.

\*3: HDV/DV stream input/output are available only in FAT mode. Depending on the connected products, it may not be recorded correctly.

\*4: Viewable area measured diagonally.

## Optional Accessories



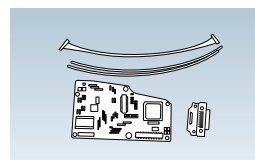
SxS Memory Card Series



MEAD-MS01/SD02 QDA-EX1 Media Adapters for MS/SD Card and XQD



CBK-WA100/101 Wireless Adapter



CBK-CE01 50-pin Interface Unit and Digital Extender Option



CA-FB70/TX70 System Camera Configuration Units

Distributed by

©2013 Sony Corporation. All rights reserved.

Reproduction in whole or in part without written permission is prohibited. Features, design, and specifications are subject to change without notice.

The values for mass and dimension are approximate.

SONY, make.believe, XDCAM, Exmor, MPEG HD422, MPEG HD, MPEG IMX, DVCAM, XAVC, SxS, and i.LINK are trademarks of Sony Corporation.

All other trademarks are the property of their respective owners.