

PMW-500

Three 2/3-inch Power HAD FX
CCD sensors XDCAM HD422
camcorder recording full HD
(plus SD option)

Overview

The PMW-500 is Sony Professional's first XDCAM HD422 Camcorder with solid state recording. It supports full-HD 422 50-Mbps MXF record and playback based on highly developed MPEG-2 Long GOP compression technology. Uniquely, it can also be switched to record in HD 420 35-Mbps MP4 format which makes for seamless integration when used alongside XDCAM EX models.

Its 2/3-inch type three Power HAD FX CCD sensors deliver the same outstanding picture quality and low-light performance as the acclaimed PDW-700, however it records onto Solid State SxS media rather than optical Professional Disc.

The exceptionally ergonomic chassis is a development of the acclaimed PDW-700/F800, while already class-leading power consumption is further reduced along with weight for superb on-location usability.

Sony's XDCAM product range sets the benchmark for high speed, exceptionally flexible, file-based workflow. XDCAM Professional Disc products were first introduced in 2004, followed by high-speed memory-based XDCAM EX in 2007. A common technology platform provides a unique hybrid workflow meeting a broad variety of customer application needs.

Features

Three 2/3-inch type Full-HD Power HAD FX CCDs

The PMW-500 is equipped with three 2/3-inch type 2.2-megapixel full-HD progressive CCDs - the same sensors as used in Sony's acclaimed PDW-F800/700 XDCAM Professional Disc HD 422 camcorders. Based on Sony's Power HAD FX sensor technology and the latest on-chip lens structure, this type of CCD offers a high sensitivity of F12 at 50i (F11 at 59.94i).

SxS Memory Cards Combine High Transfer Speeds and High Reliability

Both SxS PRO™ and SxS-1™* memory cards use the PCI Express interface to achieve an extremely high data-transfer speed of 800 Mbps, and can resist considerable shock (1500 G) and vibration (15 G). Also, a unique Salvage function serves to restore content damaged by power loss or memory disconnection during recording**.

In addition, with an optional MEAD-MS01 or MEAD-SD01 Media Adaptor***, a high-speed Memory Stick™ or SD memory card**** can be used as emergency or alternative recording media.

* SxS-1 memory cards support fewer re-writes than SxS PRO™ memory cards. Notification is given when an SxS-1 memory card approaches its end of life.

** In some cases, images recorded just before an accident may not be restored (several seconds). No warranty is given on always achieving content restoration.

*** UDF (MXF) mode, Slow Motion and the Salvage function are not supported.

**** For information about memory devices, please contact your nearest Sony office or authorized dealer.

HD 1920x1080 and 1280x720 Recording Using the MPEG HD 422 Codec

The PMW-500 records and plays back high-definition video with 1920x1080 and 1280x720 resolutions up to 50 Mbps using MPEG-2 4:2:2P HL compression technology.

24-bit Four-channel Audio Recording

The PMW-500 records uncompressed four-channel, 24-bit audio in MPEG HD 422 mode or MPEG IMX mode. Each channel level can be adjusted independently by individual level controllers.

Selectable Recording Modes and Video Formats

In addition to high-quality MPEG HD 422 50-Mbps mode, the PMW-500 can record and play back videos at different bit rates and in a variety of video formats. The PMW-500 supports both the broadcast-standard MXF file wrapper and IT-standard MP4 file wrapper. In UDF mode (MXF), which is compatible with the recording formats of the XDCAM™ Professional Disc Series, and in FAT mode (MP4/AVI), which is compatible with the XDCAM EX™ Series, the supplied XDCAM™ Browser, software can very rapidly convert files between formats, as no transcoding process is required.

Long Recording Time

With highly efficient MPEG-2 Long GOP compression and a large-capacity SxS memory card, the PMW-500 can record high-quality HD 422 50-Mbps images for a long recording time of 110 minutes on a single 64-GB SxS memory card. The SxS memory card can be hot-swapped with two cards while shooting, without interrupting the recording.

Well-balanced Compact Body

Designed to be very compact and ergonomically well balanced, the PMW-500 provides a high level of mobility and comfort in various shooting situations. It inherits the design of Sony's well regarded PMW-350/320 XDCAM EX™ camcorders. The main body

weighs only 3.4 kg

Low power consumption

The power consumption of the PMW-500 is only 29W

Digital Extender

With optional CBK-HD02 boards, the Digital Extender function* of the PMW-500 enables images to be digitally doubled in size. Unlike lens extenders, the Digital Extender function performs this doubling in size without any F-drop phenomenon (i.e., without loss of image sensitivity).**

*:This function is due to be activated at the end of March 2011.**: The Digital Extender function does not operate in 1080p mode, S and Q mode, or when working with XDCA-55 via CBK-HD02.

Focus Magnification

A magnified camera picture (x2) is available in the viewfinder, simplifying precise focus adjustment.

Auto Focus Assist Function

The Auto Focus Assist function enables operators to change focus positions manually using the focus ring in AF mode.

ALAC (Automatic Lens Aberration Compensation)

This feature decreases any chromatic aberration caused by the lens. ALAC is activated only with some third-party lenses that incorporate compensation data. (Please check with lens manufacturers for ALAC support.)

Slow and Quick Motion Function

The PMW-500 offers a powerful Slow and Quick Motion function that enables users to create elegant fast- and slow-motion footage. The PMW-500 can capture images at frame rates selectable from 1 fps (frame per second) to 60 fps in 720p mode and from 1 fps to 30 fps in 1080p mode, in increments of 1 fps. (With the PAL setting in UDF (MXF) mode, frame rates are

selectable up to 50 fps in 720p mode and up to 25 fps in 1080p mode.)

Slow Shutter

A maximum of 64 frames can be accumulated using the Slow Shutter function.

HyperGamma

Four types of HyperGamma curve – inherited from Sony's CineAlta camcorders – are provided in addition to six standard gammas.

Interval Recording Function

The Interval Recording function intermittently records one frame at pre-determined intervals. This is convenient for shooting over long periods of time, and also when creating special effects with extremely rapid motion.

Frame Recording Function

The Frame Recording function records images for pre-determined frames every time the Record button is pressed. This is particularly useful for clay animation shooting.

Optical ND Filters and Electrical CC Filters

The PMW-500 camcorder comes equipped with optical ND filters and electrical CC filters. With electrical CC filters, users can easily select a colour temperature -3200K, 4300K, 5600K, or 6300K - by rotation using a camcorder-assignable switch.

ATW (Auto Tracing White Balance) and Hold

The Auto Tracing White Balance function automatically adjusts the camera's colour temperature according to changes in lighting conditions. If required, the user can hold auto tracing at a desired colour balance via an assignable switch.

Gain Control

Gain Control(-6 dB to +42 dB) and Turbo Gain ("Shockless gain

control") provide smooth transition in gain control.

IMX and DVCAM Recording and Playback*

IMX and DVCAM™ format recording and playback are also supported by the optional CBK-MD01 which can realize smooth migration from current SD operation to near-future HD operation.

* Please note this is a chargeable option.

Proxy Data Recording

At the same time as recording high-resolution video and audio data, a low-resolution version of this AV data (called proxy data) can be recorded on SxS memory card. Proxy data enables amazingly high-speed file transfer and efficient batch editing workflow. (The Proxy Recording function works only in UDF (MXF) mode.)

Pool-feed Operation

For pool-feed operation*, optional CBK-HD02 boards provide HD- and SD-SDI inputs and Analog Composite input.

* This function is due to be activated at the end of March 2011.

Up-/Down- and Cross-conversion Capability

The PMW-500 comes equipped with up- and cross-conversion systems for input signals, which provide operational flexibility. It also supports down-conversion from HD to SD in playback mode. (Down-conversion of input signals and up-/cross-conversion of output signals are not supported.)

Freeze Mix

This function superimposes a previously recorded image onto the viewfinder, making it easy to shoot in the same framework as a previous take. Please note this function works only in HD mode.

Clip Continuous REC

This mode allows users to create a single, large clip with multiple starts and stops in recording. The benefit of this mode is a faster transport speed for single clips - there is no overhead for the file open/close process. Please note this function works only in UDF (MXF) mode.

Easy-to-view 3.5-inch Colour LCD Monitor

The PMW-500 is equipped with a large, easy-to-view, 3.5-inch colour LCD monitor with a high resolution of approx. 921,000 effective pixels. This LCD monitor enables operators to instantly review recorded footage, as well as access the camera's set-up menus and view status indications.

Eight Assignable Switches

Frequently used functions can be programmed onto eight assignable switches on the PMW-500, allowing operators to make rapid changes when working in the field, convenient for shooting over long periods of time, and also when creating special effects with extremely rapid motion

Specifications

General

Mass	Approx. 3.4 kg (without lens) Approx. 7 lb 7 oz (without lens)
Dimensions (W x H x D) *1	124 x 269 x 332 mm (excluding protrusions, body only) 5 x 10 5/8 x 13 1/8 inches (excluding protrusions, body only)
Power Requirements	DC 12 V (11 V to 17 V)

Power Consumption	Approx. 33 W (with viewfinder, lens and microphone while recording) Approx. 29 W (body while recording)
Operating Temperature	-5°C to +40°C 23°F to 104°F
Storage Temperature	-20°C to +60°C -4°F to +140°F
Continuous Operating Time	Approx. 170 min with BP-GL95 battery
Recording Format (Video)	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 (with CBK-MD01): IMX, DVCAM
	UDF HD 422 50 mode: LPCM 24 bits, 48 kHz, 4 channels HD 420 HQ mode: LPCM 16 bits, 48 kHz, 4 channels SD IMX mode (with CBK-MD01):

Recording Format (Audio)	LPCM 16/ 24 bits, 48 kHz, 4 channels SD DVCAM mode (with CBK-MD01): LPCM 16 bits, 48 kHz, 4 channels FAT HD mode: LPCM 16 bits, 48 kHz, 4 channels SD DVCAM mode (with CBK-MD01): LPCM 16 bits, 48 kHz, 2 channels
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Recording/Playback Time (MPEG HD)	UDF Mode HD 422 50/ SD 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-
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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
 Recording/Playback
 Time (MPEG HD) 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

UDF
 HD 422 50 Mode: MPEG-2

Recording Frame Rate

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
- 1440 x 1080/ 59.94i, 50i, 29.97p,
25p, 23.98p,
- 1280 x 720/ 59.94p, 50p, 29.97p,
25p, 23.98p (2-3 pull down)
SD IMX Mode (with CBK-MD01)
- 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 (with CBK-MD01 option)
 - 720 x 486/ 59.94i, 29.97PsF
 - 720 x 576/ 50i, 25PsF

Lens

Lens Mount Sony 2/3-inch type bayonet mount

Input/Output

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 (x1), HD-SDI/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	Monaural
DC Input	XLR-type 4-pin
DC Output	4-pin
Lens	12-pin
Remote	8-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)

Camera Section

Imager	3-chip 2/3-type HD Power HAD FX CCDs
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 *4 *5
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 (from 1 fps to 50 fps in the case of PAL area setting in the UDF mode) 1080p: Frame rate selectable from 1 fps to 60 fps (from 1 fps to 25 fps in the case of PAL area setting in the UDF mode)
Sensitivity (2000 lx, 89.9% reflectance)	F11 (typical) (1920 x 1080/59.94i mode) F12 (typical) (1920 x 1080/50i mode)
Minimum Illumination	0.016 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	-6, -3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42 dB
S/N Ratio	59 dB (Y) (typical)
	1,000 TV lines or more (1920 x 1080i)

Horizontal Resolution (mode)

Viewfinder

Viewfinder Supplied interfaces (20-pin IF for HDVF, 26-pin IF for CBK-VF01)

Other Equipment

Built-in LCD Monitor 3.5-inch *6 type color LCD monitor: approx. 921000 effective pixels, 640 (H) x 3 (RGB) x 480 (V), 16:9, hybrid type

Supplied Accessories

Supplied Accessories Shoulder strap (1)
Cold shoe kit (1)
Lens mount cap (1)
Flange back adjustment chart (1)
CD-ROM:
Utility software (1)
Operating instructions in PDF (1)
Operation manuals:
English version (1)
Japanese version (1)

Notes

Note

*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. DVCAM stream input is only for monitoring use on viewfinder.

*4 Slow shutter setting frames vary according to the system frequency.

*5 ECS: Extended Clear Scan

*6 Viewable area measured diagonally.

Related products



SBAC-US20

SxS PRO solid state memory USB 3.0 & 2.0 reader/writer



PMW-1000

Compact HD/SD SxS memory recording deck



DWR-S02D

Digital wireless receiver



ECM-678

Shotgun Electret condenser microphone



ECM-674

Affordable shotgun



ECM-673

Short Shotgun



UWP-D11

UWP-D bodypack



UWP-D12

UWP-D handheld

Electret condenser microphone



UWP-D16

UWP-D bodypack and XLR plug-on wireless microphone package

Electret Condenser Microphone.



MDR-7510

Studio professional headphones

wireless microphone package



ECM-VG1

Shotgun Electret condenser microphone

wireless microphone package



MDR-7506

Stereo professional headphones



XDS-1000

XDCAM Deck / IT Server with two SxS memory slots and 1TB HDD



XDS-PD1000

XDCAM Deck / IT Server with two SxS memory slots, Professional Disc drive and 1TB HDD



HDVF-EL20

OLED 0.7-inch colour HD viewfinder



HDVF-EL30

OLED 0.7-inch colour Full HD viewfinder with 3.5-inch sub-LCD