SONY

PDW-680

Three 2/3-inch type Exmor CMOS sensors XDCAM HD shoulder camcorder recording full HD / SD

Overview

Professional camcorder for recording interlaced HD and SD images

The PDW-680 XDCAM HD422 camcorder is a mid-range Professional Disc camcorder with many of the same features as the more advanced PDW-700. The PDW-680 has three 2/3-inch type Exmor CMOS sensors for recording 1080/50i or 1080/60i HD images or MPEG IMX and DVCAM SD, as standard. Progressive mode is available only for playback.

More IT based operation

The PDW-680 is designed to enable a smooth migration from tape camcorder use to PC-based operation to improve workflow efficiency with MXF/MPEG interoperability and metadata functions.

This product contains pre-installed software and requires the purchase of licence keys to activate some functions.

Features

Three 2/3-inch type Exmor CMOS sensors with high sensitivity

The PMW-680 is equipped with three 2/3-inch type Exmor™ CMOS

sensors, each with an effective pixel count of 1920 (H) x 1080 (V). These deliver superior picture performance with full HD resolution. This 2/3-inch-type image sensor allows the camcorder to provide an excellent sensitivity of F12 in 60Hz mode and F13 in 50Hz, a remarkable signal-to-noise ratio of 59 dB, and a high horizontal resolution of 1000 TV lines at 60i.

Lower power consumption for longer battery life

The Exmor CMOS sensor is a unique design that deploys an A/D converter to each column of pixels, resulting in a much lower clock speed than conventional CMOS sensors. This makes it possible to greatly reduce power consumption of the camcorder. So while the PDW-680 is the same size and weight as the PDW-700, it has a power consumption of approximately 5W less than the PDW-700, enabling longer battery life.

Choice of SD or HD operation

The PDW-680 has flexible, multi-format recording capabilities. Users can select an HD recording format (MPEG HD422, MPEG HD) or SD recording format (MPEG IMX 50/40/30 and DVCAM) in 59.94i and 50i. Progressive mode is available only for playback. Having a built-in up/down convertor between HD and SD, the PDW-680 can be integrated into an existing SD production system or can be used for HD operation.

Maximum x4 Digital Extender function for magnification without loss of image sensitivity

The PDW-680 features a Digital Extender function to enable images to be digitally zoomed four times in size. Unlike lens extenders, the Digital Extender performs this function without loss of image sensitivity. Combining Digital Extender with Focus Magnification, the image will expand up to eight times, allowing for more precise focusing.

Optional analogue composite and HD/SD SDI input boards for pool-feed operation

The PDW-680 allows for both the optional CBK-SC02 analogue composite input board and CBK-HD01 HD/SD SDI input board to be installed at the same time. The option boards enables the camcorder to record video and audio output from an external deck or camcorder.

Wide choice of microphone systems

The PDW-680 is equipped with the same high quality stereo microphone as the PMW-350 camcorder. It is also compatible with a wide variety of microphones via the VF interface, allowing it to work with shotgun-type microphones such as the ECM-680S, ECM-678 and ECM674*. There is also a slot to accommodate the DWR-S01D/S02D digital wireless microphone receiver, which provides stable and secure two-channel audio. The WRR-855 series analogue microphone receiver can also be used.

*For the ECM-678 and ECM-674, the 3pin -5pin conversion cable EC-0.5X3F5M is not supplied.

14-bit A/D conversion

The PDW-680 incorporates a high-performance 14-bit A/D converter that enables images captured by the high-performance CCDs to be processed with maximum precision. In particular, this high-resolution A/D conversion allows the gradation in mid-to-dark-tone areas of the picture to be faithfully reproduced. Thanks to the 14-bit A/D converter, pre-knee signal compression in highlighted areas can be eliminated, and the camera can clearly reproduce a high-luminance subject at a 600% dynamic range.

State-of-the-art DSP LSI

The DSP (Digital Signal Processing) LSI is the heart of the image-processing device for the PDW-680 camcorder. In conjunction with the 14-bit A/D converter, it reproduces images captured by the CCD at maximum quality. In addition, white balance, white shading, and flare are digitally corrected, allowing for stable image correction. In addition, the PDW-680 provides a NS (Noise

Suppression) mode to reduce high-frequency noise elements in a video signal using Sony's advanced digital processing technology.

High-quality 4-channel 24-bit audio recording

The PDW-680 records uncompressed four-channel, 24-bit audio. It is also equipped with a range of audio interfaces.

Well-balanced compact body

The PDW-680 is designed to be very compact and ergonomically well balanced, providing a high level of mobility and comfort in various shooting situations. It weighs only 6.0 kg (13 lb 4 oz) including the HDVF-20A viewfinder, the ECM-680S microphone, the PFD50DLA disc and the BP-GL95 battery pack.

Shock and dust-resistant disc drive

To minimize errors caused by shock or dust entering the disc drive, the PDW-680 has several unique ways of providing operational resistance to such factors. The disc drive entrance is concealed by two lids, helping to prevent any dust from entering the drive. In addition, four rubber dampers are used to hold the disc drive block in place and to absorb shocks that would otherwise go into the disc drive.

Optional viewfinders available

Two types of optional viewfinders are available for users: the HDVF-20A and HDVF-200 2.0-inch* monochrome viewfinders and the HDVF-C35W 3.5-inch* colour viewfinder.

*Viewable area measured diagonally.

3.5-inch* LCD

A large, easy-to-view, colour LCD screen on the PDW-680 camcorder's side panel enables operators to instantly review recorded footage, as well as access the camera's set-up menus and view status indications such as four-channel audio meters, and the remaining time available on the disc and battery. It also

enables advanced operations such as Thumbnail Search and Scene Selection.

*Viewable area, measured diagonally.

Slow Shutter speeds for increased creativity

The shutter speed of the PDW-680 is selectable down to a 16-frame period (in 2-, 3-, 4-, 5-, 6-, 7-, 8- and 16-frame periods). During such a long frame period, electrical charges accumulate on the CMOSs, which dramatically increase sensitivity. This helps camera operators to shoot in extremely dark environments. The Slow Shutter function also allows operators to use shutter speeds longer than the frame rate and to intentionally blur images when shooting a moving object, for increased shooting creativity.

Interval Recording function

The PDW-680 offers an Interval Recording function, which intermittently records signals at pre-determined intervals. This is convenient for shooting over long periods of time, and also when creating pictures with special effects of extremely quick motion.

Picture Cache Recording function

The PDW-680 offers a Picture Cache Recording function that is especially useful during ENG applications. Up to 30 seconds of audio and video signals are buffered into the camcorder's memory before the Rec start button is even pressed (when in Standby mode). This means that everything that happened 30 seconds before the Rec start button was pressed will still be recorded onto the disc. This function works even before the disc is inserted in the drive - thereby helping to prevent the loss of any unexpected, yet important events. The caching period can be adjusted by menu setting. This camcorder cache memory also allows users to exchange the discs while recording. By removing a disc from the drive and inserting a new disc within 30 seconds,

video, audio, and time code can be recorded seamlessly onto the new disc.

Smooth gain control

A wide choice of gain and its easy-to-use control system is one remarkable feature of the PDW-680 camcorder. By setting the gain to the assignable switches, the user can easily access the desired gain. And the transition to each gain value is extremely smooth thus eliminating undesirable abrupt changes to the overall image.

Optical ND filters and electrical CC filters

The PDW-680 camcorder comes equipped with optical ND (Neutral Density) filters and electrical CC (Colour Correction) filters. The optical ND filter is controlled via a built-in ND filter wheel -- Clear, 1/4ND, 1/16ND/, and 1/64ND. And with the electrical CC filter, the user can easily obtain the desired colour temperature by setting the mode - 3200K/4300K/5600K/6300K - on a camcorder-assignable switch. The user can select the four values cyclically or choose one preset value. Another usage of the CC filter function is the colour temperature setting which can be instantly set to the required level with an absolute value 3200K, 4300K, 5600K, or 6300K. This is also available via an assignable switch. This is useful when a sudden change happens in the shooting environment and a quick and direct setting is required.

Trigger REC Function

The PDW-680 camcorder has the Trigger REC function that enables synchronized recording with PDW-HD1500 or portable flash memory recorders connected via the HD-SDI 10bits HD422 interface - a convenient feature for backup recording.

Specifications

General

Mass	Approx. 4.3 kg (body) Approx. 9 lb 8 oz (body) Approx. 6.0 kg (with VF, Mic, Disc, BP-GL95 battery) Approx. 13 lb 4 oz (with VF, Mic, Disc, BP-GL95 battery)
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 +5.0 V/-1.0 V
Power Consumption	Approx. 35 W (while recording, without options, color LCD on) Approx. 39 W (while recording, with viewfinder, color LCD on, manual lens, microphone)
Operating Temperature	-5°C to +40°C 23°F to 104°F
Storage Temperature	-20°C to +60°C -4°F to +140°F
Humidity	10% to 90% (relative humidity)
Continuous Operating Time	Approx. 135 min with BP-GL95 battery
	MPEG HD422 (50 Mbps)

Recording Format (Video)	MPEG HD: - HQ mode (35 Mbps max.) - SP mode (25 Mbps), - LP mode (18 Mbps max.) (playback only) MPEG IMX (50/40/30 Mbps) DVCAM (25 Mbps)
Recording Format (Audio)	MPEG HD422: 4 ch/24 bits/48 kHz MPEG HD: 4 ch/16 bits/48 kHz MPEG IMX: 4 ch/24 bits/48 kHz or 4 ch/16 bits/48 kHz DVCAM: 4 ch/16 bits/48 kHz
Recording Format (Proxy Video)	MPEG-4
Recording Format (Proxy Audio)	A-law (4 ch/8 bits/8 kHz)
Recording/Playback Time (MPEG HD422)	50 Mbps: Approx. 95 min (PFD50DLA), Approx. 43 min (PFD23A)
	35 Mbps, 4-ch audio: More than 145 min (PFD50DLA), More than 65 min (PFD23A) 35 Mbps, 2-ch audio (playback only): More than 150 min (PFD50DLA), More than 68 min (PFD23A)

Recording/Playback Time (MPEG HD)	25 Mbps, 4-ch audio: Approx. 190 min (PFD50DLA), Approx. 85 min (PFD23A) 25 Mbps, 2-ch audio (playback only): Approx. 200 min (PFD50DLA), Approx. 90 min (PFD23A) 18 Mbps, 4-ch audio (playback only): More than 248 min (PFD50DLA), More than 112 min (PFD23A) 18 Mbps, 2-ch audio (playback only): More than 265 min (PFD50DLA), More than 122 min (PFD23A)
Recording/Playback Time (MPEG IMX)	50 Mbps: Approx. 100 min (PFD50DLA), Approx. 45 min (PFD23A) 40 Mbps: Approx. 120 min (PFD50DLA), Approx. 55 min (PFD23A) 30 Mbps: Approx. 150 min (PFD50DLA), Approx. 68 min (PFD23A)
Recording/Playback Time (DVCAM)	25 Mbps: Approx. 185 min (PFD50DLA), Approx. 85 min (PFD23A)

Recording Frame Rate	HD 422 50 Mode: MPEG-2 422P@HL, 50 Mbps - 1920 x 1080/ 59.94i, 50i HD 420 HQ Mode: MPEG-2 MP@HL, 35 Mbps - 1440 x 1080/ 59.94i, 50i SD: MPEG IMX /DVCAM Mode - 720 x 486/ 59.94i - 720 x 576/ 50i

Lens

Lens Mount	2/3-inch type 48 bayonet mount

Input/Output

Genlock Input	BNC (x1), 1.0 Vp-p, 75 Ω*2 Composite Input with CBK-SC02
Timecode Input	BNC (x1), 0.5 Vp-p to 18 Vp-p, 10 kΩ
SDI Input	With CBK-HD01, BNC (x1) HD/SD switchable; HD-SDI: SMPTE 292M (w/embedded audio) SD-SDI: SMPTE 259M (w/embedded audio)
	CH-1/CH-2: XLR-type 3-pin

Audio Input	(female) (x2), Line/Mic/Mic +48V/AES/EBU selectable
Mic Input	XLR-type 5-pin (female, stereo) (x1)
Test Output	BNC (x1), switchable; HD: Y SD: composite (character on/off)
SDI Output	BNC (x2) 1 (HD/SD switchable); HD-SDI: SMPTE 292M (with embedded audio) SD-SDI: SMPTE 259M (with embedded audio) 2 (HD/SD switchable, character on/off); HD-SDI: SMPTE 292M (with embedded audio) SD-SDI: SMPTE 259M (with embedded audio)
Audio Output	CH-1/CH-2: XLR-type 5-pin (male, stereo) (x1)
Timecode Output	BNC (x1), 1.0 Vp-p, 75 Ω
Earphone Output	Mini-jack (x2); front: monaural, rear: stereo/monaural
Speaker Output	Monaural

DC Input	XLR-type 4-pin (male) (x1), 11 V to 17 V
DC Output	4-pin (x1) (for wireless microphone receiver), 11 V to 17 V DC (MAX 0.5 A)
Lens	12-pin
Remote	8-pin
Light	2-pin, DC 12 V, max. 50 W
i.LINK	IEEE 1394, 6-pin (x1), File Access Mode*3
Memory Stick	(x1) for camera setup files
Ethernet	RJ-45 (x1), 100BASE-TX: IEEE 802.3u, 10BASE-T: IEEE 802.3
USB	(x1) for Wi-Fi Adapter, USB Memory, USB Keyboard

Audio Performance

Frequency Response	20 Hz to 20 kHz, +0.5 dB/-1.0 dB
Dynamic Range	More than 93 dB
Distortion	Less than 0.08% (at 1 kHz, reference level)

Crosstalk	Less than -70 dB (at 1 kHz, reference level)
Wow and Flutter	Below measurable limit
Headroom	12/16/18/20 dB (selectable)

Camera Section

Imager	3-chip 2/3-type "Exmor" Full HD CMOS
Effective Resolution	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)	59.94i: 1/100, 1/125, 1/250, 1/500, 1/1000. 1/2000, ECS*4 , SLS*5 50i: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS*4 , SLS*5
Shutter Speed (Slow Shutter (SLS))	2, 3, 4, 5, 6, 7, 8, 16-frame accumulation*6
Sensitivity (2000 lx, 89.9% reflectance)	59.94i: F12 (typical) 50i: F13 (typical)
Minimum Illumination	Approx. 0.014 lx (F1.4 lens, +42 dB, with 16-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
Horizontal Resolution	1,000 TV lines or more (1920 x 1080i mode)
Registration	Less than 0.02%
Modulation Depth	45% or more at 27.5 MHz (typical)

Viewfinder

Viewfinder	Option

Other Equipment

Built-in LCD Monitor	3.5-inch type color LCD monitor*7
Built-in Speaker	(x1)

Supplied Accessories

Supplied Accessories	Stereo Microphone (1) Shoulder strap (1) Operation Guide (Countries) (1)

	CD-ROM manual (1) Application software CD-ROM (1)

Notes

Note	[*1] The values for dimensions are approximate.

Related products

DWR-S02D

Digital wireless receiver

HDVF-EL30

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

HDVF-EL20

OLED 0.7-inch colour HD viewfinder

LMD-B170

17-inch cost-effective, lightweight basic grade Full HD LCD monitor for versatile use

LMD-A170

17-inch lightweight Full HD high grade LCD monitor for studio and field use

LMD-A240

24-inch lightweight Full HD high grade LCD monitor for studio and field use

LMD-A220

21.5-inch lightweight Full HD high grade LCD monitor for studio and field use

Gallery

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