

# PDW-680

Professional Disc Camcorder

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## Smooth Migration to Tapeless, File-based HD Operation

The PDW-680 joins the XDCAM family as a new, powerful camcorder that supports both HD (MPEG HD422/HD420) and SD (MPEG IMX50/40/30, DVCAM) recording, offers excellent, versatile camera features, and is equipped with three 2/3-inch type CMOS Exmor sensors. The PDW-680 provides outstanding picture quality, boasting high sensitivity of F12 (60i) and F13 (50i), and an excellent signal-to-noise ratio of 59 dB. Using reliable Professional Disc™ recording media, the PDW-680 offers the advantages of file-based recording so camera professionals can significantly improve operational efficiency with capabilities such as thumbnail scene search and immediate viewing on the built-in LCD panel. With various functions inherited from Sony's world-acclaimed XDCAM camcorders, the PDW-680 is an ideal choice for many different camera professionals, from those engaged in news gathering, when speed is the key concern, to those who produce TV programs and documentaries, when quality is crucial.

**XDCAM HD**

**MPEG HD422**

**MPEG HD**

**MPEG IMX**

**DVCAM**

**Exmor**  
3 CMOS Sensors

# MAIN FEATURES

## High Picture Quality with Three 2/3-inch Type Exmor CMOS Sensors

Equipped with three Exmor CMOS sensors, the PDW-680 delivers superior picture performance with full-HD resolution. These 2/3-inch type image sensors provide excellent sensitivity levels of F12 at 60i and F13 at 50i, a remarkable signal-to-noise ratio of 59 dB, and a high horizontal resolution of 1,000 TV lines\*. These high-performance sensors result in high-quality digital signals with extremely low noise. This significantly enhances shooting in low-light environments.

\* In HD-SDI, HQ 1080 mode.

## Choice of SD or HD Operation

The PDW-680 has a highly flexible multi-format recording capability. Users can select an HD recording format (MPEG HD422, MPEG HD) or SD recording format (MPEG IMX50/40/30, DVCAM), in a variety of frame frequencies. Also, having an up/down conversion function, this camcorder can be integrated into an existing SD production system or can be chosen for future HD operation.

\* Interface mode only; Progressive mode is not supported.

## Efficient Workflow with Proxy Data

At the same time as recording high-resolution video and audio data, the PDW-680 can record a low-resolution version of the video and audio data (called Proxy Data) not only to Professional Disc but also to USB memory, which enables operators to quickly transfer the small files to a laptop for immediate viewing, logging, selecting takes, and cuts-only editing. The proxy data can be transferred at a faster-than-real-time rate from the field to the studio. This enables proxy editing to begin before the high-resolution assets arrive.

## Powerful Nonlinear Recording

The PDW-680 uses Professional Discs as its recording media, which enables long-duration recording because of this media's extremely high capacity. Professional Disc media almost equals the capacity of CDs and DVDs.

Despite its size, a single 50-GB dual-layer disc can record MPEG HD422 data for approximately 95 minutes. If MPEG HD data is recorded in 25-Mbps mode, over 3 hours of recording can be achieved, which is perfect for documentaries, nature shows, and similar projects.



## Shock- and Dust-resistant Disc Drive

To minimize errors caused by shock or dust entering the disc drive, the PDW-680 provides operational resistance in several special ways that have already proved reliable in the PDW-700/F800. 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.

## File-based Recording Capability Enhances Production Workflow

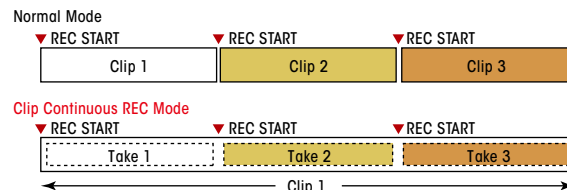
Unlike a conventional tape camcorder, the PDW-680 records video and audio as a data file, called a clip. This allows recorded scenes to be immediately



Thumbnail Search

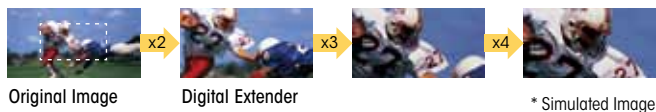
recalled and played back, thanks to file-based thumbnail search operation. Furthermore, the camera operator can return to shooting immediately without having to cue back to the end of the last shot. This helps

especially in ENG when the user needs to operate quickly without accidentally overwriting recorded clips. In addition, the PDW-680 provides two types of file recording mode. In normal mode, one clip file is created each time recording starts and stops. In the other mode, called Clip Continuous REC mode, a single clip file can be created at the user's discretion as tape media operation which greatly improves the efficiency of the nonlinear editing work that follows.



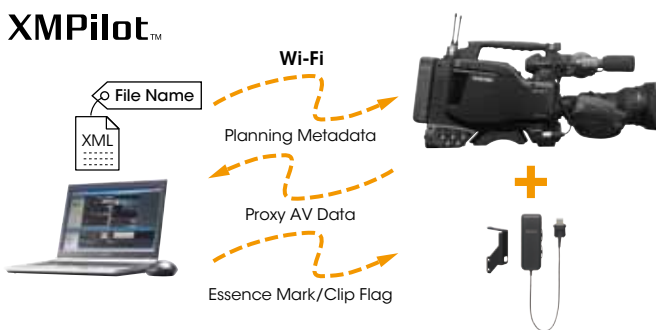
## Maximum x4 Digital Extender

The Digital Extender function of the PDW-680 enables images to be digitally zoomed to four times in size. Unlike lens extenders, the Digital Extender performs this function without any loss of image sensitivity. Combined with the Focus Magnification function, the user can expand an image up to eight times in size, allowing for more precise focusing.



## Planning Metadata Import via a Wi-Fi Adapter

To realize Sony's innovative XMPilot™ metadata workflow, the PDW-680 is designed to support planning metadata. Before shooting starts, users can import the metadata to be used. This type of metadata is called planning metadata. It diminishes the time and effort of inputting metadata at a location, thus achieving a smooth interface with post-production and archiving. With the optional CBK-WA01 Wi-Fi Adapter and the CBKZ-UPG01 software activation key, users can achieve a wireless workflow using mobile devices.



## Picture Cache and Disc Exchange Cache

The PDW-680 offers a Picture Cache Recording function that is especially useful in ENG applications. Up to 30 seconds of audio and video signals are buffered into the camcorder's internal memory before the REC start button is pressed. Using a Disc Exchange Cache function, video, audio, and timecode can be recorded seamlessly onto the new disc, by replacing a new disc within 30 seconds. This helps to prevent the loss of any unexpected yet important events.

## Optical ND Filters and Electric CC Filters

The PDW-680 comes equipped with wheel-type optical ND (Neutral Density) filters and electrical CC filters. With the electrical CC filter, users can easily select a color temperature – 3200K/4300K/5600K/6300K – using a camcorder-assignable switch. Users can also obtain the specific value with just a single click, which is useful when there's a sudden change in the shooting environment and a quick reset is required.

## Pool-feed Operation

For pool-feed operation, an optional CBK-SC02 board provides SD composite input or an optional CBK-HD01 board provides SD/HDSLI input, enabling recording of audio and video feed signals supplied by an external VTR/camcorder.

## Wide Choice of Microphone Systems

The PDW-680 has its own microphone but is also compatible with a variety of other microphones. Three shotgun-type microphones – the ECM-680S, ECM-678, and ECM-674 – are available as options. This camcorder also has a slot to accommodate the DWR-S02D\* digital wireless microphone receiver, which provides stable and secure two-channel audio with high tolerance to interference waves. The WRR-855 Series microphone receiver can also be used in this slot.

\* Availability varies by country.  
Please check with your local Sony office.



## AES XLR Digital Input

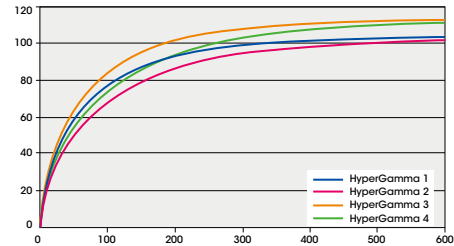
The PDW-680 offers AES XLR digital input selection, which means it can accept digital audio signals such as those supplied from an AES digital mixer during field shooting.

## Scene File System

Camera operators use the scene file system of the PDW-680 to easily call up customized picture-tonal settings to suit particular shooting conditions, rather than have to readjust the camera each time. This system is also very helpful when sharing the same camera settings across multiple camcorders. Scene files can be stored on Memory Stick, Memory Stick Pro, and Memory Stick Pro Duo media (up to 4-GB). All files, including user files, reference files, and lens files, can be also stored on Memory Sticks.

## Selectable Gamma Curves

The PDW-680 offers a wide variety of gamma curves to flexibly handle contrast and give a specific 'look' to an image. In addition to six types of standard gamma curve, there are four types of HyperGamma which are identical to those on CineAlta™ cameras. Operators can select the best-suited preset gamma curves, depending on scene requirements.



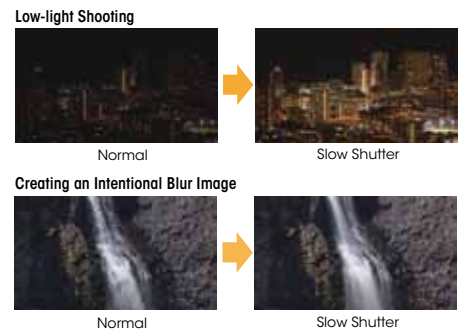
## Interval Recording

This camcorder's Interval Recording function 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 that include extremely quick motion.

## Slow Shutter

The shutter speed of the PDW-680 is selectable down to a 1/6-frame period, in 2-, 3-, 4-, 5-, 6-, 7-, 8-, and 1/6-frame periods\*, increasing its 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.

\* Only even numbers of frame settings are available.



## OPTIONAL ACCESSORIES

 <b>HDVF-C30WR</b> HD Electronic Viewfinder	 <b>HDVF-C35W</b> 3.5-inch LCD Color Viewfinder	 <b>HDVF-20A</b> 2.0-inch CRT B/W Viewfinder	 <b>HDVF-200</b> 2.0-inch CRT B/W Viewfinder	 <b>CBK-WA01</b> Wi-Fi Adaptor	Software	 <b>CBK-SC02</b> Analog Composite Input Board
 <b>CBK-HD01</b> HD/SD-SDI Input Board	 <b>PFD23A (23.3G)</b> Professional Disc	 <b>PFD50DLA (50G)</b> Professional Disc	 <b>ECM-680S</b> Shotgun-type Electret Condenser Microphone	 <b>ECM-678</b> Shotgun-type Electret Condenser Microphone	 <b>ECM-674</b> Shotgun-type Electret Condenser Microphone	 <b>EC-0.5X3F5M</b> Cable for ECM-674/678
 <b>DWR-S02D</b> Wireless Microphone Receiver	 <b>WRR-855S</b> Wireless Microphone Receiver	 <b>RM-B170</b> Editing Controller	 <b>BP-GL65A</b> Lithium-ion Battery Pack	 <b>BP-GL95A</b> Lithium-ion Battery Pack	 <b>BP-L60S</b> Lithium-ion Battery Pack	 <b>BP-L80S</b> Lithium-ion Battery Pack
 <b>CAC-12</b> Mic Holder	 <b>BKW-401</b> Viewfinder Rotation Bracket	 <b>RCP-1001</b> Remote Control Unit	 <b>RCP-1501</b> Remote Control Unit	 <b>AC-DN10/AC-DN2B</b> AC Adaptor		

# SPECIFICATIONS

PDW-680	
<b>General</b>	
Mass	Approx. 4.3 kg (9 lb 8 oz) (body) Approx. 6.0 kg (13 lb 4 oz) (with VF, Mic, Disc, BP-GL95 battery)
Dimensions (W x H x D)	124 x 269 x 332 mm (5 x 10 5/8 x 13 1/8 inches) (excluding protrusions, body only)*1
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
Recording Format (Video)	MPEG HD422 (50 Mbps) 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)*2	50 Mbps: Approx. 95 min (PFD50DLA), Approx. 43 min (PFD23A)
Recording/Playback Time (MPEG HD)*2	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) 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
<b>Lens</b>	
Lens Mount	2/3-inch type 48 bayonet mount
<b>Input/Output</b>	
Genlock Input	BNC (x1), 1.0 Vp-p, 75 Ω*3 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)
Audio Input	CH-1/CH-2: XLR-type 3-pin (female) (x2), Line/Mic/Mic +48V/AES/EBU selectable
Mic Input	XLR-type 5-pin (female, stereo) (x1)

PDW-680	
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: monoaural, rear: stereo/monoaural Speaker Output
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*4
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
<b>Audio Performance</b>	
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)
<b>Camera Section</b>	
Imager	3-chip 2/3-type HD Exmor 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)	59.94i: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS*5, SLS*6 50i: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000, ECS*5, SLS*6
Shutter Speed (Slow Shutter (SLS))	2, 3, 4, 5, 6, 7, 8, 16-frame accumulation*7
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
Smear Level	-135 dB (typical)
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)
<b>Viewfinder</b>	
Viewfinder	Option
<b>Other Equipment</b>	
Built-in LCD Monitor	3.5-inch type color LCD monitor*8
Built-in Speaker	(x1)
<b>Supplied Accessories</b>	
	Stereo Microphone (1), Shoulder strap (1), Operation Guide (Countries) (1), CD-ROM manual (1), Application software CD-ROM (1)

\*1: The values for dimensions are approximate.

\*2: Recording/ Playback time may vary by the encoding.

\*3: The genlock input connector is used for composite input when the optional CBK-SC02 is used.

\*4: AVC (DV) interface is not supported.

\*5: ECS: Extended Clear Scan

\*6: SLS: Slow Shutter

\*7: Slow shutter can not function with the digital extender.

\*8: Viewable area measured diagonally.

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MK10934V1 OHB12MAR

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The PDW-680 is produced at Sony EMCS Corporation's Tokai Technology Center, which has received ISO14001, the Environmental Management System certification.

