

SONY

PDW-75MD

XDCAM HD Medical Video Recorder

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XDCAM HD
Professional Disc System



The PDW-75MD Medical-compliant 1080i HD Video Recorder

Providing Outstanding HD Images

The demand for high-quality image recording in medical applications such as surgical procedures and endoscopy has been growing rapidly. As a result, there have been some remarkable enhancements in medical equipment such as cameras and endoscopes, which can now capture even greater image quality and reproduce both standard-definition (SD) and high-definition (HD) images. To accommodate these trends, Sony introduces the **PDW-75MD** medical-compliant 1080i HD video recorder. The **PDW-75MD XDCAM™** HD deck is an optical disc-based HD video recorder designed especially for medical recording applications that is fully compliant with medical safety standards*. It records high-quality digital images in 1440 x 1080 HD resolution, which is one of the standard video formats of HD broadcasting, resulting in extremely clear and detailed images.

The **PDW-75MD** deck can record these high-quality images for up to 4.5 hours** on a single disc, which is ideal for lengthy operations. Utilising the Professional Disc optical media for recording provides a number of significant benefits, such as instant random access to recordings, easy editing, quick copying of material to IT-based devices, and network capability – all of which offer tremendous workflow improvements.

* IEC 60601-1, UL 60601-1 listed, CAN/CSA-C22.2 No.601.1
** When recording in MPEG HD LP mode (18 Mb/s, VBR) with two-channel audio onto a PFD50DLA 50-GB disc.



PDW-75MD Highlights

- › Compliance with medical safety standards: IEC 60601-1, UL 60601-1, and CAN/CSA-C22.2 No.601.1
- › HD image recording; high resolution of 1440x 1080 pixels (one of the standard video formats of HD broadcasting)
- › Uses Professional Disc as the recording media:
 - › Large 50 GB and 23 GB optical discs
 - › Utilises the same blue-violet laser technology as consumer Blu-ray Disc™ products
 - › Designed specifically for professional recording applications to achieve higher transfer rates and a greater level of reliability compared to consumer Blu-ray discs
 - › Already adopted by a great number of professional users including broadcasters and video production companies worldwide
 - › Rewriteable media (approx. 1,000 times*)
 - › Ideal for long-term storage of footage
- › Up to 4.5 hours of recording
- › Thumbnail-based instant random access to footage
- › No overwriting of valuable existing footage
- › VTR-like picture search operation using the Jog/Shuttle dial
- › Easy cuts-only editing (Scene Selection Function)
- › Proxy Data recording – a low-resolution version of the AV data is recorded simultaneously with the high-resolution data, which can be used for fast and easy editing and playback
- › Network capability (option)

* Based on Sony testing.

Features

The Recording Media: Professional Disc



Large-capacity Optical Disc for High-quality Long-time Recording

The PDW-75MD records to large-capacity optical discs called Professional Disc, which Sony has developed specifically for professional recording applications. The Professional Disc is a 12 cm, reusable optical disc, available in two types: the PFD50DLA 50 GB dual-layer disc and the PFD23A 23 GB single-layer disc. The larger capacity PFD50DLA makes it possible to record up to 265 minutes* of HD video. With its outstanding image reproduction, extremely long recording time, and a number of advanced features, the **PDW-75MD** is an ideal medical video recorder that improves both image quality and operational efficiency.

High Reliability and Durability

Professional Disc media is highly reliable and durable because it experiences no mechanical contact during recording and playback. Packaged into an extremely durable and dust-resistant disc cartridge, the media offers a high level of reliability, as well as safe and easy handling in busy recording environments. It also allows the user to rewrite data onto it up to 1000 times and read data from it up to one million times**.

* This figure is approximate. The precise recording duration will depend on the bit rate selected.

** Estimation based on Sony accelerated testing.

› PFD50DLA



› PFD23A



Ideal for Archiving

The non-contact recording and playback makes it an ideal media for long-term storage of valuable medical recording. Plus, the media's physical size is very compact compared to VHS cassette, giving great space-saving benefits when archiving.

Flexible Media

Professional Disc media can accommodate not only AV data, but also other data in various file formats. Up to 500 MB of this additional data can be recorded onto a single disc, which allows users to store a variety of information such as still images, diagnostic data, and text information about patients, together with the video recordings.

Features



High-quality HD Recording

The PDW-75MD deck records 1080-line high definition video using the MPEG HD codec that uses MPEG-2 MP@HL compression. The greater resolution of MPEG HD video compared to standard-definition video makes it possible to reproduce extremely clear and detailed images, which is essential in medical recording.



SD Recording

The PDW-75MD has the capability to record in DVCAM™ format*, with NTSC/PAL and 16:9/4:3 switchable modes, as well as in the MPEG HD format.

* Requires the optional PDBK-104 SD input board.

Selectable Bit Rates

The user can select desired bit rates of either 35, 25, or 18 Mb/s depending on requirements for picture quality and recording length. Choosing the highest bit rate of 35 Mb/s results in the highest-quality images over a recording time of 150 minutes*, while choosing the 18 Mb/s bit rate provides a longer recording time of 265 minutes*. In HQ (35 Mb/s) and LP (18 Mb/s) modes, real-time VBR (Variable Bit Rate) encoding is used, which automatically allocates the appropriate bit rate (the amount of data used for recording) according to the picture content in real time to optimise picture quality while utilising disc space effectively.

* Approximate time in two-channel audio recording mode with a PFD50LA 50 GB disc.

XDCAM HD Recording Specifications

HD Video Codec	Compression	MPEG-2 MP@HL		
	Sampling Rate	4:2:0		
	Bit Rate and Recording Time* (approx.)		PFD50DLA(50 GB)	PFD23A(23.3 GB)
		HQ 35 Mb/s VBR	145 minutes (4-ch audio) 150 minutes (2-ch audio)	65 minutes (4-ch audio) 68 minutes (2-ch audio)
	SP 25 Mb/s CBR		190 minutes (4-ch audio) 200 minutes (2-ch audio)	85 minutes (4-ch audio) 90 minutes (2-ch audio)
		LP 18 Mb/s VBR	248 minutes (4-ch audio) 265 minutes (2-ch audio)	112 minutes (4-ch audio) 122 minutes (2-ch audio)
	Number of Pixels	1440 x 1080		
SD Video Codec	Compression	DVCAM		
	Sampling Rate	4:1:1 (NTSC)/4:2:0 (PAL)		
	Bit Rate and Recording Time* (approx.)		PFD50DLA(50 GB)	PFD23A(23.3 GB)
		25Mb/s	185 minutes	85 minutes
	Active Lines Per Frame	480 (NTSC)/576 (PAL)		
Audio	Compression	None (Linear PCM)		
	Number of Channels	2 or 4, selectable		
	Sampling Frequency	48 kHz		
	Quantization	16 bits/sample		

* When recording in HQ (35 Mb/s) or LP (18 Mb/s) mode, recording time may be more than the shown specified figures depending on the actual bit rate that is adopted during VBR encoding.



No Overwriting of Footage - For Immediate Recording Start

The PDW-75MD makes each new recording on an empty area of the disc. This means you do not have to worry about accidentally recording over your existing valuable footage.



Thumbnail Search

Instant Thumbnail Search with "Expand" Function

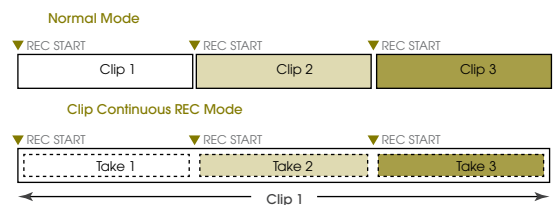
The PDW-75MD provides significant benefits in reviewing recorded footage. The video and audio signals that are captured between the start and finish of each recording are saved as a "clip". During playback, the user can cue-up to the next or previous clip simply by pressing the "Next" or "Previous" button, as you would do on a CD or DVD player. Furthermore, thumbnails are automatically generated for each clip as a visual reference, allowing the user to cue-up to a desired scene simply by guiding the cursor to a thumbnail and pressing the "Play" button. For further convenience, the "Expand" function allows one selected clip in the thumbnail display to be divided into 12 even-time intervals, each with their own thumbnail identifier. This is useful if the user wants to quickly search for a particular scene within a lengthy clip.

Selectable Modes of File Recording

The PDW-75MD provides two types of file recording modes. In standard operation, one clip file is created each time recording is started and stopped*. In the other mode, called Clip Continuous REC mode, one clip file can be created at the user's discretion. What's more, although it is a single clip, Thumbnail Search operation and the Expand function are available just as if individual clips were created. Users can choose the most suitable mode depending on the type of application.

* Each take needs to be longer than two seconds.

** Available when recording is remotely controlled via an RS-232C or RS-442A interface.



Features

Equipped with a Jog/Shuttle Dial

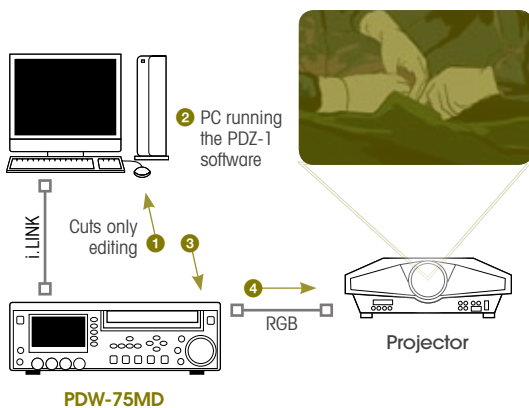
In addition to the convenient thumbnail-based search, the PDW-75MD deck provides a search operation using the Jog/Shuttle dial, which is a common feature of VTR-based operations. Up to ± 20 times normal-speed playback in Shuttle mode and ± 1 time normal-speed playback in Jog/Variable mode are provided.

Scene Selection Function

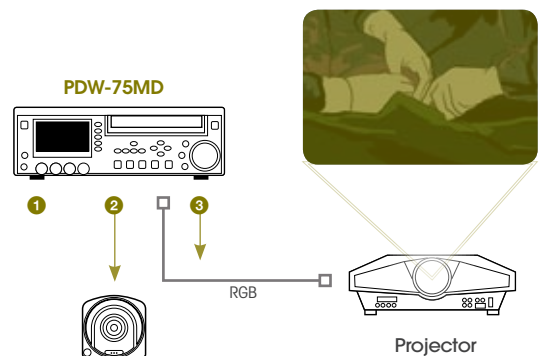
The PDW-75MD deck has a "Scene Selection" function that allows instant cut editing to be performed on the deck itself. With this function, the user can select and play back only the necessary clips directly from the deck. This can be done while keeping the original material unchanged, thus allowing different versions of video sequence to be easily created, without the use of any external devices. This is highly convenient when the user wants to use a single source of recorded footage for different purposes such as for lectures, medical trainings, and academic presentations.



Scene Selection on PC



Scene Selection on the Deck



- 1 Import Proxy Data to a PC running the PDZ-1 software
- 2 Edit the Proxy Data (Scene Selection)
- 3 Save the edit results on the XDCAM disc
- 4 The deck plays back the high-resolution data according to the edit results

- 1 Edit clips on the deck (Scene Selection)
- 2 Save the edit results on the XDCAM disc
- 3 The deck plays back the high-resolution data according to the edit results

Proxy Data Recording

One of the significant characteristics of the PDW-75MD is that it records a low-resolution version of AV data (called "Proxy Data") simultaneously with the high-resolution version. This Proxy Data, which is much smaller in size than high-resolution data, is readily available on the disc immediately after recording, and can be transferred to other devices such as PCs or servers at an extremely high speed.

Proxy Data can be conveniently used for many different purposes such as reviewing footage and referring as library pictures in an archive system. The user can browse the Proxy Data on their PC using the supplied software.

The PDW-U1: XDCAM Drive Unit

The optional PDW-U1* is a new, compact, mobile, and highly cost-effective solution for reviewing material and editing applications. It serves as an external PC drive connected via a common USB interface, and enables material recorded on Professional Disc media to be viewed directly on a computer.



› PDW-U1

Professional Disc

Proxy AV Data Low-resolution Version of AV Data

Video MPEG-4, 1.5 Mb/s
Audio A-law, 0.5 Mb/s

- › Remote Browsing
- › Simple and Quick Editing



MPEG HD High-resolution AV Data

- › Handles both the new dual-layer disc (PFD50DLA) and single-layer disc (PFD23A)
- › Supports the Hi-Speed USB (USB 2.0) interface – compatible with most PCs
- › High-speed file transfers with the newly developed optical drive
- › Highly compact and lightweight
- › Dimensions (W x H x D): 59 x 164 x 226 mm (2 3/8 x 6 1/2 x 9 inches)
- › Mass: 1.4 kg (3 lb 1 oz)
- › Can be operated either horizontally or vertically

* The initial version of the PDW-U1 is read-only, and cannot write files onto Professional Disc media. However, this capability will be available with a software upgrade planned to be available in Spring 2008.

Features

Supplied Software

The PDW-75MD comes with a variety of application software packages, as standard, that maximise the benefits of the XDCAM's disc- and file-based operations. The PDZ-1 Proxy Browsing Software provides a wide variety of convenient operations to effectively manage recorded data, as well as to browse Proxy Data. For example, it enables the user to record information such as the date/time of diagnostics or operations, the name of the doctor and/or patient, and general comments onto a Professional Disc together with the original AV data. It also allows the user to perform simple cut editing via its easy-to-use GUIs. After editing, the PDW-75MD deck can play back high-resolution AV data according to the edit results. Furthermore, it provides powerful operations such as generation-loss-free disc/clip copying and the creation of popular ASF files for playback on Windows® Media Player. The PDZ-VX10 software allows users to view high-resolution and proxy MXF files on your PC. And the PDZK-P1 software is a plug-in for Apple Final Cut Pro nonlinear editing systems. With this software installed, XDCAM devices can be mounted on Mac Finder via a FireWire/i.LINK™* connection, and users can seamlessly import, edit, and export recorded material.

* i.LINK is a Sony trademark used only to designate that a product is equipped with an IEEE1394 connector. Not all products with an i.LINK connector may communicate with each other. Please refer to the documentation that comes with any device having an i.LINK connector for information on compatibility, operating conditions, and proper connection.

A Wide Variety of Interfaces

The PDW-75MD deck is equipped with a wide variety of interfaces including HD-SDI input and output, analogue HD output, XGA output, and analogue/digital audio input and output. It also has an i.LINK interface that supports two protocols: DV OUT for digital AV signal transfer, and File Access Mode for file-based data exchange with IT-based devices. RS-422A and RS-232C remote interfaces are also provided.



› PDZ-1



› PDZ-VX10



› PDZK-P1

Down-conversion Output and Up-conversion Recording

The PDW-75MD deck incorporates a down-conversion capability that allows material recorded in the MPEG HD format to be converted to SD signals and output via the SD video output connectors (including SD composite and i.LINK connectors). It also boasts an up-conversion recording capability via the optional PDBK-104 board. This allows input signals from the SD-SDI or SD analogue composite connector to be recorded in the MPEG HD format. In addition, various aspect ratios are available for SD outputs, which provides great operational flexibility.

Other Features

- › 16:9, 3.5-inch* colour LCD
- › Supplied with a simple Remote Commander™ unit
- › Repeat playback function
- › Compact and lightweight design, and can be placed either horizontally or vertically
- › Input and output of 25 Mb/s streams compatible with the HDV™ 1080i format (requires the optional PDBK-102 board)

* Viewable area measured diagonally

Output Aspect Ratio

Output Mode	LCD	HD-SDI / Analogue HD	SD-SDI/Composite		
HD Recording	FULL	FULL	Down Conversion		
			SQUEEZE	EDGE CROP	LETTER BOX 16:9/14:9/13:9
HD Playback	FULL	FULL	Down Conversion		
			SQUEEZE	EDGE CROP	LETTER BOX 16:9/14:9/13:9
DVCAM Playback or Recording (16:9 Disc)	FULL	FULL	Down Conversion		
			SQUEEZE	EDGE CROP	LETTER BOX 16:9/14:9/13:9
DVCAM Playback or Recording (4:3 Disc)	FULL	FULL	FULL		

Specifications

General			
Power Requirements	AC 100 V to 240 V, 50/60 Hz		
Power Consumption	70 W		
Operating Temperature	+5 to +40 °C (+41 to +104 °F)		
Storage Temperature	-20 to +60 °C (-4 to +140 °F)		
Operating Humidity	20 to 90% (relative humidity)		
Dimensions (W x H x D)	307 x 100 x 411 mm (12 1/8 x 4 x 16 1/2 inches)		
Mass	7.2 kg (15 lb 6 oz)		
Recording format	Video	MPEG HD (MPEG-2 MP@HL): HQ mode (VBR, maximum bit rate: 35 Mb/s), SP mode (CBR, 25 Mb/s), LP mode (VBR, maximum bit rate: 18 Mb/s) DVCAM (CRB, 25 Mb/s) (Option: PDBK-104)	
	Proxy Video	MPEG-4	
	Audio	4 ch or 2 ch, 16 bits/48 kHz	
	Proxy Audio	A-law (4 ch / 2 ch, 8 bit, 8 kHz)	
Playback format	Video	MPEG HD (MPEG-2 MP@HL): HQ mode (VBR, maximum bit rate: 35 Mb/s), SP mode (CBR, 25 Mb/s), LP mode (VBR, maximum bit rate: 18 Mb/s), DVCAM (CRB, 25 Mb/s)	
	Proxy Video	MPEG-4	
	Audio	MPEG HD: 4 ch or 2 ch, 16 bits/48 kHz DVCAM: 4 ch, 16 bit/48 kHz	
	Proxy Audio	A-law (4 ch / 2 ch, 8 bit, 8 kHz)	
Recording / playback time	MPEG HD	PFD50DLA (50 GB)	PFD23A (23.3 GB)
	HQ mode	(4-ch audio) 145 min. (2-ch audio) 150 min.	65 min. 68 min.
	SP mode	(4-ch audio) 190 min. (2-ch audio) 200 min.	85 min. 90 min.
	LP mode	(4-ch audio) 248 min. (2-ch audio) 265 min.	112 min. 122 min.
	DVCAM	(4-ch audio) Approx. 85 min. (playback only)	
	Search speed (in colour)	Jog mode	±1 time normal speed
	Variable Speed mode	±1 time normal speed	
	Shuttle mode	±20 times normal speed	
Signal Inputs			
Analogue reference input	BNC x2 (including loop through), HD Tri-level sync or SD composite sync (0.3 Vp-p/75Ω/sync negative)		
Analogue composite input (option: PDBK-104)	BNC x1, RS-170M		
Analogue HD component input (option: PDBK-103)	BNC x4, Y/Pb/Pr/ (Sync) or G/B/R/ (Sync)		
HD-SDI input	BNC x1, SMPTE 292M		
SD-SDI input (option: PDBK-104)	BNC x1, SMPTE 259M		
Analogue audio input	XLR x2 (channel selectable), +4/0/-3/-6 dBu (selectable), 10 kΩ, balanced		
Digital audio input	AES/EBU, BNC x2, 4 channels		
Timecode input	BNC x1, SMPTE timecode		
Signal Outputs			
Analogue composite video	BNC x1, (1.0 Vp-p/75 Ω/sync negative), RCA-pin x1, (1.0 Vp-p/75 Ω/sync negative)		
Monitor output	D-sub 15-pin (G/B/R or Y/Pb/Pr)		
Built-in display	3.5-inch type colour LCD monitor		
HD-SDI output	BNC x2, SMPTE 292M		
SD-SDI output	BNC x1, SMPTE 259M		
Analogue audio output	XLR x2 (channel selectable), +4/0/-3/-6 dBu (selectable), 600 Ω load, balanced		
Audio monitor output	RCA x2 (L, R, Mix), -6 dBu, 47 kΩ, unbalanced		
Headphone output	Stereo phone jack, -14 dBu, 8 W unbalanced		
Digital audio output	AES/EBU, BNC x2, 4 channels		
Timecode output	BNC x1, SMPTE timecode		
Other inputs/outputs			
i.LINK	IEEE1394, 6-pin x1, DV OUT or File Access Mode		
i.LINK (HDV 1080i) (option: PDBK-102)	IEEE1394, 6-pin x1, HDV 1080i IN/OUT		
Ethernet (option: PDBK-101)	1000Base-T (RJ-45)		
RS-422A	D-sub 9-pin x1		
RS-232C	D-sub 9-pin x1		
CONTROL	Mini-jack 4-pin		
Video performance			
Sampling frequency	Y: 74.25MHz, R-Y/B-Y: 37.125MHz		
Quantisation	8 bits/sample		
Analogue composite output (DV)	Frequency response: 0 to 4.2 MHz +1.0/-3.0 dB (525), 0 to 4.8 MHz +1.0/-3.0 dB (625) S/N (Y): 53 dB or more, Y/C delay (K2T): ±25 ns or less, K-factor (K2T): 2% or less		
Audio performance			
Sampling frequency	48 kHz		
Quantisation	16 bits / 2 channels or 16 bits / 4 channels		
Frequency response	20 Hz to 20 kHz +0.5/-1.0 dB (0 dB at 1 kHz)		
Dynamic range	90 dB or more		
Distortion	0.05% or less (at 1 kHz)		
Headroom	20/18/16/12 dB (selectable)		
Supplied accessories			
Operation manual (x1), Vertical installation stand (x1), Infrared Remote Commander (x1), PDZ-1 Proxy Browsing Software (x1), XDCAM Proxy Viewer Software (x1), PDZK-P1 XDCAM Transfer Software (x1)			

Optional Accessories



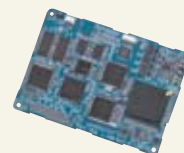
PFD50DLA
Professional Disc



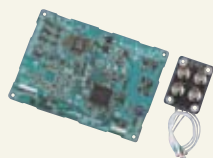
PFD23A
Professional Disc



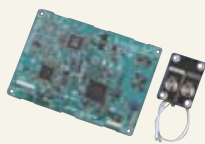
PDBK-101
Network Board



PDBK-102
MPEG-TS In/Out Board*



PDBK-103
HD Analogue
Input Board*



PDBK-104
SD Input Up-converter
Board*



RCC-5G
Remote Control Cable
(5 m)



VMC-IL4615B
i.LINK Cable
(4-pin to 6-pin, 1.5 m)



PDW-U1
XDCAM Drive Unit

* Only one of the PDBK-102, PDBK-103 or PDBK-104 boards can be installed at any one time.

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