SONY

Our new HD Medical Video Recorder. Another precision tool.

Professional Disc™

XDCAM HD
Professional Disc System

PDW-70MD

XDCAM HD Medical Video Recorder

www.sonybiz.net/healthcare

THE PDW-70MD

Unprecedented Image Quality from the World's First* Medical-compliant 1080i HD Video Recorder

The demand for high-quality image recording in medical applications such as surgical procedures and endoscopy has been growing rapidly. As such, there have been some remarkable enhancements in recent 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 world's first medical-compliant 1080i HD video recorder* – the PDW-70MD. The Sony PDW-70MD XDCAM™ HD deck is an optical disc-based HD video recorder designed 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. What's more, utilising an optical disc media called "Professional Disc" for recording, it 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, which brings tremendous workflow improvements. With its outstanding image reproduction and a number of advanced features, the PDW-70MD is an ideal medical video recorder that improves both image quality and operational efficiency.

* Among products that can record video of 1080 vertical lines (1080 x 1440i)
** IEC 60601-1, UL 60601-1, CAN/CSA-C22.2 No.601.1

PDW-70MD
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 1440 x 1080 pixels (one of the standard video formats of HD broadcasting)
- **USES PROFESSIONAL DISC AS THE RECORDING MEDIA**
  - Large 23 GB optical disc
  - Utilises the same blue-violet laser technology as consumer Blu-ray™ Discs
  - Designed specifically for professional recording applications to achieve higher transfer rates and a greater level of reliability
  - 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 TWO 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)**

PROFESSIONAL DISC RECORDING MEDIA

Professional Disc ™

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

The PDW-70MD records to a large-capacity optical disc, the PFD23 Professional Disc media, which Sony has developed specifically for professional recording applications. The Professional Disc media is a 12 cm, single-layer, reusable optical disc with a capacity of 23 GB. This large capacity makes it possible to record up to two hours of HD images on a single disc.

High Reliability and Durability

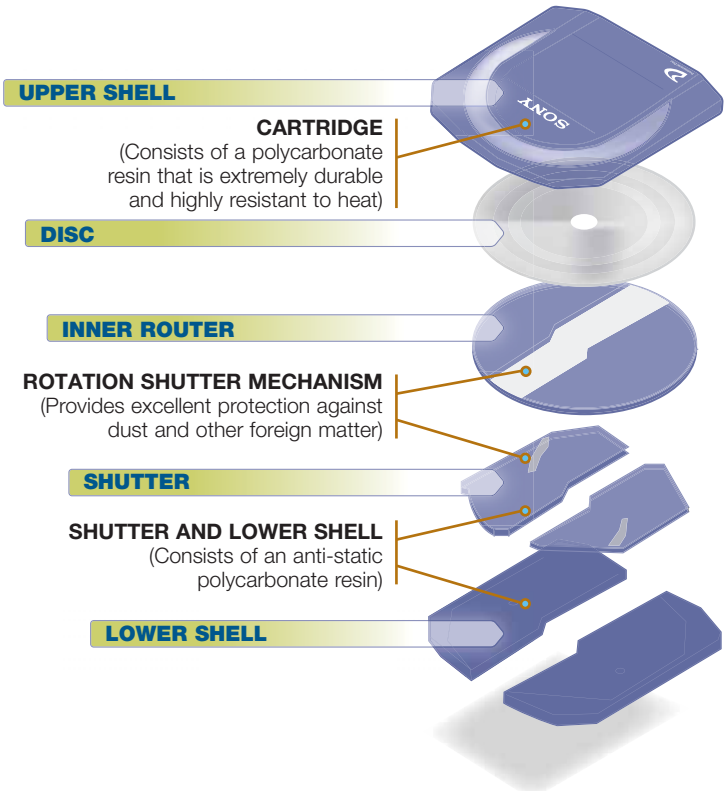
Professional Disc media is highly reliable and durable because it experiences no mechanical contact during recording and playback. Packaged into an extremely durable and dust-resistant disc cartridge, the media offers a high level of reliability, as well as safe and easy handling in busy recording environments. It also allows you to rewrite data onto it up to 1000 times and read data from it up to one million times. The combination of XDCAM series of products and Professional Disc media is hugely popular around the world, especially for demanding broadcast and professional video production applications that require the ultimate in reliability.

Ideal for Archiving

Another great characteristic of Professional Disc media is its long media life. 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-70MD deck records 1080-line HD 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 an essential criteria in medical recording.

MPEG HD

Selectable Bit Rates

You can select desired bit rates of either 35, 25, or 18 Mb/s depending on your 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 66 minutes, while choosing the 18 Mb/s bit rate provides a longer recording time of 122 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.

No Overwriting of Footage – For Immediate Recording Start

By virtue of disc recording, the PDW-70MD 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.

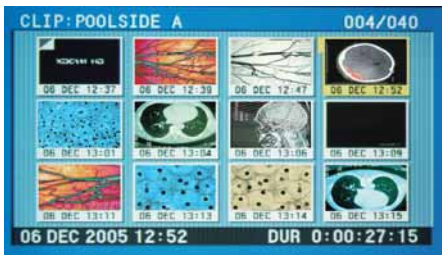
XDCAM HD Recording Specifications

HD Video Codec	Compression	MPEG-2 MP@HL	
	Sampling Rate	4:2:0	
	Bit Rate and Recording Time* (approx.)	HQ, 35 Mb/s VBR	69 minutes (2-ch audio)
			66 minutes (4-ch audio)
		SP, 25 Mb/s CBR	92 minutes (2-ch audio)
			87 minutes (4-ch audio)
		LP, 18 Mb/s VBR	122 minutes (2-ch audio)
			113 minutes (4-ch audio)
	Number of Pixels	1440 x 1080	
Audio	Compression	None (Linear PCM)	
	Number of Channels	2 or 4, selectable	
	Sampling Frequency	48 kHz	
	Quantisation	16 bits/sample	

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

Instant Thumbnail Search with “Expand” Function

Disc recording of the PDW-70MD 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, you 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 you 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 you want to quickly search for a particular scene within a lengthy clip.



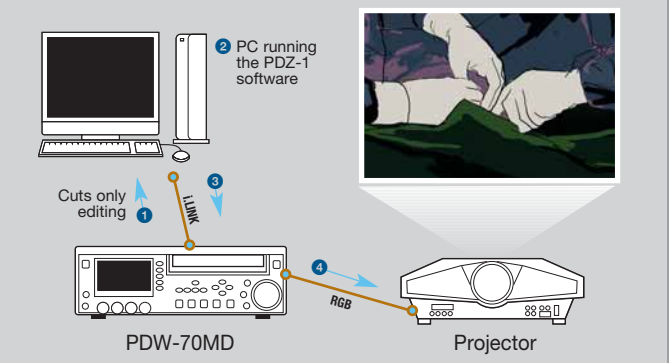
Equipped with a Jog/Shuttle Dial

In addition to the convenient thumbnail-based search, the PDW-70MD 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

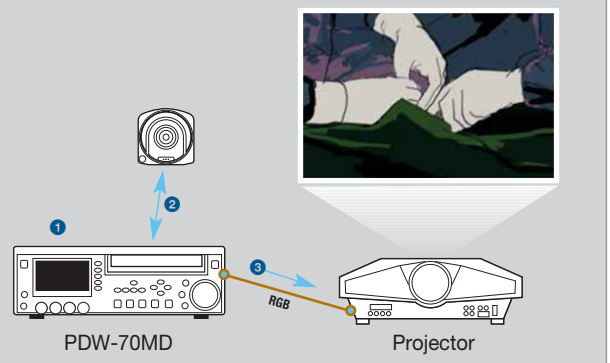
The PDW-70MD deck has a “Scene Selection” function that allows instant cut editing to be performed on the deck itself. With this function, you can select and play back only the necessary clips directly from the deck. This can be done while keeping the original material unchanged, thus allowing different versions of video sequence to be easily created, without the use of any external devices. This is highly convenient when you want to use a single source of recorded footage for different purposes such as for lectures, medical trainings and academic presentations.

SCENE SELECTION ON PC



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

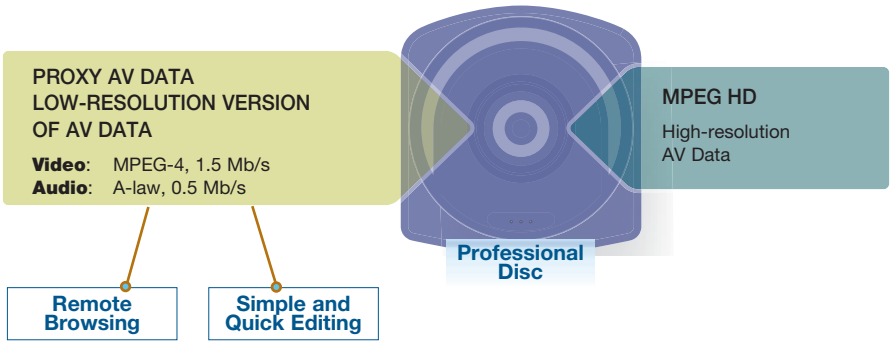
SCENE SELECTION ON THE DECK



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-70MD 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. You can browse the Proxy Data on your PC using the supplied PDZ-1 Proxy Browsing Software.



PDZ-1 Proxy Browsing Software

Supplied PDZ-1 Proxy Browsing Software

In addition to browsing Proxy Data on your PC, the supplied PDZ-1 Proxy Browsing Software provides a wide variety of other convenient operations to effectively manage recorded data. For example, it enables you to record information such as date/time of diagnostics or operations, doctor's name, patient's name and general comments onto a Professional Disc together with the original AV data. It also allows you to perform simple cut editing via its easy-to-use GUIs. After editing, the PDW-70MD deck can play back high-resolution AV data according 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.

A Wide Variety of Interfaces

The PDW-70MD 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.

* 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.

Down-conversion Output and Up-conversion Recording

The PDW-70MD deck incorporates a downconversion 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.

Network Capability*

Through a common Ethernet network, clips that are stored on Professional Disc can be transferred from the PDW-70MD to other IT devices (including another PDW-70MD decks). With the PDZ-1 software, it is possible to quickly and easily send all clips or a selection of clips (defined by the Scene Selection operation on the deck or PDZ-1 software) to another PDW-70MD deck. This enables effective, network-based sharing of recorded material, for example, between affiliated hospitals at remote locations, or between different departments.

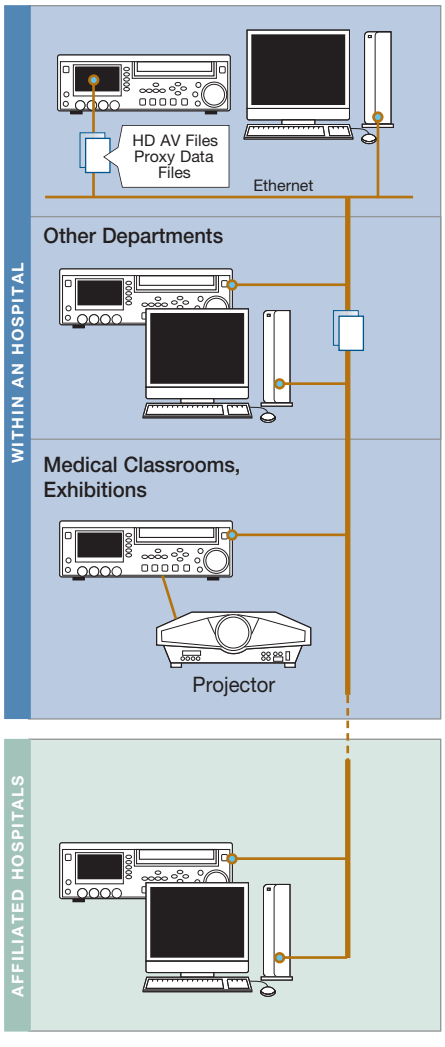
* Requires the optional PDBK-101 network board.

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 HDV 1080i format (requires the optional PDBK-102 board)

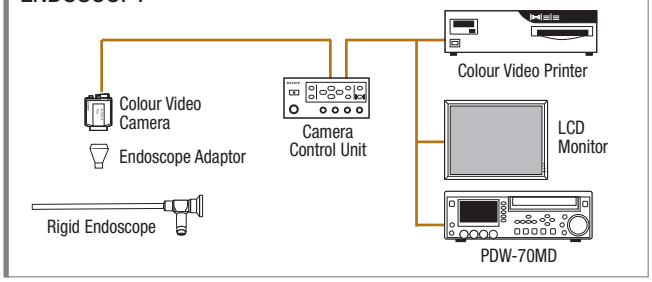
* Viewable area measured diagonally

NETWORK CAPABILITY

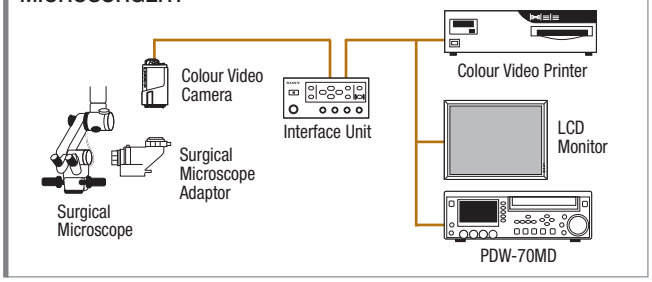


SYSTEM CONFIGURATIONS

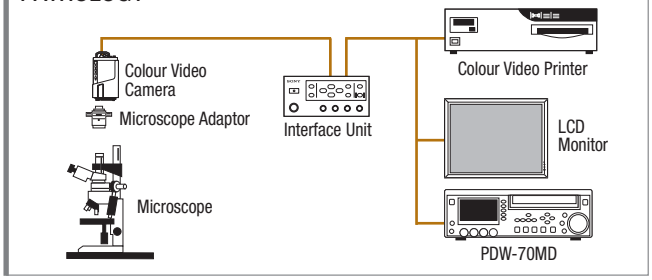
ENDOSCOPY



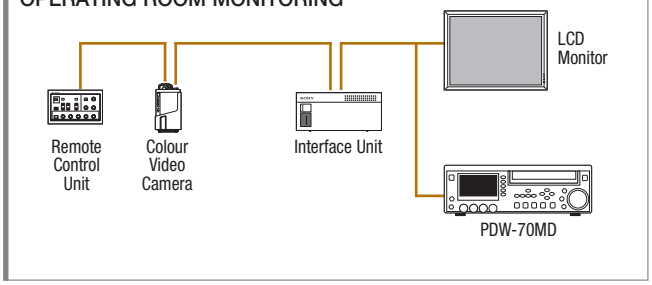
MICROSURGERY



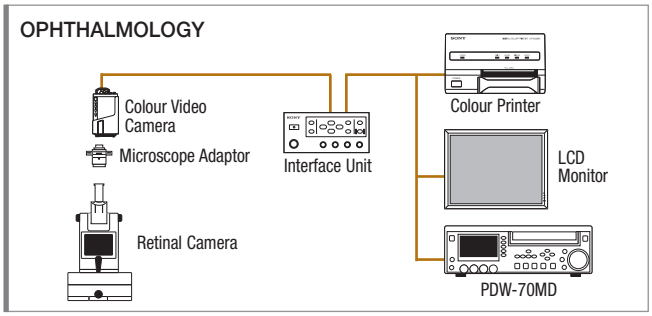
PATHOLOGY



OPERATING ROOM MONITORING



OPHTHALMOLOGY



SERVICES FROM SONY
working with you, working for you.

Recognising that every company and every challenge is unique, we offer a complete and comprehensive range of services all the way through consulting, planning, financing, implementation, training, servicing, maintenance and support. Choose exactly what's right for you, when and where you need it.

- Sony Professional Services: Tailor-made design, installation and project management of audio-visual and IT (AV/IT) systems using skills developed over 25 years of systems integration.
- Sony Financial Services: Innovative and flexible finance solutions designed to meet budgetary and financial requirements and constraints, enabling businesses to always have the most current technology.
- Sony Training Services: A range of off-the-shelf or customised training services from basic operation through to high-level technical maintenance.
- Sony Prime Support Services: Fully integrated and customised support for products and systems throughout their operational life, combining proactive and reactive technical services.

Not all services are available in all countries. If you'd like to find out more about what we do, who we do it for and how we do it, visit www.sonybiz.net or contact your local Sony office.

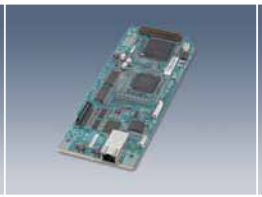
SPECIFICATIONS PDW-70MD

GENERAL		
Power requirements		100 V to 240 V AC, 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)
Humidity		20 to 90% (relative humidity)
Mass		7.2 kg (15 lb 6 oz)
Dimensions (W x H x D)		307 x 100 x 411 mm (12 1/8 x 4 x 16 1/2 inches)
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)
	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
	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 HQ mode SP mode LP mode DVCAM	 Audio 2ch: approx. 69 min., Audio 4ch: approx. 66 min. Audio 2ch: approx. 92 min., Audio 4ch: approx. 87 min. Audio 2ch: approx. 122 min., Audio 4ch: approx. 113 min. Approx. 85 min. (playback only)
Search speed (in colour)	Jog mode Variable Speed mode Shuttle mode	±1 time normal speed ±1 time normal speed ±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

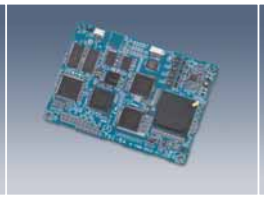
SIGNAL OUTPUTS	
Analogue composite video output	BNC x1, (1.0 Vp-p/75 Ω/sync negative), RCA-pin x1, (1.0 Vp-p/75 Ω/sync negative)
Monitor output	D-sub 15-pin (G/B/R or Y/Pb/Pr)
Built-in display	3.5-inch type colour LCD monitor
HD-SDI output	BNC x2, SMPTE 292M
SD-SDI output	BNC x1, SMPTE 259M
Analogue 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 Ω, 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)	

OPTIONAL ACCESSORIES

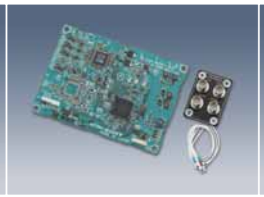
PFD23
Professional Disc



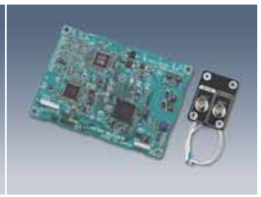
PDBK-101
Network Board



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
VMC-IL4635B
i.LINK Cable (4-pin to 6-pin, 1.5 m/3.5 m)

VMC-IL6615B
VMC-IL6635B
i.LINK Cable (6-pin to 6-pin, 1.5 m/3.5 m)

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

CA PDW-70MD/GB- /11/2006