SONY

XDCAM Family

XDCAM HD Professional Disc System
XDCAM EX
XDCAM Professional Disc System

Sony XDCAM Family – Today's Nonlinear Tapeless Production Solutions

In 2003, Sony introduced a series of products for video recording using nonlinear media. Along with the advantages of a tapeless workflow, this heralded a number of other tremendous benefits including file-based recording, split-second random-access capability, thumbnail search capability, no overwriting on existing footage and an IT/network capability. Sony named this epoch-making product line the XDCAM™ Professional Disc™ System.

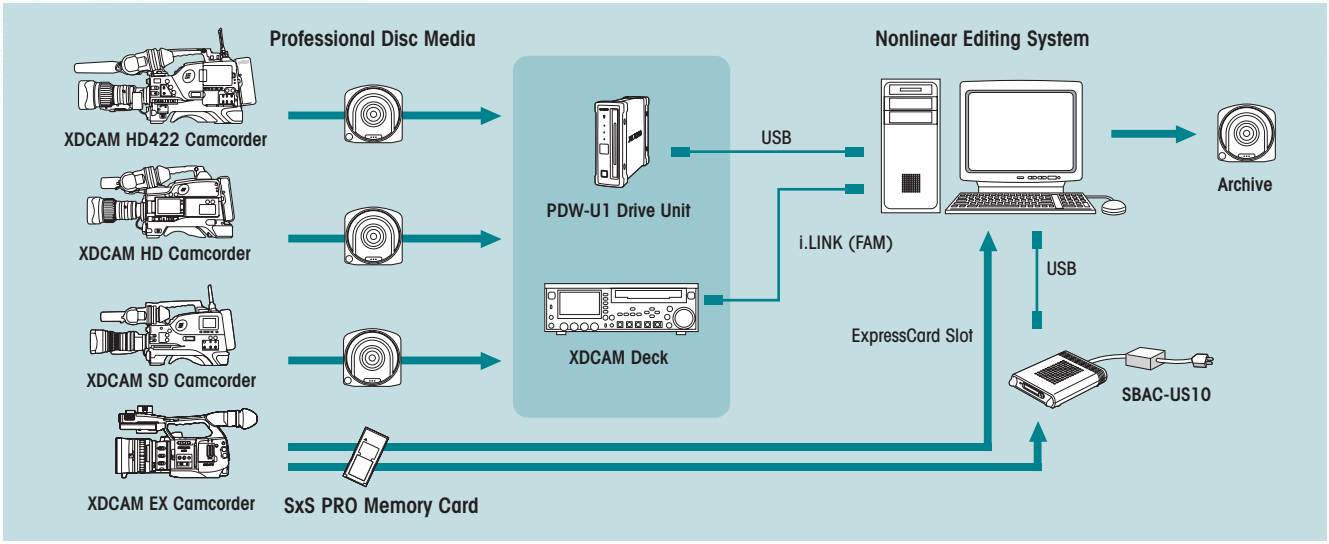
Since then, the XDCAM series has continued to demonstrate the many advantages of nonlinear recording, including a superb system for high-definition (HD) production. In response to ever-increasing demands of video production, Sony has expanded the XDCAM series by introducing four lines of products* – the XDCAM HD422, XDCAM HD, XDCAM SD and XDCAM EX™ – each of which is well suited to meet the wide range of applications and budget constraints. For user flexibility, there is also a choice of recording format, such as HD or SD, recording bit rate, interlace or progressive mode, and optical disc or memory card recording media.

With the XDCAM family, users can now select the product best suited to the particular production being created, and enjoy all the great benefits and efficiencies of a nonlinear workflow.

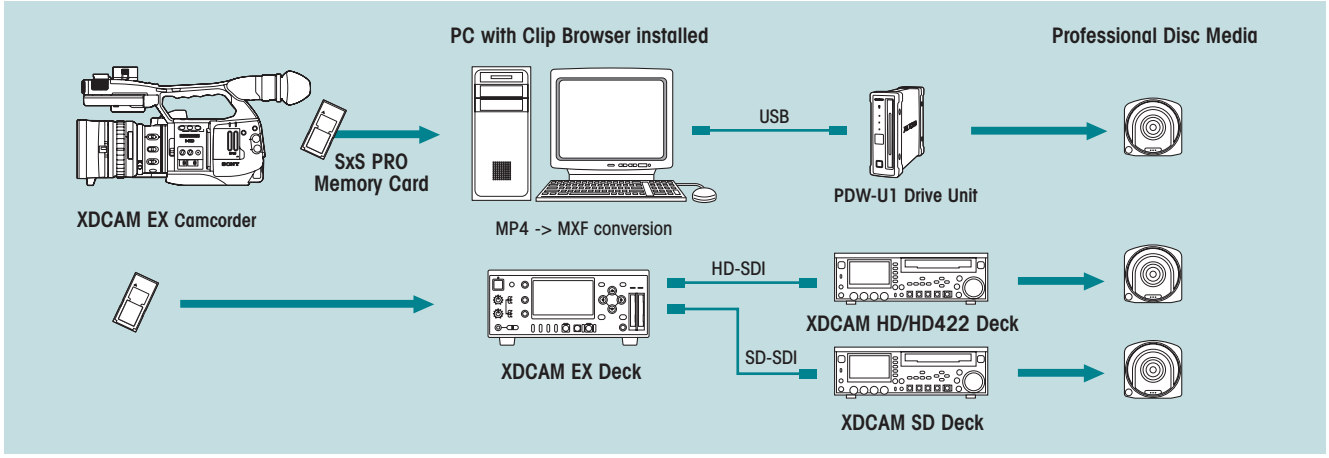
*Please refer to the brochures of each XDCAM product line for details on each model.

XDCAM Workflow

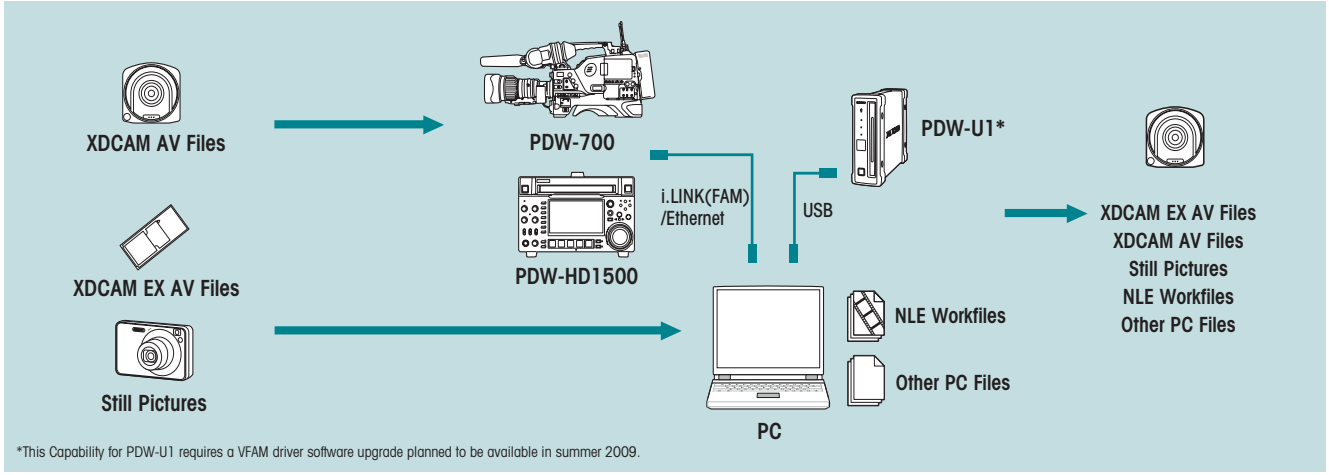
Editing



Dubbing



Data File Recording by User Data Folder



*This Capability for PDW-U1 requires a VFAM driver software upgrade planned to be available in summer 2009.

Two Types of Nonlinear Recording Medium – The Professional Disc and SxS PRO Media

Through detailed analysis of an optimum workflow for various types of production applications, Sony has selected two types of nonlinear recording media for the XDCAM family – optical disc and memory card. The XDCAM HD422, XDCAM HD and XDCAM SD lineup use an optical disc medium, called Professional Disc media, which offers large storage capacity of up to 50 GB at an affordable price. The XDCAM EX lineup uses a memory card, the SxS PRO™ card, having a highly compact design because the card itself is so slim, as well as offering data transfer rates of up to 800 Mb/s.*

Both product lines – disc-based products and memory card-based products – deliver the same tremendous benefits of a nonlinear workflow, including file-based recording, an instant random-access capability, a thumbnail search capability, no overwriting on existing footage, and IT/network capability.

*This data read speed is measured with benchmark software. Actual data transfer speeds vary according to measurement conditions. Please refer to http://www.sony.net/SxS-Support/ for information on measuring methods.

The Professional Disc Media

The Professional Disc medium adopted in the XDCAM HD422, XDCAM HD and XDCAM SD lineup uses state-of-the-art blue-violet laser technology to enable extremely large-capacity recordings. The diameter of the Professional Disc media employed is a mere 12 cm, equal to that of other optical media such as CDs and DVDs. Yet, despite its small size, this disc provides an amazing storage capacity of 50 GB (PFD50DLA dual-layer disc)/23.3 GB (PFD23A single-layer disc), yet it is offered at a very affordable price.

- Extraordinary storage capacity in a 12-cm (5-inch) diameter disc
  - PFD50DLA dual-layer disc: 50 GB
  - PFD23A single-layer disc: 23 GB
- Long recording time*

Recording format	Recording bit rate	PFD50DLA (50 GB)	PFD23A (23 GB)
MPEG HD422	50 Mb/s	95 min.	43 min.
MPEG HD	35 Mb/s	145 min.	65 min.
	25 Mb/s	190 min.	85 min.
	18 Mb/s	248 min.	112 min.
MPEG IMX	50 Mb/s	100 min.	45 min.
	40 Mb/s	120 min.	55 min.
	30 Mb/s	150 min.	68 min.
DVCAM	25 Mb/s	185 min.	85 min.

- High data read speed: approx. 220 Mb/s**
- Highly reliable: no mechanical contact during recording and playback
- Durable mechanism: disc is packaged in an extremely durable and dust-resistant disc cartridge
- Affordable cost-per-to-storage capacity media

*With four-channel audio. Actual recording time may vary depending on factors such as bit rate mode, number of audio channels, and number of video clips.

**Actual data read speeds may vary.

Professional Disc™ DL

Professional Disc

The SxS PRO Memory Card

The SxS PRO memory card adopted by the XDCAM EX series for recording is an ultra-compact nonlinear medium that uses flash memory, and is based on the SxS™ memory card specification. The SxS PRO memory card achieves an extremely high data transfer speed of 800 Mb/s*, allowing users to quickly transfer recorded footage to a compatible PC or nonlinear editing system.

- Compatible with the ExpressCard/34 standard
- Uses PCI Express interface, and achieves an extremely high data transfer speed of 800 Mb/s*
- Storage capacity: 32 GB (SBP-32), 16 GB (SBP-16) and 8 GB (SBP-8)
- Long recording time

Recording format	Recording bit rate	SBP-32 (32 GB)	SBP-16 (16 GB)	SBP-8 (8 GB)
MPEG HD	35 Mb/s	100 min.	50 min.	25 min.
	25 Mb/s	140 min.	70 min.	35 min.

- Most new Macintosh systems and PCs are equipped with ExpressCard slots
- Compact size: approx. 75 x 34 x 5 mm (3 x 1 3/8 x 7/32 inches) (excluding the projecting parts) – about half the size of a conventional PC card
- Low power consumption
- Highly reliable: can resist shocks (1500 G) and vibrations (15 G)

*This data read speed is measured with benchmark software. Actual data transfer speeds vary according to measurement conditions. Please refer to http://www.sony.net/SxS-Support/ for information on measuring methods.

SxS

XDCAM HD422 System

The brand-new XDCAM HD422 lineup sits at the top of the range in the XDCAM family – ideal for applications such as news gathering, where speed is a key concern, and for the production of TV dramas, documentaries and mainstream entertainment programs, where a high-quality impression is crucial.

The XDCAM HD422 line of products offers amazing quality HD video at a data rate of up to 50 Mb/s using MPEG-2 4:2:2P@HL compression technology referred to as MPEG HD422. This lineup also offers multi-format recording flexibility including 1080P, 1080i, 720P and SD, which comes with HD/SD conversion and cross conversion between 1080P, 1080i and 720P.

XDCAM HD422 Products Common Features

MPEG HD422

- HD recording at up to 50 Mb/s using MPEG HD422 codec (an MPEG-2 4:2:2P@HL compression technology)
- 1080P, 1080i and 720P recording with a choice of frame rates
- Native 1080/23.98P mode*
- Support for MPEG IMX™ and DVCAM™ formats**
- Dual-layer (50 GB, PFD50DLA) and single-layer (23.3 GB, PFD23A) Professional Disc support
- Long recording time (at 50 Mb/s with four-channel audio)
  - Approximately 95 minutes on dual-layer disc and 43 minutes on single-layer disc
- Proxy data (1.5 Mb/s for video and 0.5 Mb/s for audio) and metadata recording
- Built-in up-conversion to HD from SDI input when recording
- HD/SD conversion and cross conversion between 1080 and 720 at output during playback
- Data File Recording by User Data Folder

*PDW-700 requires the optional CBKZ-FC02 software planned to be available in summer 2009. PDW-HD1500 requires the optional PDBK-F1500 hardware key planned to be available in summer 2009.

**PDW-700 requires the optional CBKZ-MD01 software. PDW-HD1500 requires the optional PDBK-S1500 hardware key.

PDW-700 Camcorder Features

Power HAD FX

Lens, microphone, microphone receiver, viewfinder and battery are optional.

- Three 2/3-inch type Power HAD™ FX CCDs, each with 1920 x 1080 effective pixels
- High-quality four-channel audio recording (at 24-bit)
- 14-bit A/D conversion and advanced digital signal processing
- Dual HD/SD-SDI outputs and composite/HD-Y output
- Pool-feed input (HD/SD-SDI and composite)*
- Picture cache recording (max. 30 sec.)
- Ethernet interface (100Base-TX) and i.LINK™ (File Access Mode)** interface
- Compatible with the DWR-S01D two-channel digital wireless microphone receiver***, which can be directly mounted in the camcorder's slot

*Will require an optional CBK-HD01 board for HD/SD-SDI input and CBK-SC02 board for composite input.

**i.LINK is a Sony trademark used only to designate that a product is equipped with an IEEE 1394 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.

***The digital wireless microphone system is not available in some countries where prohibited by the radio law.

PDW-HD1500 Deck Features

- Half-rack-wide recording deck
- High-quality eight-channel audio recording (at 24-bit)
- Dual optical pick-up for higher-speed file transfer
- 4.3-inch type* color LCD display
- VTR-like jog/shuttle operation
- Video control (via front panel and remote)
- AC, DC or battery powered
- Range of interfaces including HD-SDI and SD-SDI
- Ethernet interface (1000Base-T) and i.LINK interface

*Viewable area measured diagonally.

XDCAM HD System

The XDCAM HD lineup offers a choice of highly versatile production tools for an elegant and affordable route to HD for users looking to move up from analog and conventional DVCAM capabilities. The XDCAM HD lineup records 1080-line HD video at a data rate of up to 35 Mb/s using the MPEG HD codec that employs industry-standard MPEG-2 MP@HL compression.

The newest members of the XDCAM HD lineup support 50 GB dual-layer Professional Disc media, greatly extending recording time. In addition, the XDCAM HD lineup offers flexible recording functionalities including a choice of video frame rates, interlace or progressive modes, recording data rates, and both HD and SD format support.

XDCAM HD Products Common Features

MPEG HD CINEALTA

- HD recording at up to 35 Mb/s using MPEG HD codec (an MPEG-2 MP@HL compression technology)
- High-quality four-channel uncompressed audio recording
- Wide choice of video format – 1080, interlace and progressive including native 23.98P mode
- Support for DVCAM format
- Dual-layer (50 GB, PFD50DLA) and single-layer (23.3 GB, PFD23A) Professional Disc support
- Long recording time (at 18 Mb/s with two-channel audio)
  - Up to 265 minutes of HD recording on dual-layer disc
- Proxy data (1.5 Mb/s for video and 0.5 Mb/s for audio) and metadata recording
- Built-in down-conversion from HD to SD during playback

PDW-F355/F335 Camcorder Features

PDW-F355

PDW-F335

Lens and battery are optional.
(The VCL-719BXS/B AF Lens is supplied with the PDW-F335K.)

- Three 1/2-inch type HD Power HAD CCDs, each with a high density of approximately 1.56 megapixels
- Wide choice of 1/2- and 2/3-inch type lenses*
- 3.5-inch type** color LCD display
- HD/SD-SDI, SD analog composite, timecode and stereo audio (XLR 5-pin) outputs (PDW-F355)
- HD/SD analog component (selectable), SD analog composite, timecode and audio (Pin jack) outputs (PDW-F335)
- Picture cache recording
- i.LINK interface (selectable: File Access Mode or DV stream)
- Creative shooting features
  - Native 23.98P recording capability
  - Slow & Quick motion function for creation of elegant over- and under-cranked footage (PDW-F355 only)
  - Selectable gamma curves including CINE gamma modes

*Requires an optional LO-32BMT 2/3-inch type Lens Mount Adaptor to use 2/3-inch type lenses.
**Viewable area measured diagonally.

PDW-F75 Deck Features

- Recording deck can be placed either horizontally or vertically
- Up-conversion to HD from SDI/SD composite input when recording*
- Built-in up-conversion from SD to HD during playback
- 3.5-inch type** color LCD display
- VTR-like jog/shuttle operation
- A range of interfaces including HD-SDI input/output and SD-SDI input*/output
- Ethernet interface*** (Gigabit Ethernet) and i.LINK interface****

*Requires the optional PDBK-104 board.
**Viewable area measured diagonally.
***Requires the optional PDBK-101 board.
****Requires the optional PDBK-102 board to input/output HDV™ stream via i.LINK connector.

XDCAM SD System

The XDCAM SD line up offers the ultimate solution for today's and tomorrow's SD video productions with a disc-based nonlinear workflow. The XDCAM SD lineup records outstanding quality SD video and audio on a single-layer (23 GB) Professional Disc, and supports MPEG IMX and DVCAM formats.* The XDCAM SD line up consists of two camcorders, three companion decks, two drive units and two cart systems – all of which meet a diverse range of operational requirements and budgetary constrains.

*The PDW-510/510P camcorder supports DVCAM recording only.

XDCAM SD Products Common Features

- SD recording at up to 50 Mb/s using MPEG-2 4:2:2P@ML compression technology
- MPEG IMX and DVCAM format recording*
  - Selectable bit rate: MPEG IMX (50/40/30 Mb/s) and DVCAM format
- Support for interlace and progressive recording
  - NTSC model: 29.97P or 23.98P**
  - PAL model: 25P
- High-quality four-channel audio recording
- Single-layer disc (23.3 GB, PFD23A) support
- Long recording time (at 50 Mb/s with four-channel audio)
  - Approximately 45 minutes on single-layer disc
- Proxy data (1.5 Mb/s for video and 0.5 Mb/s for audio) and metadata recording

*The PDW-510/510P camcorder supports DVCAM recording only.

**The PDW-530/510 camcorder only. It requires the optional CBK-FC01 pull-down (24P shooting) board. Recording to disc is in 59.94i via 2-3 pull-down.

PDW-510/510P, PDW-530/530P Camcorder Features

Lens, microphone receiver and battery are optional.

- Three 2/3-inch type Power HAD EX CCDs
- MPEG IMX and DVCAM switchable recording (PDW-530/530P)
- DVCAM recording (PDW-510/510P)
- 2.5-inch type* color LCD display
- Analog composite output, SDI output** and analog composite input***
- i.LINK interface (selectable: File Access Mode or DV stream)

*Viewable area measured diagonally.
**Requires the optional CBK-SD01 board.
***Requires the optional CBK-SC01 board.

PDW-1500 Deck Features

- Half-rack-wide recording deck
- VTR-like jog/shuttle operation
- High-speed file transfers: 50x for Proxy, 5x for DVCAM and 2.5x for MPEG IMX (at 50 Mb/s) files when using a Gigabit Ethernet connection
- Insert and assemble editing capability*
- Metadata recording
- Ability to write EDL (Clip List) back onto disc
- SDI input/output, analog composite input/output, digital audio input/output and timecode input/output
- Ethernet interface (1000Base-T) and i.LINK interface
- RS-422A 9-pin remote interface

*Requires optional PDBZ-E1500 software. For this functionality, the PFD23A Professional Disc must be used (the PFD23 disc cannot be used).

PDW-R1 Deck Features

- Highly mobile field recorder
- 3.5-inch type* color LCD screen
- VTR-like jog/shuttle operation
- High-speed file transfers: 30x for Proxy, 2.5x for DVCAM and 1.25x for MPEG IMX (50 Mb/s) files when using an i.LINK (File Access Mode) connection
- Metadata recording
- Ability to write EDL (Clip List) back onto disc
- SDI input/output, analog composite input/output, digital audio input/output and timecode input/output
- Ethernet interface (100Base-TX) and i.LINK interface
- RS-422A 9-pin remote interface
- Parallel recording function, which enables the deck's Rec start/stop to be synchronized with the Rec start/stop of the camcorder connected via the i.LINK interface

*Viewable area measured diagonally.

XDCAM HD422/HD/SD Common Product

The PDW-U1 is a compact, mobile and highly cost-effective solution for many different applications. It serves as an external drive connected via a common USB interface, and enables material recorded on the Professional Disc media to be viewed directly on a PC. The PDW-U1 can also be used as a source feeder for nonlinear editing systems.

One of the most distinguishing features of the PDW-U1 is its ability to handle XDCAM HD422, XDCAM HD and XDCAM SD discs, providing a high level of versatility and cost efficiency.

PDW-U1 Drive Unit Features

- Compact, mobile, and highly cost-effective drive unit
- Used as an external disc drive or source feeder for nonlinear editing systems
- Handles both dual-layer disc (PFD50DLA) and single-layer disc (PFD23A)
- Supports high-speed USB (USB 2.0) – compatible with most PCs
- High-speed file transfers
- Can be operated either horizontally or vertically

XDCAM EX System

The XDCAM EX line of products represents an exciting low-cost entry point into the world of HD, making it fast and easy to shoot, edit and distribute great quality HD pictures.

This lineup is ideal for a wide range of customers, from broadcasters to independent videographers and film makers, who want exceptional HD picture quality and state-of-the-art workflow from compact and affordable tools. The XDCAM EX lineup records high-quality HD video at a data rate of up to 35 Mb/s using MPEG-2 Long GOP compression technology.

These products also offer multi-format recording flexibility including 1080P, 1080i and 720P.

XDCAM EX Products Common Features

- HD recording at up to 35 Mb/s using MPEG HD codec (an MPEG-2 MP@HL compression technology) with 1920 x 1080 resolution
- High-quality two-channel uncompressed audio recording
- Uses the PCI Express interface, and achieves an extremely high data transfer speed
- Wide choice of video format – 1080P, 1080i, and 720P, including native 23.98P mode
- Records onto SxS PRO memory cards which comply with the ExpressCard standard
- Built-in two SxS PRO memory card slots – capable of seamless recording between two slots
- Long recording time (at 35 Mb/s)
  - Approximately 100 minutes on a 32-GB SxS PRO memory card and 200 minutes on two SxS PRO memory cards in HQ mode.
- Built-in down-conversion from HD to SD during playback
- Metadata recording*
- The PHU-60K, Professional Harddisk Unit, records XDCAM EX clips on to its 60-GB hard disk drive for up to approximately 200 minutes in HQ mode and 260 minutes in SP mode.
- The SBAC-US10, SxS PRO memory card reader/writer, works on both Windows-based PCs and Macintosh computers via a USB 2.0 interface for browsing copying, and editing.

*XDCAM EX products do not support proxy recording.

PMW-EX1 Camcorder Features

The shotgun microphone is an optional accessory.

- Handheld camcorder
- Three 1/2-inch type Exmor™ Full HD CMOS Sensors, each with 1920 x 1080 pixels
- Wide-angle Fujinon 14x zoom lens
- Professional manual focus and auto focus operation
- Slow & Quick motion capability
- 3.5-inch type* color LCD display
- HD-SDI output, down-converted SD-SDI output, i.LINK (HDV stream) input/output, analog composite/component output and USB interface (USB 2.0)

*Viewable area measured diagonally.

PMW-EX3 Camcorder Features

The shotgun microphone is an optional accessory.

- Compact camcorder with an interchangeable lens system, allowing use of 1/2- and 2/3-inch type lenses*
- Three 1/2-inch type Exmor Full HD CMOS Sensors, each with 1920 x 1080 pixels
- Professional manual focus and auto focus operation
- Slow & Quick motion capability
- 3.5-inch type** color LCD viewfinder
- HD-SDI output, down-converted SD-SDI output, i.LINK (HDV stream) input/output, analog composite/component output and USB interface (USB 2.0)
- Built-in gen-lock input, timecode input/output and remote control interface for multi-camera operation

*Requires lens mount adaptor
**Viewable area measured diagonally.

PMW-EX30 Deck Features

- Highly compact design – can be placed either horizontally or vertically
- Built-in 3.5-inch type* LCD monitor
- Comprehensive range of HD interfaces – HD-SDI input/output, i.LINK (HDV) input/output and component output
- Down-converted SD outputs for migration to SD environments – SD-SDI, i.LINK (DVCAM), component, S-Video and composite
- HDMI output for digital connection to a range of consumer displays
- Adjustable audio input volume (CH1 and CH2)

*Viewable area measured diagonally.

Application Software

PDZ-1

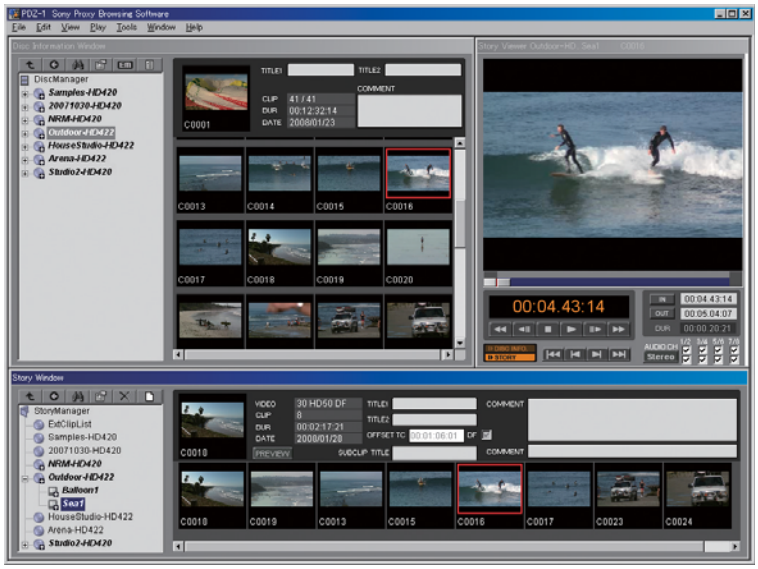
The PDZ-1 software is a simple-to-use PC application that allows users to easily browse and storyboard video clips recorded by an XDCAM system. It runs on Windows-based PCs and supports three types of interface: i.LINK (File Access Mode), Ethernet and USB*.
Once Proxy Data recorded on Professional Disc media is transferred to a PC with the PDZ-1 software installed, users can conveniently view and storyboard recorded footage right on the PC.

*For PDW-U1 only.

Features

- Supported interface: i.LINK (File Access Mode), Ethernet, and USB (only for connection with the PDW-U1)
- High-speed ingestion of Proxy Data from the XDCAM devices
- Browsing of Proxy Data recorded by the XDCAM systems (including those recorded by the SD version of the XDCAM system)
- Simple and quick cuts-only editing (storyboarding)* with the following functions;
  - Preview a result of the storyboard on the PC
  - Save the results as a Clip List (XDCAM EDL)
  - Convert the Proxy Data on the storyboard to an ASF file for replay on Windows Media Player software
  - Export the Clip List in AAF, BVE-9100, NewsBase™ XML, and ALE (Avid Log Exchange) formats
  - Transfer high-resolution clips according to the Clip List
- Disc copy – entire disc (all clips) or only selected clips

*The video and audio of a clip cannot be edited independently.



PDZK-P1 XDCAM Transfer for Apple Final Cut Pro Nonlinear Editing Systems

PDZK-P1 XDCAM Transfer is a plug-in application software for Apple Final Cut Pro nonlinear editing systems that provides support for MXF files recorded by XDCAM systems and MP4 files recorded by XDCAM EX 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.

Clip Browser Version 2

The Clip Browser software for the XDCAM EX products is a simple-to-use PC application software that allows users to easily browse and copy video clips recorded by the XDCAM EX camcorder or deck to other devices such as hard disk drives. It also serves as a bridge tool between a variety of formats – converting XDCAM EX clips to be other file formats. The Clip Browser software is available for both Windows - based PCs and Macintosh computers.

Features

- Browsing of video clips recorded by the XDCAM EX products
- Copy XDCAM EX's clip files from the SxS PRO memory card to hard disk drive
- Combine segmented clips recorded across two SxS PRO memory cards
- File format conversion from MP4 to other file formats:
  - > MXF format for export to XDCAM HD discs or MXF-based nonlinear editing systems* (option)
  - > DV format for export to DV-based nonlinear editing systems
  - > AAF format for export to Avid nonlinear editing systems
  - > H.264/AVC format for field viewing on Sony PSP™, Apple iPod/iPhone as well as WMV format* (option)
- Create sub clips with Mark IN/OUT operation

*Requires an optional plug-in software supplied from MainConcept AG. (http://www.mainconcept.com/plugin4clipbrowser)

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