

**SONY.**

# FAQs

**XDCAM HD PRODUCTION**



**XDCAM HD**  
Professional Video Systems

# **XDCAM HD PRODUCTION**

**Q: What recording media does the XDCAM HD system use?**

A: The same PFD-23 Professional Disc™ media as in XDCAM standard definition recording. Only now the media delivers more maximum recording time: 120 minutes at 18 Mbps.

**Q: Why do XDCAM HD camcorders have 1/2-inch type CCDs instead of 2/3-inch?**

A: The XDCAM HD system was designed to meet the urgent requests from customers for affordable, professional HD production with interchangeable lenses. The choice of 1/2-inch type image sensors enables Sony to deliver three distinct classes of professional HD production: Sony HDV™ 1080i camcorders use 1/3-inch, XDCAM HD camcorders use 1/2-inch and HDCAM® camcorders use 2/3-inch type sensors.

**Q: Why did Sony choose bitrates of 18, 25 and 35 Mbps?**

A: Because MPEG2 includes both interframe and intraframe compression technology, it can offer higher quality at lower bitrates than intraframe compression alone. The XDCAM HD system uses 18 Mbps and 35 Mbps variable bitrates, plus a 25 Mbps constant bitrate. These rates offer decisive advantages in cost, recording time and compatibility. For example, the XDCAM HD system offers the longest recording time currently available in an HD camcorder: over 120 minutes at 18 Mbps. And thanks to the low bitrates, XDCAM HD recording is compatible with just about any NLE that works with 25 Mbps.

**Q: Does 25 Mbps XDCAM HD recording use the same compression as HDV 1080i recording?**

A: Yes. While XDCAM HD recording at 18 and 35 Mbps uses variable bitrate technology, the 25 Mbps alternative uses a fixed bitrate for compatibility with HDV 1080i editors and recorders. Basically the only difference is that HDV editors use Transport Stream (TS) and XDCAM HD uses Elementary Stream (ES). When the PDW-F70 recorder and the PDW-F30 player are fitted with the optional PDBK-102 MPEG Transport Stream (TS) card, these decks can be connected directly to HDV 1080i recorders, camcorders and compatible NLEs, via the i.LINK® HDV interface.\*

**Q: What is the recording time?**

A: Extended recording time is another big advantage of the XDCAM HD system bitrates. Recording time is over 60 minutes at 35 Mbps, 90 minutes at 25 Mbps and over 120 minutes at 18 Mbps. This represents the longest recording time of any HD camcorder currently available.

**Q: Can I upconvert XDCAM standard definition content to HD?**

A: Yes. The PDW-F70 recorder and PDW-F30 player can both upconvert XDCAM standard definition content recorded in the DVCAM™ format at 25 Mbps to 1080i high definition at the output.

# **XDCAM HD PRODUCTION**

**Q: Can I downconvert XDCAM high definition content to SD?**

A: Yes. All XDCAM HD camcorders and decks can downconvert to standard definition.

**Q: Can XDCAM HD decks or camcorders also record standard definition?**

A: Yes. The PDW-F350 and PDW-F330 camcorders and the PDW-F70 recorder will all record DVCAM 25 Mbps standard definition in NTSC (480/59.94i) or PAL (576/50i).

**Q: Can XDCAM HD decks or camcorders play back my current XDCAM SD discs?**

A: The XDCAM HD products can play back DVCAM standard definition discs only.

**Q: Can I record HD and SD on the same disc?**

A: No. The XDCAM HD file system requires a disc to be all HD or all SD. However you can freely select HD bitrates of 18, 25 or 35 Mbps for each clip you record on the same disc and 60i, 30P, 50i and 25P can be mixed as well. However a dedicated disc needs to be used when recording 24P material.

**Q: How do I edit XDCAM HD assets?**

A: You have plenty of options. First, all 29 companies that currently support XDCAM standard definition are also committed to supporting XDCAM HD production. So depending on your system, you can choose from various workflows. Second, when equipped with the optional PDBK-102 MPEG TS card, the PDW-F70 and PDW-F30 work with the full range of NLEs that are compatible with HDV 1080i. And third, you can use the HD-SDI output of the PDW-F70 and edit as with a traditional VTR.

**Q: Can I use my current HDV editing software to edit XDCAM HD 25 Mbps material?**

A: Absolutely. Part of the beauty of the XDCAM HD system is its compatibility with HDV 1080i editing. The PDW-F70 recorder and PDW-F30 player accept the optional PDBK-102 MPEG TS card. This outputs a 25 Mbps signal over the i.LINK interface\* for the large pool of NLEs that are compatible with HDV 1080i recording.

**Q: Does the XDCAM HD system use Proxy A/V?**

A: Yes. The system combines the beauty of high definition with all the workflow innovation of the XDCAM system, including the durability of optical discs, the simplicity of file-based operations and the power of Proxy A/V.

**Q: Will Sony offer PAL versions?**

A: You're reading about them now. All XDCAM HD camcorders and decks support both PAL and NTSC standard definition. One world, one camcorder.

## **XDCAM HD PRODUCTION**

**Q: What are overcranking and undercranking?**

A: The terms originated with the early film cameras, where the frame rate was literally determined by a manual crank. Undercranking refers to shooting at a slower frame rate than the playback rate, for a high-speed "Keystone Kops" effect. Overcranking refers to shooting at a higher frame rate than the playback, for the beautiful slow motion effect often seen in cinema. The PDW-F350 enables both overcranking and undercranking at a range of frame rates from 4 fps to 60 fps in 1 fps increments. When viewed at 24 fps, 4 fps yields motion six times faster than normal, where 60 fps yields motion at 40% normal speed. And these effects can be played back right in the camera. Sony calls this feature for the PDW-F350 camcorder "Slow and Quick Motion".

**Q: What frame rates are supported in the XDCAM HD system?**

A: The base PDW-F330 camcorder shoots high definition at 1080/59.94i, 50i, 29.97P, 25P and 23.98P. The camcorder also captures standard definition at 480/59.94i, 480/29.97P and 480/23.98P or 576/50i and 576/25P. The advanced PDW-F350 adds variable frame rate capture from 4 fps to 60 fps in 1 fps increments. The PDW-F70 recorder and PDW-F30 player support all the frame rates of both the PDW-F330 and PDW-F350 camcorders.

**Q: What is MPEG long GOP?**

A: Like HDV recording before it, the XDCAM HD system uses the international standard MPEG 2 Main Profile at High Level encoding with a long Group of Pictures (GOP). Because the system combines interframe and intraframe compression technology, it enables us to achieve a higher picture quality at lower bitrates than systems that use intraframe compression alone. As we've just stated, XDCAM HD production is compatible with NLEs that accept HDV signals. MPEG long GOP is the reason why.

**Q: Do you plan to immediately discontinue the XDCAM SD line?**

A: No. Standard definition XDCAM products answer an established need for top-quality SD production at up to 50 Mbps. Sony sees SD video production still having a relatively long life and is continually adding to the SD product line up and feature set. Sony recently introduced the XDCAM Cart machine and in June 2006 plans to deliver the PDW-R1 field recorder. Another product under development which was demonstrated at NAB 05 is an XDCAM internal drive unit that would fit into a 5" bay on a desktop PC. With a distinct feature set, XDCAM SD products complement and interoperate with the XDCAM HD product line. XDCAM HD products can play back DVCAM™ 25 Mbps material recorded on XDCAM SD products.

**Q: Do you plan to discontinue the HDCAM™ line?**

A: Absolutely not. With 2/3-inch type image sensors and 140 Mbps recording, HDCAM products offer compelling advantages for high-end sports, episodic television and feature films. It's a whole different class.

## **XDCAM HD PRODUCTION**

**Q: Who makes 1/2-inch HD lenses?**

A: At the moment, both Canon and Fujinon. As the installed base of 1/2-inch type HD camcorders builds, we expect other manufacturers to enter this burgeoning market. The optional Canon lens that Sony offers also supports auto focus function of the PDW-F330 and PDW-F350.

**Q: Can I use my 2/3-inch lenses on the XDCAM HD camcorder?**

A: Yes, with the optional Sony LO-32BMT adaptor. Of course, the difference in size between 2/3-inch and 1/2-inch type sensors means that your lens focal lengths are multiplied by a factor of 1.37x.

**Q: Why is the CineAlta™ trademark (brand) on XDCAM HD products?**

A: Sony uses the CineAlta name to identify a high level of cinema production. With gorgeous performance at true 24 frames progressive, the XDCAM HD system fully meets that description.

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# FAQs

■ TECHNOLOGY & MEDIA



**XDCAM HD**  
Professional Video System

## **TECHNOLOGY & MEDIA**

**Q: Why is Sony offering the Professional Disc media?**

A: Sony believes that the Professional Disc media is a means by which our customers can achieve benefits in production workflows, where flexibility, speed, and cost effectiveness are key requirements. The Professional Disc media has been engineered specifically for professional content creation; its data rate, data capacity, transfer speed, robustness, and instant random access provide professional-quality performance. Because the XDCAM Professional Disc series of products employ existing MPEG IMX® and DVCAM codecs for the SD line up and MPEG HD and DVCAM for the HD line up, disc advantages are immediately available without costly infrastructure upgrades, while built-in network and metadata technologies provide unprecedented levels of production flexibility.

**Q: Is the XDCAM system's Professional Disc media the same as the consumer Blu-ray Disc™ media?**

A: No. While there are some similarities, the Professional Disc media uses a unique phase-change recording material to support higher read/write speeds. In addition, the Professional Disc cartridge shutter supports access by two simultaneous pickups, while the earliest Japan-market Blu-ray Disc media had a shutter that accommodated only one pickup. Current Blu-ray Disc media uses a bare disc without cartridge. There is no cross-compatibility between XDCAM products and Blu-ray Disc products.

**Q: What is the difference between the recording material used for consumer Blu-ray Disc media and that used for the XDCAM system's Professional Disc media?**

A: The higher transfer rates of the XDCAM system require a more sensitive phase-change recording layer. The Professional Disc recording layer must change from crystalline (high reflectivity) phase to amorphous (low reflectivity) phase fast enough to enable transfer speeds of up to 72 Mbps. In comparison, the writing speed of consumer media is 36 Mbps. Aside from the different phase-change material, the track pitch, recording density and production processes are the same.

**Q: How does the read/write/erase life cycle of the XDCAM system's Professional Disc media compare to the Blu-ray Disc media?**

A: They're identical in the minimum spec. Both are rated at a minimum of 1,000 read/write/erase cycles under normal operating conditions. The Professional Disc media has a maximum read/write/erase life cycle of 10,000 under ideal operating conditions (73 degrees F, 50% RH). All of this information is based on Sony's own testing.

## **TECHNOLOGY & MEDIA**

**Q: How does the XDCAM system's Professional Disc media differ from DVD?**

A: Profoundly. Although both are 12 cm in diameter and 1.2 mm thick, Professional Disc media has five times the capacity, 13 times the transfer rate, a shorter laser wavelength and a protective cartridge for the media. Professional Disc media capacity is 23.3 GB, compared to 4.7 GB for DVD. The XDCAM HD decks and camcorders have a transfer rate of 72 Mbps, compared to 11 Mbps for DVD. The XDCAM system uses a blue-violet laser as opposed to the red laser used for DVD.

**Q: Is the XDCAM system's Professional Disc media playback- or record-compatible with DVD drives?**

A: No. They have different file formatting, track pitch and pickup specifications, in addition to different mechanical requirements.

**Q: Will the Professional Disc media replace tape?**

A: The Professional Disc is a new medium capable of storing a variety of formats. Therefore, Sony expects that the optical disc, as a new medium, will supplement and reinforce existing videotape. There are application areas where tape media is quite suitable, and areas where disc technology is more suitable. Sony anticipates that Professional Disc media and tape will coexist for years to come.

**Q: For what applications are XDCAM Professional Disc systems intended?**

A: XDCAM Professional Disc systems are intended for all video applications including newsgathering, production, postproduction, event videography, and so on.

**Q: Is it necessary to format a disc prior to use?**

A: Yes. Formatting, which creates a file system, is required for brand new discs; however, this is a very quick process that is done when the disc is inserted into a camcorder or deck. Because this happens so quickly, an end user will not be aware that the disc is being formatted.

**Q: What is the operating temperature range for XDCAM systems?**

A: The specified operating temperature for XDCAM camcorders ranges from -5°C (23°F) to 40°C (104°F) ambient temperature, which is a wider range than current professional tape-based camcorder products. XDCAM products operate as well as (if not better than) current VTRs and tape-based camcorders operate when used in the same environment (ex. typical cold winter weather or hot summer conditions).

## TECHNOLOGY & MEDIA

**Q: Once a Professional Disc media has been partially recorded, can I record more video without first initializing (erasing) the entire disc?**

A: Yes. The disc media is fully rewriteable, and always appends new recordings after the last clip, regardless of what clip was being viewed. You can keep recording more video/audio until the disc is full. Even then, you can delete the last clip or all clips on the disc to free up needed space.

**Q: What is the archival life of the XDCAM system's Professional Disc media?**

A: When stored at room temperature (68°F and 40% relative humidity), the estimated archival life of the Professional Disc is greater than or equal to 50 years based on Sony's own accelerated testing.

**Q: Does the XDCAM system's Professional Disc media have copy protection?**

A: No.

**Q: Is it possible to erase recordings on a disc?**

A: Yes, all XDCAM camcorders and decks can delete the last recorded shot, one by one. A "Quick Format" of a disc, which is equivalent to "all file delete," can be done in about two seconds.

**Q: Is there protection from accidentally erasing data on a disc?**

A: Yes, there is write protection tab on the disc cartridge. This is similar to a rec/save tab on DVCAM tape media or a rec/inhibit tab on other professional tape media. There is also a REC INH function on all deck products to help prevent a user from accidentally erasing material.

**Q: Can I erase the disc (or files on the disc) without using the deck?**

A: The camcorder has a DISC MENU this allows the ability to delete that last clip, all of the clips, or perform a "Quick Format".

**Q: Is there a possibility of a bulk eraser type machine?**

A: At this time, there are no plans to develop a bulk eraser type of machine. Unless desired for security purposes, there is no need to bulk erase data because unlike tape, directly overwriting data on discs does not degrade quality.

**Q: What is the Professional Disc cartridge made of?**

A: The cartridge is made of polycarbonate and the storage case is made of polypropylene.

**Q: What is the warranty on the Professional Disc media?**

A: Sony warrants Professional Disc media from defects in material or workmanship for 90 days. See actual warranty for details.

## TECHNOLOGY & MEDIA

**Q: We want to manage Professional Discs using bar codes. Can we stick a bar code label on the front of the cartridge?**

A: Yes, adhesive labels, including bar code labels, can be attached to the front of the cartridge.

**Q: Are there any effects from magnetic fields or airport X-ray scanners?**

A: Since recordings on Professional Disc media are not made using magnetic material like tape, or light sensitive material like film, it is highly unlikely that magnetic fields or X-ray scanners will affect the media.

**Q: Is there protection from accidentally scratching a disc?**

A: Yes. A polycarbonate cartridge shields the disc from dust and helps prevent the disc from being scratched. Even if a disc is accidentally scratched, robust error correction enables data on the disc to be played out. If the scratched portion of the disc happens to contain the file system, the data that allows access to all other data on a disc, a mirrored file system is located on the disc in a different physical location allowing the XDCAM system to access files.

**Q: Is there any way to recover data from a damaged or corrupt disc?**

A: The Error Correction on Sony XDCAM products can recover extensive lost data. However, just as with videotape, if the damage is too severe for error correction to recover, or if the media is broken into pieces, there is no way to recover data.

**Q: Is there a second source for the media?**

A: We support secondary suppliers for optical disc media. Currently Professional Disc media is also available from TDK. Please contact TDK for details.

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## ■ LASER SPECIFICATION



**XDCAM HD**  
Professional Disc System

## **LASER SPECIFICATION**

**Q: How long does the laser last?**

A: In the decks, Sony's recommended replacement interval for the laser is 6,000 hours of operation (recording and playback combined). This corresponds to three years of use at a constant eight hours a day, five days a week, 50 weeks a year. On the camcorders, the interval is 4,000 hours of operation. These replacement intervals are based upon Sony's simulation of normal usage. Sony optical products constantly monitor the laser's health by checking the current to the laser. As the laser approaches the end of its life, the current will fall out of tolerance, triggering an alarm. In this way, you can replace the laser before failure occurs.

**Q: Can I replace the laser myself?**

A: It depends. The replacement item is not the laser itself, but an optical block that includes the laser. Replacing and adjusting the optical block requires no special skill. But the installer would require a special measurement tool called an Autocollimator. However, Sony does not expect that a customer will want to buy an Autocollimator for such infrequent servicing.

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# FAQs

## ■ CAMCORDERS



**XDCM HD**  
Professional Disc System

## CAMCORDERS

**Q: Do XDCAM hardware and media work well in humid environments?**

A: Incredibly well. Thanks to non-contact recording and playback, the XDCAM system has nothing that would cause the sticking that interferes with videotape operation. Sony specifies operating humidity up to 90%. However, in Sony's own tests the camcorders have been shown to operate as long as there is no condensation or dew on the surface of the disc. Should condensation exist on media while in a camcorder or deck, the user will be prompted with a HUMID alarm. In case of dew, if you allow the disc to acclimate to room temperature and humidity (68°F/40%RH) you can resume recording. One other hidden benefit of the media type is that even when moisture appears on the surface, there are no permanent effects. With other media types utilizing pins for contact, often when those pins come in contact with moisture, they have a tendency to short out, causing loss of data.

**Q: Is there shock and vibration resistance built into XDCAM camcorders?**

A: Yes, Sony XDCAM camcorders use rubber dampers to hold the disc drive block in place, thereby minimizing the effect of any shock or vibration. In addition, a tracking system, based on the best Sony servo technologies, reduces the chance of the optical head recording off track. In the event a shock exceeds the servo's capacity, causing the head to move off track, recording continues in a buffer memory until the head is positioned properly. Once the head is back on track, the buffered information is recorded to disc. A substantial amount of buffering is built into the camcorder to operate in harsh environments.

**Q: What happens if the camcorder battery is removed or power is suddenly lost from an AC adaptor while recording?**

A: The emergency recovery system is designed to restore as much AV data as possible even if the file system is not closed properly. If power is suddenly lost during a recording, the AV data can be recovered automatically once power is reapplied. When this type of recovery occurs, the duration of a lost recording is a maximum of four (4) seconds from the time just before power was lost.

**Q: What if a battery runs out while recording?**

A: The system controller automatically stops recording and closes the file system before the full exhaustion of the battery. The camcorder also provides customizable battery settings for notifying the operator when battery power is below a desired level.

**Q: What is the time from power on to being able to record, if the disc is already in?**

A: Approximately 3.5 seconds. Tape camcorders take around four seconds.

**Q: What is the time from pushing the EJECT button to full ejection of a disc?**

A: The EJECT button on the camcorder does not abort the recording process. Whether an EJECT is done shortly after a REC STOP or while the camera is idle, the EJECT process is completed in approximately 5 seconds.

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# FAQs

## ■ DECKS



**XDCM HD**  
Professional Deck System

## DECKS

**Q: How do I know my signal is being recorded? Is there a playback confidence function?**

A: XDCAM products automatically confirm laser-writing conditions by checking the focus servo, tracking servo, reflection of laser beam, and laser power. An alarm will alert you if an unusual condition is detected. Because optical recording is fundamentally different from tape recording, there is no traditional playback confidence monitoring.

**Q: How long does it take from inserting the disc to a picture being displayed on screen?**

A: Approximately 10 seconds.

**Q: Is Metadata transferred together with proxy AV?**

A: Yes.

**Q: When an optical deck receives MXF files from another machine, will there be proxy AV?**

A: Yes. All XDCAM decks automatically create proxy AV that is not included in the MXF file. This function also works at high data transmission speeds via the Gigabit Ethernet or i.LINK (file access mode) interface.\*

**Q: Can I play back while transferring over Ethernet?**

A: No, it is not possible.

**Q: Are the DVCAM and MPEG HD files supported by Material eXchange File Format (MXF) for Ethernet file transfers?**

A: Yes, both DVCAM and MPEG HD formats are supported.

**Q: Does the product line allow for direct file access to the disc in any model?**

A: Direct file access on the disc is provided over the i.LINK interface\* (via 'file access mode'). "File access mode" over the i.LINK interface\* enables such operations as Browse File Directory, Direct read, Get File, Put File, etc. Since it occurs over the i.LINK interface, all products support the feature as all XDCAM units include the i.LINK interface as part of the standard offering.

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# FAQs

## ■ FUTURE DEVELOPMENT



**XDCAM HD**  
Professional Disc System

## **FUTURE DEVELOPMENT**

**Q: Is there consideration for greater capacity, such as double-sided or dual-layered disc?**

A: Yes, greater capacity discs are under consideration (dual layer is one of the candidates).

**Q: Can current XDCAM HD products (PDW-F350, PDW-F330, PDW-F70, PDW-F30) accept a dual layer disc?**

A: No, dual layer disc technology is not supported by the current XDCAM HD line-up. However, it is planned that if dual layer products are introduced they will be able to handle single layer discs as well as dual layer discs, therefore protecting the single layer legacy material you record today.

**Q: Can the HDCAM format be recorded on Professional Disc media?**

A: No. With today's technology, it is not possible due to the transfer rate. The HDCAM format is a 140 Mbps stream, while the XDCAM cameras utilize a single laser recording at 72 Mbps.

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Sony Electronics Inc.  
1 Sony Drive  
Park Ridge, New Jersey 07656  
[www.sony.com/XDCAM](http://www.sony.com/XDCAM)

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