SONY

Professional Disc

New Generation Recording Media

like.no.other*

*Incomparable

Sony Professional Disc™
New Generation Recording Media

Sony has chosen Professional Disc as the next generation professional recording medium because it offers fast transfer speed and the flexibility to handle all kinds of storage requirements from acquisition to archive.
Professional disc will also be the recording medium of choice for the new 2006 Sony HD XDCAM range.

Launched in 2003, the incredibly compact and reliable Professional DiscTM is a single-sided, optical disc that uses state-of the-art blue-violet laser technology to allow extremely large-capacity recordings of 23.3 GB.

Professional Disc

Created for today's converging world

Developed by Sony to meet the real needs of camera operators, editors, producers, studios and rental companies, Professional Disc is a rugged and reliable platform for acquisition, production and distribution. Featuring advanced optical disc technology, the format overcomes many of the drawbacks of tape-based systems and embraces concepts familiar to the open world of IT networks including non-linear random access, file sharing and advanced metadata handling. In today's converging world where quality, reliability, compatibility and integration are vital, Sony Professional Disc and XDCAM takes production efficiency into the 21st Century.

Easy Migration to HD

No need to worry about the future! Sony has a clear migration path for taking XDCAM Professional Disc to HD. XDCAM Professional Disc already has the potential capacity and bit rate to support HD recordings from Sony XDCAM HD, an all-new High Definition (HD) production format that will be launched in 2006. Featuring HD/SD dual-format recording capability, the XDCAM HD camcorder will be able to handle the new XDCAM HD and well-proven DVCAM formats, providing camera operators and studios with an easy step-by-step transition to HD. By combining High Definition picture quality with the advantages of non-linear, file-based production, XDCAM HD records true 1080-line HD pictures using MPEG Long GOP encoding at a selectable bit-rate of 35, 25 or 18 Mbps.

Technology

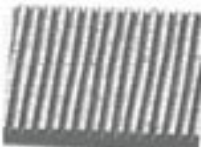
Advanced Blue Violet Laser

In collaboration with Nichia Corporation, Sony has improved performance of the Blue-Violet Laser Diode and enhanced development of the XDCAM market.

State-of-the-art Mastering Technology

Professional Optical Disc

Deep UV Laser (λ=266nm) Cutting System



Track Pitch 0.32μm

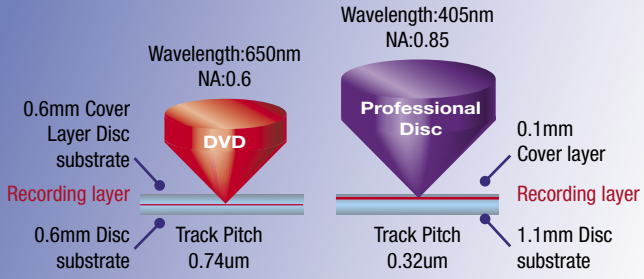
Track Pitch & Accuracy 320±5nm

Professional Disc uses a 450 nm blue violet laser to store digital data using a phase change process that briefly heats an incredibly small area of the disc's surface to a temperature of 400 to 600 degrees Celsius. This ensures a remarkably stable recording, resisting temperature extremes in the harshest of conditions and environments.

Store all essential AV project data on one disc

Only Professional Disc gives you the flexibility to mix and match data in a variety of formats such as XDCAM HD and SD. Unlike tape media, optical disc allows different formats to be recorded on the same disc. As well as recording audio-video streams, Professional Disc also captures a variety of metadata including date/time/location information plus low-resolution proxies that can be

Optical parameters (DVD versus Professional Disc)



Professional Disc employs a blue-violet laser with a wavelength of just 405 nm, enabling data density some 2.6 times that of the red laser technology used for conventional optical media. Moreover, the powerful objective lens has a numerical aperture of 0.85 –greater than that used for DVDs (NA: 0.6). The resulting narrow beam further doubles recording density. As a result, track pitch is just 0.32ym, making it possible to record as much as 23GB on one side of a disc.

used for browsing and shot selection or even played out on-air. Each disc includes a generous 500 Mb of storage space for extra project files such as graphics and audio clips, scripts, spreadsheets and editing timelines. All essential project information stays safely in one place!

Ultra fast data transfer

Professional Disc is fast with a data write speed of 72 Mb/s from a single optical head (144 Mb/s from dual head units) and read speeds of up to 170 Mb/s from dual head units. That means efficient recording and playback of high bit-rate data streams including 50 Mb/s MPEG IMX with simultaneous recording of low-resolution proxies and metadata

Quick access saves time and improves reliability

Why shuttle back and forth to find a particular scene or waste time winding back to the beginning of a take? Professional Disc offers all the advantages of random access, allowing any point on a recording to be accessed in a fraction of the time taken with tape. That makes it easier and faster than ever to locate material! Since there's no contact between the laser and the disc surface, mechanical wear on the recording is eliminated and overall reliability dramatically increased compared with tape.

Totally Flexible 'Format Free' Recording

Professional Disc offers the high storage capacities and lightning fast recording times essential for day-to-day broadcast operations. For the first time, camera operators no longer need to tie a video format to a specific physical media. This allows recording of video and audio streams in a choice of formats and resolutions, as well as the inclusion of a range of metadata such as date/time/location information, scripts, personal notes and production spreadsheets. Professional Disc combines the speed and efficiency of random access disc-based recording with the cost effectiveness of tape...in other words, total flexibility!

Sony optical disc assets

Tough enough for extreme conditions

Whether you're shooting in sun-baked deserts or on snowy mountain peaks, the rugged Professional Disc will never let you down. This incredible format delivers highly reliable recording and replay performance across an extreme range of temperatures and environments. Sony's advanced **hard coat technology** gives the disc **high scratch-resistance** and an extremely low electrostatic charge, making it difficult for static electricity to be generated and preventing dust inside the camera from damaging the disc.

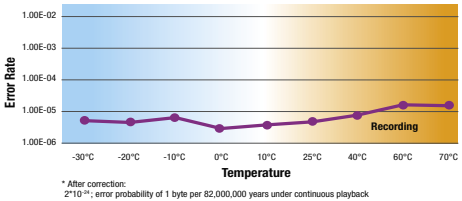
A Durable Cartridge

A highly durable, highly shock resistant polycarbonate resin is utilized for the upper and lower shells.

A rotating shutter mechanism provides accommodation of 2 heads and high dust resistance.

An anti-static resin is utilized on the disc opening.

High/Low Temperature Test
(Recording->Playback Error Rate)



* After correction:
$2^{*}10^{-24}$; error probability of 1 byte per 82,000,000 years under continuous playback

Ruggedly engineered to perform a minimum of **1,000 record/re-record cycles**, the disc can be used as many times as you like without picture or audio degradation. Fewer moving parts also means **higher reliability** with maintenance costs typically reduced by a factor of six in comparison with even the lowest cost professional tape formats. The disc is protected by a **durable cartridge** that offers exceptional resistance to dust, mechanical vibration, surface scratches and X-rays – more than tough enough to cope with the knocks and shocks of real-life shooting conditions!

High Capacity Optical Disc

The single-sided Professional Disc offers long-duration, high quality recordings with a massive 23.3 GB data capacity. This translates into a recording time of 45 to 85 minutes for SD and 60 to 120 minutes for HD, depending on the chosen bit rate

Outstanding picture quality across all formats

With Professional Disc, you can choose between the fabulous picture quality of MPEG IMX or the economy and convenience of DVCAM. Latest Sony XDCAM products offer the ability to record* and play back HD, MPEG IMX** (8-bit MPEG-2 4:2:2P@ML compression at 50, 40, 30 Mb/s) and DVCAM 8-bit digital-component recording with a 5:1 compression ratio and a sampling rate of 4:1:1 (for NTSC)/4:2:0 (for PAL) streams. Professional Disc provides 60 to 120 minutes recording time for HD, depending on the chosen bit rate, approximately 85 minutes recording time for DVCAM and 68, 57, and 45 minutes recording time for MPEG IMX at 30, 40, and 50 Mb/s respectively. At the highest data rate, picture quality is equivalent to Digital Betacam.

* The PDW-V1 Viewing Deck only allows recording using network and i.LINK File Access Mode.
** The PDW-510P camcorder is capable of DVCAM recording only.

Specifications

Items	Unit	Typical Values
Storage capacity	GB	23.3
Laser wavelength (blue-violet)	nm	405
Data transfer Rate (per optical head)	Mbps	72
Recording format		Phase change recording
Track pitch	μm	0.32
Erase/write/read	cycles times	≥ 1,000
Read cycles	times	≥ 1,000,000
Raw byte error rate	times	≤ 0.0002
Estimated shelf life	years	≥ 50*
Estimated archival life	years	≥ 50*
Disc diameter	mm	120
	inches	4 5/8
Cartridge dimensions	mm	128.6 x 130.6 x 9.1
	inches	5 1/8 x 5 1/4 x 3/8
Case Dimension	mm	158 x 145.2 x 14.8
	inches	6 1/4 x 5 3/4 x 0 1/2
Operating Condition	-	-5~55 C / 3~85%RH
Storage Condition	-	-10~55 C / 3~90%RH

*Estimation from Sony's acceleration test

Professional Disc™ line-up

Model	Weight	Master Carton Quantity		Sub-Carton Quantity	
		Quantity	Weight (g)	Quantity	Weight (g)
PFD-23	189.2	50	10,385	5	985

SONY

www.sony-europe.com/promedia