

SONY

XDCAM™
Professional Disc System

XDCAM. The next generation production family.

You make it a Sony



Sony Professional Disc™



Professional Disc™



Professional Disc System



System

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- **Ultimate freedom**
Ultimate speed
Ultimate flexibility



Just imagine...

...Your star news reporter is on the scene of a major story. Better still, she's got there first and captured some phenomenal pictures. There's only one problem – you want to run an exclusive on tonight's programme, your crew is 1000 km from home and the clock's ticking. Wouldn't you like to beat deadlines and get to your audience first with great-looking pictures while your competitors are still waiting to catch the next plane home? With Professional Disc, at last there's a file-based acquisition and production platform that lets you send compact proxy files back to base for confirmation and shot selection – or even immediate transmission – from a network-connected PC anywhere in the world

And while you're about it, wouldn't your camera crews appreciate a camcorder that lets them shoot up to 85 minutes worth of video and audio data streams in a choice of DVCAM or MPEG IMX formats to offer up to Digital Betacam quality. Wouldn't they value the reassurance of an incredibly compact, re-usable disc cartridge that's protected against dust, shocks and rough handling? Wouldn't they like a 10 second loop record function so there's never any danger of missing the action? And wouldn't they like to review each shot immediately and then keep shooting, freed from the worry of accidentally erasing a precious scene because they didn't re-cue to a blank space on tape?

Back at base, wouldn't you like an open, network-oriented production platform based around IT industry standards that offers seamless integration with today's nonlinear editors and other broadcast systems from leading manufacturers? What's more, wouldn't you like to slash running costs, streamline workflow and turn projects around faster than you ever thought possible?

With Sony Professional Disc™, at last there's a truly open media production platform that lets you do all this and more.



Created for a convergent world

Developed by Sony to meet the real needs of camera operators, editors, producers, facilities houses and rental companies, Professional Disc offers all the qualities you'd expect from a rugged, reliable platform for acquisition, production and distribution.

Based around advanced optical disc technology that overcomes many of the restrictions of tape-based systems, Sony Professional Disc embraces paradigms familiar to the open world of IT networks, from non-linear random access and file sharing to advanced metadata handling.

In a convergent world where speed, flexibility, quality, dependability, compatibility and integration are vital, Sony Professional Disc and the XDCAM range take production workflow into the 21st Century.

Terminology at a glance



Professional Disc TM

An advanced high capacity storage medium and production platform. Based around the latest optical disc technology, Professional Disc brings the benefits of the IT world to AV production.



A range of highly advanced products that support the Professional Disc format. XDCAM Series products offer an intuitive feature set, designed to take full advantage of the non-linear media.



Sony XDCAM camcorders have been designed to cope effortlessly with heavy duty field acquisition.



'Format Free' Recording Means Total Flexibility

Professional Disc overcomes the limitations of proprietary formats while delivering the storage capacities and recording times essential for day-to-day broadcast operations.

For the first time, Professional Disc eliminates the long standing concept of tying a video format to a particular physical medium. This provides the unique ability to record video and audio streams in a choice of formats plus low-resolution audio and video proxies, as well as a range of metadata including date/time/location information plus scripts, personal notes, production spreadsheets and other project-related files. Mix and match between DVCAM and MPEG IMX formats – right up to 50 Mb/s for Digital Betacam quality if your production needs it – on the same disc cartridge. Flick between formats on the fly depending on available storage capacity or your programme making requirements.

Combining the speed and workflow efficiency of random access disc-based recording with the cost efficiency of tape, there's no other platform that offers the flexibility of Professional Disc.

Mix and match between DVCAM and MPEG IMX formats – right up to 50 Mb/s for Digital Betacam quality if your production needs it – on the same disc cartridge.

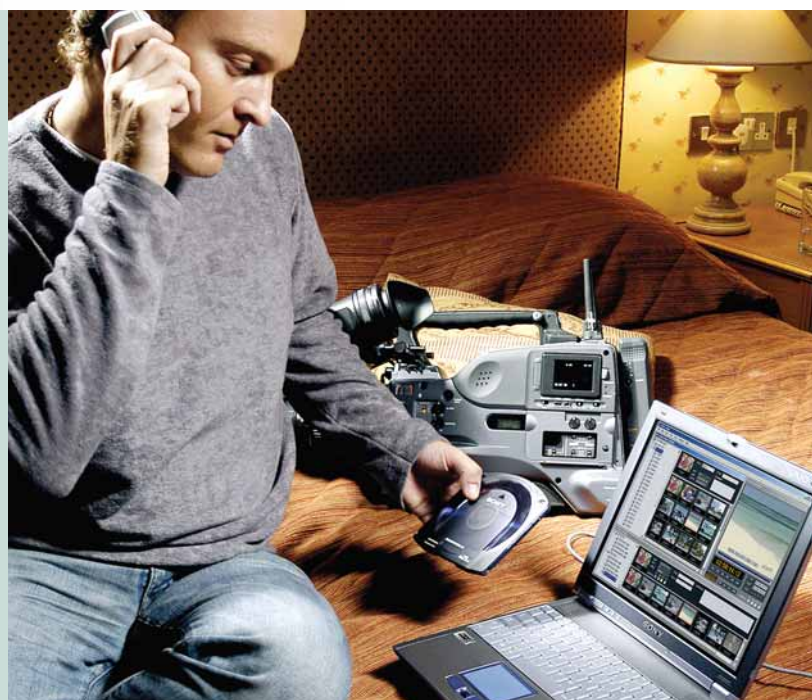


■ Making the Business Case

XDCAM offers a compelling cost proposition compared with the traditional costs of production. In real-life shooting situations, the raw cost of tape and camera hire can be overshadowed by expensive off-line rental charges back home when tapes need to be transferred to a nonlinear editing system for review and editing.

Using a tape-based camcorder for acquisition, it's not unusual to return from a ten day shoot with more than 40 hours of taped material. On returning home, tapes must be ingested to a NLE system before editing can even start - a process that might require a day or two's machine rental plus the cost of an operator. XDCAM, on the other hand, lets you upload the same 40 hours of material as low bit rate 'proxies' to a standard laptop PC at an amazing 50 times faster than real time for scene selection and rough editing.

Storyboards and pre-compiled EDLs can then be sent back to base while you're still on location. Back home, pre-selected full resolution clips can be ingested to a NLE at up to five times normal speed - saving even more time and facilities costs.



Reducing the Cost of Ownership

Whether you are a broadcaster, facilities company, rental house or freelancer, XDCAM offers a compelling value proposition:

- Optimised to deliver reduced costs through more efficient workflows... faster browsing, faster file transfers and faster editing saves time and money.
- Lowest cost per Gigabyte of any non linear, removable broadcast media.
- High media recyclability (more than 1000 record/re-record cycles) reduces media replacement costs compared with tape.
- Reduced maintenance costs: 6000 hr / 4000 hr (deck/camcorder) replacement interval for optical block; compares with typical 2000 hr replacement interval for a tape based mechanism. These costs are also covered under the 7-year warranty.
- Fewer moving parts means service costs typically 50% lower than professional tape based mechanisms.
- Capability to select DVCAM or MPEG IMX formats reduces hardware inventory requirements in production and rental operations - only one camcorder/deck needed instead of two.
- File oriented, network capability allows 'pooling' of XDCAM equipment in production environment. Typically share one XDCAM deck between three nonlinear editing systems as opposed to traditional requirement of one VTR per NLE.
- PAL/NTSC compatible decks eliminate need for dual equipment to support different broadcast standards.
- 'HD-ready' Professional Disc media offers seamless evolutionary path to HD production.



■ XDCAM –The future shape of broadcast production



Professional Disc™

For news, for sport, for documentaries, for reality television, for Internet television – Sony XDCAM delivers the power, speed, convenience and flexibility to transform the way programme makers of all kinds approach the production process.

XDCAM uses advanced optical recording and storage technologies to achieve data transfer rates and storage capacities that are required for day-to-day broadcast and production operations. While the disc itself is carefully protected by a tough plastic cartridge, Professional Disc is very much an open technology. Format independent and compatible with de facto broadcast standards, Sony XDCAM series products are designed to integrate with legacy tape-based systems as well as latest nonlinear solutions from other leading manufacturers.

Since Professional Disc technology is inherently 'format free', it also offers a clearly-mapped migration path to High Definition. Already offering the storage capacity and data transfer rates required to support 1080i High Definition production, XDCAM is poised to bring all the advantages of optical disc-based non-linear workflow to simultaneous HD/SD production.

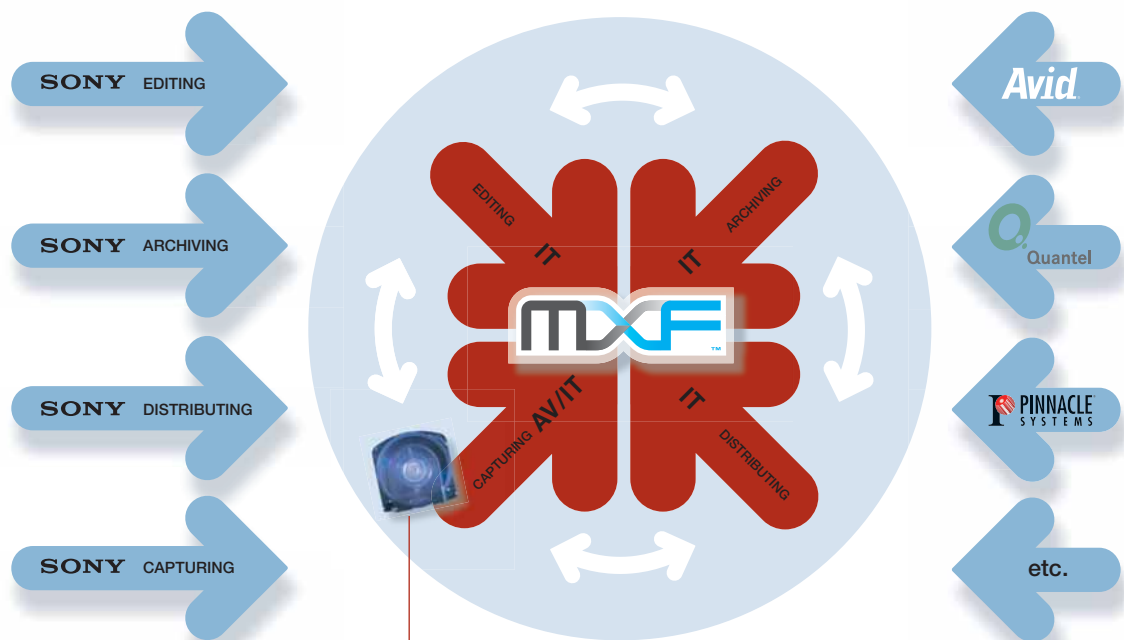


Designed for an Open World

XDCAM has been designed from the outset to provide full compatibility with the totally open MXF file format. Supported by many leading equipment manufacturers and other industry players, MXF (Material eXchange Format) will become the de facto networked file exchange format in the professional world.



IT based workflow

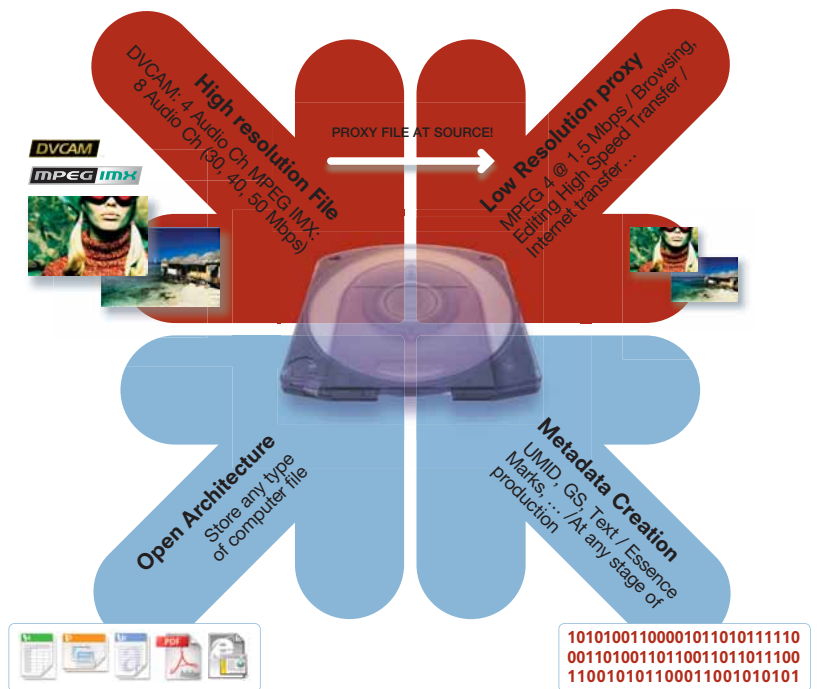


For some time, the archiving, editing and distribution stages of the production chain have benefited from IT, file based systems. Now, Professional Disc completes the picture by bringing IT to the 'capture' phase of this chain and in doing so, improves the overall efficiency of the chain.

With a fully IT based production process, workflow efficiency is greatly enhanced. Because materials are only ever held as files, managing, sharing and storing materials within and between companies is as easy as 'copy and paste'. Previously, cost and time restrictions may have meant that you only archived materials that were digitised for your production. Now, it becomes little more effort to archive all the footage stored on disc – vastly enhancing your available archive resource.

The IT based production platform offers a fully future proof solution. Format independence and MXF open standards mean that integration of new equipment – either from Sony or third party manufacturers – is seamless.

■ The next Generation Medium



Phase change recording

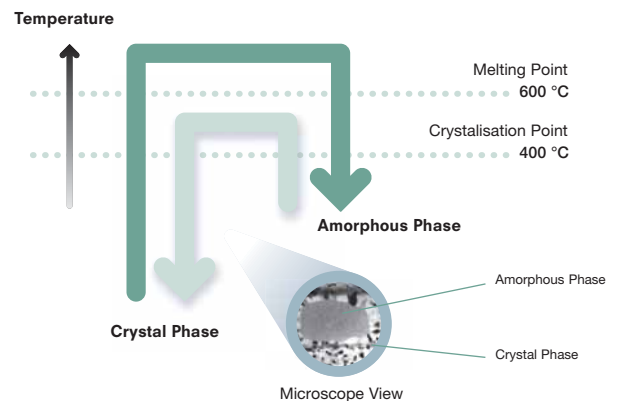
High Capacity Optical Disc

The single sided high capacity optical disc offers the advantages of long-duration, high quality recordings. The 23.3 GB data capacity translates into a recording time of 45 to 85 minutes, depending on the chosen bit rate. Better still, there's no need to pre-format each disc cartridge before use. Just slip in a fresh disc and start shooting immediately to catch the action.

Store Video, Audio, Proxies, Metadata and Project Files on the Same Disc

Only Professional Disc gives you the flexibility to mix and match data in a variety of formats. Optical disc technology eliminates the restrictions inherent in proprietary tape footprints, allowing different formats to be recorded using the same disc. In addition to video and audio streams, Professional Disc supports the recording of a variety of metadata including date/time/location information, as well as low-resolution proxies that can be used for browsing and shot selection or even played out on-air. Each disc cartridge also includes a generous 500 Mb of supplementary space to store additional project files ranging from graphics and audio clips to scripts, spreadsheets and editing timelines – ensuring that everything relating to a project stays safely in one place.

Professional Disc uses a 450 nm blue-violet laser to store digital data using a phase change process that momentarily heats an incredibly small area of the disc's surface to a temperature of 400 – 600 degrees Celsius. The resulting recording is remarkably stable, resisting high and low extremes of temperature in the harshest recording environments.



High Data Transfer Rate

With current products already supporting 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, Professional Disc offers sure, stable recording and playback of high-bit-rate data streams – even 50 Mb/s MPEG IMX – with simultaneous recording of low-resolution proxies and metadata.

Wear-Free, Quick Random Access

Professional Disc offers all the advantage of disc-based random access, overcoming the frustration of having to shuttle tapes backwards and forward to find a particular scene. There's no time wasted winding back to locate the beginning of a take, and any point on a recording can be accessed in a fraction of the time taken to access the same information on tape – making it easier and faster to locate source material than ever before. Since there's no physical contact between the laser and the disc's surface, mechanical wear on the recording is eliminated and overall reliability dramatically increased compared with tape.

Reliable, Durable, Re-usable

Wherever you are, whatever you're doing – Professional Disc can keep up with the pace. From sun-baked deserts to snowy mountain peaks, Professional Disc delivers highly reliable recording and replay performance across an extreme range of temperatures and operating conditions. More than tough enough to cope with the knocks and shocks of real-life shooting conditions, the disc is housed in a durable cartridge that offers exceptional resistance to dust, mechanical vibration, surface scratches and X-rays.

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 worry about 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.

Weighing just 89 g, Professional Disc measures a compact 129 x 131 x 9 mm (W x H x D). The disc is permanently protected by a durable plastic cartridge, designed to safeguard the optical medium in the toughest of environments. Slipping into a slender library case, Professional Disc takes up less space on your library shelf to save storage costs.



■ A Revolution in Workflow Efficiency



Low-resolution proxies are created automatically as you shoot, allowing simplified off-line scene selection and storyboarding using XDCAM camcorders or decks either on their own or with an attached PC.

From Acquisition Straight to Editing

XDCAM revolutionises production workflows, increasing efficiency and expanding creative options by taking you straight from acquisition to editing without any intermediate steps.

With XDCAM, low-resolution proxies are created automatically as you shoot, allowing simplified off-line scene selection and storyboarding using XDCAM camcorders or decks either on their own or with an attached PC. Camera operators can therefore pre-produce material whenever and wherever they choose – in a hotel room, on a train or in an aeroplane – eliminating the need for costly facilities time to review and storyboard material. Back at base, high resolution files can be uploaded to a NLE, either directly from disc or via a network connection, at up to five times faster than real time to save even more studio time costs and streamlining workflows.

Instant Thumbnail Access to Material

Sony XDCAM improves production workflows by allowing camera operators, editors and producers to share information and collaborate more closely. 'Thumbnails' of every scene are created automatically and instantly displayed via either the camcorder's LCD display or a connected monitor. After scrolling to select the thumbnail corresponding to a desired scene, the scene instantly appears full size to allow playback, pause, fast-forward, fast-reverse or scrubbing within the clip.



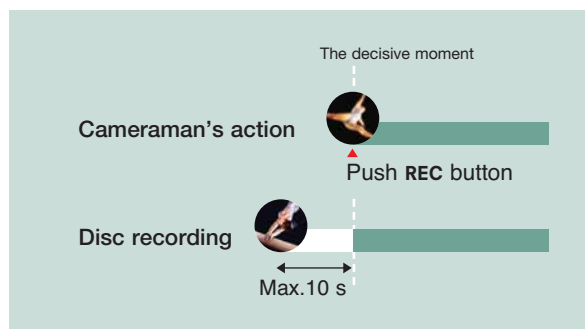
The Fastest, Most Convenient Answer for Acquisition

When you're in the field, there's often only one chance to capture the action. With Sony XDCAM Professional Disc camcorders, you're liberated from the constraints of tape to make acquisition easier, faster, surer and more convenient than ever before.

Whether it's for news, documentaries or sport, the only thing you can expect is the unexpected.

There's less chance of missing a vital shot thanks to the invaluable XDCAM Picture Cache Recording facility that constantly buffers the last ten seconds' worth of action before you've even pressed the record button. Since new recordings are made onto an empty area of the disc, there's no danger of overwriting a precious take.

Review each take immediately and decide on the spot if you want to keep the shot. If it's not good, simply delete it and move on to re-take. Keep shooting, and the camcorder is always ready for the next shot with no time wasted re-cueing to a blank area of tape.



There's less chance of missing a vital shot thanks to the invaluable XDCAM Picture Cache Recording facility that constantly buffers the last ten seconds' worth of action.



Scene Selection

Selecting material for transfer over a network or digitizing to a nonlinear editor can be a time consuming task. Sony XDCAM overcomes this critical bottleneck in the production workflow with a unique scene selection function – featured as standard on all products – that makes it possible to play out only clips that have been pre-selected by the operator and ignore unnecessary clips. Random access optical technology means that clips can be played back in any sequence selected by the user, with no interruptions to locate the next clip. There's no additional hardware or software required as the scene selection process is accomplished within the XDCAM camcorder or deck itself.

XDCAM camcorders and decks can play out clips in the order they were selected, making it quick and easy for the operator to generate storyboards. Clips can be resequenced at will, and XDCAM decks offer the additional ability to trim clips. Once clip selection or storyboarding is complete, an Edit Decision List (EDL) can be written back to the source disc. This disc can then be replayed on any XDCAM camcorder or deck according to the scene selection data, without breaks between clips. Material can be played out in the format it was recorded at (MPEG IMX/DVCAM) or as low-resolution proxies. For even more flexibility, scene selection can also be performed on-screen using a standard PC running supplied logging software.



AV Proxies Offer new Possibilities for Networked Collaboration

XDCAM camcorders record low-resolution 'proxy' AV data onto disc at the same time as the full-resolution MPEG IMX or DVCAM data stream. These MPEG-4 proxy AV streams are time code synchronized with the full-resolution stream, providing a far smaller file size for browsing and editing tasks such as storyboarding without the need for a high performance nonlinear editing system. Despite their small bandwidth requirements, these proxies offer excellent subjective picture quality.

1. Remote Content Browsing

Offering excellent picture quality at a bit-rate of just 1.5 Mb/s, AV proxies can be 'browsed' from virtually any location using a standard PC. All Sony XDCAM camcorders* and decks allow transfer of proxy AV data via their integral LAN or i.Link ports, allowing material shot in the field to be uploaded to a designated server for remote viewing by other news teams, journalists, editors or producers. A journalist can therefore start writing a script for a story by viewing proxies before the disc arrives back home, saving valuable time in the most pressured news and other on-air environments. What's more, if scene selection has already been conducted, proxies of this playout sequence can be uploaded to the server. The results of an offline proxy edit can also be uploaded and viewed remotely.

2. Proxy Editing

XDCAM is the perfect in-the-field complement to the Sony XPRi Mobile that allows proxy data to be transferred to its hard drives at an incredible 30 times normal playback speed. Its studio counterpart, the XPRi MetaStation, also allows proxy editing and 30-times speed transfers, plus high-resolution MPEG IMX/DVCAM editing to form an efficient on-line/off-line switchable system. Once offline proxy editing is completed on either XPRi Mobile or XPRi MetaStation, EDLs can be written back to the same disc containing the original high resolution material.

* XDCAM camcorders require optional PCMCIA card slot.

Compatibility with XPRI Non Linear Editors

The XDCAM family of Professional Disc production tools presents a perfect match for the Sony XPRI family of SD and HD non linear editors. Streamlining broadcast workflow thanks to its ability to browse and incorporate MXF-compliant media files and metadata directly from a PDW Series camcorder or deck, XPRI complements the capabilities of XDCAM to create an immensely powerful environment for longform programme production.

Alongside full-resolution MPEG IMX files, XPRI can ingest low resolution, low bandwidth MPEG-4 proxies created automatically by XDCAM camcorders and stored on the same Professional Disc media at up to 50x quicker than real time – allowing content to be searched, located and reviewed virtually instantaneously without the need to cue tapes and upload content.

Edit Decision Lists (EDLs) created in the field using the PDZ-1 XPRI Mobile can be written back onto XDCAM Professional Disc media alongside full-resolution MPEG-2 IMX files and metadata. Back at base, media files, EDLs and metadata can be ingested from an XDCAM feeder source into XPRI at 2.5x faster than real time – saving valuable facilities time and allowing editing to start immediately without the lengthy delay of ingesting material from tape. During ingest, only source XDCAM material referenced by the EDL is transferred to XPRI's hard drive – other unwanted material is ignored, reducing transfer times from XDCAM to XPRI still further.



Random access optical technology means that clips can be played back in any sequence selected by the user.



Using the XPRi Mobile and XPRi MetaStation

Designed to run on a standard notebook PC, XPRi Mobile software allows quick and full offline editing in the field. The offline EDL created in the field can then be transferred to the XPRi MetaStation to finish the edit in high-resolution MPEG IMX or DVCAM formats.

Timelines produced from offline edits with the XPRi Mobile can be instantly reproduced on the XPRi MetaStation simply by loading EDL and proxy AV data. This EDL and proxy AV data can be delivered and loaded to a XPRi MetaStation in the studio via a common IP network, enabling offline proxy editing to continue in the studio until the Professional Disc arrives. When it does, the XPRi MetaStation loads from the disc, only the high-resolution material associated with the clips used in the proxy edit timeline, instantly creating the online version of the timeline for final retouches.

Using the XPRi MetaStation Alone

Used alone, the XPRi MetaStation allows operators to perform offline edits using proxy AV data, before using the same timeline for high-resolution editing. The XPRi MetaStation will upload at high speed only the high-resolution material associated with the clips used in the offline edit timeline ready for final retouching.

Proxies of material gathered in the field can be loaded at very high speed to the XPRi MetaStation in the studio via a standard IP network for editing to begin. Once the source disc arrives, the XPRi MetaStation loads only the high-resolution material associated with the clips used in the proxy edit timeline, instantly creating the timeline's online version ready for final retouches. The same operations can be performed even when a network connection is not available for the transfer of proxy AV data. After the disc has reached the station, Proxy AV data is loaded locally from disc to the XPRi MetaStation at up to 50-times normal speed for offline proxy editing.



High Speed Data Transfer Delivers More Efficiency, More Flexibility

XDCAM's high speed data transfer capability translates into tangible cost savings for programme makers and broadcasters – whether you're working with proxies or high resolution material.

High resolution MPEG IMX and DVCAM material can be transferred from Professional Disc to a nonlinear editor far more quickly than from tape. DVCAM signals are transferred at an equivalent five times normal speed, and MPEG IMX signals at 2.5 times normal speed via an i.LINK™ (File Access Mode) or network connection. In addition, Proxy material can be transferred – using the PDW-1500 – at up to 50 times normal speed.

* i.LINK is a Sony trademark used only to designate that a product is equipped with an IEEE 1394 connector. All products with an i.LINK connector may not 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.

XDCAM in a Networked Production Environment

XDCAM is the perfect partner for the new Sony Networked Production System (NPS), a powerful yet cost effective IT network server based system that integrates all ingest, production and playout processes within time-critical production environments such as newsgathering.

Specifically designed to work seamlessly with Sony XDCAM products as well as the XPRI Mobile and MetaStations, NPS enables significant new workflow enhancements to save time and costs associated with news production. For example, AV proxies can be downloaded from XDCAM camcorder to the XPRI Mobile before being sent via a network connection to NPS for viewing and editing.



Optical disc technology eliminates the restrictions inherent in proprietary tape footprints, allowing different formats to be recorded using the same disc, while still maintaining the benefits of low-cost media.

Professional Disc's high speed data transfer capability translates into tangible cost savings for programme makers and broadcasters.



XDCAM Benefits



Outstanding Picture Quality

Whether you need the outstanding picture quality of MPEG IMX or the economy and convenience of working in DVCAM, Sony XDCAM products offer the ability to record* and play back both 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. Camera operators can even mix and match recording formats on the same Professional Disc cartridge according to their quality and production workflow needs.

Professional Disc provides approximately 85 minutes of DVCAM recording time, and 75, 57, and 45 minutes of MPEG IMX recording 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.

Flexible Metadata Recording

Sony XDCAM camcorders and decks are capable of recording a variety of metadata to speed up and simplify the process of locating and managing specific shots. PDZ-1 Metadata Manager software is supplied with all XDCAM decks for simple, convenient reviewing of content and creation of metadata.

UMID

A UMID (Unique Material Identifier) is automatically generated and recorded to disc whenever a recording is made on a XDCAM camcorder or deck. Extended UMID functionality is also supported, including information about time and location of a shoot. Each clip recorded will have a unique reference throughout the world.

Essence Mark Recording

During shooting, thumbnail pictures are generated each time an essence mark is created to simplify searches for a required scene. An essence mark is also set each time the Return button on the camcorder lens is pressed. After each shot, the operator can quickly cue to that point simply by selecting its thumbnail from a list displayed on the LCD screen of the camcorder or deck into which the disc is loaded.

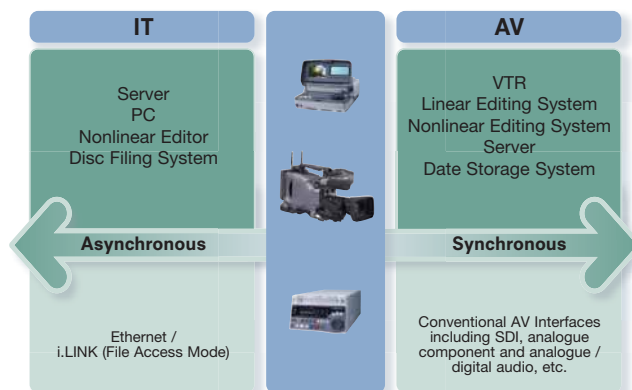
XDCAM camcorders can also automatically set an essence mark when particular events are sensed, such as audio level overshoots or abrupt changes in video luminance levels or colour balance.

File Oriented, IT Friendly Platform

XDCAM operates around a file based recording system that allows material to be viewed directly on a PC linked to the deck or camcorder via an i.LINK (File Access Mode) connection. All XDCAM camcorders and decks are equipped with IT-friendly, computer-based interfaces including the IEEE-1394 i.LINK interface that supports AV/C and File Access Mode protocols, as well as 1000Base-T and 100Base-T Ethernet interfaces.



XDCAM Series Products





Sony MMStation™ SNMP-compliant Remote Monitoring and Maintenance Software.



The Tough Performer

Just like the Sony Betacam family that has been engineered to handle 'real-world' shooting conditions, Professional Disc can cope with environmental extremes including high humidity levels as well as high and low temperature.

XDCAM camcorders use rubber dampers to hold the disc drive block in place, minimizing the effects of mechanical shocks and vibration. In addition, the powerful Sony-developed servo tracking system maintains recording stability of the optical head, even when the camcorder is shaken or knocked. In the event of a shock that exceeds the servo's capacity, a generous capacity buffer memory stores recorded data until the optical head returns to its correct position. Powerful ECC (Error Correction Code) and sophisticated concealment techniques further ensure the quality and integrity of recording and playback functions under all conditions.

Embracing an Open World: Seamless Integration into VTR-Based Systems

Interoperability is a key requisite with any broadcast technology, and Sony has developed XDCAM and Professional Disc with the clear objective of retaining open interfaces with 'traditional' VTR-based products as well as nonlinear systems from Sony and other third party manufacturers.

AV interfaces including SDI, component and RS-422 I/O allow easy connectivity with current equipment, including linear and nonlinear editors, studio VTRs and audio mixers. Sony XDCAM products also offer network-based interoperability with other Sony network-capable equipment, such as the MPEG IMX e-VTR.

Simplified, Lower Cost Maintenance

A major reduction in the number of moving parts compared with tape-based systems means that XDCAM products are subject to significantly reduced day-to-day maintenance costs. Replacement of the optical block in XDCAM studio decks is specified only once every 6000 hours (NB: camcorder 4000 hours), compared with a typical replacement interval of 2000 hours for professional tape based head mechanisms. With maintenance costs typically half those of tape mechanisms, this equates to a maintenance outlay as much as six times less than the lowest cost professional tape format.

All XDCAM Professional Disc products are compatible with Sony MMStation remote maintenance and monitoring software; an SNMP compliant application that can monitor and log hardware status in real time as well as providing updated maintenance information via a TCP/IP network.

■ The XDCAM range

The Sony XDCAM Series includes two compact, high-performance camcorders and three decks, all including a comprehensive range of features to take full advantage of the creative possibilities of Professional Disc. The XDCAM series is also the perfect partner for the Sony XPRi Nonlinear Editing System, XPRi Mobile and XPRi MetaStation, simplifying everything from low-resolution storyboarding and field editing to off-line editing via networked data transfers.

As you'd expect from a medium that's been designed to mesh seamlessly with today's networked IT infrastructures, the Sony XDCAM series brings the benefits of optical technology to synchronous as well as asynchronous environments, offering smooth, simple integration with third party nonlinear and other broadcast and production systems.



XDCAM[™]
Professional Disc System

SONY FINANCIAL SERVICES

Owning XDCAM becomes even more attractive with a range of flexible financing packages from Sony Financial Services. Please contact your local dealer or Sony sales representative for more information.

7-YEAR LASER WARRANTY

All XDCAM PDW Series products come with a 7-YEAR WARRANTY AS STANDARD, covering optical drive components plus parts and labour.

XDCAM Camcorders



Sony XDCAM camcorders have been designed to cope effortlessly with heavy duty field acquisition, providing excellent picture quality, operability and reliability inherited from the Sony BETACAM™ family of acquisition products.

PDW-510P DVCAM Camcorder

PDW-530P MPEG IMX/DVCAM Switchable Camcorder

The PDW-530P features MPEG IMX/DVCAM-switchable recording modes and two built-in optical filters (ND and CC), while the PDW-510P features DVCAM recording and one built-in optical filter (ND).

As an alternative to standard 50i operation, both camcorders can also shoot as standard in 25P (progressive) mode to deliver 'cinematic' pictures – a valuable plus that can add tangible viewer appeal and marketability to drama and other quality productions without the complexity and expense of shooting film.

16:9/4:3 Switchable PowerHAD™ EX CCDs

XDCAM camcorders incorporate three 4:3/16:9 switchable CCDs for outstanding picture quality with a high signal-to noise ratio of -65 dB (NTSC)/-63 dB (PAL), low smear level of -140 dB (typical) and a high sensitivity of f11.

12-bit A/D Conversion

The high integrity 12-bit A/D LSI ensures that images captured by the PowerHAD EX CCDs are processed with greater precision. In particular, this higher-bit resolution allows contrast to be reproduced more precisely in mid-tone areas of the picture.

Advanced Digital Signal Processing (DSP)

XDCAM camcorders use more than 30 bits for key digital signal processing functions, minimising round-off errors to extract the greatest possible picture performance from the PowerHAD EX CCDs. Highly sophisticated image refinement functions include Multi-Matrix and Triple Skin Tone detail control.



PDW-510P
DVCAM Camcorder



PDW-530P
MPEG IMX/DVCAM
Switchable Camcorder

■ XDCAM Camcorders

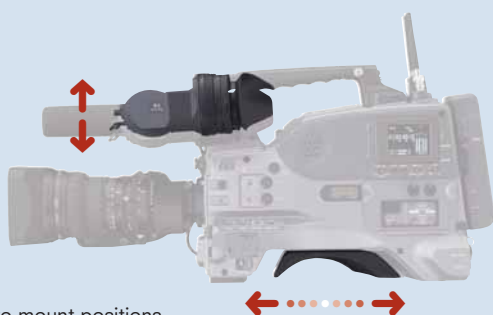
XDCAM
Professional Disc System™



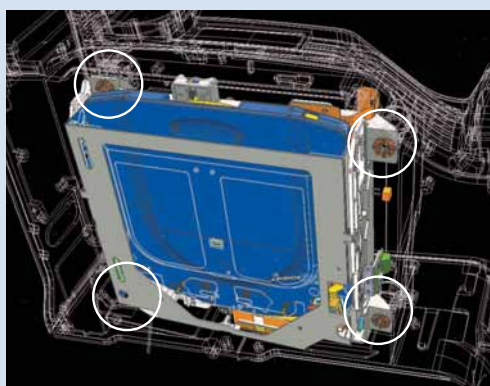
PDW-510P **DVCAM**
DVCAM CAMCORDER



PDW-530P **DVCAM** **MPEG IMX**
MPEG IMX/DVCAM SWITCHABLE CAMCORDER



Two mount positions



Four Shock-Absorbing Dampers



2.5-Inch Colour LCD Screen

COMMON FEATURES

Shock and Dust-Resistant Disc Drive

The disc drive entrance is concealed by two lids helping to prevent any dust from entering the drive. In addition, four rubber dampers are used to hold the disc drive block in place to absorb mechanical shocks and vibration.

Compact, Lightweight Body

Weighing just 7.2 kg (15 lb 13 oz) including lens, battery and disc media, XDCAM camcorders are designed for high mobility in the field.

2.5-Inch* Colour LCD Screen

The easy-to-view colour LCD screen on the camcorder side panel simplifies thumbnail search and scene selection.

*Viewable area measured diagonally

Rugged, Ergonomic Design

Based on years of Sony experience in camera ergonomics, XDCAM camcorders offer high levels of mobility, comfort and balance. The shoulder-pad position is adjustable, and viewfinder height is selectable between two positions, while rear-panel connectors are located well away from the battery pack for quicker, easier cable connection. For even greater comfort and convenience, five switches mounted on the camera body can be assigned to virtually any camera function.

Extensive Range of Interfaces

A comprehensive range of interfaces ensures successful interoperability with other broadcast equipment. Analogue composite output and i.LINK interfaces are offered as standard, while SDI output



and analogue composite inputs are enabled by adding the appropriate optional plug-in board. Boards can be installed within the camcorder chassis, eliminating the need for an external camera adaptor unit and maintaining the compactness and balance of the camcorder. Additional camera adaptors add further interfacing options including SDI input or four audio input connectors.

Picture Cache Recording

Picture Cache Recording buffers up to 10 seconds of audio and video signals into memory before the Record button is even pressed, minimising the risk of missing an unexpected but crucial shot.

Low Light Shooting

Two convenient features expand creative possibilities when shooting in low light conditions:

Slow Shutter permits shutter speeds longer than the frame rate, while Turbo Gain allows the camera gain to be boosted up to +48 dB.

Flexible Image Controls

Sony XDCAM camcorders provide highly advanced image control features hitherto available only on high-end studio cameras. These allow images to be recorded to disc with maximum quality and with an expanded palette of creative possibilities.

- Multi-Matrix function
- Electronic soft focus
- TruEye™ processing
- Selectable gamma table
- Triple Skin-Tone-Detail control
- Colour-temperature control

Progressive Mode (25P)

XDCAM Series camcorders support shooting in 25P progressive mode as standard, offering camera crews and directors the creative freedom to acquire material with an enhanced 'cinematic' appearance that shares many of the same subjective qualities as shooting with film.

High Quality Audio Recording

Sony XDCAM camcorders support high-quality audio as specified by the selected recording format. Both camcorders are equipped with an analogue XLR-5 pin connector for stereo audio output, two 3-pin XLR connectors with selectable MIC/Line level for 4-channel audio input and a front microphone input. Two 3-pin XLR connectors can be switched to accept AES/EBU digital audio inputs, establishing a full digital ENG/EPF system in conjunction with the Sony DMX-P01 Digital Portable Mixer.

- DVCAM recording: 4 channels, 16-bit, 48 kHz
- MPEG IMX recording: 8 channels at 16 bits/channel, 4 channels at 24 bits/channel selectable, 48 kHz

Camcorder rear connectors



DMX-P01 Digital Portable Mixer



■ XDCAM Camcorders



OTHER FEATURES

- Thumbnail search operation
- Scene selection operation
- Proxy AV data recording
- Metadata recording: UMID, Extended UMID, essence mark including shot mark, GPS information (option)
- Black-and-white LCD screen displays time code and remaining battery/disc capacity
- Four assignable buttons, two on camera handle and two on the inside panel, enabling operator assignment of frequently used functions
- Auto Tracing White Balance for automatic real-time adjustments of camera colour temperature to suit lighting changes
- Interval recording (automatic and manual) intermittently records signals at pre-determined intervals: ideal for recording over long periods
- MemoryStick™ function for storage of camcorder setup files
- Slot to accommodate Sony WRR-855 Series wireless microphone receiver
- Optional PCMCIA card slot for Ethernet connection
- Camera remote control via Sony RM-B150 and RM-B750 remote control units
- Intelligent lighting system synchronizes strobe on/off to the Rec button of the camcorder lens
- Return button



Rear Connector Panel



XDCAM Decks

In the field or in the studio, the Sony XDCAM Series of Professional Disc decks team performance and reliability with the familiarity of VTR-like controls to offer the full benefits of disc-based recording and playback.

PDW-V1 Mobile Deck

PDW-1500 Compact Deck



PDW-V1
Mobile Deck



PDW-1500
Compact Deck



PDW-V1
Connector Panel



PDW-1500
Connector Panel

■ XDCAM Decks

XDCAM
Professional Disc System

PDW-V1

MOBILE DECK



MPEG IMX
DVCAM

PDW-1500

COMPACT DECK



MPEG IMX
DVCAM

The compact, lightweight **PDW-V1** Mobile Deck is ideal for field applications as well as desktop viewing by journalists, producers, and other production staff. An affordable solution for playing back Professional Discs, the PDW-V1 can also replay AV and associated data files recording via its i.LINK (File Access Mode) interface or a standard Ethernet network connection.

The built-in 3.5-inch* colour LCD screen allows users to view recordings any time, anywhere without the need for an external video monitor. A VGA output capability also allows users to view recordings on a standard PC screen.

The PDW-V1 can be AC or battery powered for maximum

convenience in the field. It can also replay proxy AV data to serve as a cost-effective editing solution in conjunction with the XPRI Mobile. As with other XDCAM products, the PDW-V1 offers scene selection capability that can be viewed via its colour LCD screen.

* Viewable area measured diagonally

The **PDW-1500** Compact Deck is a half-rack sized recorder optimized for use with nonlinear editing systems. Despite its compact size, this deck offers high-speed data transfers between compatible nonlinear devices to create a powerful editing tool for news production.

FEATURES

PDW-V1

- Playback of MPEG IMX/DVCAM and proxy AV streams
- High resolution AV files (MPEG IMX/DVCAM) and associated proxy AV data can be recorded via the Ethernet network interface or i.LINK (File Access Mode) interface*
- Metadata recording
- Ability to write EDL back onto disc
- Compact, lightweight A4-sized design
- Single optical head allows transfer speeds of 1.25x for MPEG IMX (recording at 50 Mb/s) and 2.5x for DVCAM streams
- 3.5-inch** built-in LCD screen
- Thumbnail search operation
- Scene selection operation
- VGA output capability (refer to the chart on page 18)
- AC/battery-powered operation
- Network connectivity (100Base-T)
- Metadata handling
- Search speed: Jog -1 to +1 times normal speed / Shuttle ± 50 times normal speed
- Dimensions (W x H x D): 210 x 90 x 320 mm (8 $\frac{3}{8}$ x 3 $\frac{5}{8}$ x 12 $\frac{5}{8}$ inches)
- Mass: 3.5 kg (7 lb 11 oz)

* The PDW-V1 does not support synchronous video/audio input.

** Viewable area measured diagonally

PDW-1500

- MPEG IMX/DVCAM and proxy AV stream recording
- Two optical heads allow transfer speeds of 2.5x for MPEG IMX (recording at 50 Mb/s) and 5x for DVCAM streams
- High resolution AV files (MPEG IMX/DVCAM) and associated proxy AV data can be recorded via the Ethernet network interface or i.LINK (File Access Mode) interface
- Proxy AV data recording
- Metadata recording
- Ability to write EDL back onto disc
- A variety of interfaces
- Thumbnail search operation
- Scene selection operation
- High speed data transfer
- Search speed: Jog -1 to +2 times normal speed / Shuttle ± 50 times normal speed
- Voice-over recording
- Gigabit Ethernet connectivity
- DVCAM output from MPEG IMX streams
- Dimensions (W x H x D): 210 x 130 x 415 mm (8 $\frac{3}{8}$ x 5 $\frac{1}{8}$ x 16 $\frac{3}{8}$ inches)
- Mass: 7.4 kg (16 lb 5 oz)

■ Audio for XDCAM

Sony offers a choice of audio acquisition solutions to complement the PDW Series of XDCAM camcorders – including rugged, high performance wireless microphones and a compact, ultra-portable digital mixer designed specifically for use in exacting ENG/EFP applications.



■ Digital Portable Mixer

DMX-P01



Electronic News Gathering (ENG) and Electronic Field Production (EFP) applications deserve outstanding audio to complement the superb picture quality obtainable with the Sony PDW-510P and PDW-530P XDCAM camcorders.

Offering full 24-bit audio processing and 48/96 kHz selectable sampling, the DMX-P01 Portable Digital Mixer delivers studio quality mixing of up to four microphone or line sources in an incredibly compact, go-anywhere package.

Quick to set up and use thanks to its intuitive control panel, the DMX-P01 packs a host of features for in-the-field use. On-board digital limiter/compressors assure stable levels when contending with real-life sound sources. Up to ten 'scene memories' recall mixer settings for instant re-configuration in multiple shooting scenarios, and control settings can be locked against inadvertent adjustment.

Other video-friendly features include flexible meter scaling and simple matching of mixer output and camera audio return levels, while the mixer also provides an AES/EBU input for direct connection to the digital audio output of Sony PDW-510P and PDW-530P XDCAM camcorders.

FEATURES

DMX-P01

- Compact (266 x 68 x 206 mm) and lightweight (Approx. 2.2 kg)
- 24-bit A/D and D/A converters and internal 32-bit DSP for excellent sound quality
- 4 microphone/line inputs with switchable +48 V mic power
- 2 channels of balanced analogue output and AES/EBU digital output (stereo) via XLR-type connectors
- Front panel control of every parameter via physical and menu-driven controls
- Easy-to-read backlit LCD panel displays output levels and setup menus; also allows various parameter settings
- Camera-audio return-level check via 12-pin connector

■ Wireless Microphones

WRR-855B



Offering compatibility with the full range of Sony wireless microphone transmitters, the WRR-855B is a compact and lightweight UHF diversity receiver designed for easy installation into the PDW Series and other Sony professional camcorders via a choice of optional external housings (Sony BTA-801 & CA-WR855). Operation is via a clear, easy-to-read LCD screen that provides at-a-glance confirmation of RF & AF levels, while the water resistant case helps to ensure faultless operation in the most demanding and extreme ENG/EFP conditions.

FEATURES

- Weatherproof design
- Compact, lightweight design: 280 g (9.9 oz)
- D-sub 15-pin connector for audio output to Sony camcorders and for receiving power supply from camcorder
- Operation in 798 MHz – 862 MHz UHF frequency band (TV channels 62 to 69)
- LED indicators for AF/RF conditions
- LCD indicator for operating channel

WRT-8B

A belt-pack transmitter featuring ultra-compact design and outstanding performance. Provides dual RF power capability to enable either single channel operation over large distances or multichannel use with enhanced protection against interference.



FEATURES

- Extremely compact, lightweight design: 140 g including batteries, 63 (W) x 83 (H) x 17 (H) mm
- Operates over a 24 MHz frequency band within 838 MHz - 862 MHz range (TV channels 67 to 69)
- Selectable RF output powers: 10 mW or 50 mW
- Variable audio attenuator: Approx. 13 hours of continuous operation with two AA-size (LR6) alkaline batteries at 10 mW output (Approx. six hours of operation at 50 mW output)
- Removable antenna with SMA connector
- LCD screen indicates extensive information such as operating channel/frequency, audio input level, RF output level, transmitter battery status and accumulated operating time

WRR-862B



In the most demanding situations where one wireless microphone is not enough, the WRR-862B offers two complete channels of diversity wireless reception in a single unit that attaches to the rear of PDW series camcorders (NB requires optional mounting accessory). Offering exceptional RF and AF performance, the WRR-862 is compatible with all Sony 800 series wireless microphone transmitters.

FEATURES

- Receives two independent RF signals on two separate channels
- Operates over 24 MHz frequency band within the range of 798 MHz – 862 MHz (TV channels 62 to 69)
- Space diversity system on both channels eliminates signal dropout and provides stable reception
- Compact, lightweight body: 400 g (14.1 oz.) including batteries

Condenser Microphones

ECM-88



The ECM-88 and ECM-88PT are ultra-miniature, omni-directional electret condenser microphones designed for quality-critical broadcast and field applications. High sensitivity, flat-and-wide frequency response and low noise characteristics deliver performance that betters the acclaimed Sony ECM-77 Series lavalier microphones. The tiny (3.5 x 3.5 x 16.8 mm) microphone capsule is small enough for easy concealment and offers water-resistant architecture to prevent penetration of moisture or perspiration.

FEATURES

- Ultra miniature, omni-directional electret condenser microphone
- Dual-diaphragm mechanism contributes to its high sensitivity and low inherent noise characteristics
- Flat-and-wide frequency response: 20 Hz to 20 kHz

WRT-847B

Highly versatile microphone with a choice of four interchangeable capsules for optimum audio performance in any situation. Easy operation coupled with superb RF and AF performance makes the WRT-847B a true professionals' choice.



FEATURES

- Choice of four optional microphone capsules with specific characteristics to suit a range of audio acquisition applications (NB: One capsule is required for operation)
- Switchable audio compander time constant to suit different capsules
- Operates over 24 MHz frequency band within the range of 798 MHz to 862 MHz (TV channels 62 to 69)
- Easy-to-read LCD display with back light

CU-F780

Dynamic super-cardioid capsule

CU-E700

Electret condenser super-cardioid capsule

CU-E672

Electret condenser hyper-cardioid capsule

CU-F117

Dynamic omni-directional capsule



■ Specifications

XDCAM Camcorders

		PDW-510P (DVCAM)	PDW-530P (DVCAM / MPEG IMX)
General	Mass	Approx. 4.1 kg (9 lb) 5.8kg (with VF, Mic, Disc, BP-IL75 battery) (12 lb 12 oz)	
	Power requirements	DC 12 V +5.0 V/-1.0 V	
	Power consumption	Approx. 36 W (while recording, with viewfinder, colour LCD off)	
	Operating temperature	-5 to 40 °C (+23 to +104 °F)	
	Storage temperature	-20 to +60 °C (-4 to +140 °F)	
	Humidity	10 to 90% (relative humidity)	
	Continuous operating time	Approx. 90 min. w/BP-IL75 battery, approx. 120 min. w/BP-GL95 battery	
	Recording format		
	Video	DVCAM (25 Mb/s)	MPEG IMX (50/40/30 Mb/s), DVCAM (25 Mb/s)
	Proxy Video	MPEG-4	
Audio	DVCAM: 4 ch/16 bits/48 kHz	MPEG IMX: 4 ch/16 bits/48 kHz, 4 ch/24 bits/48 kHz DVCAM: 4 ch/16 bits/48 kHz	
Proxy Audio	A-law (4ch, 8 bits, 8 kHz)		
Recording/Playback time			
MPEG IMX	—	50 Mb/s: 45 min., 40 Mb/s: 55 min., 30 Mb/s: 68 min.	
DVCAM	85 min.		
Signal Inputs	Genlock video	BNC x1, 1.0 Vp-p, 75 Ω	
	Time code input	BNC x1, 0.5 to 18 Vp-p, 10 kΩ	
	Audio input	XLR-3-31 x2, line/mic/mic + 48V/AES/EBU selectable	
	Mic input	XLR-3-31 x1	
Signal Outputs	Video output	BNC x1, 1.0 Vp-p, 75 Ω	
	Video test output	BNC x1, 1.0 Vp-p, 75 Ω	
	Time code output	BNC x1, 1.0 Vp-p, 75 Ω	
	Earphone	Mini-jack x2 (front: monaural, rear: stereo/monaural)	
Audio output (CH-1/2)	XLR-5-pin male (stereo)		
Others Inputs / Outputs	Lens	12-pin	
	Remote	8-pin	
	Light	2-pin, DC 12 V, max. 50 W	
	DC input	XLR-4-pin (for the optional AC-550/550CE)	
	DC output	4-pin (for wireless microphone receiver), DC 12 V (MAX 0.2A)	
	Camcorder adapter	40-pin	
	i.LINK	IEEE 1394, DV IN/OUT or file access mode, 6-pin x1	
Audio Performance	Frequency response	20 Hz to 20 kHz, +0.5 dB/-1.0 dB	
	Dynamic range	More than 85 dB	
	Distortion	Less than 0.08% (at 1 kHz, reference level)	
	Crosstalk	Less than -70 dB (at 1 kHz, reference level)	
	Wow & flutter	Below measurable limit	
	Head room	20 dB (ex-factory setting)	
Camera section	Pickup device	3-chip 2/3-inch type 16:9 widescreen Power HAD EX CCD	
	Total picture elements	NTSC model: 1038(H) x 1008(V) PAL model: 1038(H) x 1188(V)	
	Effective picture elements	NTSC model: 980(H) x 494(V) PAL model: 980(H) x 582(V)	
	Optical system	F1.4 prism	
	Built-in optical filters	1 : 3200K, 2 : 5600K+1/8ND, 3 : 5600K, 4 : 5600K + 1/64ND	1 : Clear, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND A : CROSS, B: 3200K, C: 4300K, D: 6300K
	Shutter speed	NTSC model: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 (s) PAL model: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 (s)	
	Slow Shutter	NTSC model: 1/2 to 1/30 (s) PAL model: 1/2 to 1/25 (s) (1 to 8 and 16 frame accumulation)	
	Lens mount	2/3" 48 bayonet mount	
	Sensitivity (2000 lx, 89.9% reflectance)	F11 (typical)	
	Minimum illumination	Approx. 0.13 lx (F1.4 lens, +48 dB turbo gain, shutter off)	
	Gain selection	-3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42, 48 dB	
	Smear level	-140 dB (typical)	
	S/N ratio	NTSC model: 65 dB (typical) PAL model: 63 dB (typical)	
	Vertical resolution	NTSC model: 400 TV Lines/450 TV Lines (EVS) PAL model: 480 TV Lines/530 TV Lines (EVS)	
	Registration	0.05% (all zones, w/o lens)	
	Geometric distortion	Below measurable level (w/o lens)	
	Modulation depth at 5 MHz	70% (16:9, typical) /55% (4:3, typical)	
Viewfinder	CRT	2.0-inch type monochrome	
	Controls	BRIGHT, CONTRAST, PEAKING controls, TALLY, ZEBRA, DISPLAY switches	
	Horizontal resolution	450 TV lines (16:9)	
	Microphone	Ultra-directional (detachable)	
Built-in LCD Monitor		2.5-inch type colour LCD monitor	
Supplied Accessories		Operation manual (x1) – Viewfinder (x1) – Lens cap (x1) – Shoulder belt (x1) – Monaural microphone (x1)	

XDCAM Decks

	PDW-V1 MOBILE DECK		PDW-1500 COMPACT DECK
General	Power requirements	AC 100 to 240 V, 50 / 60 Hz, DC (with battery)	AC 100 to 240 V, 50/60 Hz
	Power consumption	43 W	75 W
	Storage temperature	-20 to +60°C (-4 to +140°F)	
	Humidity	10 to 90% (relative humidity)	
	Mass	3.5 kg (7.7 lb)	7.4 kg (16 lb 5 oz)
	Dimensions (W x H x D)	210 x 90 x 320 mm (8 3/8 x 3 5/8 x 12 5/8 inches)	210 x 130 x 415 mm (8 3/8 x 5 1/8 x 16 5/8 inches)
	Recording format		
	Video	—	MPEG IMX (50/40/30 Mb/s), DVCAM (25 Mb/s)
	Proxy Video	MPEG-4	
	Audio	—	MPEG IMX: 8 ch/16 bits/48 kHz, 4 ch/24 bits/48 kHz DVCAM: 4 ch/16 bits/48 kHz
	Proxy Audio	A-law (8/4 ch, 8 bit, 8 kHz)	
	Recording/Playback time		
	MPEG IMX	50 Mb/s: 45 min., 40 Mb/s: 55 min., 30 Mb/s: 68 min.	
	DVCAM	85 min.	
Signal Inputs	Search speed (in colour)		
	Jog mode	±1 times normal playback speed	-1 time to +2 times normal playback speed
	Shuttle mode	±20 times normal playback speed	±50 times normal playback speed
Signal Inputs	Analogue reference input	—	BNC x2 (including loop through), 1.0 Vp-p, 75 Ω, sync negative
	Analogue composite input	—	BNC x2 (including loop through), 1.0 Vp-p, 75 Ω, sync negative
	SDI input	—	BNC x1, SMPTE 259M, (ITU-R BT656-3), 270 Mb/s
	Analogue audio input	—	XLR x2 (channel selectable), -9 dBu to 28 dBu, 10 kΩ, balanced
	Digital audio input	—	AES/EBU, BNC x2, 4 channels
	Time code input	—	BNC x1
Signal Outputs	Analogue composite video output	BNC x1 (character out), 1.0 Vp-p, 75 Ω, sync negative	BNC x2 (including one character out), 1.0 Vp-p, 75 Ω, sync negative
	SDI output	BNC x1 (character out), SMPTE 259M (ITU-R BT656-3), 270 Mb/s	BNC x2 (including one character out), SMPTE 259M (ITU-R BT656-3), 270 Mb/s
	VGA output	D-sub 15-pin x1	—
	Built-in display	3.5-inch type colour LCD monitor	—
	Analogue audio output	—	XLR x2 (ch. selectable), +4 dBu, 600 Ω load, low impedance, balanced
	Audio monitor output	RCA x2 (L/R), -6 dBu, 47 kΩ, unbalanced	RCA x1 (L, R, Mix), -6 dBu, 47 kΩ, unbalanced
	Digital audio output	—	BNC x2, 4 channels
	Headphone output	Jack x1, -16 dBu, 8 Ω, unbalanced	
	Built-in audio speaker	x1, monaural	—
Other Inputs / Outputs	Time code output	—	BNC x1
	i.LINK	IEEE 1394, DV IN/OUT or file access mode, 6-pin x 1	
	Ethernet	100Base-TX (RJ-45 x1)	1000Base-T (RJ-45 x1)
Video Performance	RS-422A	—	D-sub 9-pin x1 (VTR protocol)
	Sampling frequency	Y: 13.5 MHz, R-Y/B-Y: 6.75 MHz	
Video Performance	Quantization	10 bits/sample	
	Error correction	Reed Solomon Code	
	Analogue composite input to analogue composite output	—	Bandwidth: 30 Hz to 4.5 MHz +0.5/-1.5 dB (NTSC) 25 Hz to 5.5 MHz +0.5/-1.5 dB (PAL) S/N ratio: 53 dB or more Differential gain: 2% or less Differential phase: 2° or less Y/C delay: 20 ns or less K-factor (2T pulse): 2% or less
Processor Adjustment Range	Video level	—	±3 dB
	Chroma level	—	±3 dB
	Set up/black level	—	±15 IRE/±105 mV
	Chroma phase/hue	—	±30°
	System sync phase	—	±15 μs
	System SC phase	—	±200 ns
Audio Performance	Frequency response	—	20 Hz to 20 kHz +0.5/-1.0 dB (0 dB at 1 kHz)
	Dynamic range	—	More than 90 dB
	Distortion	—	Less than 0.05% (at 1 kHz)
	Head room	—	20 dB (18 dB selectable)
Supplied Accessories		Operation manual (x1) PDZ-1 proxy browsing software (x1) Shoulder belt (x1)	Operation manual (x1) PDZ-1 proxy browsing software (x1)

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