

SONY®

PAL

Digital Videocassette Recorder

DSR-1P

DVCAM™



DVCAM—Digital Innovation

Digitization is opening up new avenues to success in many business areas. Nowhere is this more true than in professional video production, where evolving digital technology is bringing proven advances in image quality and equipment versatility as well as reducing operating costs.

DVCAM was born in 1996 as an extension of the consumer DV format, with which it is compatible. With its superb picture quality, excellent editing capabilities and multigeneration performance, DVCAM is the perfect choice of format in the highly competitive world of professional video.

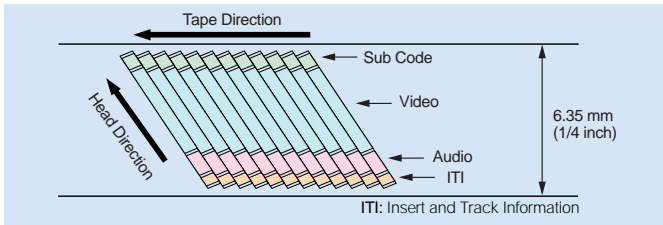
The DSR-1P is a dockable recorder for a camcorder, offering outstanding performance in the acquisition process. When the DSR-1P is combined with a Sony DXC-D35P or DXC-D35WSP Digital Camera, it becomes a Digital Camcorder, providing a completely digital signal path and perfect ClipLink™ operation. For complete versatility, the DSR-1P incorporates both a Pro 50-pin analogue and a Pro 76-pin digital interface, enabling connection to both analogue and digital cameras. The DSR-1P features a dual-size cassette mechanism that accepts both mini and standard size cassette tapes without any special adaptors - a first in the history of dockable recorders. With its superb performance and operating flexibility, the DSR-1P meets all the requirements of video professionals.



Features

DVCAM Recording Format for the Next Generation

The DSR-1P offers superb picture quality, multi-generation capability and production flexibility from its use of the DVCAM digital recording format - specifically developed by Sony for professionals in the digital era.



Digital Component Recording for Excellent Picture Quality

The DVCAM format uses 8-bit digital component recording with a 5:1 compression ratio that is identical to the DV format. It also offers a sampling rate of 4:2:0 for excellent picture quality and superb multi-generation performance. The DVCAM format utilises an intra-frame compression scheme and is based on DCT (Discrete Cosine Transform) techniques with each frame consisting of 12 tracks. Each track has video, audio, ITI (Insert and Track Information) and sub-code sectors. It is the combination of ITI - a reference signal used for precise tracking - and time code on the sub-code sector that helps to assure highly accurate editing performance.

High-Quality Digital Audio

The DVCAM format also offers superior digital audio performance that is comparable to CD quality, thanks to a wide dynamic range and excellent signal-to-noise ratio. There are two selectable audio channel modes: a two-channel mode with 48 kHz/16-bit recording or a four-channel mode with 32 kHz/12-bit recording.

Playback Compatibility with the DV Format

The DVCAM format is the professional extension of the world-wide standard DV format, with which it maintains playback compatibility. Thus all DVCAM equipment is

capable of playing back DV recorded tapes* without any mechanical adaptors. A wider track pitch of 15 μ m (compared with 10 μ m for the DV format) gives the DVCAM format higher reliability for professional editing.

* SP mode only

Excellent Performance from Professional DVCAM Tapes

To gain maximum performance from high-density digital recording, advanced Metal Evaporated tape technology has been developed for the DVCAM format. The use of Sony's pure cobalt advanced evaporated coating gives both high output and high C/N (Carrier-to-Noise) ratio, resulting in superb quality pictures and a low error rate. A DLC (Diamond Like Carbon) protective layer provides the enhanced protection of the tape surface that is essential to avoid the possibility of damage during long editing sessions. Finally, DVCAM tapes provide a low frequency of dropout and superior thermal stability.

A variety of cassette types is available to suit different applications. These include types with or without an IC Cassette Memory, and a Master Tape. The built-in 16-kbit Cassette Memory stores ClipLink Log Data, Index Pictures, Photo mode and other shooting data that enhance editing efficiency. The tapes without IC Cassette Memory fit a wide range of applications with affordable price. The Master Tape, which uses Sony Hyper Evaticle II Magnetic Particle technology to provide higher output and lower noise, is equally suitable for high-speed data transfer applications as well as for making master recordings.

Recording Capability of Up to Three Hours

DVCAM cassette tapes are available in two sizes: standard and mini. The standard-size cassette provides a recording time of up to 184 minutes while the mini-size cassette provides up to 40 minutes. These long recording times are achieved in very compact cassettes with a tape width of only 1/4 of an inch (6.35 mm).



User-Convenient Operation as a Dockable Camcorder

The ClipLink System

ClipLink is a comprehensive supervisory system which logs all the shooting data necessary for the whole of the digital production process - from acquisition to editing.

When the DSR-1P is combined with the DXC-D35P Digital Camera to form the DSR-135P DVCAM Digital Camcorder, two kinds of useful information are automatically generated during shooting - information which dramatically reduces the work required for later editing. The first is Index Picture which is a digitally miniaturized picture of the video image at each MARK IN point. These Index Pictures are recorded on the DVCAM tape. Up to 198 Index Pictures can be recorded onto a cassette tape when using a professional DVCAM tape or up to 45 Index Pictures can be recorded in the case of a consumer DV cassette. The second type of information is ClipLink Log Data, which is a reference data for editing, such as reel numbers, scene numbers, take numbers, time code of MARK IN/MARK OUT and Cue points. This ClipLink Log Data is stored in the cassette by a memory IC incorporated into all Sony DVCAM and DV cassettes.

Both kinds of information, Index Picture and ClipLink Log Data, are very effectively utilized in the ClipLink system. The ClipLink Log Data can be instantly uploaded to the Sony EditStations from the DVCAM VTRs, so that a selection of usable video clips can be easily made by just glancing at the GUI (Graphical User Interface) screen of the EditStation.

The ClipLink system, in combination with Sony's new digital products such as the DXC-D35P/D35WSP Digital Camera, DSR-85P Digital Videocassette Recorder, and the ES-7 EditStation, provide a remarkable improvement in productivity and operating efficiency throughout the programme production process.

The ClipLink system functions even when the DSR-1P is combined with analogue component cameras, allowing storage of the Index Pictures at REC IN points onto the tape and the time codes into the cassette memory. Even when the cassette tape loaded into another DSR-1P, continuous recording is still available.

DSR-135P
Digital Camcorder



Scene No.	Index Picture	Time Code (IN)	Time Code (OUT)
1		00:01:01	00:05:22
2		00:05:23	00:18:20
3		00:18:21	00:24:13

DVCAM or DV
Cassette Tape



Camera Setup Data File System (Camera Data Recording)

When a DSR-1P is connected to a DXC-D35P/D35WSP Digital Camera, the camera setup file data set for a specific shooting condition can be recorded directly onto the video auxiliary area of the DVCAM tape via the Pro 76-pin Digital connector. The stored set-up data can then be copied onto other DVCAM tapes so that a specific camera set-up can be copied to many other cameras.

This system makes it easy to set up several cameras to a uniform condition simply by using duplicated tapes.

Dual Interface Mechanism Gives Choice of Dockable Cameras

The DSR-1P has both Pro 76-pin Digital and Pro 50-pin connectors which allow direct connection with Sony digital (DXC-D35P/D35WSP/D30P*/D30WSP*) and analogue (DXC-327BP/637P*/537AP*/327AP*) cameras.

This excellent flexibility, which allows a camcorder to be configured for a variety of different applications, is achieved by a newly developed dual interface mechanism, which incorporates both analogue Pro 50-pin and Pro 76-pin Digital interfaces with a unique seesaw construction. The Pro 76-pin Digital interface gives closer communication between a digital camera and the VTR in operations such as the ClipLink system, Camera setup data recording on



<Pro 76-pin Digital>

<Pro 50-pin>

tapes and time code display on the viewfinder in playback mode. In addition, the new design of the connectors offers enhanced interface reliability.

* These cameras are no longer sold, but current owners can still connect with the DSR-1P.

Perfect Camcorder Operation with the DSR-135P

When connected to a DXC-D35P Digital Camera to form a DSR-135P DVCAM camcorder, the DSR-1P operates at its optimum performance. Since both video and audio signals are printed in the digital domain, working with the DSR-135P Digital Camcorder has the great advantage that the video and audio quality of the programme material can be maintained right through the production process - from acquisition to programme distribution.



◆ DSR-135P

Unique Design

Compact and Lightweight Construction

Sony innovation in mechanical and electronic design, such as the use of a magnesium diecast body and the development of a very compact drum mechanism, makes the DSR-1P remarkably small and lightweight yet durable in use. Weighing in at just 3.1 kg (6 lb 13 oz) complete with BP-L40 Battery, means that when the DSR-1P is configured with a DXC-D35P camera, it forms a camcorder of remarkable ergonomic design that has an operating weight of only around 5.9 kg (13 lb).



Low Power Consumption

With a low power consumption totaling only 24.8 W, one fully charged Sony BP-L40 battery gives continuous operation for approximately 75 minutes when operating in the DSR-135P configuration.

Dual Cassette Mechanism

The DSR-1P accepts both DVCAM Mini cassette tapes and DVCAM Standard cassette tapes without any adaptor. This is a Sony first in the history of the dockable recorder or camcorder, and it enables the DSR-1P to have a maximum recording time of 184 minutes. It also means that the DSR-1P can accommodate a wide selection of cassette tapes, either the DVCAM Mini cassettes or the DVCAM Standard.



Versatile Comprehensive Built-in Features

Record Review Function

By simply pressing the Rec Review button while in the Rec pause mode or in the Stop mode, the DSR-1P plays back two seconds of the last scene and stops at the end of the previous recording. The Rec Review time can also be extended up to a maximum of approximately 10 seconds, if the Rec Review button is pressed for longer than two seconds.

Frame Accurate Back Space Editing

Automatic back space editing with instant start provides sequential recording, without picture breakup at the transition points. The time code regeneration function, when used with the Rec Review function, enables the DSR-1P to record continuous time code at any editing point.

Viewfinder Playback Capability

The DSR-1P provides the viewfinder playback function for field verification. In playback or Rec Review mode, the recorded luminance signal can be monitored in the viewfinder, while audio playback is available via an earphone or the built-in loudspeaker.

Built-in EBU Time Code Generator and Reader

The DSR-1P includes a built-in time code generator and reader which conforms to the EBU standard. Users bits are also available. Both the time code and the users bits are recorded in the sub code area which can be read at any playback speed. Time code lock to either external time code or another DSR-1P is available for multi-camera operation. Furthermore, the DSR-1P has both time code preset and regeneration capabilities.

Time Base Stabilizer

The DSR-1P is equipped with a built-in time base stabilizer which provides stable pictures without any additional equipment.

Easy, Full Colour Picture Playback in the Field

The DSR-1P provides a full colour picture playback capability without any playback adaptor, which is a great advantage for field verification of the recording and permits direct microwave transmission.



Interchangeable Batteries

The DSR-1P is equipped to accept the BP-L40/L60A/L90A range of Lithium-ion batteries for extended operating time. With an optional adaptor, the DSR-1P can also accept NP-1B batteries.

Others

- Easy Integration with Anton/Bauer® Equipment
- Versatile Signal Interfaces

The DSR-1P is equipped with versatile signal interfaces such as S-video and composite outputs. For audio interfaces, an earphone output, unbalanced phono output and balanced XLR-type audio inputs are provided.

- DC Out Connector for Wireless Microphone Powering
- +48 V Powering for External Microphone
- Built-in Loudspeaker



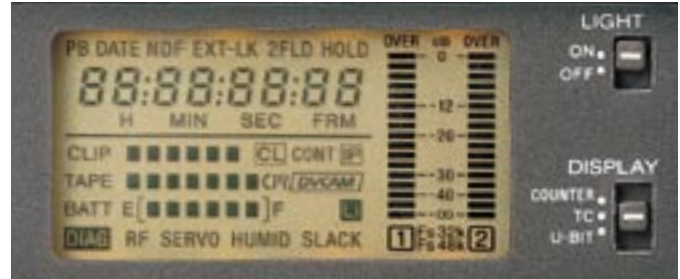
User Friendly Operation

VTR Full Function Control

Eject, Rewind, Play, Fast Forward, and Stop function buttons are located on the top of the unit and are covered with a lid to prevent accidental access. During Rec mode, all function buttons are automatically inhibited. The Rec mode can also be activated with the trigger buttons on the front of the camera or on the zoom lens grip.

Comprehensive LCD Display

An 8-digit LCD display provides an extensive range of critical information about the VTR operation. In addition to time data (including Time Code, counter and User Bit data), remaining tape quantity and battery capacity, the ClipLink operation status is also displayed. A digital audio meter allows precise adjustment of the audio recording level.



Menu Selection

Various VTR menus such as cumulative hours (head drum operating hours, tape transport operation hours, total operation hours), ClipLink On/Off mode, selection of audio mode, Anton/Bauer Logic Series® Digital battery capacity indication settings and stand-by period setting can be shown on the LCD display for easy access to the various menus.

Reliable and Serviceable

Built-In Self-Diagnostics and Hours Meter

Should an error be detected, an error message will be displayed which will identify the problem area. In this way, down-time can be minimized. Furthermore, an hours meter is provided to indicate the elapsed time of time-critical operations such as accumulated drum rotation time. It can easily be displayed on the LCD display via menu selection.

Peripheral Equipment



DXC-D35WSP*
Digital Video Camera



DXC-327BP*
Colour Video Camera



BP-L40
Rechargeable Lithium-ion Battery



BP-L60A/BP-L90A
Rechargeable Lithium-ion Battery



NP-1B
Rechargeable NiCd Battery



BC-L50/L100
Battery Charger for BP-L40/L60A/L90A



DC-L1
Battery Adaptor for NP-1B



DC-520
Battery Case for NP-1B



BC-1WDCE
Battery Charger for four NP-1B batteries



WRR-810A**
UHF Synthesized Tuner



WRR-855A**
UHF Synthesized Diversity Tuner



CMA-8ACE
AC Adaptor (used with the optional CCOX-3 cable)

* Camera adaptor is optional. DSR-1P is directly connected to the cameras.

** WRR-810A/855A cannot be used in some areas.

DSR-135P DVCAM Digital Camcorder



Main Features

Excellent Design

- Directly connected via the Pro 76-pin Digital connector
- Compact and lightweight
- Low power consumption

Innovative Digital Signal Processing

- TruEye™ processing for faithful colour reproduction with a wide dynamic range
- Superb picture quality (880 TV lines horizontal resolution)
- Skin Detail with auto skin tone detection
- 'Black Halo' free Clean Detail
- Real Time Self Diagnostics
- High stability and uniformity

Power HAD™ CCD

- Low smear level of -125 dB, equivalent to FIT CCDs
- High sensitivity of F11.0 (at 2000 lx, 3200 K)
- High signal-to-noise ratio of 61 dB

ClipLink System for Efficient Video Production

Sophisticated Camera Setup Management

- Convenient Viewfinder menu
- Camera Setup File System to manage setup files
- SetupNavi™ to store and transfer a camera setup file using a DVCAM cassette tape
- SetupLog™ system to store operational condition of camera onto a DVCAM tape

Operational Convenience

- Time code superimposed in playback
- Freeze Mix Function to frame the subject in the same position as in the previous shot, which is superimposed on the viewfinder screen as a still image
- Edit Search button and Audio CH-1 Level Control are located on the DXC-D35P for easy access by the operator
- Total Level Control System (TLCS) for automatic light control
- Intelligent Auto Iris which detects the lighting condition to adjust the lens iris for optimum exposure
- EZ Focus and EZ mode allow quick camera setup for instant shooting
- Auto Tracing White Balance (ATW) function
- MONITOR OUT (BNC) function
- Three position auto iris mode - STD (Standard), BACK L (Back Light), SPOT L (Spot Light)

Other Features

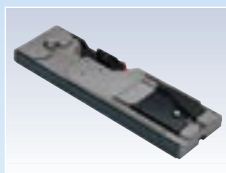
- REMOTE 10-pin (RS-232C) to allow control from external personal computers
- Black stretch and compress function to adjust the contrast in the black area
- Dual Zebra function
- Programmable Gain from a wide selection; Master Gain, DPR (Dual Pixel Readout) and Hyper Gain
- Date and time superimposition
- Built-in 1 kHz audio reference oscillator
- DynaFit™ shoulder pad
- New DXF-801 1.5-inch CRT viewfinder (600 TV lines horizontal resolution)
- Enriched Selectable colour bars – EBU100%, EBU75%, SPLIT, SNG



CCQX-3
Power Supply Cable for
CMA-8ACE



AC-550CE
AC Adaptor



VCT-U14
Tripod Adaptor



WRT-810A/830A
UHF Wireless Microphone



LC-421
Carrying Case for DSR-135P



LCR-1
Rain Cover



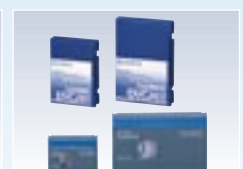
PDVM-12ME/22ME/32ME/40ME (Mini size)
PDV-34ME/64ME/94ME/124ME/184ME
(Standard size)
Digital Video Cassette Tape



PDVM-32MEM/40MEM (Mini size)
PDV-64MEM/124MEM/184MEM (Standard size)
Digital Video Cassette Master Tape



PDVM-32N/40N (Mini size)
PDV-64N/124N/184N
(Standard size)
Digital Video Cassette Tape
(Non IC tape)



PDVM-12CL (Mini size)
PDV-12CL (Standard size)
Cleaning Cassette Tape

Specifications

GENERAL

Power requirements	DC 12 V +5/-1 V
Power consumption	12 W
Operating temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to 60 °C (-4 to 140 °F)
Operating humidity	Less than 85%
Storage humidity	Less than 90%
Mass	3.1 kg (6 lb 13 oz) including BP-L40 Battery
Dimensions	118 (W) x 185 (H) x 185 (D) mm (4 3/4 x 7 3/8 x 7 3/8 inches)
Tape speed	28.221 mm/s
Recording/Playback time	Standard size: 184 min. w/PDV-184ME Mini size: 40 min. w/PDVM-40ME
Fast forward/Rewind time	Standard size: Approx. 12 min. w/PDV-184ME Mini size: Approx. 3 min. w/PDVM-40ME
Continuous recording time	Approx. 75 min. w/BP-L40 (DSR-1P + DXC-D35P)

VIDEO PERFORMANCE**

Band width	
Luminance	25 Hz ~ 5.5 MHz + 1.0/-2.0 dB 5.75 MHz + 0/-3.0 dB (Typical measurement)
Chrominance	25 Hz ~ 2.0 MHz + 1.0/-2.0 dB
S/N ratio	More than 55 dB
K-factor (K2T, KPb)	Less than 2.0%
Y/C delay	0 ± 30 nsec.

AUDIO PERFORMANCE**

Frequency response	
2 CH mode (48 kHz/16 bit)	20 Hz ~ 20 kHz +0.5/-1.0 dB
4 CH mode (32 kHz/12 bit)	20 Hz ~ 14.5 kHz +0.5/-1.0 dB
Dynamic range	More than 80 dB
Distortion (THD+N)	Less than 0.08%

SIGNAL INPUTS

GEN LOCK VIDEO IN (BNC)	1.0 V _{p-p} , 75 Ω
EXT AUDIO IN CH-1/2 (XLR 3-pin female)	-60 dBu, 3 kΩ/4 dBu, 10 kΩ
TIME CODE IN (BNC)	0.5 V _{p-p} ~ 18 V _{p-p} , 10 kΩ

SIGNAL OUTPUTS

VIDEO OUT (BNC)	1.0 V _{p-p} , 75 Ω
S-VIDEO (4-pin)	
Y	1.0 V _{p-p} , 75 Ω, sync negative
C	0.3 V _{p-p} , 75 Ω
AUDIO OUT CH-1/2 (RCA PIN)	-10 dBu, 47 kΩ
TIME CODE OUT (BNC)	1.0 V _{p-p} , 75 Ω

OTHERS

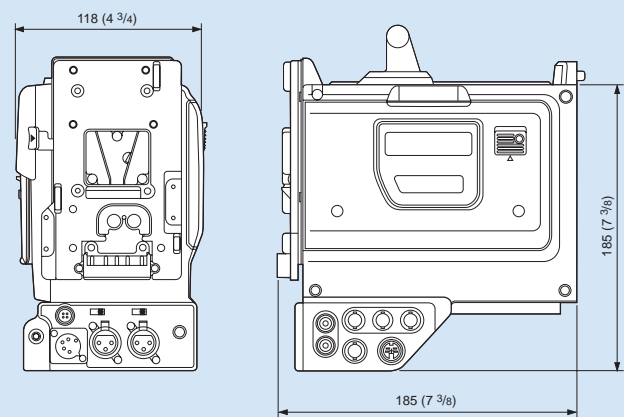
ANALOGUE I/F	Pro 50-pin
DIGITAL I/F	Pro 76-pin
DC 12 V (rear)	XLR 4-pin (male)
DC OUT	4-pin
EARPHONE OUT	Stereo mini jack

SUPPLIED ACCESSORIES

Shoulder strap
Connector cap
Lithium battery (type CR2032)
M4 x 6 screws (2)
M4 x 12 screws (2)
Operating instructions
ClipLink guide

DIMENSIONS

unit: mm (inches)



* 0 dBu = 0.775 V rms

** The Video and Audio Performance specifications were measured by playing back material on a DSR-85P (via analogue component out) that had been recorded on the DSR-1P.

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