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-85P which is at the top of the DVCAM range of VTRs, provides a high-speed data transfer capability of four times normal speed via its SDTI(QSDI™) digital interface. The SDTI(QSDI) interface and an advanced drum mechanism have made this high-speed, degradation-free transfer possible for both video and audio signals. It reduces the time-consuming uploading process while maintaining superb picture and audio quality. The DSR-85P also enjoys the advantages of ClipLink™ operation which, when integrated into a non-linear editing system with the Sony EditStation™, enhances operating efficiency throughout the entire video production process. Of course, the DSR-85P also provides a full complement of analogue interfaces for perfect integration into current analogue systems. A variety of excellent features and outstanding performance of the DSR-85P give you a new dimension of video production.

* The SDTI (Serial Data Transport Interface) is defined as SMPTE 305M.
The SDTI(QSDI) is the DV signal interface which conforms to the SDTI.
DVCAM Recording Format
For the Next Generation
The DSR-85P provides superb picture quality, multi-
generation capability and production flexibility from its use of
the new DVCAM digital recording format—specifically
developed by Sony for professionals in the digital era.

Playback Compatibility with the
Consumer “DV” Format
The DVCAM format has been developed as an extended
digital recording format for video professionals and is based
on the DV format. However it maintains playback compatibility
with the consumer DV recordings, and has advantage that
both standard and mini cassettes can be used in the same
machine. By using an increased track pitch, the DVCAM format gives
higher reliability for professional editing.

The DVCAM Component Digital
Recording Format
The DVCAM format uses 8-bit component recording with a
5:1 of compression ratio and sampling at the rate of 4:2:0 to
provide superior picture quality and multi-generation capability.
The DVCAM employs an intra frame compression scheme
which is ideal for editing applications. Based on DCT
(Discrete Cosine Transform) techniques, each frame consists
of 12 tracks. Each track has ITI (Insert and Track Information),
Audio, Video, and Sub Code areas. The ITI, which is a
reference signal for a precise tracking, and time codes on the
Sub Code area assure highly accurate editing performance.
This technique provides much greater operational flexibility, for
example by minimizing dubbing limitations to allow more
efficient and complex multi-layering.

High Quality Digital Audio
The DSR-85P provides two selectable audio channel modes,
two-channel and four-channel.
In order to ensure superb audio performance with a wide
dynamic range and an excellent signal-to-noise ratio, PCM
(Pulse Code Modulation) digital stereo recording is used for
both modes; 16-bit quantization and a 48kHz sampling
frequency in the two-channel mode, 12-bit and 32kHz
sampling in the four channel mode.

Excellent Performance from
Professional DVCAM Tapes
To gain the maximum performance from high density digital
recording, new Advanced Metal Evaporated cassette tapes are
used for DVCAM. These give superior quality to DVCAM
recording by achieving an RF video output which is +4.5dB
higher compared to that of Hi-8 metal evaporated tape.

Higher durability is also ensured for professional editing
applications by enhancing protection with a DLC (Diamond
Like Carbon) coating. Each cassette has a built-in 16kbit IC
memory which stores data to enhance editing efficiency.
DVCAM cassettes are available in two sizes; the DVCAM
Standard cassette provides a maximum recording time of 184
minutes and a DVCAM Mini cassette up to 40 minutes.

High Speed Data Transfer
for Higher Efficiency in the
Editing Environment
The parameters of the DVCAM format, combined with a
newly developed drum mechanism and an SDTI(QSDI)
interface allow compressed data to be transferred from a DSR-
85P to a Sony ES-7 EditStation at four times normal speed.
This can bring significant time savings when editing while
maintaining image and sound quality during data transfer.

Newly Developed Drum Mechanism
with Unique Head Construction
The small diameter of the head drum (21.7mm) in the
DSR-85P and 14-head and 14-channel rotary transformer
results in a very compact transport mechanism. A new
development is a laminated head structure with magneto-static
coupling film and metallic bonding. The high quality
amorphous twin-heads ensure reliable, efficient recording and
playback with low noise. To enable data to be transferred from
the DSR-85P at four times normal speed, the head drum
rotates at up to 18,000 rpm.

SDTI(QSDI) Digital Interface
The DSR-85P is equipped with an SDTI(QSDI) interface
which handles compressed video as well as Sub Code data
digital audio signals of the DVCAM recording format. The
SDTI(QSDI) allows degradation-free transfer of both picture
and audio signals. When integrated into the non-linear editing
system with the ES-7 EditStation, the DSR-85P is capable of
four times normal speed data transfer via the SDTI(QSDI)
interface.
ClipLink Operation
The ClipLink is a comprehensive supervisory system which, throughout the production and post production process, manages information on camera shots that have been recorded on a tape. Incorporated into each Sony DVCAM cassette is a memory IC which holds shot list information, called ClipLink Log Data. When a cassette is loaded into the DSR-85P, its ClipLink information is uploaded into the Sony EditStation for immediate viewing on its GUI (Graphical User Interface) screen. Then, at a glance, particular clips can be selected for transfer to the EditStation, saving both time and hard disk capacity. When integrated into a non-linear editing system with the ES-7 EditStation, the DSR-85P transmits this selected ClipLink data at four times normal speed so that the actual editing work can be started immediately and effectively.

Comprehensive Editing Features

Built-in EBU Time Code Generator/Reader
Built-in time code generator and reader are included in the DSR-85P to offer precise video editing. The time code conforms to the EBU standard. Time code written in the Sub Code is controlled via the RS-422A interface port. Input/output of time code is possible with the optional DSBK-130P Time Code Input/Output Board.

Time Base Corrector
The DSR-85P is equipped with a built-in time base corrector for the output of highly stable analogue video signals. Sync and SC phase adjustments are made from the front panel, while TBC control is possible with the optional UVR-60 TBC Remote Control Unit.

Digital Slow Function
The Digital Slow function takes advantage of digital processing to provide playback at 0 to 0.25 times normal playback speed both in reverse and forward, with noiseless slow-motion images. Either frame or field accurate playback is available.

Frame Accurate Editing Capability
When connected to RS-422A equipped editing controllers, the DSR-85P functions as an editing recorder for assemble or insert editing. Frame accurate editing is assured in both modes, thanks to the sophisticated servo control and built-in time code generator/reader.

In the insert mode of the DSR-85P, video, audio and time code can be inserted independently or in any combination. In the assemble mode, all of the prerecorded signals (video, audio and time code) are erased and replaced with new signals.

High-Speed Picture Search
The DSR-85P offers high speed picture search which provides a recognizable picture at various speeds over a range of up to 32 times normal speed, in both forward and reverse, to quicken editing operations. In JOG mode, frame accurate picture search is accomplished. These functions are available using the optional DSRM-10 Remote Control Unit or with editing controllers equipped with an RS-422A capability.

*The search speed varies with the type of controllers. In case of the DSRM-10, the search speed is up to 16 times.

High Speed Tape Dubbing with ClipLink Log Data
The DSR-85 has a high speed tape dubbing function which allows you to make a dub of the recorded DVCAM tape information (video/audio/sub code) along with the ClipLink Log Data contained in the memory IC in the DVCAM cassette tape at both normal and four times normal speeds. The dubbing is accomplished by operating the menu button on the subcontrol panel via the SDTI(QSDI) interface and the RS-422A.

Versatility for Current System Environments
The DSR-85P has been deliberately designed for easy integration into existing analogue editing systems. So, in addition to its versatile digital interfaces, the DSR-85P also includes comprehensive analogue I/O.

Remote Control via RS-422A
The DSR-85P is equipped with an RS-422A serial communication port to interface not only with Sony EditStations but also with Sony VTRs and editing controllers such as the PVE-500. The interface is also used to transfer of ClipLink Log Data from the memory IC in the DVCAM cassette to a Sony EditStation.

Full Analogue Interfacing
The DSR-85P provides full analogue I/O for audio and video signals, making it compatible with conventional analogue equipment such as Betacam SP™, Hi-8™ and S-VHS for smooth and gradual transition to digital systems. For video, composite, component and S-video connections are provided. Four channel or two channel (selectable) inputs and outputs are provided for audio.
It is possible to reproduce four channels or two channels of digital audio within 1/30 to 1 times normal playback speed, both in forward and reverse, in JOG mode. This feature is helpful in quickly and precisely designating editing points while monitoring the digital audio signals. The audio data is held in memory and output according to search speed for enhanced recognition.

Sony Integrated Remote Control System (SIRCS)

The DSR-85P is equipped with a SIRCS (Sony Integrated Remote Control System) interface on the front panel, enabling connection of the optional DSRM-10 Remote Control Unit to control jog, shuttle, playback, record, pause, fast forward and rewind modes.

Serial Digital Interface (SDI)

The SDI (Serial Digital Interface) which conforms to the ITU-R BT.601, broadcast standard, is supported by installing the optional DSBK-120P SDI I/O Board for simple connection with other SDI equipped devices such as D-1 and Digital BETACAM™.

User Friendly Operation

Ease of Initial Set-up for Convenient Operation

The DSR-85P is provided with an initial setup menu system, which is programmed in the form of a layer structure. By simply going through the menu using the subcontrol panel, users can easily initialize the VTR. This setup menu allows many detailed operational parameters to be preset. Once the menu is set, the DSR-85P will memorize the options and retain them in memory even after the power is turned off. With the use of these memorized set-up parameters, the DSR-85P can be immediately set up for a specific application.

Built-in Character Generator

The DSR-85P has a built-in character generator which superimposes characters on the video signal output from the VIDEO OUT 2 terminal. Time code data (TC, User bit), VTR operation status, menu items, and all alarm, warning, and error messages can be shown on a monitor.

Legible Front Panel Display

The DSR-85P has a large, highly visible LED display on its front panel. This display shows a variety of information such as audio and video input modes, normal/high-speed modes, ClipLink and cassette memory so that users can assimilate VTR status at a glance.

Consumer DV Playback

The DSR-85P has the consumer DV playback capability, enabling broader acquisition of programme material without the need for a special adaptor.

Reliable, Responsive and Serviceable

The DSR-85P tape transport is a highly responsive mechanism, which is an essential factor for efficient editing. In addition, to maintain its excellent performance, the DSR-85P offers ease of servicing and maintenance by incorporating self-diagnostics, error log and an hours meter.

Quick Responsive Mechanism

The DSR-85P assures high reliability in all professional applications through U-loading, direct reel drive, and electric tension servo. FF/REW speed is an impressive x85, while maximum search speed is x32 with colour playback.

Self-Diagnostics and Error Log

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. Moreover, the error log function makes it easier to detect the error factor by retaining the past status data of the DSR-85P in its memory.

Hours Meter

An hours meter is also provided to assure simplified maintenance by showing total operating time, drum rotation time, transport operation time and number of thread/unthread operations. This information can be shown both on a monitor screen and the front panel display of the unit.

Appealing, Simple, Design

The attractive and functional appearance of the DSR-85P has evolved through long years of experience. It integrates visually with Sony EditStations and other Sony equipment, providing the aesthetically pleasing look that appeals to creative professionals.

The DSR-85P is four units high and EIA standard 19-inch rack mountable with the optional RMM-130 Rack Mount Unit.
**System Configurations**

**High Speed Non-Linear Editing System**

This system shows a coherent digital editing system, from image acquisition to final post production. It provides maximum system multi generation with picture quality because the data is transferred via SDTI(QSDI) interfaces without the process of compression and decompression, or conversion between analogue and digital. Furthermore, ClipLink operation and high speed data transmission between the DSR-85P and ES-7 EditStation provide more efficient editing performance.

**Conventional Linear A/B Roll Editing System**

In the evolution process of a conventional A/B roll editing system, the DSR-85P will be at the centre of a smooth transition to the future digital operation. When integrated with current UVW series of VTRs, the DSR-85P executes its excellent performance as an editing VTR, taking advantages of its built-in digital and analogue component interfaces.

**High Speed Digital Dubbing System**

Dubbing at four times normal speed can be conducted between two DSR-85 without a need for any additional controller. The recorded DVCAM tape information (video/audio/sub code) along with the ClipLink Log Data in the memory IC can be dubbed, and the dubbed tape can be used for nonlinear editing with the Sony EditStation.
Peripheral Equipment

**DSR-130P**
Digital Camcorder
(Consists of DSR-1P Digital Videocassette Recorder and DXC-D30P Digital Camera)

**DSR-300P**
Digital Camcorder

**ES-7**
EditStation

**DSBK-120P**
SDI Input/Output Board

**DSBK-130P**
Time Code Input/Output Board

**DSRM-10**
Remote Control Unit

**RMM-130**
Rack Mount Unit

**UVR-60P**
TBC Remote Control Unit

**PVE-500**
Editing Control Unit

**DFS-500P**
DME Switcher

**RM-450A**
Editing Remote Controller

**RCC-5G/10G/30G**
Remote Control Cable (5 m, 10 m, 30 m)

**PDVM-12ME/22ME/32ME/40ME**
Digital Video Cassette (Mini size)

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

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

**PDVM-12CL** (Mini size)
Cleaning Cassette Tape
**Specifications**

**GENERAL**
- **Power requirements**: AC 220 to 240 V, 50/60 Hz
- **Power consumption**: 185 W
- **Operating temperature**: 5 °C to 40 °C (41 ˚F to 104 ˚F)
- **Storage temperature**: -20 °C to 60 °C (-4 ˚F to 140 ˚F)
- **Operating humidity**: Less than 80 %
- **Storage humidity**: Less than 90 %
- **Mass**: 21 kg (46 lb 4 oz)
- **Dimensions**: 427 x 174 x 494 mm excluding external projections (16 7/8 x 6 7/8 x 19 3/4 inches)
- **Tape speed**: 28.221 mm/s
- **Recording/Playback time**
  - Standard size: More than 184 min. w/PDV-184ME/184N
  - Mini size: More than 40 min. w/PDVM-40ME/40N
- **Fast forward/Rewind time**
  - Standard size: Less than 3 min. w/PDV-184ME/184N
  - Mini size: Less than 1 min. w/PDVM-40ME/40N
- **Search speed**
  - When controlling via RS-422A: Search speed is up to 32 times, forward and reverse.
  - When controlling via optional DSRM-10:
    - JOG mode: Frame by frame to x2, forward and reverse
    - SHUTTLE mode: 8 steps, still to x16 normal speed, forward and reverse
    - Digital slow mode: 3 steps, still, x1/5 and x1/10 normal speed, forward and reverse
    - JOG audio mode: x1/30 to x1, forward and reverse

**VIDEO PERFORMANCE**
- **Band width (via analogue component I/O)**
  - Luminance: 25 Hz to 5.5 MHz +1.0/-2.0 dB
  - Chrominance: 25 Hz to 2.0 MHz +1.0/-2.0 dB
- **S/N ratio (via analogue component I/O)**: More than 55 dB
- **K-factor (K2T, KPB)**: Less than 2.0 %
- **Y/C delay**: Less than 30 ns

**AUDIO PERFORMANCE**
- **Frequency response**
  - 2CH mode (48 kHz/16-bit): 20 Hz to 20 kHz +0.5/-1.0 dB
  - 4CH mode (32 kHz/12-bit): 20 Hz to 14.5 kHz +0.5/-1.0 dB
- **Dynamic range**: More than 85 dB
- **Distortion (THD + N)**: Less than 0.05 %

**INPUT SIGNALS**
- **ANALOGUE**
  - **REF. VIDEO (BNC x2)**: Composite, 1.0 Vp-p, 75 Ω, sync negative
  - **VIDEO (BNC x2)**: Composite, 1.0 Vp-p, 75 Ω, sync negative
  - **COMPONENT (BNC x3)**
    - Y: 1.0 Vp-p, 75 Ω, sync negative
    - R-Y/B-Y: 0.7 Vp-p, 75 Ω (100 %)
  - **S-Video (DIN 4-pin x1)**
    - Y: 1.0 Vp-p, 75 Ω, sync negative
    - C: 0.3 Vp-p, 75 Ω (at burst level)
- **DIGITAL**
  - SDI* (BNC x2): Conforms to Serial Digital Interface (270 Mbps), ITU-R BT.656
  - SDTI(QSDI) (BNC x1): Conforms to SDTI (270 Mbps), SMPTE 305M
* Using Optional DSBK-120P (SDI Input/Output Board)

**OUTPUT SIGNALS**
- **ANALOGUE**
  - **AUDIO MONITOR (RCA phono jack x1)**: -6 dBu, 47 kΩ, unbalanced
  - **HEADPHONES (JM-60 headphone jack x1)**: -16 dBu, 8 Ω, unbalanced
- **DIGITAL**
  - AES/EBU (XLR 3-pin male x2): 2 to 7 Vp-p, 110 Ω, balanced
* Using Optional DSBK-130P (Time Code Input/Output Board)

**REMOTE**
- **RS-422A**: 9-pin multi connector (x1)
- **TBC**: D-sub 15-pin (x1)
- **CONTROL-S (SIRCS)**: Stereo mini jack (x1)

**SUPPLIED ACCESSORIES**
- AC power code (x1)
- Operating instructions (x1)
- CLIP LINK guide (x1)
* 0 dB = 0.775 Vrms

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