

# DVCAM Family 2006

**SONY**

**DVCAM**



THE NEW WAY OF BUSINESS™



(simulated images)

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## Introduction

*Video production styles continue to diversify in response to the rapid and tremendous growth in visual communication. In this fast-changing environment, the need is for equipment that meets the crucial demands for both higher productivity and greater creativity in professional video production.*

*Since its launch in 1996, Sony DVCAM™ products has satisfied these demands and brought many notable benefits. Excellent picture and sound quality that only a digital format can provide, high-performance editing capabilities, and system versatility that makes it possible to migrate smoothly from analog to digital – these are just some of the factors behind the success of DVCAM products. A full model line-up for digital acquisition, editing and program playout has led to the rapid acceptance of DVCAM products by business users, production facilities and broadcasters around the world.*

*Many new models have been added to the DSR Series of DVCAM equipment, broadening the range of applications in ENG, field acquisition/editing, simple editing and so on.*

*Select from the Sony DVCAM lineup and you will be choosing innovative equipment to bring both new solutions to your production demands and added performance benefits to your system.*



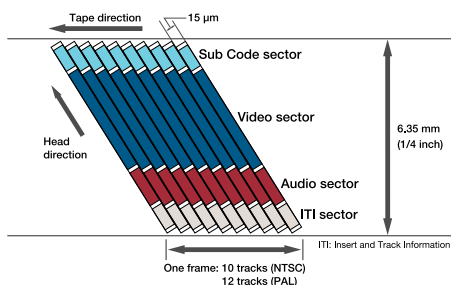
(simulated images)

## Main Features

### The DVCAM Format

#### Digital Component Recording for Excellent Picture Quality

The DVCAM format is the professional extension of the worldwide standard DV format. The DVCAM format uses 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). The unique compression algorithm provides excellent picture quality and superb multi-generation performance. The DVCAM format has a wider track pitch of 15  $\mu\text{m}$  (compared with 10  $\mu\text{m}$  for the DV format) which gives higher reliability for professional editing. It also offers superior digital audio performance, providing a wide dynamic range and excellent signal-to-noise ratio, comparable to CD quality. Alternative audio channel modes can be selected: a two-channel mode with 48 kHz/16-bit recording or a four-channel mode with 32 kHz/12-bit recording.



#### 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 a 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 to the tape surface that is essential to avoiding tape damage during long editing sessions. Finally, DVCAM tapes provide a low frequency of dropout and superb thermal stability.

A variety of cassettes, including tapes with IC Cassette Memory and Master Tapes, is available to suit different applications. The built-in 16-kbit Cassette Memory stores, Index Pictures, Photo mode and other shooting data, enhancing editing efficiency. Tapes without IC Cassette Memory fit a wide range of applications, with an affordable price. The Master Tapes, which use Sony Hyper Evaticle II Magnetic Particle technology to provide higher output and lower noise, are 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 1/4-inch (6.35 mm) tape width.



Mini-size cassette



Standard-size cassette



## Main Features

### Unique Technology and Advantages

#### Playback Capability of DV (25 Mb/s) Format Recorded Tapes

DSR-2000A DSR-1800A DSR-1600A DSR-1500A

For maximum versatility in playback, the DVCAM VTRs are designed to playback DVCAM and DV (SP mode) tapes without a mechanical adaptor or menu adjustment. The DVCAM Master Series VTRs (DSR-2000A/1800A/1600A/1500A) support DVCPRO® tape playback\*, and the DSR-2000A even supports DV (LP mode) playback. Furthermore, it is possible to use these tapes directly as editing source material, improving productivity.

\* Not compatible with SDTI (QSDI) and i.LINK® (DV) interfaces.

#### Recording Capability of the Consumer DV (25 Mb/s) Format

DSR-450WS DSR-400 DSR-250 DSR-PD170 DSR-1500A DSR-50 DSR-45A DSR-11

In the event a longer recording time is required, the above DVCAM camcorder and VTRs are also designed to record in the DV Format. Thanks to this feature, recording of up to 276 minutes is possible with a standard-size cassette and 60 minutes with a mini-size cassette.

\* The transition from cut to cut may not be smooth when recorded in DV (SP) format. In between scenes where the recording format is changed from DV to DVCAM, or vice versa, transition may not be smooth. Not available for editing.

#### • Audio Cross-fade Capability

DSR-2000A DSR-1800A

Preread heads on the DSR-2000A and DSR-1800K VTRs also provide an audio cross-fade capability with clean audio transitions at editing points. During audio insert editing, the previously recorded audio signal is read out by preread heads, cross-faded with the VTR audio input signal and recorded back onto the same track. This provides excellent audio cross-fade editing performance without audio clicks at edit points and provides high quality audio to complement the video performance.

#### Excellent Editing Performance

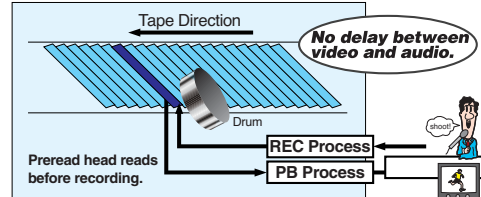
##### • Preread Editing Capability\*

DSR-2000A

The DSR-2000A VTR offers preread editing, a function never before available on a 1/4-inch (6.35 mm) VTR. Preread heads are positioned ahead of the record heads on the drum to scan previously recorded video and audio signals. These signals can then be sent to a character generator, a video switcher and/or an audio mixer, combined with signals from another source, and then recorded back onto the same tracks. Preread editing provides many advantages since it enables single-VTR titling, audio mix/swap and voice over with no delay between video and audio. In addition, A/B roll editing with two VTRs is available (MIX and WIPE only).

\* Not available for SDTI (QSDI™) and i.LINK (DV) interfaces as these handle compressed signals.

##### <Over-dubbing of audio with preread editing capability>



##### • Enhanced Digital Jog Audio

DSR-2000A DSR-1800A DSR-1600A DSR-1500A DSR-DR1000A

A digital jog audio function is included in the Master Series VTRs with a range of -1 to +1 (DSR-2000A) or -0.5 to +0.5 (DSR-1800A/1600A/1500A) times normal speed. With its quick and smooth response, locating editing points is very easy. This is a particularly important feature for ENG applications that usually require audio-based editing. Moreover, this function is even available on the master series VTRs when using DV and DVCPRO tapes.

#### Versatile Digital Interfaces

##### • SDI (Serial Digital Interface)\*

DSR-450WS\*\* DSR-2000A DSR-1800A\*\* DSR-1600A\*\* DSR-1500A\*\* DSR-DR1000A

With SDI, high-quality picture and sound can be transferred between the above DVCAM camcorders, DVCAM VTRs and SDI-equipped devices.

\* The SDI used in DVCAM camcorders and DVCAM VTRs supports digital component video signals.

\*\* The DSR-450WS/1800A/1600A/1500A require an optional board for SDI.

##### • SDTI (QSDI)\*

DSR-2000A DSR-1500A\*\*

SDTI (QSDI) is a digital interface in the DSR-2000A and the DSR-1500A VTRs that handles compressed video as well as the sub-code data and digital audio signals of the DV/DVCAM formats. It allows virtually degradation-free transfer of both video and audio signals between SDTI (QSDI) equipped VTRs.

\* SDTI (Serial Data Transport Interface) is defined as SMPTE 305M.

SDTI (QSDI) is the DV compressed signal interface defined as SMPTE 322M.

\*\* The DSR-1500A require an optional board for SDTI (QSDI).

## • HD-SDI

DSR-2000A\*\* DSR-1800A\*\* DSR-1600A\*\*

HD-SDI output from the above VTRs in 1080/59.94i, 1080/50i and 720/59.94P formats is provided from playback signals of tapes recorded in all DV formats. In addition, input signals through the SD-SDI and analog video input connectors\* can also be up-converted to these HD formats.

\* Signals via i.LINK and SDTI (QSDI) interfaces cannot be up-converted.

\*\* The DSR-2000A/1800A/1600A require an optional board for HD-SDI output.

## • i.LINK Interface (DV)\*

DSR-450WS\*\* DSR-400\*\* DSR-250 DSR-PD170 DSR-2000A\*\* DSR-1800A\*\* DSR-1600A\*\*  
DSR-1500A DSR-45A DSR-11 DSR-50 DSR-DR1000A

i.LINK interface enables a single cable to simultaneously carry digital video and audio signals, as well as data and control signals, with virtually no quality deterioration.\* This simple connection offers an ideal solution for connecting DVCAM equipment with compatible consumer AV equipment and computer-related products.

\*i.LINK stands for IEEE1394-1995 standards and their revisions.

† i.LINK is the logo for products that implement i.LINK.

i.LINK is a trademark of Sony used only to designate that a product contains 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. For information on any Sony device having an i.LINK connector contact your local Sony Representative.

\*\* Output only from the DSR-450WS/400 and DSR-1600A.

Note: Sony VAIO® computers are checked with Sony DV products, but not with DVCAM, concerning the i.LINK interconnection. Some VAIO application software may not work with DVCAM.

## • AES/EBU

DSR-2000A DSR-1800A\* DSR-1600A\* DSR-1500A\* DSR-DR1000A

The DSR-2000A/1800A/1600A/1500A VTRs and DSR-DR1000A are fitted with digital audio interfaces conforming to the AES/EBU standard. With a sampling frequency of 48 kHz and 20-bit quantization, these interfaces provide high-quality audio.

\* The DSR-1800A/1600A/1500A require an optional board for AES/EBU.

## Sophisticated Mechanisms

### • Quick, Responsive Mechanism

DSR-2000A DSR-1800A DSR-1600A DSR-1500A

Quick mechanical response is an essential requirement for professional video production. The above Master Series VTRs provide this rapid response with a combination of highly reliable direct reel drive and drum motor mechanisms. The result is a tape drive with rapid response to Jog and Shuttle commands when searching for edit points, and a rapid start in Play mode.

### • Three-size Cassette Compartment

DSR-2000A DSR-1800A DSR-1600A DSR-1500A

The above Master Series VTRs incorporate a newly designed three-size cassette compartment for compatibility with DV (25 Mb/s) format recorded tapes of all sizes and types. Thanks to this feature, it is possible to use standard and mini DV and DVCAM cassettes, as well as medium DVCPRO cassettes, without a mechanical adaptor.

### • Dual-size Cassette Compartment

DSR-450WS DSR-400 DSR-250 DSR-45A DSR-11 DSR-50

The above camcorders and VTRs have a dual-size cassette compartment which accepts both standard and mini cassettes without a mechanical adaptor.

## Creative Versatility

### • Film-like Images with Progressive Mode

DSR-450WS

The DSR-450WS generates native progressive images of 29.97P, delivering outstanding clarity as well as a cinematic look. In addition, the DSR-450WS produces 23.976P images, offering film-like motion effects. Images captured in 23.976P scanning mode have 2-3 pull-down applied and recorded on tape in 59.94i format.

### • Selectable Gamma Table Including Film-like Gamma

DSR-450WS

The DSR-450WS provides a selectable gamma table to easily give a specific look to a picture by selecting from multiple fixed gamma patterns including so-called film-like gamma.

## Lineup Features

# Digital Camcorders

## DSR-450WS/400 Series Camcorder Common Features

- Rugged and ergonomic design
- Compact and lightweight: approx. 14 lb 5 oz (6.5 kg) with the DXF-801 viewfinder, microphone, BP-GL65 battery pack and mini-size DVCAM cassette and VCL-917BY lens (supplied with the DSR-400K/400PK package)
- Low power consumption: approx. 17 W (with DC 12 V power supply, REC mode, viewfinder off and LCD monitor off)
- 12-bit A/D conversion for faithful contrast reproduction
- Advanced digital signal processing (ADSP)
- DVCAM/DV (SP) selectable recording
- Long recording time in DV (SP) mode: up to 276 minutes with a standard-size cassette
- Digital output to compatible external devices via an i.LINK •• interface
- Quick FF/REW capabilities: approx. 40 seconds for a mini-size cassette and approx. 2 minutes and 30 seconds for a standard-size cassette
- 2.5-inch type\*<sup>1</sup> color LCD monitor
- Supplied DXF-801, 1.5-inch type\*<sup>1</sup> black and white viewfinder
- Battery remaining display in the camcorder viewfinder and LCD monitor
- Shoulder pad to be adjusted either forwards or backwards
- User-friendly menu controls
- Memory Stick™ system for storage of camera setup parameters
- Four assignable buttons to enable operators to assign frequently used functions
- Turbo gain to boost the gain level up to +36 dB
- Intelligent light system\*<sup>2</sup> to synchronize an optional portable light (max. 50 W) on/off to the REC button
- CA-WR855 Camera Adaptor for the WRR-855A/855B Wireless Microphone Receiver
- Optical ND (Neutral Density) filter and electric CC (Color Correction) filter
- TruEye™ process for faithful color reproduction
- Triple Skin Tone Detail control
- Auto-Tracing White Balance (ATW) function
- Multi-matrix function
- Color temperature control
- Interval recording to intermittently record signals at pre-determined intervals
- Programmable gain (-3/0/3/6/9/12/18/24/30/36 dB)
- Dual zebra (70 IRE to 90 IRE or more than 100 IRE)
- Marker (center, safety zone, 4:3/13:9/14:9 aspect (DSR-450WS only))
- Edit search for easy access to edit points
- Stereo audio output (pin jacks)

\*<sup>1</sup> Viewable area measured diagonally

\*<sup>2</sup> When using the 'intelligent light system', the recording may start before the light is at full brightness. This will vary depending on the light being used. If it is necessary to have the first recorded frame at full brightness, simply use the camera in manual light mode.

### DSR-450WS Camcorder



- Three wide-aspect 2/3-inch type Power HAD™ EX CCDs providing high quality images with low smear level (-140 dB), high sensitivity, high S/N ratio (NTSC: 65 dB) and high horizontal resolution (800/850 TV lines in 16:9/4:3 mode)
- Aspect ratio switchable between 16:9 and 4:3
- Film-like shooting with progressive scan mode: 23.976P and 29.97P for the DSR-450WS (NTSC model).
- Selectable gamma table including film-like gamma
- Slow shutter (1 to 8 and 16 frames accumulation)
- Versatile interfaces such as analog composite output, SDI output (with the CBK-SD01 board), and analog composite input (with the CBK-SC01 board)
- Camera remote control via the RM-B150/B750 Remote Control Unit

### DSR-400 Camcorder



- Three 2/3-inch type Power HAD EX CCDs providing high quality images with low smear level (-140 dB), high sensitivity, high S/N ratio (NTSC: 65 dB) and high horizontal resolution (920 TV lines)
- Supplied VCL-917BY, 17x zoom lens for the DSR-400K/DSR-400PK package

## DSR-250

### Camcorder



- Compact and lightweight: 9 lb 11 oz (4.4 kg)
- Newly developed 1/3-inch type three CCDs for accurate color reproduction
- Capable of both interlace scan, for moving images, and progressive scan, for still images or shooting a moving subject\*<sup>1</sup> and exporting a frame of the image as a still picture
- DSP (Digital Signal Processing)
- 2.5-inch (viewable area measured diagonally) type (200,000 dot) color LCD monitor
- 12x lens\*<sup>2</sup> with Super SteadyShot™ system
- New, high-resolution 1.5-inch black & white viewfinder
- 16:9 recording mode available (electronically processed)

- Superb picture quality of the DVCAM format
- Recording and playback capability with standard and mini-size DVCAM and DV tapes (SP mode only)\*<sup>3</sup>
- Three XLR audio input connectors for professional microphones (one at front, two at rear)
- Audio dubbing capability (48 kHz/16-bit or 32 kHz/12-bit selectable)
- Long recording time: 184 minutes with a standard-size cassette in DVCAM mode, or 270 minutes in DV SP mode
- Time/date data superimposition on output pictures
- Digital still camera functions with Memory Stick system
- Light output (DC 12 V, max. 30 W) and additional DC 12 V out for optional accessories
- Time code preset capability
- i.LINK (DV) interface providing a single cable connection to simultaneously transfer audio, video and command signals
- LANC interface for simple editing with a LANC-equipped recorder or editing system
- Supplied RMT-811 Remote Commander® Unit

\*<sup>1</sup> When recording moving images in progressive scan mode, the motion will display some jitter since the picture is read/output every 1/15 second (NTSC) or 1/12.5 second (PAL).

\*<sup>2</sup> Digital zoom of 24x or 48x available via menu selection.

\*<sup>3</sup> When recording in DV (SP) format, transitions between cut to cut may not be smooth. In addition, when the recording format is switched between DVCAM and DV, the transition may not be recorded smoothly.

## DSR-PD170

### Compact Camcorder

- Compact and lightweight: Approx 3 lb 6 oz (1.6 kg) (camcorder only)
- Newly developed 1/3-inch type three CCDs for accurate color reproduction
- Capable of both interlace scan to acquire moving images and progressive scan to capture still images
- Advanced HAD™ technology for a high sensitivity and excellent signal to noise ratio
- Low light shooting of 1 lx with F1.6 at 18 dB gain
- Large 180,000-dot LCD precision black and white viewfinder
- Optical 12x zoom lens\*<sup>1</sup> with Super SteadyShot™ system
- 16:9 widescreen acquisition mode
- DVCAM/DV selectable recording
- 2 ch. XLR audio input and supplied directional microphone
- 16-bit/12-bit PCM digital sound and audio dub capabilities
- Newly developed hybrid LCD monitor with a high resolution of more than 210,000 pixels
- Simultaneous operation of LCD monitor and viewfinder
- Large-sized Handle to allow for a better and easier grip
- On-handle zoom lever and rec. start/stop button
- Long operating time of up to ten hours with the optional NP-F970 InfoLITHIUM® battery pack

- Digital still camera functions with Memory Stick system
- Supplied lens hood with built-in lens cap
- Supplied wide conversion lens and additional lens hood
- i.LINK (DV) interface providing a single cable connection to simultaneously transfer audio, video and command signals

\*<sup>1</sup> Digital zoom of 24x or 48x available via menu selection



## Lineup Features

**Digital VTRs****Master Series VTR Common Features****Master**  
Series

DSR-2000A DSR-1800A DSR-1600A DSR-1500A

Since its introduction, the DVCAM format has become widely accepted in the world of video production from industrial to broadcast markets. Recognizing the increasing demands for DV-based production in broadcast applications, Sony has developed the DVCAM Master Series of VTRs (comprising the DSR-2000A, DSR-1800A, DSR-1600A, and DSR-1500A models).

All Master Series VTRs are fully compatible with all DV family formats and provide professional features such as excellent editing performance and high-quality jog audio, inherited from analog formats. Each model is equipped with an i.LINK interface as standard. In addition, they provide SDI, SDTI (DSR-2000A and DSR-1500A only), and AES/EBU input/output, as well as HD-SDI up-conversion output capabilities via optional boards.

The introduction of Sony DVCAM Master Series VTRs brings professional features and interface versatility to production environments ranging from industrial to broadcast, and for both SD and HD programming applications.

- Superb picture quality of the DVCAM format
- Playback capability of DV (25 Mb/s) recorded tapes including DV tapes recorded in SP mode and DVCPRO tapes\*<sup>1</sup> without an adaptor or menu setting changes
- Long recording time: up to 184 minutes with a standard-size cassette and 40 minutes with a mini-size cassette
- Four-channel audio editing capability\*<sup>2</sup>
- Audio cross-fade function for clean audio transitions at editing points\*<sup>3</sup>
- Excellent jog audio capability
- DMC (Dynamic Motion Control) provides noiseless slow-motion playback\*<sup>4</sup>
- High-speed picture search over a range of 60 times\*<sup>2</sup> normal speed, in both forward and reverse
- Versatile digital interfaces\*<sup>5</sup>: SDI, SDTI (QSDI), HD-SDI, i.LINK (DV) and AES/EBU digital audio
- Extensive analog interfaces: composite, component, S-Video and XLR audio
- RS-422A remote control interface
- Frame accurate editing capability
- ClipLink operation
- Full tape dubbing with ClipLink Log Data via SDTI (QSDI) and

- RS-422A interfaces
- 16:9 aspect ID signal recording
- Video process control for greater control of both analog and digital outputs
- Built-in SMPTE/EBU time code and VITC generator/reader
- Built-in signal generator (color bars, black burst, 1 kHz tone, silent signal)\*<sup>6</sup>
- Flexible input selection between video and audio\*<sup>7</sup>
- Universal powering system (AC 100 V to 240 V)
- Three-size cassette compartment to ensure compatibility with DV(25Mb/s) recorded tapes
- Closed caption function (NTSC Model only)

\*<sup>1</sup> SDTI (QSDI) and i.LINK (DV) interfaces do not support DVCPRO playback.

\*<sup>2</sup> DSR-2000A/DSR-1800A/DSR-1600A only.

\*<sup>3</sup> DSR-2000A/DSR1800A only.

\*<sup>4</sup> DSR-2000A/DSR1800A/DSR-1600A only.

\*<sup>5</sup> Optional Input/Output Boards required. Please check Feature Comparison of Studio VTRs (p.13) for details.

\*<sup>6</sup> DSR-2000A/DSR1800A/DSR-1500A only

\*<sup>7</sup> i.LINK cannot be combined with other signal interfaces. When SDTI (QSDI) is selected as the audio input, the video signal is assumed to be SDTI (QSDI). However, when it is selected as the video input, other signal interfaces can be selected for the audio.

**DSR-2000A**  
Editing Recorder

- Playback capability of DV tapes recorded in LP mode
- Preread editing capability\*<sup>1</sup> to perform sound-on-sound capability, audio mix/swap and over-dubbing of audio with no delay between video and audio as well as A/B roll editing\*<sup>2</sup> with two VTRs
- VTR-to-VTR editing without external controllers
- Wide range of digital slow speed from -1 to +1 times normal speed
- Channel condition monitoring function
- Audio level control in both recording and playback modes
- Dial menu operation
- High-definition up-conversion output in 1080/59.94i, 1080/50i and 720/59.94P formats using the optional DSBK-2020

- Key Inhibit and Rec Inhibit functions to prevent accidental operation

\*<sup>1</sup> Not available through SDTI (QSDI) and i.LINK interfaces.

\*<sup>2</sup> MIX and WIPE only.

**Master**  
Series



## DSR-1800A

### Editing Recorder

- Pread playback capability to perform audio mix/swap and over dubbing without any delay between video and audio signals
- Wide range of digital slow speed from -0.5 to +0.5 times normal speed
- Channel condition monitoring function
- Jog dial on front panel
- High-definition up-conversion output in 1080/59.94i, 1080/50i and 720/59.94P formats using the optional DSBK-1820



**Master**  
Series

## DSR-1600A

### Editing Player



- Wide range of digital slow speed from -0.5 to +0.5 times normal speed
- Channel condition monitoring function
- Jog dial on front panel
- High-definition up-conversion output in 1080/59.94i, 1080/50i and 720/59.94P formats using the optional DSBK-1820

**Master**  
Series

## DSR-1500A

### Editing Recorder

- Recording capability with standard and mini-size DV tapes. (SP mode only)\*
- Wide range of digital slow speed from -0.5 to +0.5 times normal speed
- Compact, half-rack size
- Menu keys on front panel for picture search
- i.LINK interface as standard

\*Assemble or insert editing is not possible in the consumer DV format mode. However, back space editing is possible using the optional DSRM-10 Remote Control Unit. The transition from cut to cut may not be smooth when performed over a DV recording made on a different DV or DVCAM deck. In between



**Master**  
Series

scenes where the recording format is changed from DVCAM to consumer DV format, the transition may not be smooth either. This is a normal and expected phenomenon. The audio reference level is fixed to -12 dB at DV(SP) recording.

## Digital VTRs

### DSR-45A Recorder

- Superb picture quality of the DVCAM format
- Recording and playback capability of the DV format (SP mode only)\*<sup>1</sup>
- Long recording time: up to 184 minutes with a standard-size cassette, 40 minutes with a mini-size cassette in DVCAM mode
- Full range of analog Video IN/OUT: Component, Composite, S-Video
- Four channel independent Audio IN/OUT with XLR connectors for Audio OUT
- i.LINK(DV) interface for simultaneous transfer of audio, video, and command signals
- RS-422A remote control interface\*<sup>2</sup>
- RS-232C interface for basic control from a PC
- LANC and Control S interface
- Time code IN/OUT
- Time code/ User bit preset
- Time code IN through DV IN
- Duplication function (Including the duplication of Cassette Memory data)

- Compact size (half-rack size width, 2U height)
- Low power consumption (22W during playback)
- Built-in 2.5-inch (viewable area measured diagonally) type (123,200 dot) color LCD monitor
- Tape counter
- Wireless remote controller RMT-DS5 supplied

\*<sup>1</sup> When recording in DV (SP) format, the transition between cut to cut may not be smooth. In addition, when the recording format is switched between DVCAM and DV, the transition may not be recorded smoothly.

\*<sup>2</sup> The DSR-45A is not equipped with the synchronization capability, therefore is recommended to be used only as a source feeder in A/B roll editing.



(simulated image)

### DSR-11 Recorder



- Superb picture quality of the DVCAM format
- Recording and playback capability of the DV format (SP mode only)\*<sup>1</sup>
- Long recording time: up to 184 minutes with a standard-size cassette, 40 minutes with a mini-size cassette in DVCAM mode
- Recording and playback capability of NTSC signals\*<sup>2</sup>
- i.LINK(DV) interface for simultaneous transfer of audio, video, and command signals

- LANC and Control S interface
- Time code IN through DV IN
- Auto repeat function
- Compact/lightweight design for both horizontal and vertical layout
- Wireless remote controller RMT-DS11 supplied

\*<sup>1</sup> When recording in DV (SP) format, the transition between cut to cut may not be smooth. In addition, when the recording format is switched between DVCAM and DV, the transition may not be recorded smoothly.

\*<sup>2</sup> The DSR-11 is not equipped to convert signals from NTSC to PAL, or vice versa.

## DSR-50

### Portable Recorder



(simulated image)

- Superb picture quality of the DVCAM format
- Recording and playback capability of the DV format (SP mode only)\*
- Long recording time: up to 184 minutes with a standard-size cassette, 40 minutes with a mini-size cassette in DVCAM mode.
- Analog component video OUT
- Four channel independent Audio IN/OUT with XLR connectors for Audio OUT
- i.LINK(DV) interface for simultaneous transfer of audio, video, and command signals
- Control S and Remote control (Foot Switch) interface.
- 26-pin camera connector
- Time code IN/OUT
- Time code IN through DV IN
- Duplication function (Including the duplication of Cassette Memory data)
- Compact/lightweight design and compatibility with BP-L series batteries for portable use
- Built-in 2.5-inch (viewable area measured diagonally) type (200,000 dot) color LCD monitor

\* When recording in DV (SP) format, the transition between cut to cut may not be smooth. In addition, when the recording format is switched between DVCAM and DV, the transition may not be recorded smoothly.

## Lineup Features

**Hard Disk Product****DSR-DR1000A****Hard Disk Recorder**

- Hard disk recorder with 3.5-inch large-capacity hard drive
- Up to 12 hours of 25 Mb/s DVCAM/DV video and audio recording
- Compact and lightweight (8 3/8 x 5 1/8 x 16 5/8 inches/210 x 130 x 422 mm, 16 lb 10 oz/7.5 kg)
- Simultaneous recording and playback capability
- Variable speed playback within a wide range of -2 to +2 times normal speed
- Smooth jog sound capability for easy designation of editing points

- Clip segment playback for continuous playback of designated video segments
- Seamless repeat playback feature to allow video clips and clip segments to be seamlessly repeated
- Continuous loop recording allows recording to continue until stopped by operator
- Interval recording to produce recordings over extended periods
- Pre-alarm recording automatically triggers cache recording to start when an external alarm signal is detected
- VTR-like control panel with Jog/Shuttle dial
- Random access to files
- Slow motion replay via the optional RM-280 Editing Controller
- Control by external devices supporting Sony Virtual File List (VFL) disk protocol via an RS-422A interface
- Synchronous playback via an RS-422A interface
- Versatile interfaces
- i.LINK interface (6-pin) with AV/C and SBP2 protocols
- High-speed file transfer via an i.LINK interface using SBP2 protocol
- File transfer of DV video and audio using FTP via Ethernet connection



## Feature Comparison

**Digital Camcorders**

	DSR-450WS	DSR-400	DSR-250	DSR-PD170
<b>Cassette</b>				
Standard-size Cassette	●	●	●	–
Mini-size Cassette	●	●	●	●
<b>Camera Section</b>				
Image Device	Three 2/3-inch type Power HAD EX CCDs	Three 2/3-inch type Power HAD EX CCDs	Three 1/3-inch type CCDs	Three 1/3-inch type CCDs
16:9 Aspect Ratio	●	–	● <sup>*1</sup>	● <sup>*1</sup>
TruEye Processor	●	●	–	–
Adaptive Highlight Control	●	●	–	–
Triple Skin Tone Detail Control	●	●	–	–
Electric Soft Focus	●	●	–	–
ATW	●	●	●	●
Variable Black Gamma Range	●	●	–	–
Auto Focus	–	–	●	●
Super SteadyShot System	–	–	●	●
Color LCD Monitor	●	●	●	●
Memory Stick System for Setup Parameters	●	●	–	–
User Assignable Function-buttons	●	●	–	–
Turbo Gain	●	●	–	–
Film-like Shooting with Progressive Mode	● <sup>*2</sup>	–	–	–
Film-like Gamma	●	–	–	–
Slow Shutter	●	–	–	–
<b>VTR Section</b>				
DVCAM/DV(SP) Selectable Recording	●	●	●	●
Memory Mix	–	–	●	●
Photo Mode	–	–	●	●
<b>Interface</b>				
i.LINK (DV) Interface	● <sup>*3</sup>	● <sup>*3</sup>	●	●
LANC	–	–	●	●

\*1 Electronically processed.

\*2 DSR-450WS: 23.976P and 29.97P

\*3 Output only. (input for video monitoring only)

● : Available

– : Not available

## Feature Comparison

## Digital VTRs

	DSR-2000A	DSR-1800A	DSR-1600A	DSR-1500A	DSR-45A	DSR-11	DSR-50
<b>Cassette</b>							
Standard-size Cassette	●	●	●	●	●	●	●
Mini-size Cassette	●	●	●	●	●	●	●
DVCPRO Medium-size Cassette	●	●	●	●	—	—	—
<b>Digital Interface</b>							
SDI	●	● (Option)	● <sup>*1</sup> (Option)	● (Option)	—	—	—
SDTI (QSDI)	●	—	—	● (Option)	—	—	—
HD-SDI	● <sup>*1</sup> (Option)	● <sup>*1</sup> (Option)	● <sup>*1</sup> (Option)	—	—	—	—
i.LINK (DV) Interface	●	●	● <sup>*1</sup>	●	●	●	—
AES/EBU	● (Option)	● (Option)	● <sup>*1</sup> (Option)	●	—	—	—
<b>Analog Interface</b>							
Composite	●	●	● <sup>*1</sup>	● <sup>*2</sup> (Option)	●	●	●
Component	●	● (Option)	● <sup>*1</sup> (Option)	● <sup>*2</sup>	●	—	●
S-Video	●	●	● <sup>*1</sup>	● <sup>*2</sup> (Option)	●	●	●
<b>Remote Control Interface</b>							
RS-422A	●	●	●	●	● <sup>*3</sup>	—	—
RS-232C	—	—	—	—	●	—	—
LANC	—	—	—	—	●	●	● <sup>*4</sup>
Control S	—	●	●	●	● <sup>*5</sup>	●	● <sup>*5</sup>
Foot Switch	—	—	—	—	—	—	●
Wireless Remote Control	—	—	—	—	●	●	—
<b>Editing Capability</b>							
Preread Editing/Playback	●	● <sup>*6</sup>	—	—	—	—	—
Assemble Editing	●	●	●	—	—	—	—
Insert Editing	● (Video/Audio/TC)	● (Video/Audio/TC)	—	● (Video/Audio/TC)	—	—	—
VITC	●	●	●	●	—	—	—
Time Code Input/Output	●	●	●	●	●	—	●
CliLink	●	●	●	●	—	—	—
High-speed Data Transfer	—	—	—	—	—	—	—
Search Speed	x ±60	x ±60	x ±60	x ±60	x ±14.48 (NTSC),	±14.48 (NTSC),	±14.48 (NTSC),x
Digital Slow	x ±1	x ±0.5	x ±0.5	x ±1/10, 1/3	x ±1/10, 1/5	x ±1/10, 1/3	x ±1/10, 1/3
<b>Others</b>							
DV Playback Capability	● (SP/LP)	● (SP only)	● (SP only)	● (SP only)	● (SP only)	● (SP only)	● (SP only)
DVCPRO Playback Capability	●	●	●	●	—	—	—
DV (SP mode) Recording Capability	—	—	●	● <sup>*7</sup>	● <sup>*8</sup>	● <sup>*8</sup>	● <sup>*8</sup>
HD Up conversion Output	● <sup>*1</sup> (Option)	● <sup>*1</sup> (Option)	● <sup>*1</sup> (Option)	—	—	—	—
Auto Repeat/ Power-on Playback/Recording	—	● <sup>*9</sup>	● <sup>*9</sup>	● <sup>*9</sup>	●	● <sup>*10</sup>	—
Index Points Search	—	—	—	—	●	●	●
Closed Caption	● <sup>*11</sup>	● <sup>*11</sup>	● <sup>*11</sup>	● <sup>*11</sup>	● <sup>*11</sup> x <sup>*12</sup>	● <sup>*11</sup>	● <sup>*11</sup> x <sup>*13</sup>

\* 1 Output only.

\* 2 These signals share the same BNC connectors.

\* 3 As a player only.

\* 4 Control Jack (accepts LANC command as player)

\* 5 Input only.

\* 6 Playback only.

\* 7 Assemble or insert editing is not possible in the consumer DV format mode. However, back space editing is possible using the optional DSRM-10 Remote Control Unit. The transition from cut to cut may not be smooth when performed over a DV recording made on a different DV or DVCAM deck. In between scenes where the recording format is changed from DVCAM to consumer DV

format, the transition may not be smooth either. This is a normal and expected phenomenon. The audio reference level is fixed to -12 dB at DV(SP) recording. \* 8 When recording in DV (SP) format, transitions between cut to cut may not be smooth. In addition, when the recording format is switched between DVCAM and DV, the transition may not be recorded smoothly.

\* 9 Auto repeat/Power-on playback only.

\* 10 Auto repeat only.

\* 11 NTSC model only.

\* 12 Output from Monitor out connector only.

\* 13 Output from Video out connector only.

● : Available

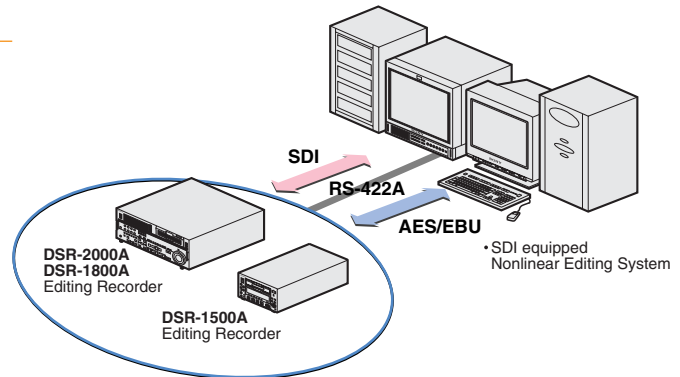
— : Not available

## Application Examples

## Studio Editing – Nonlinear

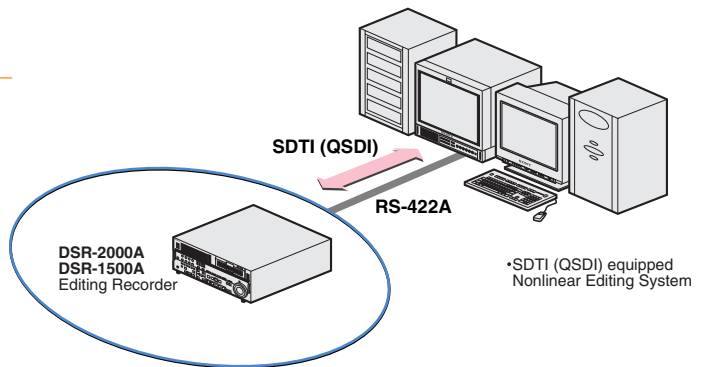
### SDI-based Nonlinear Editing System

- Direct digital connection with SDI-equipped nonlinear editing system
- High picture and sound quality by use of SDI and AES/EBU interfacing



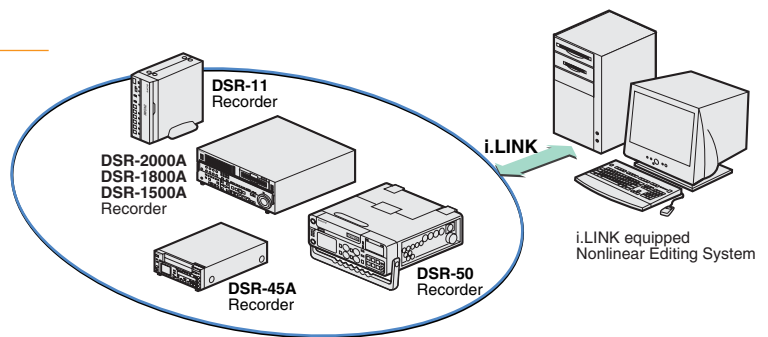
### SDTI (QSDI)-based Nonlinear Editing System

- Superb multi-generation picture and sound quality by use of SDTI (QSDI) interface



### i.LINK-based Nonlinear Editing System (AV/C Protocol)

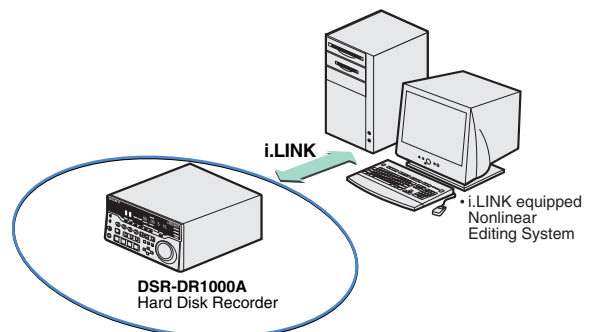
- Superb multi-generation picture and sound by use of i.LINK interface
- Quick mechanical response (DSR-2000A/1800A/1500A)



### i.LINK-based Nonlinear Editing System (SBP2 Protocol)

- Superb multi-generation picture and sound by use of i.LINK interface
- High speed clip transfer to a compatible i.LINK equipped nonlinear editor.\*

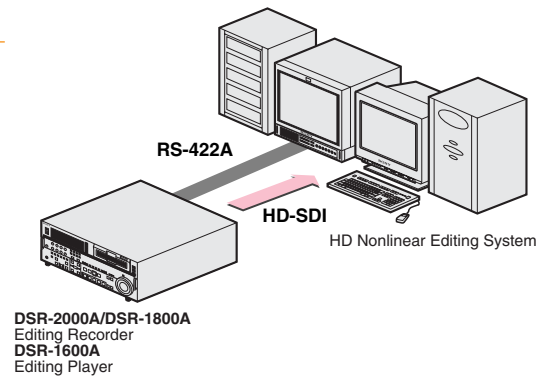
\* Please contact the nearest Sony office or authorized dealer for nonlinear products that support clip transfer.



## Application Examples

### HD-SDI-based Nonlinear Editing System

- Video material can be directly fed to HD-SDI-equipped nonlinear editing systems
- SD-originated material can be edited in HD-based editing environment



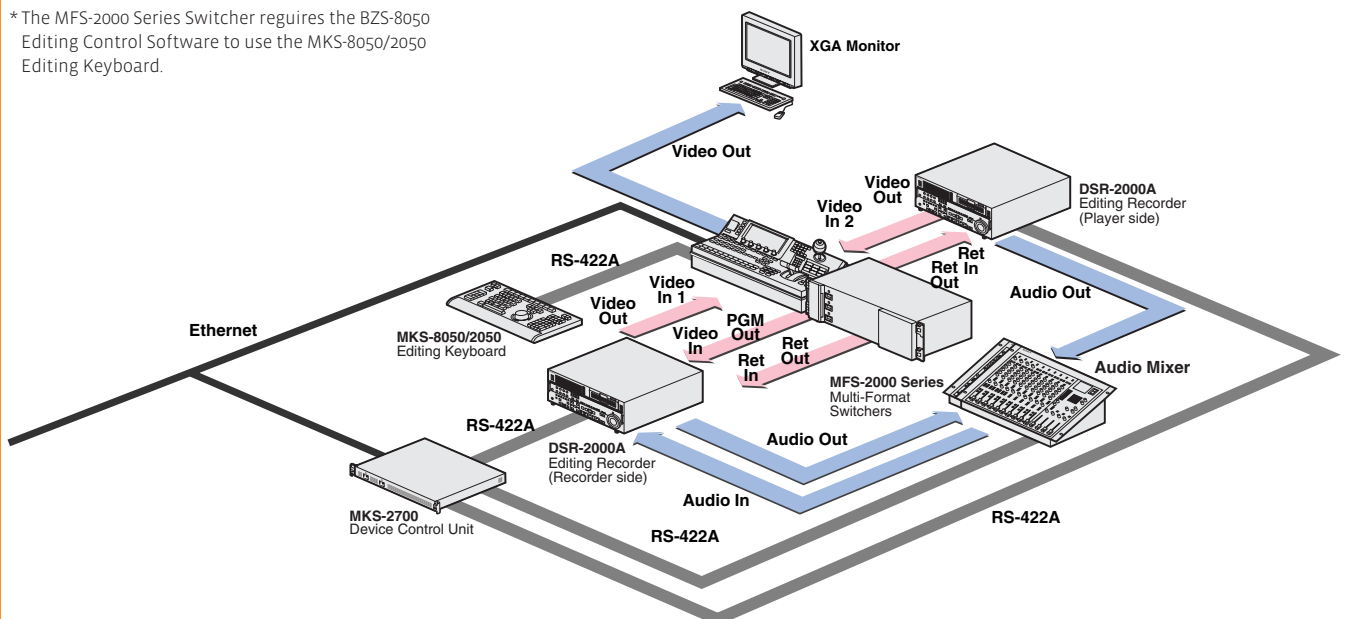
## Application Examples

### Studio Editing – Linear

#### Master Series Linear Editing System

- A/B roll editing with two VTRs\*
- Audio mix/swap and voice over with no delay between video and audio
- Title editing with one VTR and Audio Mixer

\* The MFS-2000 Series Switcher requires the BZS-8050 Editing Control Software to use the MKS-8050/2050 Editing Keyboard.

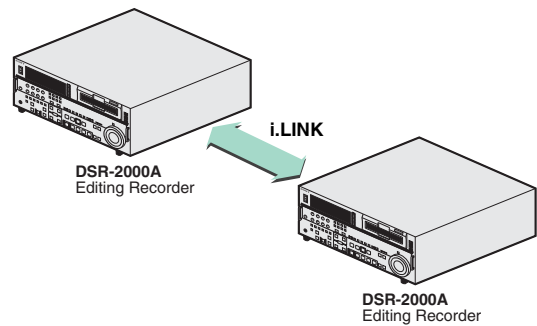




## Application Examples

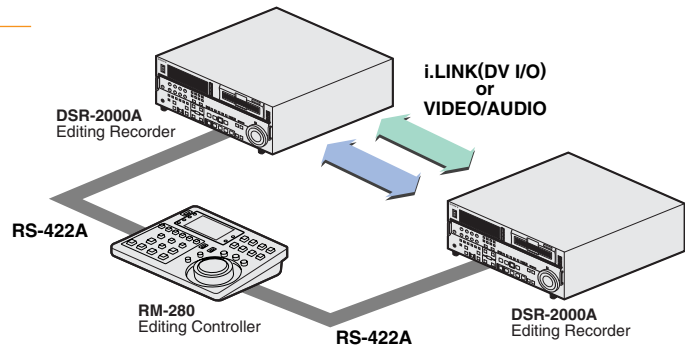
### VTR-to-VTR Editing System

- Convenient two-machine editing system



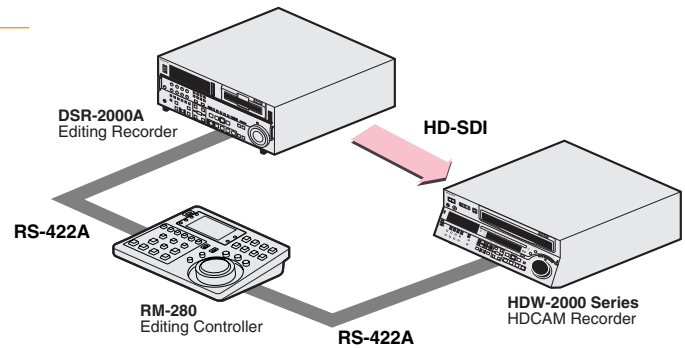
### SD-based Linear Editing System

- Easier edit control using the optional RM-280 Editing Controller



### HD-SDI-based Linear Editing System

- SD-originated material can be edited in HD-based editing environment

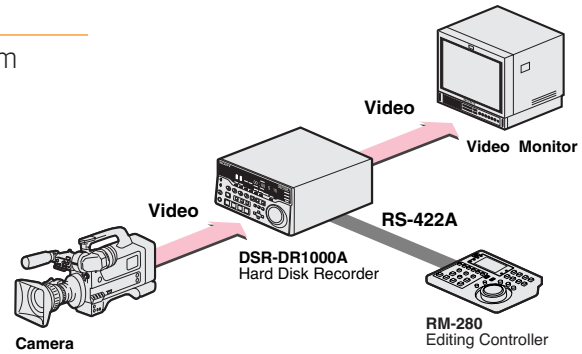


## Application Examples

## Others

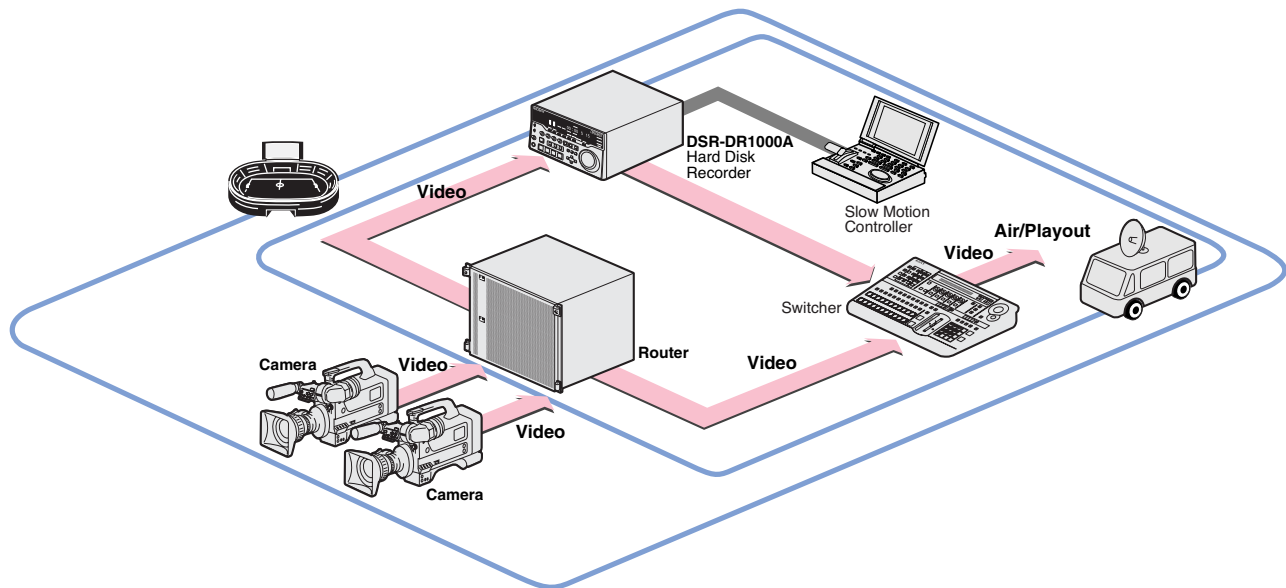
## Slow-motion Replay System

- Compact and affordable slow-motion replay system
- Simultaneous recording and playback
- Variable speed playback
- Variable pre-roll time



## Sports/Small OB-van Application

- Variable speed playback over the range of  $\pm 2$  times normal speed
- Simultaneous recording and playback
- Compact half-rack size



## Optional Accessories & Peripheral Equipment

• Some of the following accessories may not be available in certain countries. For details, please contact the nearest Sony office.



**BP-GL65/GL95**  
Lithium Ion Battery Pack

DSR-450WS DSR-400 DSR-250 DSR-50



**NP-F770**  
InfoLITHIUM Rechargeable  
Battery Pack

DSR-PD170



**NP-F970**  
InfoLITHIUM Rechargeable  
Battery Pack

DSR-PD170



**2NP-F970/B**  
InfoLITHIUM Rechargeable  
Battery Pack

DSR-PD170



**AC-DN10**  
AC Adaptor

DSR-450WS DSR-400



**AC-DN2B**  
AC Adaptor

DSR-450WS DSR-400 DSR-250



**AC-VQ1050B**  
AC Adaptor/Charger

DSR-PD170



**BC-M150**  
Battery Charger for  
BP-GL65/GL95

DSR-450WS DSR-400 DSR-250 DSR-50



**BC-L70**  
Battery Charger for  
BP-GL65/GL95

DSR-450WS DSR-400 DSR-250 DSR-50



**DXF-51**  
5-inch (viewable area measured diagonally) Monochrome  
Viewfinder

DSR-450WS DSR-400

\*When it is attached to the DSR-450WS/400, a mount bracket (A-8274-968-B) is required.



**RM-B750**  
Remote Control Unit

DSR-450WS



**RM-B150**  
Remote Control Unit

DSR-450WS



**VJ19x9BKRS**  
2/3-inch type Format  
19x Lens

DSR-450WS DSR-400



**A20x8.6BRM-SD**  
2/3-inch type Format  
20x Lens

DSR-450WS DSR-400



**VCT-1170RM**  
Video Tripod with  
Remote Control

DSR-PD170

## Optional Accessories & Peripheral Equipment



**VCT-U14**  
Tripod Adaptor

DSR-450WS DSR-400 DSR-250



**UWP-C1**  
Wireless  
Microphone Package

DSR-450WS DSR-400 DSR-250 DSR-PD170



**UWP-C2**  
Wireless  
Microphone Package

DSR-450WS DSR-400 DSR-250 DSR-PD170



**WRR-861A/861B**  
UHF Synthesized Tuner

DSR-450WS DSR-400

A-8278-057-A

\*When using the WRR-861A/861B, a mount bracket (A-8278-057-A) is required.



**WRR-855A/855B**  
UHF Synthesized Tuner

DSR-450WS DSR-400



**CA-WR855**  
Camera Adaptor for  
WRR-855A/855B

DSR-450WS DSR-400



**CAC-12**  
Microphone Holder

DSR-450WS DSR-400 DSR-250 DSR-PD170



**ECM-672/670**  
Electret Condenser  
Microphone

DSR-450WS DSR-400 DSR-250 DSR-PD170



**ECM-678**  
Electret Condenser  
Microphone

DSR-250 DSR-PD170



**LC-424TH**  
Hard Carrying Case

DSR-250



**LC-400BP**  
Carrying Case (Soft type)

DSR-450WS DSR-400



**LC-PD150BP**  
Soft Carrying Case for  
DSR-PD170

DSR-PD170



## Optional Accessories & Peripheral Equipment



**LC-PD170TH**  
Hard Carrying Case

DSR-PD170



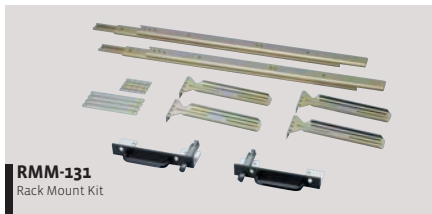
**FS-20**  
Foot Switch

DSR-50



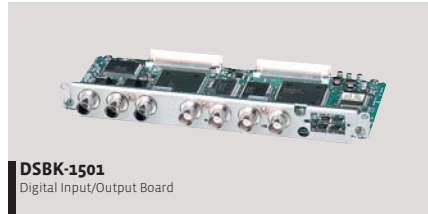
**DSRM-10**  
Remote Control Unit

DSR-1800A DSR-1600A DSR-1500A DSR-45A DSR-11  
DSR-50



**RMM-131**  
Rack Mount Kit

DSR-2000A DSR-1800A DSR-1600A



**DSBK-1501**  
Digital Input/Output Board

DSR-1500A



**DSBK-1505**  
Analog Input Board

DSR-1500A



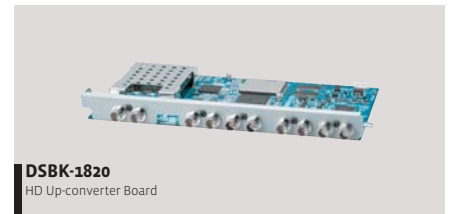
**DSBK-1601**  
SDI/AES/EBU Output Board

DSR-1600A



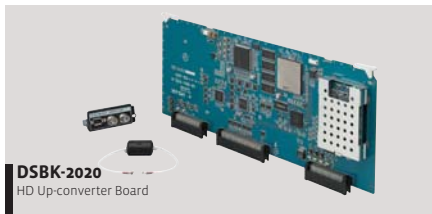
**DSBK-1801**  
SDI/AES/EBU Input/Output Board

DSR-1800A



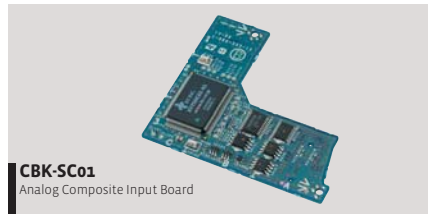
**DSBK-1820**  
HD Up-converter Board

DSR-1800A DSR-1600A



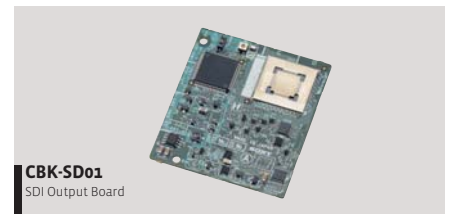
**DSBK-2020**  
HD Up-converter Board

DSR-2000A



**CBK-SC01**  
Analog Composite Input Board

DSR-450WS



**CBK-SD01**  
SDI Output Board

DSR-450WS



**RCC-5G**  
Remote Control Cable  
(5 m)

DSR-2000A DSR-1800A DSR-1600A DSR-1500A DSR-45A  
DSR-DR1000A



**PDV-64MEM/124MEM/184MEM**  
Digital Video Cassette  
(Master tape/Standard size)

DSR-450WS DSR-400 DSR-250 DSR-2000A DSR-1800A  
DSR-1600A DSR-1500A DSR-45A DSR-11 DSR-50



**PDVM-32MEM/40MEM**  
Digital Video Cassette  
(Master tape/Mini size)

DSR-450WS DSR-400 DSR-250 DSR-PD170 DSR-2000A  
DSR-1800A DSR-1600A DSR-1500A DSR-45A DSR-11  
DSR-50

## Optional Accessories & Peripheral Equipment



### PDV-34ME/64ME/94ME/124ME/184ME

Digital Video Cassette  
(Standard size)

DSR-450WS DSR-400 DSR-250 DSR-2000A DSR-1800A  
DSR-1600A DSR-1500A DSR-45A DSR-11 DSR-50



### PDVM-12ME/22ME/32ME/40ME

Digital Video Cassette  
(Mini size)

DSR-450WS DSR-400 DSR-250 DSR-PD170 DSR-2000A  
DSR-1800A DSR-1600A DSR-1500A DSR-45A DSR-11  
DSR-50



### PDV-34N/64N/94N/124N/184N

Digital Video Cassette  
(Non IC type/Standard size)

DSR-450WS DSR-400 DSR-250 DSR-2000A DSR-1800A  
DSR-1600A DSR-1500A DSR-45A DSR-11 DSR-50



### PDVM-12N/22N/32N/40N

Digital Video Cassette  
(Non IC type/Mini size)

DSR-450WS DSR-400 DSR-250 DSR-PD170 DSR-2000A  
DSR-1800A DSR-1600A DSR-1500A DSR-45A DSR-11  
DSR-50



### PDV-12CL

Cleaning Cassette Tape  
(Standard size)

DSR-450WS DSR-400 DSR-250 DSR-2000A DSR-1800A  
DSR-1600A DSR-1500A DSR-45A DSR-11 DSR-50



### PDVM-12CL

Cleaning Cassette Tape  
(Mini size)

DSR-450WS DSR-400 DSR-250 DSR-PD170 DSR-2000A  
DSR-1800A DSR-1600A DSR-1500A DSR-45A DSR-11  
DSR-50



### MSH-32/64/128/128S2

IC Recording Memory Stick Media  
(32 MB/64 MB/128 MB/256 MB)

DSR-450WS DSR-400 DSR-250 DSR-PD170



### RM-280

Editing Controller

DSR-2000A DSR-1800A DSR-1600A DSR-1500A DSR-45A  
DSR-50



### MFS-2000 Series

Multi-Formed Switchers



### MKS-8050/2050

Editing Keyboard



### BZS-8050

Editing Control Software



### MKS-2700

Device Control Unit

## Specifications (NTSC Models)

**DSR-450WS/DSR-400** Camcorders

	DSR-450WS	DSR-400
<b>General</b>		
Power requirements	DC 12 V (11 to 17 V)	
Power consumption	Approx. 17 W (with DC 12 V power supply, REC mode, viewfinder off, LCD monitor off)	
Operating temperature	+32 to +104 °F (0 to +40 °C)	
Storage temperature	-4 to +140 °F (-20 to +60 °C)	
Operating humidity	25 to 85%	
Weight	Approx. 14 lb 5 oz (6.5 kg) (with viewfinder, microphone, BP-GL65 battery, mini-size DVCAM cassette, VCL-917BY lens)	
Continuous operating time	Approx. 300 min. with BP-GL95 battery, REC mode	
<b>Signal inputs/outputs</b>		
Video inputs	Analog composite Genlock video	BNC, 1.0 Vp-p, 75 Ω (with the CBK-SC01)
Audio input (CH-1/2)		BNC, 1.0 Vp-p, 75 Ω XLR-3 (2), female, -60 dBu/+4 dBu, 10 kΩ, balanced
Microphone input		XLR-3, female, -60 dBu
Time code input		BNC, 0.5 to 18 Vp-p, 10 kΩ
Video outputs	SDI i.LINK Analog composite	BNC, 0.8 Vp-p, 75 Ω (with the CBK-SD01) i.LINK, 6-pin IEEE 1394-based BNC, 1.0 Vp-p, 75 Ω
Audio output (CH-1/2)		Pin-jacks (2), -10dBu, 47kΩ
Time code output		BNC, 1.0 Vp-p, 75 Ω
Monitor output		BNC, 1.0 Vp-p, 75 Ω
Earphone output		Mini-jack
<b>Other inputs/outputs</b>		
Lens		12-pin
VF		20-pin
Remote	8-pin	-
Wireless microphone		7-pin
Light		2-pin, DC 12 V, max. 50 W
DC input		XLR-4-pin, male, DC 11 to 17 V
DC output		4-pin (for wireless microphone receiver), DC 12 V (max. 0.2 A)
Battery terminal		5-pin
<b>Camera performance</b>		
Pickup device		3-chip 2/3-inch type Power HAD EX CCD
Aspect ratio	16:9/4:3 switchable	4:3
Total picture elements (H x V)		1038 x 1008
Effective picture elements (H x V)		980 x 988
Optical system		F1.4 prism (with quartz filter)
Spectral system		1: Clear, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND
Built-in filters		2/3-inch type Sony bayonet mount
Lens mount		NTSC color system
Electrical characteristics		NTSC color system
Signal system		525/59.94i
Scan format	525/59.94i, 525/29.97P, 525/23.976P	525/59.94i
Sync system		Internal and External with the VBS or BS signal
A/D conversion		12 bits
Sensitivity		F11 (typical) (2000 lx, 89.9% reflectance)
Minimum illumination	0.5 lx (F1.4 lens, +36 dB gain, shutter off) 0.03 lx (with slow shutter, 16 frames accumulation)	0.5 lx (F1.4 lens, +36 dB gain, shutter off)
Smear level		-140 dB (typical)
Video S/N ratio		65 dB (typical)
Horizontal resolution	850 TV lines (4:3 mode), 800 TV lines (16:9 mode)	920 TV lines
Vertical resolution	450 TV lines (with EVS) and 400 TV lines (without EVS) at 525/59.94i mode 485 TV lines at 525/29.97P and 525/23.976P modes	450 TV lines (with EVS), 400 TV lines (without EVS)
Shutter speed	1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 s at 525/59.94i mode 1/40, 1/60, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000 s at 525/29.97P mode 1/32, 1/48, 1/96, 1/125, 1/250, 1/500, 1/1000, 1/2000 s at 525/23.976 mode	1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 s
ECS	60 to 6000 Hz at 525/59.94i mode 30 to 7000 Hz at 525/29.97P mode 24 to 5000 Hz at 525/23.976P mode	60 to 6000 Hz
Slow shutter	1/30, 1/15, 1/10, 1/7.5, 1/6, 1/4.3, 1/3.8, 1/1.9 s (1 to 8, 16 frames)	-
Gain selection		-3, 0, 3, 6, 9, 12, 18, 24, 30, 36 dB (for GAIN LOW, GAIN MID, GAIN HIGH and GAIN TURBO positions)
<b>Video performance</b>		
Recording format	Video Audio	DVCAM/DV (SP) (25 Mb/s) 2 ch/16-bit/48 kHz, 2 ch/12-bit/32 kHz, 4 ch/12-bit/32 kHz (for use with a studio VTR)
Record/playback time		DVCAM: 184 min (with the PDV-184ME), DV SP: 276 min (with the PDV-184ME)
Fast forward time		Approx. 45 s (with the PDVM-40ME), approx. 2 min 30 s (with the PDV-184ME)
Rewind time		Approx. 45 s (with the PDVM-40ME), approx. 2 min 30 s (with the PDV-184ME)
Recommended recording media		PDV-184ME/124ME/94ME/64ME/34ME/184N/124N/94N/64N/34N, PDVM-184ME/124ME/94ME/64ME/34ME/184N/124N/94N/64N/34N
Sampling frequency		Y: 13.5 MHz, R-Y/B-Y: 3.375 MHz
Quantization		8 bits
<b>Audio performance</b>		
Frequency response		48 kHz: 20 Hz to 20 kHz +0.5/-1.0 dB, 32 kHz: 20 Hz to 14.5 kHz +0.5/-1.0 dB
Dynamic range		More than 80 dB
Distortion (at 1 kHz, emphasis ON, reference level)		Less than 0.12% (at 1 kHz, reference level, 48 kHz)
<b>Built-in LCD monitor</b>		
		2.5-inch (viewable area measured diagonally) type color LCD monitor, resolution: 214,000 (964 x 222) pixels
<b>Viewfinder</b>		
CRT		1.5-inch type monochrome
Indicators		REC TALLY (2), TAKE TALLY, BATT, SHUTTER, GAIN UP
Horizontal resolution		600 TV lines
<b>Microphone</b>		
		Electret condenser microphone (detachable)
<b>Eco-info</b>		
		Lead-free solder is used for soldering all the parts including circuit component electrodes. Halogenated flame retardants are not used in the printed wiring boards.(100%)
<b>Supplied Accessories</b>		
		DXF-801 Viewfinder, Microphone, VCT-U14 Tripod Adaptor, Shoulder Strap, Lens Mount Cap, Test Chart for Flange Focal Length Adjustment, VCL-917BY Zoom Lens (DSR-400K Package)

## Specifications (NTSC Models)

# DSR-250/DSR-PD170 Camcorders

	DSR-250	DSR-PD170
<b>General</b>		
Power requirements	DC 12 V (11 V to 17 V)	DC 7.2 V (Battery), DC 8.4 V (AC adaptor)
Power consumption	10.5 W (with VF), 12.1 W (with VF and LCD)	4.7 W (with VF), 5.7 W (with VF and LCD)
Operating temperature	32 °F to 104 °F (0 °C to 40 °C)	
Storage temperature	-4 °F to 140 °F (-20 °C to 60 °C)	
Tape speed	Approx. 28.2 mm/s (DVCAM mode) Approx. 18.8 mm/s (DV SP mode)	
Recording/Playback time	184 minutes (DVCAM mode), 270 minutes (DV SP mode with PDV-184ME) 40 minutes (DVCAM mode), 60 minutes (DV SP mode with PDVM-40ME)	40 minutes (DVCAM mode) 60 minutes (DV SP mode, with PDVM-40ME)
Weight	Approx. 9 lb 11 oz (4.4 kg)	Approx. 3 lb 8 oz (1.6 kg)
Dimensions (W x H x D)	9 5/8 x 10 x 20 1/8 inches (214.7 x 251.25 x 508.8 mm) including microphone	5 1/4 x 7 1/8 x 18 inches (133 x 180 x 456 mm) including microphone
<b>Lens</b>		
Zoom	12:1 Variable Speed zoom lens F =6.0 to 72.0 mm; F1.6 to 2.4	
Filter diameter	2 3/8 inches (58 mm)	
Focus	Auto/Manual (ring)/Infinity/One push auto	
<b>Camera</b>		
Image device	Three 1/3-inch type CCDs, 380,000 pixels	
Signal system	EIA Standard, NTSC color system	
Scanning system	Progressive/Interlace Scan	
Horizontal resolution	530 TV lines	
Minimum illumination	2 lx	1 lx
Gain selection	+0, +3, +6, +9, +12, +15, +18 dB	
Shutter speed selection	1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000 s	
Exposure	Auto/Manual (Iris ring)	Auto/Manual (Iris dial)
White balance	Auto/One-push (Memory A, B)/Outdoor (5800 K)/Indoor (3200 K)	Auto/One-push/Outdoor (5800 K)/Indoor (3200K)
Viewfinder	1.5-inch (viewable area measured diagonally) black and white CRT, Zebra Pattern	180,000 dot Black & White LCD, Zebra Pattern
Built-in microphone	—	
Built-in speaker	Dynamic speaker	
LCD	TFT Active Matrix, 2.5-inch (viewable area measured diagonally) type, 200,640 dots (880 x 228)	Hybrid, 2.5-inch (viewable area measured diagonally) type, 211,200 dots (960 x 220)
Memory card slot	Memory Stick media (optional) Recording signals: Camera signals, VTR signals Image compression: JPEG Image size: VGA (640 x 480)	
<b>Input/Output Connectors</b>		
Signal inputs/outputs	Video IN/OUT: RCA pin x 1 Y: 1 Vp-p, 75, unbalanced, sync negative Video OUT: BNC pin x 1 Y: 1 Vp-p, 75 Ω, unbalanced, sync negative Audio IN/OUT: RCA pin x 2, 245 mV, Output impedance with less than 2.2 k, Input impedance with more than 47 kΩ S-Video IN/OUT: Mini-DIN 4 pin x 1, Y: 1 Vp-p, 75, unbalanced C: 0.286 Vp-p Audio IN: XLR 3-pin (female) x 3, -60 dBu, 6.8 kΩ, +4 dBu, 6.8 kΩ (0 dBu = 0.775 V rms) i Link (DV): 6 pin (with lock) x 1	Video IN/OUT: RCA pin x 1 Y: 1 Vp-p, 75, unbalanced, sync negative Audio IN/OUT: RCA pin x 2, 327 mV Output impedance with less than 2.2 k Input impedance with more than 47 kΩ S-Video IN/OUT: Mini-DIN 4 pin x 1 Y: 1 Vp-p, 75, unbalanced C: 0.286 Vp-p (NTSC) Audio IN: XLR 3-pin female, x 2 -60 dBu, 3 k, +4 dBu, 10 k (0 dBu = 0.775 V rms) i.LINK (DV): 4-pin x 1
Others	LANC: Stereo mini-mini jack (0.25 mm) x 1 Headphone: Stereo mini jack (0.35 mm) x 1 External DC IN: 8.4 V for AC-L10 AC adaptor DC OUT for Light: 12 V, max. 30 W DC OUT: 12 V, 4 pin	LANC: Stereo mini-mini jack (0.25 mm) x 1 Headphone: Stereo mini jack (0.35 mm) x 1 External DC IN: 8.4 V for AC-L10 AC adaptor
<b>Supplied Accessories</b>		
	ECM-NV1 Monaural Microphone RMT-811 Remote Commander Unit and R6 Batteries (2) Hood Cap	ECM-NV1 Monaural Microphone AC-L15 AC Adaptor NP-F570 InfoLITHIUM Rechargeable Battery Pack RMT-811 Remote Commander Unit and B6 Batteries (2) VCL-HG0758 Wide Conversion Lens LSF-S58 Lens Hood for Wide Conversion Lens and Hood Cap Lens Hood with Built-in Lens Cap Carrying Belt i.LINK Cable Strap Stereo AV Cable

## Specifications (NTSC Models)

**DSR-2000A/DSR-1800A/DSR-1600A/DSR-1500A** Studio VTRs

	DSR-2000A	DSR-1800A	DSR-1600A	DSR-1500A
<b>General</b>				
Power requirements	AC 100 V to 240 V, 50/60 Hz			
Power consumption (Max.)	120 W	100 W	70 W	55 W
Operating temperature	41 °F to 104 °F (5 °C to 40 °C)			
Storage temperature	-4 °F to 140 °F (-20 °C to 60 °C)			
Operating humidity	Less than 80%			
Storage humidity	Less than 90%			
Tape speed	28,193 mm/s			
Recording/Playback time	Standard size: 184 min.(DVCAM mode), 276 min.(DV SP mode)* with PDV-184ME/184N/184MEM, Mini size: 40 min.(DVCAM mode), 60 min.(DV SP mode)* with PDVM-40ME/40N/40MEM			
Fast forward/Rewind time	Standard size: Less than 3 min. with PDV-184ME/184N/184MEM, Mini size: Less than 1 min. with PDVM-40ME/40N/40MEM			
Search speed	Shuttle mode: still to $\pm 60$ times normal speed Digital slow mode: $\pm 1$ times normal speed		Shuttle mode: still to $\pm 60$ times normal speed Digital slow mode: $\pm 0.5$ times normal speed	
Weight	39 lb 10 oz (18 kg)	28 lb 10 oz (13 kg)		13 lb 3 oz (6 kg)
Dimensions (W x H x D, excluding projections)	16 7/8 x 7 x 19 5/8 inches (427 x 175 x 495.5 mm)	16 7/8 x 6 7/8 x 15 3/4 inches (427 x 174 x 400 mm)		8 3/8 x 5 1/8 x 16 5/8 inches (210 x 130 x 420 mm)
<b>Video Performance</b>				
Bandwidth Luminance (via analog component I/O)	30 Hz to 5.0 MHz $\pm 1.0$ dB 5.75 MHz $\pm 0/-3.0$ dB (Typical measurement)	30 Hz to 5.0 MHz $\pm 1.0$ dB		30 Hz to 5.0 MHz $\pm 1.0/-1.5$ dB
Chrominance	30 Hz to 1.5 MHz $\pm 1.0/-5.0$ dB			
S/N ratio (via analog component I/O)	More than 55 dB			
K-factor (K2T, KPb)	Less than 2.0%			
Y/C delay	Less than 30 ns			
<b>Audio Performance</b>				
Frequency response	20 Hz to 20 kHz $\pm 0.5/-1.0$ dB		20 Hz to 20 kHz $\pm 1.0$ dB	
2 CH mode (48 kHz/16-bit)	20 Hz to 14.5 kHz $\pm 0.5/-1.0$ dB		20 Hz to 14.5 kHz $\pm 1.0$ dB	
4 CH mode (32 kHz/12-bit)	More than 90 dB		More than 87 dB	
Dynamic range	Less than 0.05%		Less than 0.07%	
Distortion (THD+N)				
<b>Video Signal Inputs</b>				
<b>Analog</b>				
Ref. Video (BNC x2, loop-through connection)	0.286 Vp-p, 75 $\Omega$ , sync negative Black Burst		—	0.286Vp-p, 75 $\Omega$ , sync negative
Video (BNC x2, loop-through connection) **	Composite, 1.0 Vp-p, 75 $\Omega$ , sync negative		—	Composite, 1.0 Vp-p, 75 $\Omega$ , sync negative
Component Y	1.0 Vp-p, 75 $\Omega$ , sync negative		—	1.0 Vp-p, 75 $\Omega$ , sync negative
(BNC x3) ** R-Y	0.7 Vp-p, 75 $\Omega$ (75 %)		—	0.7 Vp-p, 75 $\Omega$ (75 %)
B-Y	0.7 Vp-p, 75 $\Omega$ (75 %)		—	0.7 Vp-p, 75 $\Omega$ (75 %)
S-Video **	DIN 4-pin x1 Y: 1.0 Vp-p, 75 $\Omega$ , sync negative C: 0.286 Vp-p, 75 $\Omega$ (at burst level)		—	BNC x2 Y: 1.0 Vp-p, 75 $\Omega$ , sync negative C: 0.286 Vp-p, 75 $\Omega$ (at burst level)
Digital				
SDI ** <sup>3,5</sup>	BNC x2, active-through connection Conforms to Serial Digital Interface (270 Mb/s), SMPTE 259M		—	BNC x1 Conforms to Serial Digital Interface (270 Mb/s), SMPTE 259M
SDTI (QSDI) (BNC x1) **	Conforms to SDTI (270 Mb/s), SMPTE 305M/322M		—	Conforms to SDTI (270 Mb/s), SMPTE 305M/322M
i.LINK (DV) (6-pin x1)	IEEE1394		—	IEEE1394
<b>Audio Signal Inputs</b>				
<b>Analog</b>				
Audio **	XLR 3-pin female x4 -6/0/+4 dBu, 600 $\Omega$ on/off/-60 dBu, high impedance		—	XLR 3-pin female x2 -6/0/+4 dBu, high impedance
Digital				
AES/EBU ** <sup>3,5</sup>	BNC x2 75 $\Omega$ , unbalanced		—	BNC x2 75 $\Omega$ , unbalanced
<b>Video Signal Outputs</b>				
<b>Analog</b>				
Ref. Video (BNC x1)	0.286 Vp-p, 75 $\Omega$ , sync negative		—	—
Video	Video 1/2/3(SUPER) BNC x3	Video 1/2(SUPER) BNC x2	Video 1/2/3 (SUPER) BNC x3	
Component (BNC x3)	Y: 1.0 Vp-p, 75 $\Omega$ , sync negative, R-Y: 0.7 Vp-p, 75 $\Omega$ (75 %), B-Y: 0.7 Vp-p, 75 $\Omega$ (75 %)			
S-Video	DIN 4-pin x1 Y: 1.0 Vp-p, 75 $\Omega$ , sync negative C: 0.286 Vp-p, 75 $\Omega$ (at burst level)		BNC x2	
Digital				
SDI ** <sup>3,5</sup>	BNC x3		BNC x2	
SDTI (QSDI) **	BNC x1		Conforms to Serial Digital Interface (270 Mb/s), SMPTE 259M	
HD-SDI (BNC x 2) ** <sup>5,6</sup>	Conforms to Serial Digital Interface (1.485 Gb/s), SMPTE 292			
i.LINK (DV) (6-pin x1)	IEEE1394			
<b>Audio Signal Outputs</b>				
<b>Analog</b>				
Audio	XLR 3-pin male x4 -6/0/+4 dBu (selectable by menu) 600 $\Omega$ , loading, low impedance, balanced		XLR 3-pin male x2	
Monitor	Phono x1 -11 dBu, 47 k $\Omega$ , unbalanced (-20 dBFS)		- $\infty$ to -11 dBu, 47 k $\Omega$ , unbalanced (-20 dBFS)	
Headphone (JM-60 headphone jack x1)	- $\infty$ to -13 dBu, 8 $\Omega$ , unbalanced (-20 dBFS)			
Digital				
AES/EBU ** <sup>3,5</sup>	BNC x2 75 $\Omega$ , unbalanced			
<b>Time Code Input/Output</b>				
In (BNC x1)	0.5 Vp-p to 18 Vp-p, 3.3 k $\Omega$ , unbalanced			
Out (BNC x1)	1.2 Vp-p, 75 $\Omega$ , unbalanced			
<b>Remote</b>				
	RS-422A: D-sub 9-pin female x2 Video Control: D-sub 15-pin male x1 Control Panel: D-sub 15-pin female x1	RS-422A: D-sub 9-pin female x1 Video Control: D-sub 15-pin male x1 Control S (SIRCS): Stereo mini jack x1	RS-422A: D-sub 9-pin female x1 Control S (SIRCS): Stereo mini jack x1	
<b>Supplied Accessories</b>				
	AC Power Cord RCC-5G 9-pin Remote Control Cable Operating Instructions (CD-R)	AC Power Cord Operating Instructions (CD-R)	AC Power Cord CD-R (Operating Instructions)	

\* The DSR-1500A only for recording and playback.

\*1: The optional DSBK-1505 is required for the DSR-1500A.

\*2: The optional DSBK1801 is required for the DSR-1800A.

\*3: The optional DSBK1501 is required for the DSR-1500A.

\*4: The optional DSBK-1601 is required for the DSR-1600A.

\*5: The optional DSBK-1820 is required for the DSR-1600A/DSR-1800A.

\*6 The optional DSBK-2020 is required for the DSR-2000A.

## Specifications (NTSC Models)

**DSR-45A/DSR-11** Studio VTRs

	DSR-45A	DSR-11
<b>General</b>		
System	NTSC	NTSC/PAL Switchable
Power requirements	AC100 to 240V, 50 to 60Hz	AC100 to 240V, 50 to 60Hz
Power consumption	22 W	15 W
Operating temperature	41 °F to 104 °F (5 °C to 40 °C)	
Storage temperature	-4 °F to 140 °F (-20 °C to 60 °C)	
Tape speed	DVCAM mode	8.2 mm/s
	DV SP mode	18.8 mm/s
Recording/ Playback time in DVCAM mode	Standard size	184 min. with PDV-184ME/184N/184MEM
	Mini size	40 min. with PDVM-40ME/40N/40MEM
Tape rewind time	Less than 2 min. with PDV-184ME/184N/184MEM	
Search speed	When controlling via optional DSRM-10: or supplied RMT-DS5 ± x1/10, x1/3, x1,x2,x9, x14 (DVCAM) ± x1/10, x1/3, x1,x2,x9, x24 (DV SP)	When controlling via optional DSRM-10 or supplied RMT-DS11: ± x1/10, x1/3, x1,x2,x9, x14 (DVCAM NTSC) ± x1/10, x1/3, x1,x2,x9, x24 (DV SP NTSC)
Weight	Approx. 10 lb 2 oz (4.6 kg)	Approx. 6 lb 2 oz (2.8 kg)
Dimensions (W x H x D, including projections)	8 3/8 x 3 7/8 x 15 1/2 inches (212 x 98 x 392.8 mm)	7 1/8 x 2 7/8 x 10 1/2 inches (180 x 73 x 265 mm)
<b>Video Signal Inputs</b>		
Rec mode	DVCAM/DV (SP mode only)	DVCAM/DV (SP mode only)
PB mode	DVCAM/DV (SP mode only)	
Ref. Video	BNC x1** Black burst: 75 Ω, sync negative	—
Composite	BNCx1(Shared with REF IN) 1.0Vp-p, 75 Ω, Sync Negative	PIN Jack x1 1.0Vp-p, 75 Ω, Sync Negative
S-Video	4-pin mini DIN (x1) Y: 1.0Vp-p, 75 Ω, Sync Negative C: 0.286Vp-p (subcarrier burst) 75 Ω	4-pin mini DIN (x1) Y: 1.0Vp-p, 75 Ω, Sync Negative C: 0.286Vp-p (NTSC Mode)(subcarrier burst)
Component	BNC x3 Y: 1.0 Vp-p, 75 Ω, sync negative R-Y/B-Y: 0.7 Vp-p, 75 Ω, (with 75 % color bar)	—
<b>Audio Signal Inputs</b>		
Audio	PIN Jack x4 -10/-2/+4 dBu (full bits -20dB)	PIN Jack (L/R x1) 2 Vrms (full bits)
<b>Video Signal Outputs</b>		
Composite	BNCx1 1.0Vp-p, 75 Ω, Sync Negative	PIN Jack x1 1.0Vp-p, 75 Ω, Sync Negative
S-Video	4-pin mini DIN (x1) Y: 1.0Vp-p, 75 Ω, Sync Negative C: 0.286Vp-p (subcarrier burst) 75 Ω	4-pin mini DIN (x1) Y: 1.0Vp-p, 75 Ω, Sync Negative C: 0.286Vp-p (NTSC Mode)(subcarrier burst)
Component	BNC x3, Y: 1.0 Vp-p, 75 Ω, sync negative R-Y/B-Y: 0.7 Vp-p, 75 Ω, (with 75 % color bar)	—
Monitor	PIN Jackx1, 1.0Vp-p, 75 Ω, Sync Negative	—
<b>Audio Signal Outputs</b>		
Audio	XLR 3pin x4 (Male) +4dBu(full bits -20dB) (***)	PIN Jack (L/R x1) 2 Vrms (full bits)
Monitor	PIN Jack x1, 2 Vrms (maximum)	—
<b>Digital Input/Output</b>		
i.LINK (DV)	4-pin x1, IEEE1394	
<b>Time Code Input/Output</b>		
In	BNC x1, 0.5 to 18 Vp-p (time code input), 0.5 to 4 Vp-p (through output)	—
Out	BNC x1, 2.2 Vp-p, 600 Ω/1.2 Vp-p, 75 Ω, 0.5 to 4 Vp-p (through output)	—
<b>Others</b>		
LCD Monitor	LANC: Stereo mini-mini jack x1 Control S** (SIRCS) In: Stereo mini jack x1 Headphone: Stereo mini jack x1 RS-422A: D-sub 9-pin female x1 RS-232C: D-sub 9-pin male x1 2.5-inch (viewable area measured diagonally) type, 123,200 dots	LANC: Stereo mini-mini jack x1 Control S** (SIRCS): Stereo mini jack x1
<b>Supplied Accessories</b>		
	RMT-DS5 Wireless Remote Controller Size AA (R6) Battery for Remote (2) AC Power Cord Cleaning Cassette Operating Manual Interface Manual for Programmers (RS-232C)	RMT-DS11 Wireless Remote Controller Size AA (R6) Batteries for Remote (2) AC Adaptor, Power Cord Cleaning Cassette Operating Manual Rack

\*1 Shared between composite IN and REF-IN.  
\*3 Recommended remote control unit: DSRM-10

\*2 The audio output level of the DSR-45A will be reduced by half when connected to an Unbalanced XLR input device.  
\*4 Priority on front LANC.



## DSR-50 Portable Recorder

General	
System	NTSC
DC input	XLR 4-pin (male), +12 V
Power consumption	15 W
Operating temperature	41 °F to 104 °F (5 °C to 40 °C)
Storage temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Tape speed	Approx. 28.2 mm/s (DVCAM mode), Approx. 18.8 mm/s (DV SP mode)
Recording/Playback time	184 minutes (DVCAM mode), 270 minutes (DV SP mode), with PDV-184ME cassette 40 minutes (DVCAM mode), 60 minutes (DV SP mode), with PDVM-40ME cassette
Weight	8 lb 9 oz (3.9 kg), excluding battery and tape
Dimensions (W x H x D)	9 3/4 x 3 3/4 x 12 1/4 inches (247 x 92.5 x 311 mm), excluding projections 11 x 4 x 12 1/2 inches (279 x 99 x 315 mm), including projections
Video	
Recording mode	DVCAM/DV (SP mode only)
Playback mode	DVCAM/DV (SP mode only)
Audio	
Recording mode	48.0 kHz/16-bit (2CH)/ 32.0 kHz/12-bit (4CH)/automatic (DV IN)
Playback mode	48.0 kHz/16-bit (2CH)/32.0 kHz/12-bit (4CH) 32.0 kHz/16-bit (2CH)/44.1 kHz/16-bit (2CH) (automatically selected)
Input/Output Terminals	
Video IN Composite	1.0 Vp-p, 75 Ω, Sync negative
S (4-pin mini DIN)	Y: 1.0 Vp-p, 75 Ω, Sync negative C: 0.286 Vp-p (subcarrier burst) 75 Ω

Audio IN	XLR 3-pin (female) (+4 dBu/-20 dBu/-60 dBu) x 4, impedance more than 3 kΩ with +48 V power supply (independently switched for each channel)
Camera IN	26-pin camera connector
Composite	1.0 Vp-p, 75 Ω, Sync negative
Component	Y: 1.0 Vp-p, 75 Ω, Sync negative B-Y: 0.7 Vp-p, 75 Ω, R-Y: 0.7 Vp-p, 75 Ω
Reference IN	BNC, Black Burst 75 Ω, Sync negative (use Video IN)
Video OUT 1 (Monitor) Composite	BNC, 1.0 Vp-p, 75 Ω, Sync negative Superimpose On/Off
Video OUT 2 Composite	BNC, 1.0 Vp-p, 75 Ω, Sync negative
S (4-pin mini DIN)	Y: 1.0 Vp-p, 75 Ω, Sync negative C: 0.286 Vp-p (subcarrier burst) 75 Ω
Component OUT	BNC x 3 Y: 1.0 Vp-p, 75 Ω, Sync negative B-Y/R-Y: 0.7 Vp-p, 75 Ω
Audio OUT	PIN Jack x 4, -10 dBu Standard output level -20 dB from full bit
Audio OUT (Monitor)	PIN Jack
DV IN/OUT	6-pin (with lock)
Timecode IN	BNC, 0.5 to 18 Vp-p, 10 kΩ
Timecode OUT	BNC, 2.2 Vp-p, 600 Ω/1.2 Vp-p, 75 Ω
Control S	Stereo mini jack
Remote	Stereo mini jack (Edge High/Edge Low/Level High/Level Low) (Tally)
Control	Stereo mini-mini jack (compatible with LANC as a player)
Headphone jack (left side)	Stereo standard jack, -19 dBu, with Level Control
Other	
Color LCD monitor	2.5-inch (viewable area measured diagonally) type, 200,000 dots
Supplied accessories	LCD Protection Cover, Cleaning Cassette

## DSR-DR1000A Hard Disk Recorder

General	
Power requirements	AC 100 V to 240 V, 50/60 Hz
Power consumption	75 W
Operating temperature	41 °F to 104 °F (5 °C to 40 °C)
Storage temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Operating humidity	Less than 80%
Storage humidity	Less than 90%
Weight	16 lb 10 oz (7.5 kg)
Dimensions (W x H x D)	8 3/8 x 5 1/8 x 16 5/8 inches, without projection (210 x 130 x 422 mm)
Recording/playback time	12 hours
Video Performance	
Bandwidth (via analog component I/O)	Luminance 30 Hz to 5.0 MHz ±1.0 Chrominance 30 Hz to 1.5 MHz +1.0/-5.0 dB
S/N ratio (via analog component I/O)	More than 54 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 ±1.0 dB 4CH mode (32 kHz/12-bit) 20 Hz to 14.5 kHz ±1.0 dB
Dynamic range	More than 87 dB
Distortion (THD + N)	Less than 0.07% (48 kHz)
Video Signal Inputs	
Analog	
REF: Video (BNC x 2)	0.286 Vp-p, 75 Ω sync negative
Composite Video (BNC x 2), loop-through connection <sup>1</sup>	1.0 Vp-p, 75 Ω sync negative
Component (BNC x 3) <sup>1</sup>	Y: 1.0 Vp-p, 75 Ω, sync negative R-Y: 0.7 Vp-p, 75 Ω (75% color bar) B-Y: 0.7 Vp-p, 75 Ω (75% color bar)
S-Video (BNC x 2) <sup>2</sup>	Y: 1.0 Vp-p, 75 Ω, sync negative C: 0.286 Vp-p, 75 Ω (at burst level)
Digital	
SDI (BNC x 2)	Conforms to Serial Digital Interface (270 Mb/s), SMPTE259M
i.LINK (DV)(6-pin x 1)	IEEE 1394-based

Audio Signal Inputs	
Analog	
Audio (XLR 3-pin female x 2)	-6/0/+4 dBu (selectable by menu), high impedance
Digital	
AES/EBU (BNC x 2)	75 Ω, unbalanced
Video Signal Outputs	
Analog	
Composite 1/2(SUPER) (BNC x 2) <sup>2</sup>	1.0 Vp-p, 75 Ω, sync negative
Component (BNC x 3) <sup>2</sup>	Y: 1.0 Vp-p, 75 Ω, sync negative R-Y: 0.7 Vp-p, 75 Ω (75% color bar) B-Y: 0.7 Vp-p, 75 Ω (75% color bar)
S-Video (BNC x 2) <sup>2</sup>	Y: 1.0 Vp-p, 75 Ω, sync negative C: 0.286 Vp-p, 75 Ω (at burst level)
Digital	
SDI (BNC x 2)	Conforms to Serial Digital Interface (270 Mb/s), SMPTE259M
i.LINK (DV) (6-pin x 1)	IEEE 1394-based
Audio Signal Outputs	
Audio (Analog)	
Audio (XLR 3-pin male x 2)	-6/0/+4 dBu (selectable by menu)
Monitor (RCA x 1) <sup>3</sup>	-∞ to -11 dBu, 47kΩ, unbalanced (-20 dBFS)
Headphone	-∞ to -13 dBu, 8Ω, unbalanced (-20 dBFS)
JM-60 headphone jack x 1)	
Audio (Digital)	
AES/EBU (BNC x 2)	75 Ω, unbalanced
Time Code	
Time Code In (BNC x 1)	0.5 Vp-p to 18.0 Vp-p, 3 kΩ, unbalanced
Time Code Out (BNC x 1)	2.2 Vp-p, 600 Ω, unbalanced
Remote	
RS-422A	D-sub 9-pin, female x 2
Control	Mini jack x 1
Network	
Ethernet (x 1)	10/100 Base-T Ethernet, RJ-45 modular jack
Supplied Accessories	
AC power cord x 1, RM-LG2 (Remote Control Unit) x 1, Operation manual (CD-ROM) x 1, Warranty card x 1	

<sup>1</sup>1: Composite, Component and S-video inputs share the same BNC connectors.

<sup>2</sup>2: Composite, Component and S-video outputs share the same BNC connectors.

<sup>3</sup>3: The volume of monitor can be controlled by the PHONE LEVEL control knob.

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**SONY**

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