HDV Product Range 2008

SONY

www.sonybiz.net/hdv

PROGRESSIVE **HDV**

HDV 1080i

Compact and Cost-Effective HD Acquisition, Recording and Playback

Now With a New Generation of HDV Products for Further Flexibility.

The rapid transition to HD programming in broadcasting and post-production has created tremendous demand for an entry-level path into the HD world. Sony responded to this demand with the introduction of an exciting range of Digital HD products. They adopt the 1/4-inch HD format – the HDV 1080i specification of the HDV format – while maintaining the DVCAM/DV recording and playback capabilities provided on Sony's current market-acclaimed DVCAM models. What's more, they all offer a down-conversion capability of their 1080i recordings.

These features allow these products to be active immediately in current SD systems, while also providing a step-by-step migration to the HD world. Operators can continue to work in DVCAM or DV and switch to HDV as needed, or work in HDV 1080i from the start and use the down-conversion capability as required.

In 2008, Sony is proud to introduce two new HDV camcorders that deliver the enhanced choice professionals have been waiting for: an interchangeable lens system, native progressive recording and solid-state memory recording. Introducing the HVR-Z7E, the world's first HDV handheld camcorder that uses 1/3-inch bayonet joint interchangeable lenses and the HVR-S270E shoulder-mount camcorder which supports standard size cassettes for extended recording times. A streamlined non-linear editing workflow can be achieved using the supplied Memory Recording Unit, which provides HDV/DVCAM/DV file recording on a professional CF solid-state memory card. These groundbreaking new camcorders feature the 1080/25p HDV native progressive recording mode and they also have HDMI or HD/SD-SDI output. This next-generation system features the HVR-M35E Video Cassette Recorder which has HD/SD-SDI output. These new solutions enhance the operational versatility of Sony's professional HDV line-up.

Sony's professional HDV products are aimed at professional videographers, documentary makers and feature film makers working to tight budgets. HDV is also an increasingly attractive option for mainstream broadcasters and corporate programme makers needing to acquire HD content in restricted or hard-to-reach locations. HDV also serves as an ideal source for contributing HD content into an HDCAM production environment. The format's quality, versatility and low operational costs also extend its appeal to educational establishments and hire companies.

The new models will only serve to increase the breadth of Professional HDV.

HDV Format

From the outset, the HDV 1080i specification of the HDV format has been developed to record stunning HD images with 1080 active scanning lines on DV-specification cassette tapes. It adopts the MPEG-2 compression format, using 8-bit digital component recording at approximately 25 Mb/s, which is the same data rate as the DVCAM/DV format, enabling a long recording time on compact DV cassettes.

For example, more than 60 minutes of high-quality HD images can be recorded on a mini DV cassette. As with the DVCAM and DV formats, the HDV format allows an i.LINK connection to compatible non-linear editors, enabling a cost-effective HD production system. The sheer volume of HDV 1080i professional and consumer equipment used around the world is a clear indication that HDV 1080i has become one of the most popular HD formats.

Note: Although not used in Sony's HDV products, the HDV format also defines the HDV 720p specification, which features 720 effective scanning lines (progressive scanning system).

Digital Master™ Tape – The Perfect Media for HDV

The HDV specification includes two types of HD recording – 720p at a video bit rate of 19Mbps or 1080i at a rate of 25Mbps – allowing output of either SD or HD signals for effortless integration into any existing production system. Digital Master tape has been designed and tested with HDV VTRs for outstanding performance.

Understanding Digital Master Tape

Designed for any MiniDV, DVCAM or HDV camcorder, Digital Master tape is unique. It's the only professional video tape with not one but two active magnetic layers for 80% fewer errors than HDV consumer tape. Digital Master protects your precious films and images better than any other DV media from damaging dropouts and the adverse effects of dusty or smoky environments, temperature and humidity changes, repeated playback or extended time in pause mode.

Long Recording Time

The HDV format adopts the same track pitch and tape speed as the DV format, thus offering the same recording time – a maximum of 63 minutes on a mini videocassette or a maximum of 276 minutes on a large shell videocassette such as Digital Master tape (see diagram below).
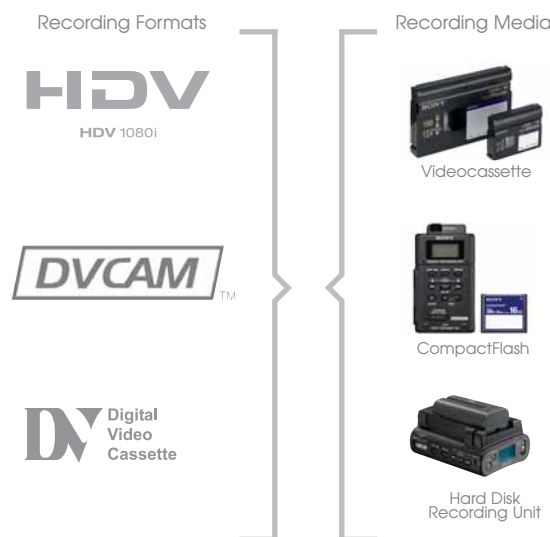
Hybrid Solid State Recording

Along with traditional tape recording, the new HVR line-up includes models supplied with a CompactFlash memory recording unit offering either HDV, DVCAM or DV stream capture and speeding up NLE workflow. Along with the HVR-DR60 HDD recorder for existing models, only Sony offers unique and flexible hybrid recording options.
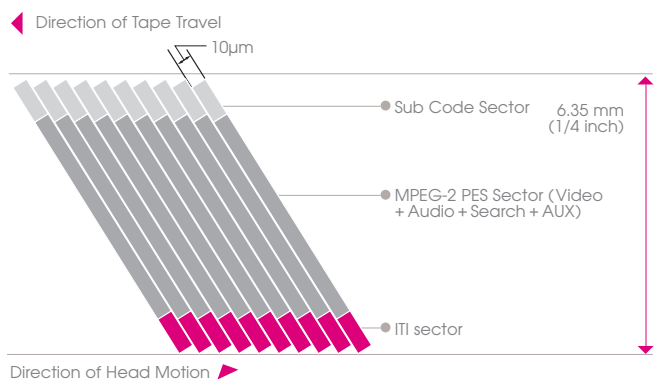
Designed for Professional Use

As a professional, Sony recognises that your needs are different to those of a consumer. As a result, Sony's professional HDV range incorporates more functions over the consumer products to help support you and your production needs. For example:

> DVCAM Support
> Viewfinder B/W and Colour Selectable
> White Balance Outdoor Level Shift
> XLR Connectors and Mic Power Supply

Flexible Recording Media

Recording Formats

HDV 1080i

DVCAM™

DV Digital Video Cassette

Recording Media

Videocassette

CompactFlash

Hard Disk Recording Unit

Long Recording Time: Track Pattern of the HDV 1080i Specification

◄ Direction of Tape Travel

10μm

Sub Code Sector — 6.35 mm (1/4 inch)

MPEG-2 PES Sector (Video + Audio + Search + AUX)

ITI sector

Direction of Head Motion ►

ITI: Insert and Track Information PES: Packetised Elementary Stream

HVR-Z7E and HVR-S270E Common Features

New Line-up Expanding the HDV Format World

Sony's commitment to HDV has resulted in the remarkable evolution of cutting-edge technology equipment, such as the HVR-Z7E and HVR-S270E which use the popular HDV 1080i recording specification.

The HDV 1080i specification uses one of the "MPEG2 Long GOP" compression profiles. This highly efficient and robust "MPEG2 Long GOP" codec – which is also used in Sony's XDCAM HD and XDCAM EX series – enables users to record stunning-quality HD video.

The HVR-Z7E provides over 60 minutes[1] of recording time using miniDV videotape. While the HVR-S270E has the additional option of using standard size cassettes that provide over 4.5 hours[2] of continuous recording.

Native editing in the HDV format is supported by most of the popular NLE (non-linear editing) software manufacturers. Additionally, the HDV signals can be recorded as a file on non-tape media. For example, when using the supplied CompactFlash (CF) Memory Recording Unit, images can be stored on a CF card[3] for quick non-linear editing. The optional HVR-DR60 Hard Disk Recording Unit can be used in the same manner, with images being recorded on to its large-capacity 60GB hard drive, which provides 4.5 hours of recording time.

1 When Sony's recommended professional HDV tape DigitalMaster™ model PHDVM-63DM is used, approx. 63 min. recording time.

2 When Sony's recommended professional HDV tape DigitalMaster™ model PHDV-276DM is used, approx. 276 min. (4 hrs. 36 min.) recording time.

3 When Sony's recommended professional CF Card Model NCFD-8GP is used, approx. 36 min recording time.

PHDVM-63DM

PHDV-276DM

Memory Recording Unit (supplied)
(CF Card is not included)

HVR-DR60 (option)

Switchable Recording and Playback – HDV1080i/DVCAM/DV

The HVR-Z7E and HVR-S270E can switch between HDV 1080i, DVCAM and DV recording, providing full flexibility to record in either Standard Definition or High Definition depending on your production needs.

Built-in Down-converter for SD Production

The HVR-Z7E and S270E can convert material from 1080i down to 576i and output the video signals through its i.LINK interface and other SD output connectors. This allows users to edit recorded material with a compatible non-linear editing system using current DV editing software, as well as record SD signals to an external VTR.
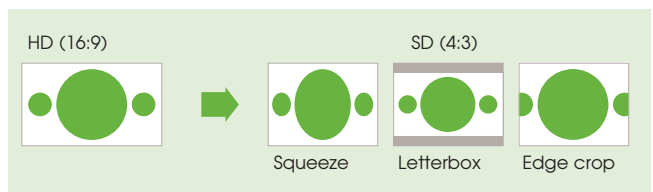
HD (16:9)   SD (4:3)

Squeeze   Letterbox   Edge crop

Note: Letterbox mode is not available from the i.LINK connector. i.Link is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact Sony's local office.

Cutting-edge Imaging System for New Camcorders

1/3 inch-type 3 ClearVid CMOS Sensor System

The newly developed 1/3-inch type 3 ClearVid CMOS Sensor™ system has 45-degree rotated pixels on each chip in order to increase the signal density, while each pixel maintains sufficient surface area.

In combination with Enhanced Imaging Processor™ (EIP), the 3 ClearVid CMOS Sensor system achieves high resolution, high sensitivity, wide dynamic range and excellent colour reproduction.

The pixel shift interpolation technique has been traditionally used in small 3CCD camcorders. However, it normally requires the combination of all three colour element (RGB) signals to maximise resolution. If an object lacks one or more colour elements, the resolution of the object may be degraded.

The 3 ClearVid CMOS Sensor system is different. It can always produce maximum resolution, regardless of the balance between colour elements, thanks to its unique and sophisticated interpolation technology.

Enhanced Functionality due to the "Exmor" Technology

Both the HVR-Z7E and HVR-S270E offer cutting-edge features, such as "Exmor™ " technology developed by Sony, which utilises the full potential of the 3 ClearVid CMOS Sensor system.

The "Exmor" technology, which features the column-parallel A/D conversion technique and the dual noise cancelling method are also used in other new camera products from Sony, such as the PMW-EX1.

Multiple A/D (analogue to digital) converters on each pixel row convert analogue signals to digital as soon as they are generated, unlike traditional technology that only has one A/D converter on each chip. The "Exmor" technology can eliminate the influence of external noise that enters the signal chain during transfer to the A/D converter, resulting in high-quality digital signals with extremely low noise. This significantly enhances shooting in low-light environments.

By adopting this groundbreaking technology, the new 1/3-inch 3 ClearVid CMOS Sensor system enables the HVR-Z7E and HVR-S270E to achieve a low light sensitivity of just 1.5 lux[1].

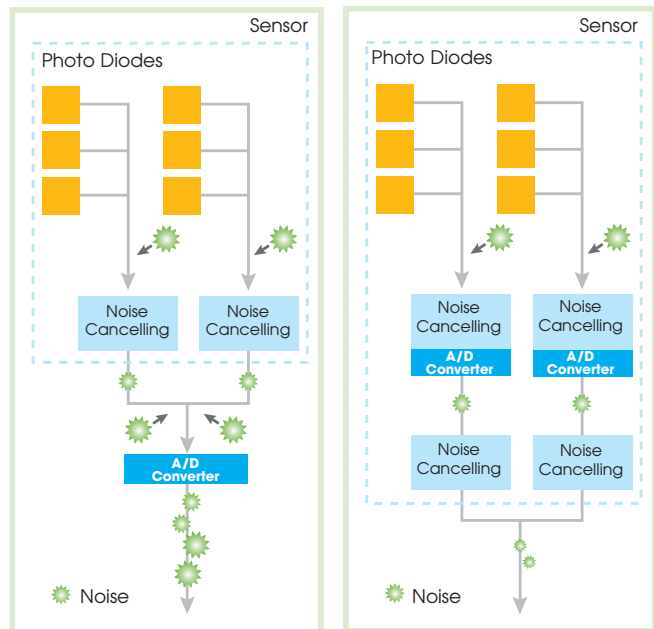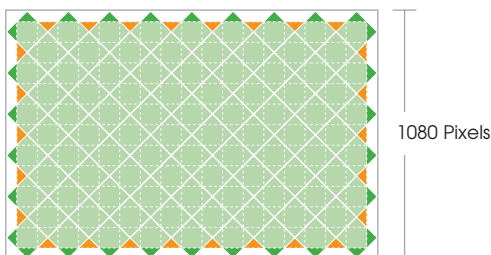1 At 1/25 shutter, auto iris and auto gain.

3 ClearVid CMOS Sensor

3 ClearVid CMOS sensor

Pixel Layout

1080 Pixels

◆ Pixels (Photo Diodes)

■ Signals after interpolation
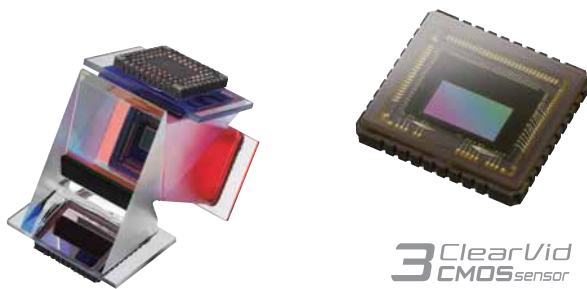
Enhanced Functionality

Exmor™

Current Technology

"Exmor" Technology

Interchangeable Lens System Offers Unlimited Possibilities

ZEISS

Various video lenses can be attached to the HVR-S270E and HVR-Z7E which are both equipped with a universal standard 1/3-inch bayonet mount mechanism for quick changing of lenses.

Carl Zeiss Lens for HD Video as Standard

A high-quality, multi-purpose Carl Zeiss lens for HD video comes as standard with the HVR-S270E and HVR-Z7E. Stunning resolution and contrast is achieved thanks to the Carl Zeiss Vario-Sonnar™ T* coating, which suppresses unwanted reflections. A specially designed wide-angle lens is also available as an option to suit a diverse range of shooting requirements.

Easy-to-use Interchangeable Lens for Fixed-lens Camcorder Users

These lenses give Sony's two new HDV camcorders the same functionality as popular fixed-lens camcorders like the HVR-Z1E and HVR-V1E, thanks to built-in features such as auto-focus, optical stabiliser and automatic back-focus adjustment. Current users of the above camcorders will easily become adept at using the HVR-Z7E and HVR-S270E, even if they have never used interchangeable lenses.

Lens		Optical Zoom	Focal Length[1]	F number
Standard lens (supplied)	VCL-412BWH (for HVR-Z7E) VCL-412BWS (for HVR-S270E)	12x	32mm–384mm (16:9)	1.6 – 2.0
Wide lens (option)	VCL-308BWH (for HVR-Z7E) VCL-308BWS (for HVR-S270E)	8x	24mm–192mm (16:9)	1.6 – 2.4

1 These values are calculated to be equivalent to 35mm film

Natural-touch Lens Operation

Focus

The newly-designed focus ring offers two types of manual focus, plus an auto focus mode that can be easily switched by sliding the focus ring forward or backward.

When the focus ring is in the front position, the lens works in the same way as the HVR-Z1E, HVR-V1E and DSR-PD170P. In this case, either manual or auto focus mode can be selected by the assignable button on the lens. On the other hand, when the focus ring is set to the rear position, the focus ring has a physical stop at infinity and works in the same way as a professional interchangeable lens, with fixed-focus-position and distance indicators.

Zoom

Fast, intuitive manual-zoom response is provided by an internal gearwheel mechanism that provides accurate zoom positioning. A high-quality servo-motor provides the smooth zooming performance that industry professionals have come to rely on.

Iris

The iris ring encircles the lens barrel. Manual iris adjustment is possible with an ENG-type ring system that allows fine exposure control for challenging lighting situations.

Wide Range of Lenses

The flexible bayonet lens attachment system allows you to use a wide range of lenses.

Standard 1/3-inch HD video lenses, from manufacturers such as Fujinon and Canon, can be attached directly to the HVR-Z7E and HVR-S270E.

If you'd like to attach a 2/3-inch or 1/2-inch HD video lens on the HVR-Z7E or HVR-S270E, it is possible to do so by adding a standard lens adaptor from the lens manufacturer.

The HVR-S270E and HVR-Z7E camcorders have 12-pin lens connectors allowing compatibility with professional ENG lenses. This feature is very useful, not only for those who already have these professional HD video lenses, but also for those who prefer to use HD digital cinema lenses for their unique contrast, colour and atmosphere.

α Lens Compatibility

With a special adaptor from Sony, it is also possible to use the α lens series designed for Sony's Digital SLR stills cameras. By using α lenses in various configurations, creative effects can be achieved.

This approach is ideal for filmmakers on a budget or those who already own α lenses.

Note:
The focal length is doubled with a 2/3-inch lens adaptor
The focal length is increased 1.3 times with a 1/2-inch lens adaptor
The focal length is increased 7 times with an α lens adaptor
Some lenses may not be compatible and not all lens functions may be available

Front : AF/MF ◄   ► Back : Full MF

AF/MF Mode
● Full AF
● MF with One-push AF

Full MF Mode
● Full MF (absolute focus position)

Iris Ring
Zoom Ring
Slide Focus Ring

Lens Adaptor   Cinema Lens on HVR-S270E with an Adaptor

α Lenses

Operational Versatility

New Manual Camera Settings

Three ND filters
The HVR-Z7E and HVR-S270E have three built-in ND (Neutral Density) filters, which help users to reduce light intensity under bright shooting conditions.

Negative Gain
Negative gain settings of -6 and -3 dB have also been added to help reduce sensitivity under bright lighting conditions. When the iris needs to be opened to create a short depth of field, a suitable brightness can be achieved with this function.

Smooth Gain
The Smooth Gain function is a smooth transition gain system that avoids sudden brightness changes caused by manual gain-level adjustment. With this function, the brightness changes gradually when the gain-level position is switched and avoids any sudden, unwanted iris adjustment.

Smooth WB (White Balance)
The Smooth WB feature is a smooth transition white balance system that avoids unnatural sudden colour temperature changes between preset white balance settings. For example, this function is useful when you move from an artificial, low-light environment inside a building, to bright natural sunlight outside.

Three ND filters

Shooting Support Functions

Advanced Histogram
The Histogram Indicator for brightness can be displayed on the LCD monitor and viewfinder, allowing operators to easily evaluate the brightness of captured images.
A target window appears in the centre of the screen and the brightness level is indicated by a vertical red line in the histogram. The zebra indicator level appears as a yellow vertical line in the histogram as reference for proper exposure.

Focus Marking
When the focus position needs to be manually moved to pre-decided positions, you can put up to two markers (A and B) on a focus position indicator in the LCD/EVF as reference points. When the focus position becomes aligned with one of these markers, it will begin to flash. This allows you to keep your eye on the subject of your shot, without having to check the focus indicator on the lens.

Camera Leveling
The HVR-Z7E and HVR-S270E both have a built-in three dimensional gravity (3G) sensor, which detects the horizontal level of the camcorder and displays it via an indicator in the LCD/EVF. This digital leveler function makes it possible to obtain a horizontal level reading even when shooting without a tripod.

AE Window
Six types of AE (Auto Exposure) can be selected to automatically adjust the exposure to the most suitable level.

| Standard | Type 1 | Type 2 |
| Type 3 | Type 4 | Type 5 |
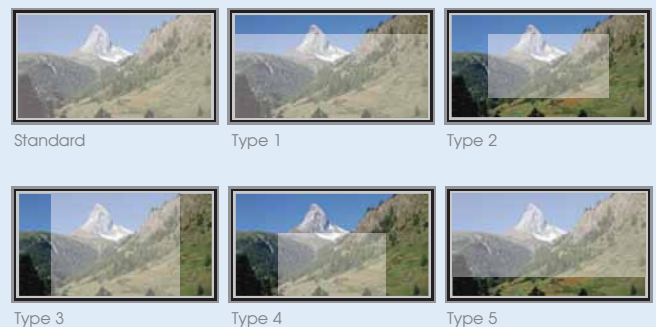
Picture Profile

Up to six different picture-quality settings, including gamma and colour settings, can be registered in the memory as picture profiles. This labour-saving function allows operators to easily recall customised picture quality settings for various shooting conditions. It is also useful for matching footage shot at different times or for multi-camera setups.

The picture-profile functions of the HVR-Z7E and HVR-S270E include enhanced versions from the HVR-Z1E or HVR-V1E, plus a selection of new functions.

Colour Depth

Generally, the brightness of a video image increases as the colour level becomes more vivid. In these new camcorders, the brightness and colour level are processed independently so that more flexible tone – for instance, a dark image with a vivid colour – is realised by 3D-LUT colour processing.

Note: 3D-LUT = three-dimensional look-up table

Colour Correction

The Colour Correction function of the HVR-Z1E has been improved in the HVR-Z7E and HVR-S270E camcorders. Colour Correction provides two functions for creative shooting. The Colour Extraction function can retain up to two desired colours of monitored pictures in the screen, while making all other colours black and white. The advanced function allows users to select the colour simply by pressing a button to memorise the centre colour of the captured image.

The Colour Revision function can change the hue of only the colour designated by the Colour Extraction function. This function is good not only for creating impressive images, but also for blue- or green-screen shooting in order to normalise uneven colour.

The colour data is stored in each Picture Profile so that users can select the most suitable colour setting for each shooting situation.

Normal	Colour Extraction	Colour Revision

Colour Correction Images Simulated

WB Shift

The WB (White Balance) Shift function allows users to create an impressive colour or to adjust the colour temperature of the camcorder. There are two WB Shift options to choose from:
> LB-CC type: adjusting the LB axis (colour temperature) and CC filter effect
> R-B level type: adjusting the red and blue levels

Skintone Detail

This function allows users to change the sharpness of an object with a specific colour and is particularly good for making skin tones look more natural. The target colour can be specified by controlling the Phase/Range/Saturation/Y Level/Y Range parameters or by pressing a button to specify the colour of an object with a colour picker. If the sharpness of the background object is decreased, the blur looks more natural.

Improved Microphone Sound Quality

New Supplied Monaural Microphone ECM-XM1

The supplied ECM-XM1 microphone's S/N ratio is 78 dB, a sensitivity increase of 14 dB over its predecessor, the ECM-NV1[1].

1 The ECM-NV1 is a supplied microphone with DSR-PD170P, DSR-250P, HVR-A1E and HVR-V1E.

Microphone	ECM-XM1	ECM-NV1
Sensitivity (at 1KHz)	-30 dB ±3.5 dB[2]	-44 dB ±4.0 dB
Signal-to-noise Ratio	78 dB, typical	70 dB
Frequency Response	50~20,000 Hz	100~15,000 Hz
Maximum Input Sound Pressure Level[3]	127 dB SPL, typical	121 dB SPL
Dynamic Range	111 dB, typical	97 dB

2 0 dB=1 V/Pa. at 1 kHz
3 0 dB SPL=20 µ Pa.

Selectable Progressive Modes

The HVR-Z7E and HVR-S270E have two types of progressive shooting modes.

25p HDV Native Progressive Recording Modes

The HVR-Z7E and HVR-S270E camcorders newly feature a 25p HDV native progressive recording mode. The 3 ClearVid CMOS Sensor system and EIP create true 1080p images, which can then be recorded as a progressive signal by the HVR-Z7E and HVR-S270E camcorders in HDV format.

The progressive HDV stream can be output from an i.LINK connector and used for progressive editing with compatible NLE software.

The native progressive recording mode is suitable for output to film, CG composition, viewing on a progressive monitor, or as an Internet movie.
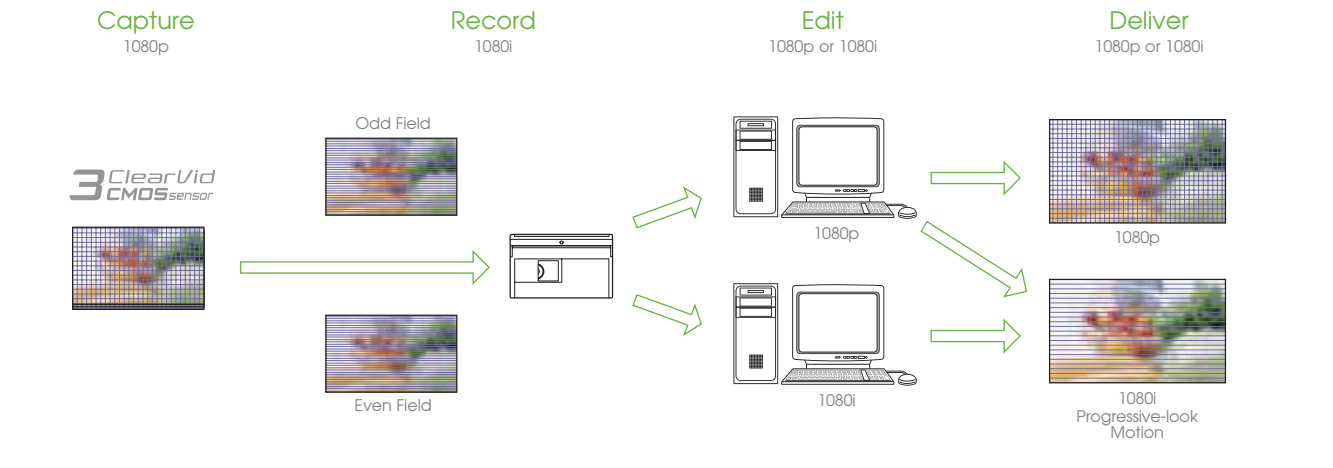
Note: interlaced video is output from connectors other than i.LINK.

Capture	Record	Edit	Deliver
1080p	1080p	1080p	1080p

3 ClearVid CMOS sensor   PROGRESSIVE
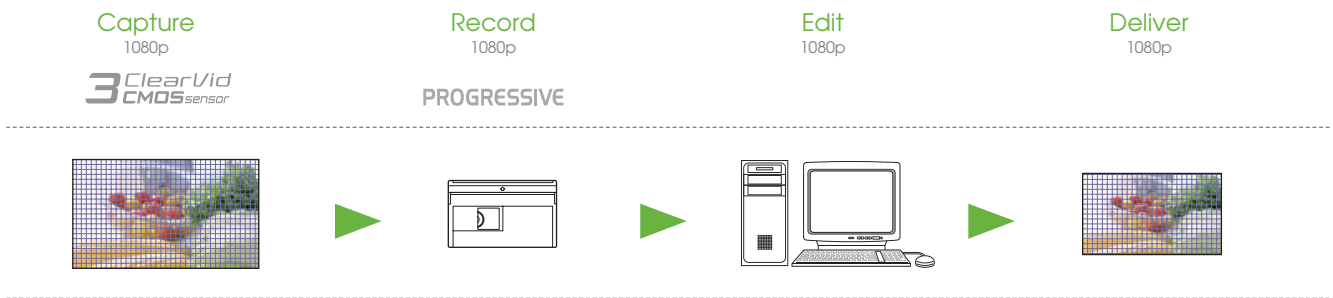
25p Progressive Scan Mode

In this mode, the 1080p image captured by the 3 ClearVid CMOS Sensor system is also recorded as an interlaced signal by dividing each frame into two fields. This enables compatibility with current editing and monitoring equipment that only accept interlace signals, while maintaining the quality of the 1080p image. The progressive scan mode is suitable for feature films, documentaries and music videos, which have to be recorded as interlaced video for viewing on interlaced monitors, but want to offer a "progressive look" to their motion. It is also possible to edit footage recorded in the "25p scan" mode as progressive material. Most NLE software can output the edited timeline in progressive format by merging odd and even fields.

Capture	Record	Edit	Deliver
1080p	1080i	1080p or 1080i	1080p or 1080i

Odd Field

Even Field

1080p

1080i

1080p

1080i Progressive-look Motion

Memory Recording Unit

HDV in IT Workflow by CompactFlash Memory Recording Unit

HDV in IT Workflow by CompactFlash Memory Recording Unit

The Memory Recording Unit is supplied with each camcorder to support HDV tape recording. It captures the HDV1080i, DVCAM or DV stream output from the camcorder and records it as a movie file while you are simultaneously recording to tape. You can use a CompactFlash (CF) card[1], which offers secure recording, high-speed access, large data capacity, removable media convenience and high durability against external vibration.

1 Not supplied.

HDV/DVCAM/DV File Recording on CompactFlash Card[3]

The recording time on a 16GB CF card[2] in HDV, DVCAM and DV format[3] is approximately 72 minutes.

2 At least 133x speed and 2GB capacity is required. The NCFD8GP and NCFD16GP CF cards from Sony are recommended.

3 The recording time may change according to the CF card type and recording format.

CF Card Capacity	Recording time (approximately)
16GB	72 minutes
8GB	36 minutes
4GB	18 minutes
2GB	9 minutes

72 min.
16GB

Integration Without Cabling

The Memory Recording Unit can be integrated to the HVR-Z7E or HVR-S270E without the need for cabling, simply by attaching it onto the special shoe connector[4]. This smart combination never interferes with shooting operations. The Memory Recording Unit automatically synchronises with the recording action of the camcorder – i.e., when the camcorder starts or stops recording, so does the unit.

4 The intelligent shoe connector inputs and outputs an HDV/DV stream and supplies power to the Memory Recording Unit. The i.LINK connector is not available when the unit is attached on the camcorder.

Attached on the HVR-Z7E

Attached on the HVR-S270E

Hybrid Operation Realises Archiving, IT Workflow and HD/SD Parallel Recording

The Memory Recording Unit provides a hybrid operation, where images are recorded to tape and a CF card simultaneously, in a similar fashion to the HVR-DR60 Hard Disk Recording Unit [1].

1 HVR-DR60 does not accept a native progressive HDV stream.

This means you can immediately access a movie file for streamlined NLE work, while keeping the master source tape in a safe place.
The file format is M2T for HDV mode and AVI or RawDV for DVCAM/DV modes. In the same fashion as HVR-DR60 operation, these files can be edited using popular NLE software.[2]

2 The Memory Recording Unit and HVR-DR60 adopt the FAT32 file system. Continuous recording is divided into 4 GB files (approximately 20 minutes of recording time). A utility software, available from www.sonybiz.net/hdv, can merge these divided files for seamless editing on NLEs. Some NLEs include this function. For details of NLE operation, please consult your nearest NLE software dealer.

In addition, when the built-in down-converter of the connected HDV camcorder is active, SD images can be recorded on a CF card while HD images are recorded to tape.
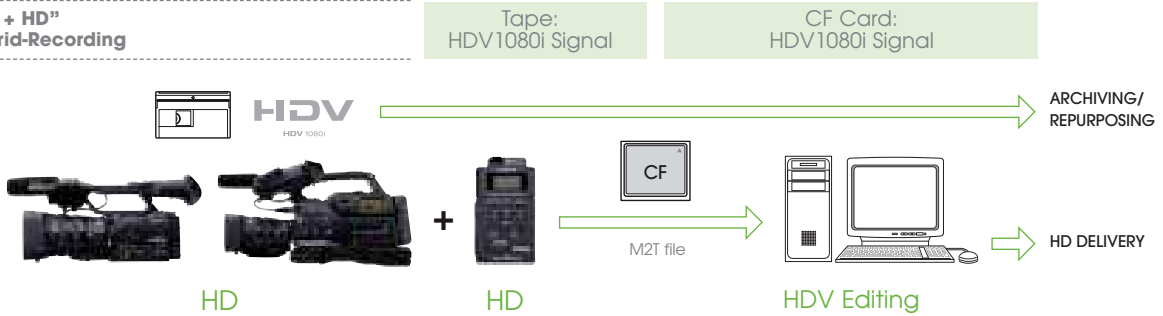HD master tape is recorded and SD movie files are created at the same time.
HDV or DVCAM tape-based users can gradually move to IT workflow with this hybrid-operation. Tapeless recording is also available if desired.
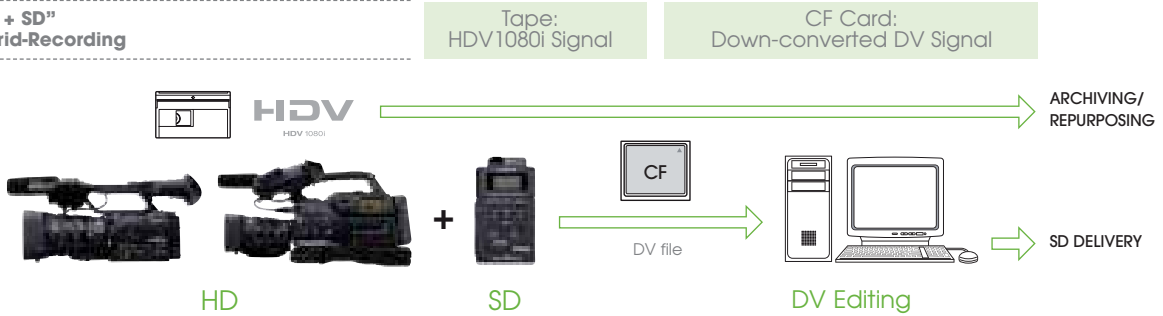
Mode	File Format
HDV	M2T
DVCAM/DV	DV-AVI(type 1) or Raw-DV

Hybrid-Recording

File Transfer

CF
CF Card

Memory
Recording Unit

CF
CF Card

CF Card Reader (USB)
(Not supplied)

USB Connection

CF
CF Card

Memory Recording Unit
on the Supplied Cradle

i.LINK Connection

PC with CF Card Slot

PC with USB Interface
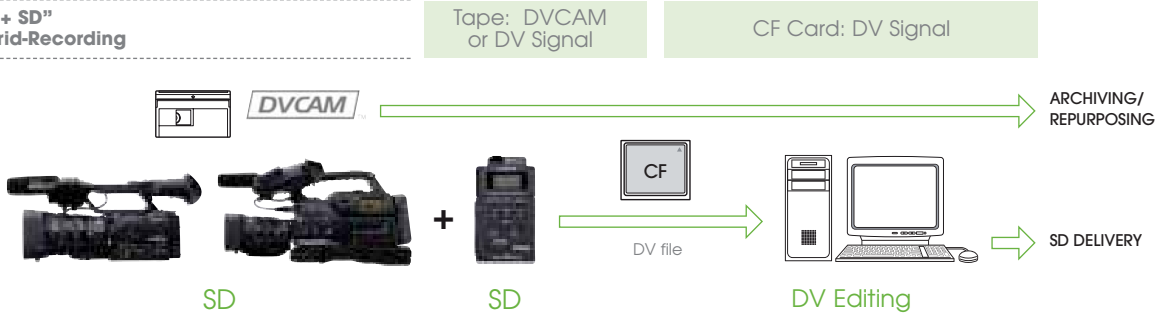
PC with i.LINK (IEEE1394)
Connector
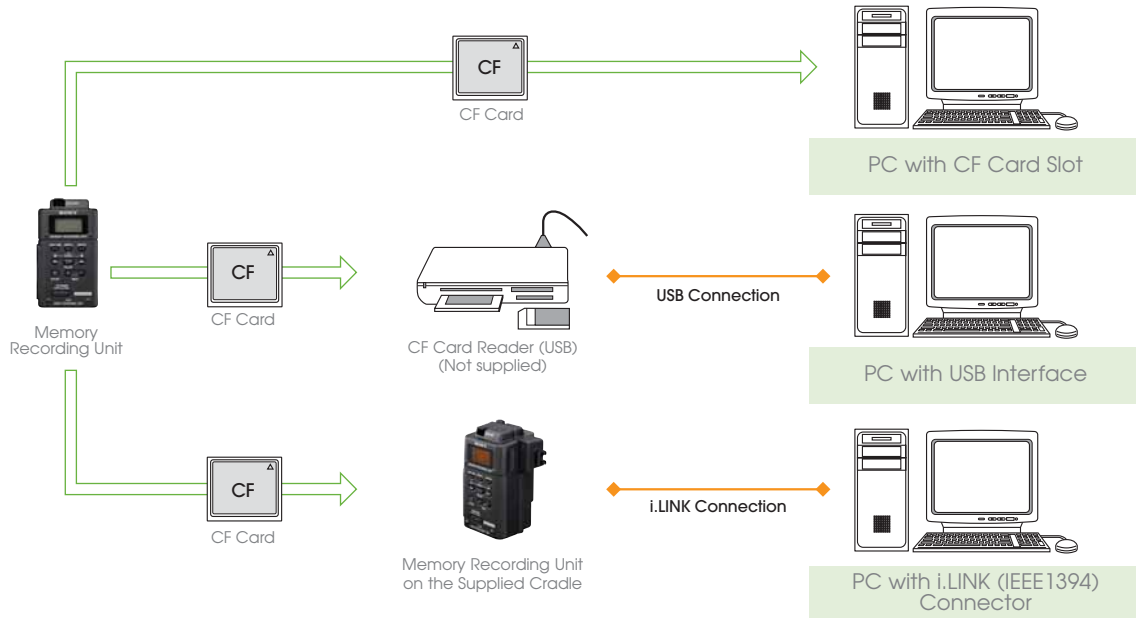
Playback from the Memory Recording Unit

Memory
Recording Unit

+

HVR-Z7E

OR

HVR-S270E

Video Output
Component
Composite/S-Video
HDMI (HVR-Z7E)
HD/SD-SDI (HVR-S270E)

Display

Memory Recording
Unit on the Supplied
Cradle

i.LINK Connection

HDV VTR/Camcorder

Video Output
Component
Composite/S-Video
HDMI (HVR-M25E, HVR-V1E)
HD/SD-SDI (HVR-M35E/HVR-1500)

Display

Independent Use With the Supplied Cradle

The Memory Recording Unit can be used as an external recording unit, just like the HVR-DR60, by attaching the supplied cradle that has an i.LINK connector, battery attachment and DC power input. When the Memory Recording Unit is connected to a PC via i.LINK, it is recognised as an external drive and can be used to access files. When connected to a video device (such as a VTR or NLE system) via i.LINK, it can be used to input/output a HDV/DVCAM/DV stream.

Cradle

Memory
Recording Unit

Battery (L series) Slot

i.LINK Connector
(6pin)

DC Power Input

HVR-Z7E

Sony's new HVR-Z7E is the world's first professional handheld HDV camcorder with an interchangeable lens system. The compact design makes it easy to use and flexible when shooting applications requiring mobility and in space-constrained locations.

HDV, DVCAM and DV Recording on a Digital Master Cassette Tape

The HVR-Z7E accepts Digital Master cassette tapes, which provide over 60 minutes recording time for HDV and DV formats, over 40 minutes for DVCAM format.

Cassette compartment

An Ideal Handheld Camcorder Design

Sony has responded to professional user feedback to create the ideal handheld camcorder with ergonomically designed body-weight balance and a well-planned layout of buttons and connectors to reduce camera operator fatigue.

Operational Versatility of HVR-Z7E

New XtraFine LCD and EVF Offer High-resolution, High-contrast Images

XtraFine™ LCD

A 3.2-inch type XtraFine LCD is located on the HVR-Z7E in the same position as on the HVR-Z1E. The high pixel number of approximately 921,000 dots is around four times greater than the LCD of the HVR-Z1E and this higher resolution allows for easier focus adjustments.

XtraFine EVF

The 0.45 inch type XtraFine EVF (Electronic View Finder) has approximately 1,227,000 dots (852x480x3(RGB)). This device has three independent LEDs for R, G and B colours. This technology allows users to check objects with remarkable colour reproduction and resolution[1]. The EVF has a selectable display mode between colour or black and white.

1 When the camcorder is panned quickly or when an object in the screen moves quickly, the primary colours of R/G/B may be seen on the object in the EVF momentarily.

Common Features of the XtraFine LCD and EVF

> 100% full-scan display – helps you to check the entire recorded area.

> 6500K colour temperature – the standard for professional monitors.

XtraFine LCD and EVF

infoLITHIUM L Series Battery Compatible

The HVR-Z7E uses the same batteries as the HVR-Z1E, HVR-V1E and DSR-PD170P, so you can fully utilise your existing battery and charger assets.
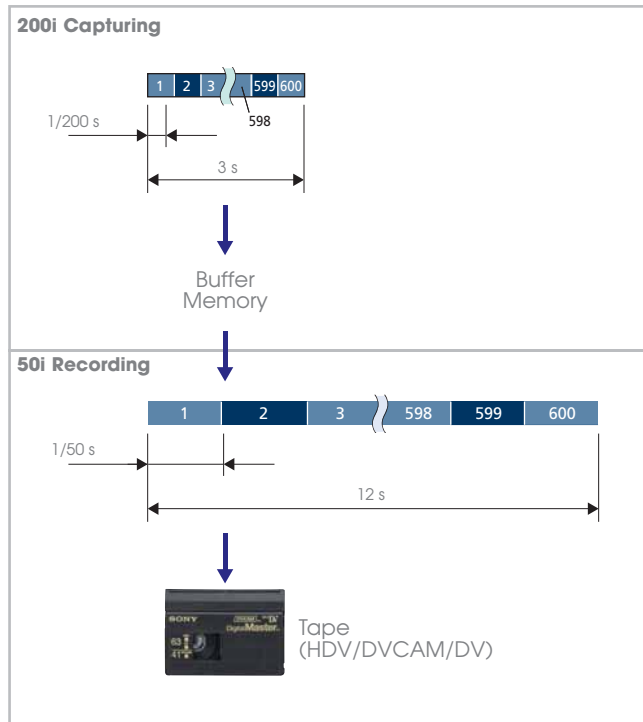
HDMI Output Connector

Uncompressed digital HD video and audio signals are output from the HDMI connector. You can see stunning HD images on the HDMI-compatible monitor display. During shooting, the pre-compressed 1920x1080i/4:2:2 signal is output from the HDMI connector.

HDMI™
HIGH DEFINITION MULTIMEDIA INTERFACE

Smooth Slow Rec

The Smooth Slow Rec function of the HVR-Z7E camcorder enables slow-motion playback by capturing images four times faster than the normal field rate (200 fields/s). In this mode, quad-speed images are captured for three seconds, stored in the built-in buffer memory and then recorded to tape (in either HDV, DVCAM, or DV format) as slow-motion pictures lasting 12 seconds[1]. This allows recorded images to be checked immediately in the field. Although the resolution of the picture quality is decreased, this function is effective for some applications that don't need full HD quality, such as Internet movies or the analysis of moving objects like a golf swing, for example.

1 Audio cannot be recorded while shooting in this mode.

200i Capturing

1 | 2 | 3 ⁓ 599 | 600
1/200 s
598
3 s

Buffer Memory

50i Recording

1 | 2 | 3 ⁓ 598 | 599 | 600
1/50 s
12 s

Tape
(HDV/DVCAM/DV)

Two Accessory Shoes

The HVR-Z7E features two accessory shoes. There is a cold shoe on the front that can be removed to make room for a mattebox. At the rear, there is a screw-hole type shoe located on the handle, which can be changed to a cold shoe, if required, using supplied parts.

A Removable Front Shoe   B Screw Hole

Removable Front Shoe   Rear Cold Shoe Parts

Two Screw Holes for Secure Connection

To provide a more secure connection between the camcorder and tripod plate or other accessories, two screw holes have been incorporated.

One-touch Clip-type Microphone Holder

A one-touch clip-type microphone holder makes it easy to remove the microphone for quick storage.

Clip-Type Microphone Holder

HVR-S270E

The HVR-S270E offers videographers a traditional "on-the-shoulder" feel with the benefits of increased camera stability and longer recording time of up to 4.5 hours with standard size Digital Master cassettes.

Standard size Cassette Compatibility

A standard size cassette tape provides approximately 4.5 hours of HDV/DV recording or approximately 3 hours of DVCAM recording. Of course, recording on a miniDV tape is still an option.

HD/SD-SDI & Other Output Connectors

An HD/SD-SDI output connector provides embedded audio and TC data and can, for example, be linked up to an XDCAM HD deck. BNC connectors provide secure cabling connections.

Rear Panel

Connectors   Side Panel

Four-channel Audio Input

Four-channel audio recording is realised in HDV and DVCAM thanks to four XLR audio input connectors – two at the front, and two at the back.

"Dual Finder" New LCD Position on EVF Unit

The new LCD position on the EVF (Electric View Finder) unit is currently only available on Sony's professional HDV shoulder-mount camcorders.

The HVR-S270E camcorder features a new configuration of a 3.2-inch type XtraFine LCD monitor (approximately 921,000 dots) and an XtraFine EVF (approximately 1,227,000 dots, 852x480 x3 (RGB))[1]. The LCD is located on the EVF unit. This unique layout enables the camera operator to perform both traditional EVF monitoring and LCD monitoring, while the camcorder is held on the shoulder. The 180-degree tilt mechanism allows for LCD monitoring when the camcorder is held in a high or low-angle position. The 270-degree swivel mechanism will allow LCD monitoring from the front, right, or even left of the camcorder so that a reporter or a director can monitor what is being captured by the camcorder.

1 When the camcorder is panned quickly or when an object in the screen moves quickly, the primary colours of R/G/B may be seen on the object in the EVF momentarily.

BP Series Battery Compatible

V-lock professional BP batteries are another great feature in common with broadcast camcorders.

Smooth Slow Rec

As with the HVR-Z7E, the HVR-S270E camcorder enables slow-motion playback by capturing images four times faster than the normal field rate (200 fields/s).

HVR-M35E

The HVR-M35E is compatible with HDV native progressive recording modes and supports HD/SD-SDI output with embedded audio and TC data.

HD/SD-SDI Output
The HD/SD-SDI output of HVR-M35E allows straight duplication to a deck with HD/SD-SDI input.

Multi-format Playback/Recording Capability
The HVR-M35E supports HDV native progressive recording modes and has a 60i/50i switchable function, so it can playback/record:
> HDV1080i: 60i/50i/24p/30p/25p
> DVCAM/DV:60i/50i
> The HDV720p (24/25/30p) tape playback is available for a simple viewing.[1]

1 No i.LINK output for HDV720p

Standard and Mini Size Cassette Tape Compatibility
Both standard and mini size cassette tapes are supported. It accepts standard cassettes shot on the HVR-S270E or other shoulder-mount DVCAM camcorders.

Four Channel Audio Data Playback
The HVR-M35E can play back the four-channel audio data in HDV1080i format recorded by the HVR-S270E. It can also play back the four-channel audio data in DVCAM format. The four-channel audio data is embedded in the i.LINK and HD/SD-SDI output, or is output through the AES/EBU audio connectors.

2.7-inch Wide Clear Photo LCD plus Screen and Monaural Speaker
A built-in 2.7-inch type wide Clear Photo LCD plus™ screen and built-in monaural speaker allow quick and convenient checking of video and audio.

Other Functions of the HVR-M35E
The HVR-M35E covers most functions of its lower-end model, the HVR-M25E.

Down-conversion Playback Capabilities
The HVR-M35E can convert material from HD down to SD and output the SD video signal through its i.LINK, SD-SDI, analogue component, S-video and composite connectors. This allows users to edit recorded material with a compatible non-linear editing system using current DV editing software, as well as record SD signals to an external VTR. When down-converting these signals, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze, Letterbox and Edge Crop[2].

2 Letterbox output is not available from the i.LINK connector. For the HDV recording with four channels audio data, the audio data in the down-converted DV signal is selectable from either 1/2ch or 3/4ch.

Edge Crop Adjust
When down-converting signals in Edge Crop mode, you can use the Edge Crop Adjust function to adjust the edge crop position. By displaying the edge crop marker on the LCD monitor, operators can conveniently check the edge crop position before outputting down-converted signals.

DUPLICATE PLUS
The DUPLICATE PLUS function makes it easy to copy video and audio from a VTR or camcorder onto the HVR-M35E – along with the original time code. Operators simply connect the two i.LINK devices together via their i.LINK interfaces and press the DUPLICATE PLUS and PLAY buttons on the front panel of the HVR-M35E. Copying will then begin.

HVR-Z1E

With a unique camcorder body design and a multitude of camera features, the HVR-Z1E offers maximum operability in the field, as well as opening up a new range of opportunities for creative shooting. Offered at a price comparable to Sony's DVCAM camcorders, the HVR-Z1E has set the benchmark for cost-effective but uncompromising HD programme production.

Professional Features

3CCD Camera System with 1080i HD CCDs

The HVR-Z1E incorporates three 1/3-inch type 1080i HD CCDs, each with a 16:9 aspect ratio, a total pixel number of 1.12M (1,012 x 1,111) and an effective pixel number of 1.07 M (972 x 1,100). The combined 3CCD system achieves a resolution of 1,440 x 1,080 by adopting the precise spatial offset technology and interlace scanning system (see image below).

14-bit HD DXP

The HVR-Z1E incorporates a high-integrity 14-bit HD DXP (Digital eXtended Processor), which features a 14-bit A/D converter and advanced camera processing. This 14-bit HD DXP can process the high-quality images captured by the 1080i HD CCDs with greater precision than conventional 10-bit A/D LSIs. In particular, this higher bit resolution allows the contrast to be reproduced more faithfully in mid-tone areas of the picture. The 14-bit HD DXP also enables highly sophisticated image controls, such as Cinematone Gamma and Colour Correction functions.

Optical 12x Carl Zeiss Vario-Sonnar T* Zoom Lens

The HVR-Z1E is equipped with a new Carl Zeiss Vario-Sonnar T* High Definition lens with a 12x zoom function. Its fully coated glass is the same as used on Carl Zeiss prime lenses, producing sharp, high-contrast images, with virtually no chromatic aberration. This lens is designed with a wide viewing angle and a focal length ranging from 32.5 mm to 390 mm in 16:9 mode[1] and from 40 mm to 480 mm in 4:3 mode[1], thanks to a large filter diameter of 72 mm (see image right).

1 These values are calculated to be equivalent to 35 mm film.

Optical Super SteadyShot System

The HVR-Z1E employs the Super SteadyShot system, whereby horizontal and vertical movements can be detected independently by the sensors. The prism system located behind the lens adjusts and optically compensates for unsteady camera handling and a choice of SteadyShot function types – "HARD", "STANDARD", "SOFT" or "WIDE CONV"[2] – can easily be selected.

2 Select "HARD" to activate the SteadyShot functionality with stronger effect than "STANDARD". Select "SOFT" to activate the SteadyShot functionality with softer effect than "STANDARD". Select "WIDE CONV" for the most effective SteadyShot functionality when the optional VCL-HG0872 wide conversion lens is attached.

Switchable Recording and Playback – HDV 1080i/DVCAM/DV[3] and 50i/60i

The HVR-Z1E can switch between HDV 1080i, DVCAM and DV recording, providing full flexibility to record in either Standard or High Definition depending on production needs. In addition, it can be switched between 50i and 60i modes (PAL and NTSC), allowing for flexible productions without the need for two separate camcorders with each standard.

3 The HVR-Z1E supports DV SP mode only; no support for DV LP mode.
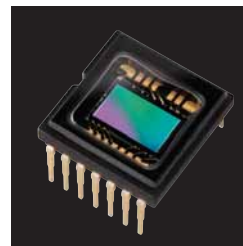
3CCD Camera System with 1080i HD CCDs


Carl Zeiss Vario-Sonnar T* lens

Built-in Stereo Microphone and 2-channel XLR Audio Input

Down-conversion Playback Capabilities

The HVR-Z1E can convert material from 1080i down to 576i and 480i and output these video signals through its i.LINK interface. In addition, these signals can also be output via either analogue component, composite, or S-video connectors. This allows editing of recorded material with a non-linear editing system using current DV editing software[1] as well as recording SD signals to an external VTR, while simultaneously recording HDV signals with the HVR-Z1E. The HVR-Z1E can also down-convert to 576p and 480p and output these signals through its analogue component video connectors. When down-converting these signals, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze, Letterbox or Edge crop (see diagram below).

1   When using the HVR-Z1E down-conversion capabilities with your current DV editing software, please contact Sony's local office to confirm compatibility.

Down-conversion Playback Capabilities

HDV 1080i (16:9)   DVCAM/DV (4:3)

Squeeze   Letterbox   Edge crop
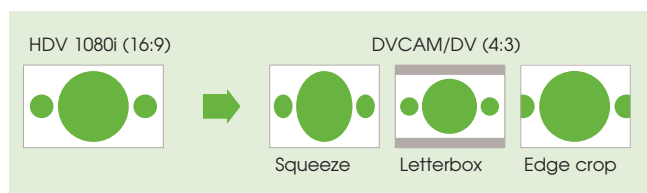
Recording, Playback and Down-conversion Formats

50i mode

| Recording Format | Playback/ Down-conversion Format | i.LINK | Input | | Output | | |
			Analogue Composite	S-Video	Analogue Component	Analogue Composite	S-Video
1080/50i	1080/50i	n	–	–	n	–	–
	576/50p (16:9/4:3)	–	–	–	n	–	–
	576/50i (16:9/4:3)	n	–	–	n[1]		n[2]
576/50i (16:9)	576/50i (16:9/4:3)	n	n[2]	n[2]	n[1]		n[2]
576/50i (4:3)	576/50i (4:3)	n	n[2]	n[2]	n[1]		n[2]

60i mode

| Recording Format | Playback/ Down-conversion Format | i.LINK | Input | | Output | | |
			Analogue Composite	S-Video	Analogue Component	Analogue Composite	S-Video
1080/60i	1080/60i	n	–	–	n	–	–
	480/60p (16:9/4:3)	–	–	–	n	–	–
	480/60i (16:9/4:3)	n	–	–	n[1]		n[2]
480/60i (16:9)	480/60i (16:9/4:3)	n	n[2]	n[2]	n[1]		n[2]
480/60i (4:3)	480/60i (4:3)	n	n[2]	n[2]	n[1]		n[2]

n Available
n Either 1 or 2 connection is available. When both are connected to cables, the 1 connection has a priority.

16:9 Widescreen Acquisition in DVCAM and DV formats

The HVR-Z1E is capable of native 16:9 widescreen image capturing, with a high-resolution of 720 x 576 pixels (PAL) and 720 x 480 pixels (NTSC) in DVCAM and DV formats and providing true 16:9 images in SD format.

HD Codec Engine

The HVR-Z1E employs the highly advanced HD Codec Engine which efficiently compresses base band HD signal data at approx. 25 Mb/s with MPEG-2 compression while maintaining optimal HD quality. Designed for reduced energy consumption, this powerful digital signal processor fits perfectly inside the compact and streamlined body of the HVR-Z1E (see image below).

i.LINK[2] Interface

The HVR-Z1E is equipped with a 4-pin i.LINK interface. This allows for on-cable digital transfer[3] of audio, video and command signals to a connected VTR or non-linear editing system in the HDV, DVCAM and DV formats.

2   i.LINK is a trademark of Sony Corporation used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact Sony's local office.

3   Insert and assemble editing using HDV material is not recommended with the HVR-Z1E. When video programmes in the HDV format are transferred via the i.LINK interface and edited, transitions from cut to cut may not be smooth.

Built-in Stereo Microphone and 2-channel XLR Audio Input

The HVR-Z1E provides a high-quality, built-in stereo microphone as well as two XLR audio input connectors for connecting professional microphones or feeding an external-line audio source. Phantom power of approx. 40 V[4] can be supplied for the external condenser microphone. INPUT 1 audio can be recorded on CH1 only, or on both CH1 and CH2 audio tracks, with easy selection via a switch (see image on opposite page).

4   When using the phantom power for an external microphone, the specification of the input power supply must be checked.

2-channel Independent Audio Record Level Control with Audio Level Meter

Each input level for CH1 and CH2 can be independently adjusted using two audio level dials on the camera body and viewed with an audio level meter on the LCD monitor. The audio level meter can be recalled quickly and easily by a Status Check function (see image below).

HD Codec Engine

2-channel Independent Audio Record Level Control with Audio Level Meter

Operational Versatility – Advanced Features for Professional Results

Large, 16:9 Widescreen Colour Viewfinder

The 0.44-inch type colour LCD viewfinder displays high-resolution colour pictures of approx. 250,000 pixels in a widescreen aspect ratio of 16:9. Operators can also select to display pictures in black and white. The size of the eyepiece has been increased to allow viewing of images even while wearing glasses. The supplied large-size eye-cup provides superior light excluding capability and allows easy focusing and comfortable use of the viewfinder (See image opposite).

Large, 16:9 Widescreen Hybrid LCD Monitor

The HVR-Z1E includes a 3.5-inch type colour LCD monitor with a high-resolution of approx. 250,000 pixels, which allows for viewing of the input source during recording, or checking the playback picture on location in a widescreen aspect ratio of 16:9. This large screen is also helpful in setting menus or audio recording levels, as well as monitoring the camera and audio status while mounted on a tripod. The hybrid LCD monitor combines the characteristics of both transmissive and reflective LCD panels. The transmissive LCD panel is well suited to dark conditions, such as those found in the studio, while the reflective LCD panel provides clear viewing in bright conditions, such as under strong sunlight.

Simultaneous Operation of LCD Monitor and Viewfinder

The LCD monitor and viewfinder can be used simultaneously. The LCD monitor is located above and in front of the handle, which places it on the same level as the viewfinder. This allows operators to perform focus adjustments on the subject with the LCD viewfinder, while adjusting the colour balance with the LCD monitor.

Long Operating Time

With the optional NP-F970 InfoLITHIUM Rechargeable Battery Pack attached, the HVR-Z1E can continuously record in HDV mode for up to 360 minutes, or up to 380 minutes in DVCAM/DV mode (see diagram on opposite page).

On-handle Zoom Lever and Rec Start/Stop Button

In order to facilitate zoom control and recording operation during low-angle shooting, an additional zoom lever and a rec start/stop button have been added to the carrying handle. Zoom speed can be selected from H, L or OFF via the three-position slide switch located on the side of the handle. The H and L settings can be selected from values of 1 to 8 via the menu.

Variety of Zoom Operations

In addition to two zoom levers on the carrying handle and on the side of the camera body, a motorised zoom ring, equipped with stops and barrel marking, is located on the lens body. Turning this zoom ring allows for fine adjustments in zoom position settings, providing operability and feeling comparable to manual zoom operations. Furthermore, the supplied wireless Remote Commander can be used for external control. These various zoom control functions enable operators to deploy various shooting styles.

Six Assign Buttons

Functions frequently used in the field can be assigned to six Assign Buttons (push buttons), allowing operators to make rapid changes under field conditions. The assignable functions include AE Override, Hyper Gain, All Scan Mode, White Balance Outdoor Level (+), White Balance Outdoor Level (-), Marker, Back Light, Spot Light, Rec Review, Fader (white fader/black fader), Steady Shot, Index Mark (index recording), Audio Dubbing (DVCAM only), Display and Colour Bars (two types).

AE Override

The AE (Auto Exposure) Override function allows operators to manually change exposure settings during the AE mode via an iris dial. This allows operators to set the desired exposure settings immediately, with no need to set all exposure settings modes to manual. This function can easily be recalled at the touch of an Assign Button.

Hyper Gain

The Hyper Gain function can automatically boost the gain level up to approx. +36 dB at the touch of an Assign Button. This makes it possible to shoot in extremely low-light conditions.

Marker

Three types of markers can be displayed on the LCD monitor and viewfinder simply by pressing an Assign Button:
Centre Displays a marker at the centre of the screen
4:3 Displays a marker in the shape of 4:3 when using a widescreen monitor
Safety Zone Displays a marker indicating the range that can be displayed on a standard TV (4:3 and 16:9) for home use (80%)

All Scan Mode

The All Scan Mode is similar to the Under Scan Mode of other camcorders, displaying all effective scanning lines in the screen. It is useful to check pictures for web applications. This function can easily be recalled at the touch of an Assign Button.

01 4:3 Marker
02 Zoom Ring
03 Assign Buttons
04 Iris Dial
05 Audio Level Dials
06 Shot Transition Buttons
07 ECM-678 Electret Condenser
   Microphone (optional)

08 Built-in Microphone
09 Zoom Levers

Long Operating Time: Battery Life

Continuous Recording Time*	With LCD Viewfinder On		With LCD Monitor On**		With LCD Viewfinder and Monitor On	
	HDV	DVCAM/DV	HDV	DVCAM/DV	HDV	DVCAM/DV
NP-F570 (supplied)	115 min	120 min	105 min	110 min	100 min	105 min
NP-F770 (optional)	235 min	250 min	220 min	235 min	210 min	220 min
NP-F970 (optional)	360 min	380 min	335 min	355 min	315 min	335 min

* Continuous recording time, indoors at 25 °C
** With LCD backlight on

Eye Cup

Operational Versatility – Advanced Features for Professional Results

AF Assist

The AF (Auto Focus) Assist function allows operators to focus on desired subjects when using the AF mode. Operators can manually change focus positions using a focus ring during AF mode, allowing AF reference focus positions to be shifted to manually changed positions. This is useful, for example, when operators want to focus on subjects far away through a window.

Expanded Focus

At the touch of a button, the centre of the screen on the LCD monitor and viewfinder can be magnified to about twice the size, making it easier to confirm focus settings during manual focusing (see image on opposite page).

Peaking

The Peaking function can perform an effect on pictures displayed in the LCD monitor and viewfinder that allows operators to easily adjust focus positions. It enhances the outline of the image, which the camera focuses on most and colours the outline to make it more visible. Enhance levels can be selected from a choice of "HIGH", "MIDDLE" and "LOW" and the outline colour from "RED", "WHITE" and "YELLOW" (see image on opposite page).

Time Code Preset

The time code[1] can be preset using any number in H/M/S/F (hours/minutes/seconds/frames) to record desired tape-position information. The time-code mode can be selected between "REC RUN" and "FREE RUN". In addition to the time code, user bits can also be set.

1 When recording video clips, which are transferred from other devices through an i.LINK interface, the time code should be preset because it is not copied.

External Record Control

By connecting the HVR-Z1E to an HDV 1080i, DVCAM or DV compatible device such as a camcorder, VTR or HDD recorder with an i.LINK interface, operators can control the HVR-Z1E and its connected device externally, to perform simultaneous recording and sequential recording.

Quick Rec[2].

When operators do not want to miss a single recording opportunity, the time until the recording restarts from stop mode[3] can easily be shortened .

2 The transition from the last recorded scene may not be smooth.

3 When standby mode continues for more than three minutes, it is automatically switched to stop mode.

Status Check

With the touch of a button, operators can display settings menus for audio, output signal and camera, as well as Assign Button and Picture Profile functions, superimposed over the video on the LCD monitor, allowing for easy status or settings checks during recording, playback and feeding.

Picture Profile

Up to six different picture-quality settings can be registered in the memory as picture profiles and displayed on the LCD monitor at the touch of a button. This function allows operators to easily call up customised picture-quality settings to the camera to suit various shooting conditions, thus saving on the labour needed to reset the camera each time for the same conditions. At the default setting, six picture profiles are registered, with recommended settings for typical shooting conditions. The setting items include Colour Level, Colour Phase, Sharpness, Skintone Detail, Skintone Level, AE Shift, AGC Limit, Auto Iris Limit, White Balance Shift, ATW Sensitivity, Black Stretch, Cinematone Gamma and Cineframe. The default picture profiles include "For recording in HDV", "For recording in DV", "For recording people's pictures", "For recording film-like pictures", "For recording sunset pictures" and "For recording in black and white".

Personal Menu

The Personal Menu function allows operators to make a customised settings menu with frequently used menu items and to easily recall it at the touch of a button. Up to 28 menu items each for the camera and VTR settings can be added to the Personal Menu and their order can be arranged in the menu.

Battery Info

Information on the compatible battery pack attached to the camera can be displayed on the LCD monitor at the touch of a button. The battery's current charge level and its current remaining recording time can be checked when the power is turned off. The remaining recording time available for the selected recording format also appears (see image on opposite page).

Optimum Weight Distribution and Balance

The optimum weight distribution and balance of its body make the HVR-Z1E particularly suitable for hand-held shots and also allows operators to easily carry the camera without causing fatigue. In addition, the camcorder can sit comfortably on the shoulder simply by attaching the optional VCT-FXA Shoulder Brace.
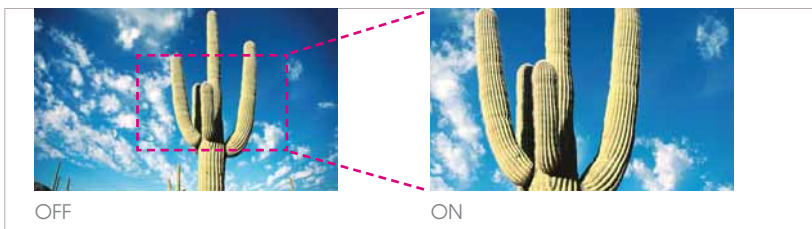
Other Convenient Functions

In order to provide the flexibility required for professional shooting, the HVR-Z1E offers a variety of convenient functions:
– AE Response
– Flicker Reduce (by AGC)
– Zebra Patterns (100% or 70 to 100% – adjustable by 5%)
– Date Stamping
– Audio Lock (DVCAM/DV mode only)
– Audio Limiter

01 Zebra/Peaking Switch
02 Picture Profile
03 Personal Menu
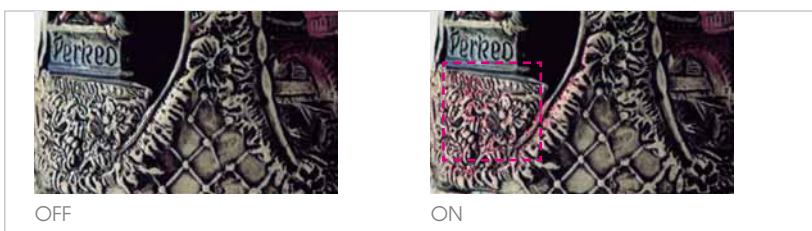04 Status Check

Expanded Focus for LCD Monitor & Viewfinder

OFF

ON

Peaking for LCD Monitor & Viewfinder

OFF

ON

Battery Info

Battery Info Display Button

BATTERY INFO
BATTERY CHARGE LEVEL
0%   50%   100%
REC TIME AVAILABLE
LCD SCREEN: 359 min
VIEWFINDER: 400 min

Battery Info

Creative Versatility – Unique Features for Creative Shooting

Cinematone Gamma

The HVR-Z1E provides a special gamma feature – the Cinematone Gamma – which allows operators to quickly set up and load a gamma curve with similar contrast characteristics to a film gamma curve. Three gamma curves can be selected from "OFF" (normal gamma), "TYPE1", or "TYPE2" (See diagram below).

Shot Transition

The Shot Transition function allows for smooth automatic scene transitions. The operator can program start and end settings for zoom, focus, iris, gain, shutter speed and white balance into the camera's A/B buttons. By pressing the start button, a smooth transition will take place according to the set time, because the camera automatically calculates the intermediate values during the scene transition. The transition progress can be checked using an indicator displayed on the LCD monitor. This is very useful when complex camera settings are required during the scene transition – for example, when shooting subjects moving from the background to the foreground of a scene. In addition, a start timer function is also available for the Shot Transition function, preventing operators from missing a shot. Transition types can be selected from a choice of "LINEAR", "SOFT STOP" and "SOFT TRANS", transition time can be set from 2 to 15 seconds and the start delay time can be selected from 5, 10 and 20 seconds (See diagram on opposite page).

Cineframe

The Cineframe allows picture movement to be reproduced like a film. Combined with the use of Cinematone Gamma, this allows a cinematic and film-like look to be achieved. Three types of Cineframe modes can be selected.

Cineframe 25 Cineframe 25 is used in 50i mode and can reproduce the picture movement like films of 25 frames/second in HDV, DVCAM and DV formats.

Cineframe 24 and 30 Cineframe 24 and Cineframe 30 are used in 60i mode and can reproduce the picture movement like films of 24 or 30 frames/second[1] in HDV, DVCAM and DV formats.

1 Using Cineframe 24 or Cineframe 30 respectively.

Colour Correction

The Colour Correction feature provides two functions for creative shooting. The Colour Extraction function can retain up to two desired colours of monitored pictures in the screen by designating colour hue, saturation and range, while making the other colours black and white. This provides interesting in-camera colour effects that can emphasise particular colours on the screen. In addition, the Colour Revision function can change the hue of only the colours designated by Colour Extraction, while retaining the hue of the other colours. This also provides interesting in-camera effects (see image on opposite page).

Cinematone Gamma
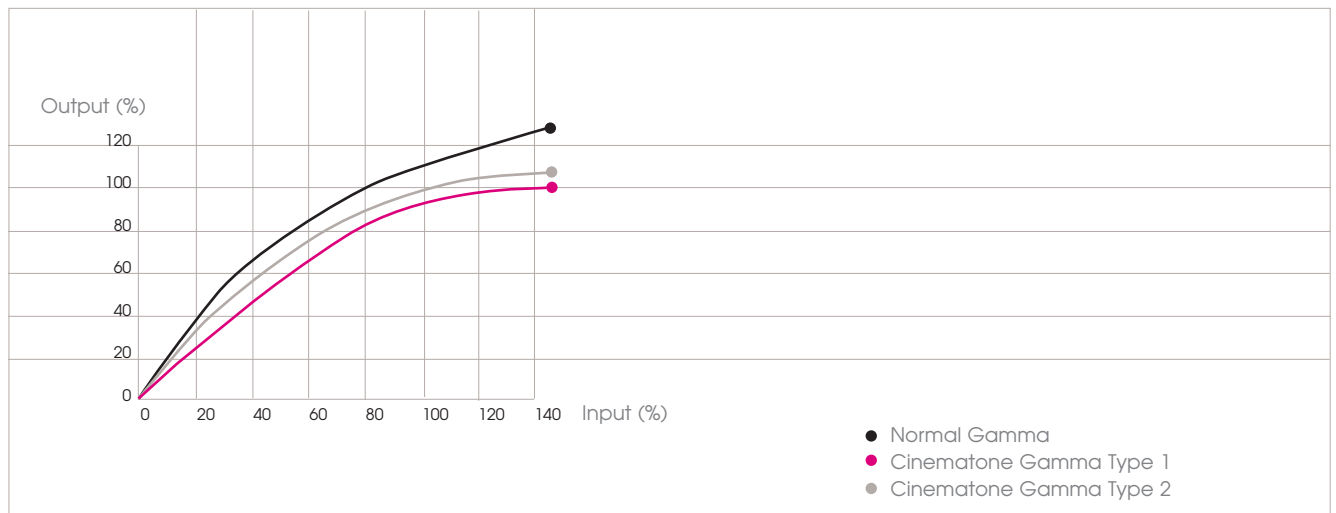
- Normal Gamma
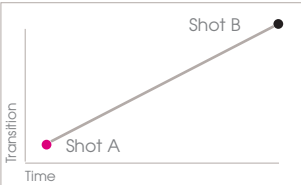- Cinematone Gamma Type 1
- Cinematone Gamma Type 2

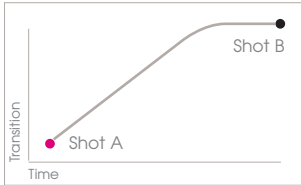## Shot Transition

Shot A

Shot B

Transition types

Linear Makes the transition linearly.

Soft Stop Makes the transition slowly at the end.
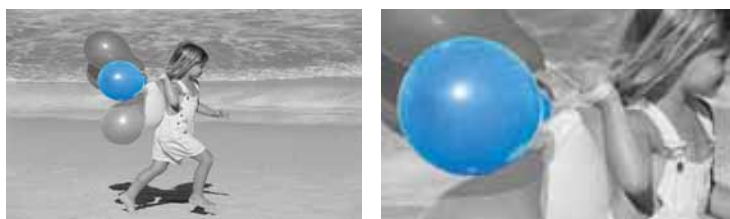

Soft Transition Makes the transition slowly at the beginning and at end and linearly between.
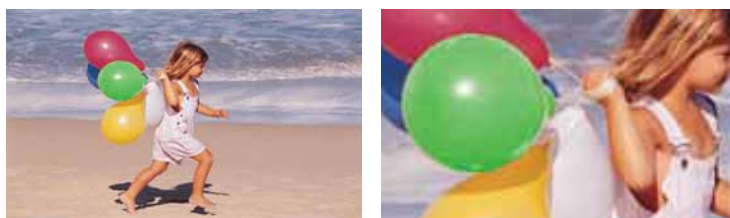
Colour Correction

Normal

Colour Extraction

Colour Revision

HVR-V1E

Since introduction, the HVR-V1E has extended the HDV line-up offering users additional features such as 25p progressive scanning as well as 50i interlaced recording.

In its compact, lightweight and ergonomically designed chassis, the HVR-V1E camcorder integrates advanced technologies such as the newly developed 3 ClearVid CMOS Sensor imaging system – which is only made possible by Sony's industry-leading semiconductor technology – and a stunning optical 20x Carl Zeiss Vario-Sonnar T* zoom lens.

Innovative Technologies and Professional Features

3 ClearVid CMOS Sensor Imaging System

The ClearVid CMOS Sensor™ has been developed using the most advanced technologies in the semiconductor industry. Thanks to the unique grid arrangement of the photo diode sensors, in which each is rotated by 45 degrees, sensor resolution has been optimised and the photosensitive surface area has been maximised.

The HVR-V1E employs a 3-chip ClearVid CMOS Sensor imaging system, which produces high-resolution (1920 x 1080) images with rich and natural colours. The combined use of the 3 ClearVid CMOS Sensor imaging system and the Enhanced Imaging Processor™ has enabled a most precise interpolation scheme, which concludes within each R, G and B channel. This allows a higher resolution for each R, G and B channel than is offered by equivalent-class camcorders that resort to spatial offset techniques to improve resolution.

Unlike CCD sensors, there is no vertical smear in the ClearVid CMOS Sensor when shooting high-intensity subjects, further reducing shooting-condition constraints (see diagram below).
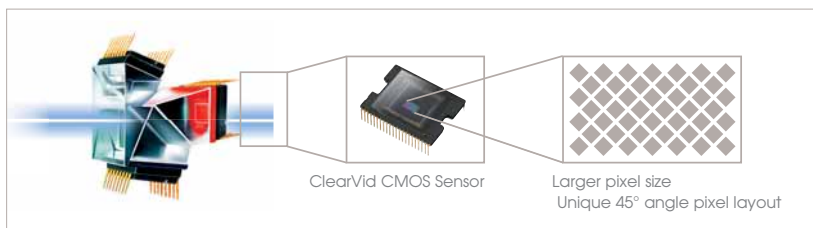
Enhanced Imaging Processor (EIP)

The EIP is a newly developed imaging processor that brings out the full power of the 3 ClearVid CMOS Sensor imaging system. It handles video data in 1920 x 1080p and 4:2:2 colour space for high-quality signal processing before recording it to tape in the HDV format[1]. Combined use of the EIP and 3 ClearVid CMOS Sensor imaging system allows the camcorder to provide extremely high image quality with a high level of gradation and detailed image reproduction (see image below).

1 The HDV recording is in 1440 x 1080i and 4:2:0 colour space.

Carl Zeiss Vario-Sonnar T* Lens

The HVR-V1E is equipped with a high-quality Carl Zeiss Vario-Sonnar T* lens. Thanks to its multi-layer coating and extra-low dispersion glass, this lens offers excellent spectral characteristics, which result in virtually negligible chromatic aberrations.

ClearVid CMOS Sensor

ClearVid CMOS Sensor

Larger pixel size
Unique 45° angle pixel layout

Enhanced Imaging Processor (EIP)

Optical 20x Lens and Optional 0.8x Wide Conversion Lens

The Vario-Sonnar T* lens of the HVR-V1E features a 20x zoom function. Moreover, the built-in digital extender[1] increases the zoom ratio to approximately 30x. The optional VCL-HG0868K 0.8x wide conversion lens uses the bayonet mount system for instant attachment or detachment. Combining these lens features, operators can effortlessly capture close-up or wide-angle shots as their video production requires.

1 The digital extender is not available in progressive scan mode.

Super SteadyShot (Optical)

The HVR-V1E employs the Super SteadyShot™ system, which has sensors that detect horizontal and vertical movements independently. It uses a prism system located behind the lens to adjust and optically compensate for unsteady camera handling.

Switchable Recording and Playback – HDV 1080i/DVCAM/DV

The HVR-V1E can switch between HDV 1080i, DVCAM and DV[2] recording, providing the full flexibility to record in either Standard or High Definition format according to different production needs.

2 The HVR-V1E supports DV SP mode only; DV LP mode is not available.

Down-conversion Playback Capabilities

The HVR-V1E has a built-in down-conversion capability, allowing 1080i recordings to be output as 576i signals.
The 576i signals can be output from the i.LINK[3] connector. In addition, these signals can also be output from either the analogue component, composite, or S-Video connectors.
This allows 1080i recordings to be edited using non-linear editing systems running DV editing software and viewing the 1080i recording on an SD monitor.
When down-converting these signals, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze, Letterbox[4], or Edge crop (see diagrams right).

3 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact Sony's local office.

4 Letterbox mode is not available from the i.LINK connector.

16:9 Widescreen Acquisition in DVCAM and DV Formats

When recording in DVCAM and DV formats, Standard Definition images can be captured in either 16:9 or 4:3 aspect ratio.

2-channel XLR Audio Input

The HVR-V1E has two XLR audio input connectors for connecting professional microphones or for receiving external-line audio sources. Microphone power of approximately 48 V can be supplied for the external condenser microphone. INPUT 1 audio can be recorded either on CH1 only or on both CH1 and CH2 audio tracks (see image below).

Time Code Preset

The time code can be manually preset using any number in H/M/S/F (hours/minutes/seconds/frames) to record desired tape-position information. The time code mode can be selected between "REC RUN" and "FREE RUN". In addition to time code, user bits can also be set and recorded.

Down-conversion Playback Capabilities
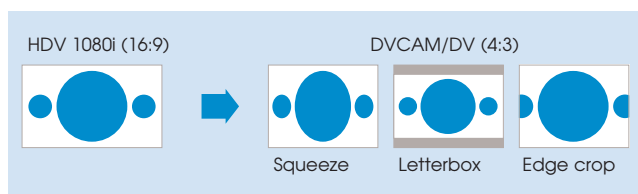
HDV 1080i (16:9)   DVCAM/DV (4:3)

Squeeze   Letterbox   Edge crop

Recording, Playback and Down-conversion Formats

Recording Format	Playback/ Down Conversion Format	i.LINK	Output			
			Analogue Component	HDMI	Analogue Component	S-Video
HDV1080i	1080/50i	n	n	n	—	—
	576/50i (SQ/EC)	n	n [1]	n [1]	n [2]	
	576/50i (LB)	—	n [1]	n [1]	n [2]	
DVCAM/ DV (576/50i)		n	n [1]	n [1]	n [2]	

n Available
n Either 1 or 2 connection is available. When cables are connected to both, the 1 connection has priority.

SQ=Sqeeze, EC=Edge Crop, LB=Letter Box

2-channel XLR Audio Input

Professional Features

Interval Recording

Interval recording is a unique function that records signals at pre-determined intervals (more than 30 seconds) for pre-determined durations (more than 0.5 seconds). This is ideal for recording subjects over long periods, such as the movement of clouds or the blossoming of flowers.

Smooth Slow Rec

The Smooth Slow Rec[1] function enables clean slow-motion playback by capturing images at four times faster than the normal field rate (200 fields/s).

For example, when setting the function to Fine mode, quad-speed images are captured for three seconds, stored in the built-in buffer memory and then recorded to tape (in either HDV, DVCAM, or DV format) as slow-motion pictures lasting 12 seconds. The Smooth Slow Rec function also supports Standard and Low modes, which can record high-speed images for 6 and 12 seconds, respectively (see diagram on opposite page).

1 When using the Smooth Slow Rec function, the resolution of the camera image decreases. For example, the resolution at Fine mode is 640 x 360 pixels. Also, audio recording is not available.

Shot Transition

The Shot Transition function allows for smooth automatic scene transitions. After an operator has programmed a shot's start and end settings (e.g., for zoom, focus, iris, gain, shutter speed and white balance) and pressed the start button, it ensures a smooth transition takes place over the duration of the shot by automatically calculating intermediate setting values.

This is very useful when complex camera settings are required during the scene transition – for example, when panning the camcorder from a distant subject to a close subject (see diagram below).

Picture Profile™

Up to six different picture-tonal settings can be registered in the memory with desired names as picture profiles on the HVR-V1E and displayed on the LCD monitor at the touch of a button. This allows operators to easily call up customised picture-tonal settings to suit particular shooting conditions, rather than having to readjust the camera each time. The factory default setting includes six pre-loaded picture profiles for typical shooting conditions.
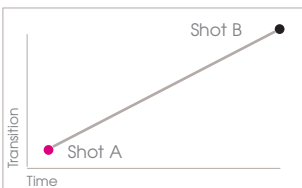
Shot Transition
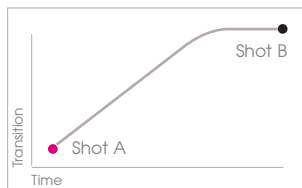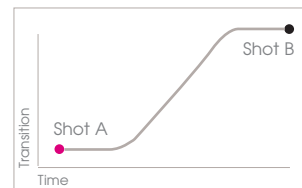

Shot A

Shot B

Transition types

Linear Makes the transition linearly.

Soft Stop Makes the transition slowly at the end.

Soft Transition Makes the transition slowly at the beginning and at end and linearly between.

Last Scene Review

At the touch of a button, the video and audio of the last shot can be instantly played back on the LCD monitor. This is achieved without even having to switch from "Camera mode" to "VTR mode". After playback, the tape is automatically cued up to the end of the last shot to continue back space editing. These features allow operators to seamlessly shoot and review material.

Playback Zoom

Using the playback zoom function, a selected area of the re-corded HD images can be enlarged and played back on the LCD monitor and viewfinder, allowing operators to check them for certain details. These enlarged images can also be output in SD format via the i.LINK and analogue connectors, allowing operators to cut out parts of the HD image and use them as SD material.

## TC LINK Function for Multi-camera Operations

Using the TC LINK function, the time code of the HVR-V1E can be synchronised with another camcorder such as an HVR-Z1E, a DSR-PD170P, or a second HVR-V1E. By connecting the HVR-V1E to the other camcorder via an i.LINK cable and activating this function, the HVR-V1E's time code generator will switch to free-run mode and reset its time code to that provided from the connected camcorder. Once the time code of the HVR-V1E is synchronised[1], the i.LINK cable can be disconnected and the next HVR-V1E that needs synchronised time code can be set up. TC LINK is a convenient function when using the HVR-V1E in multi-camera operations, such as live-event recording and stage-shooting applications.

1 The synchronisation accuracy is within one frame.

Long Operating Time

With the optional NP-F970 InfoLiTHIUM™ Rechargeable Battery Pack attached, the HVR-V1E can operate continuously for up to around 7 hours (see diagram below).

Smooth Slow Rec
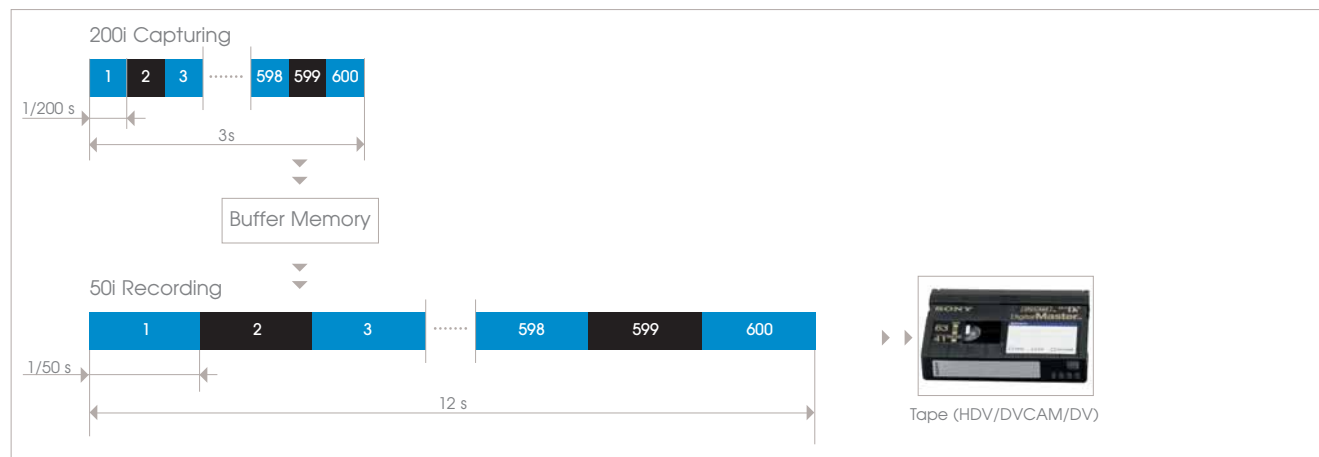
Tape (HDV/DVCAM/DV)

Long Operating Time: Battery Life

Continuous Recording Time[2]	With LCD[3] Viewfinder On		With LCD[3] Monitor On		With LCD[3] Viewfinder and Monitor On	
	HDV	DVCAM/DV	HDV	DVCAM/DV	HDV	DVCAM/DV
NP-F570 (supplied)	135 min	135 min	135 min	135 min	130 min	130 min
NP-F770 (optional)	280 min	290 min	280 min	290 min	265 min	275 min
NP-F970 (optional)	415 min	430 min	415 min	430 min	395 min	410 min

2 Continuous recording time, indoors at 25 °C
3 With the LCD backlight on

Operational Versatility

Compact and Lightweight Design
The HVR-V1E is designed to be very compact and lightweight, for a high level of mobility in the field. It weighs approximately 1.5 kg (3 lb 6 oz) (camcorder only).

Ergonomic Design
The design of the HVR-V1E is based on years of Sony's experience in camera ergonomics and provides ease of use and operational comfort.

Audio Level Dials
Two audio level dials are located on the carrying handle where they are easy to adjust, while avoiding inadvertent operations. The microphone power can be easily turned on and off via the mechanical switches.

Zoom Ring and Focus Ring
The motorised zoom ring and focus rings provide a smooth and natural operational feel for fine adjustments of zoom and focus settings.

EXPOSURE/IRIS Dial
The EXPOSURE/IRIS dial is located near the zoom and focus rings for smooth camera operations. The dial can be used to set the iris, AE shift and exposure compensation functions, giving operators manual exposure control during auto exposure mode. The rotation direction and response for controlling these functions can be selected via the menu according to operators' preference.

One-push AF Button
The one-push auto focus button, which is used for temporary auto focus adjustments, is located near the EXPOSURE/IRIS dial and the zoom and focus rings.

Carrying Handle
A rubber coating is used on the bottom of the handle for slip resistance. A large space of 34.3 mm (1 ⅜ inches) is offered below the handle for secure carrying of the camcorder, even when wearing gloves.

On-handle Zoom Lever and Rec Start/Stop Button
In order to facilitate zoom control and recording operations during low-angle shooting, an additional zoom lever and a rec start/stop button are available on the carrying handle.

Camera Setting Storage on Memory Stick Duo Media
The HVR-V1E provides a convenient function to store camera setting data. It can store and recall 20 different setting configurations using Memory Stick Duo™ media and a further two using its built-in memory. This is useful for sharing the same setting configurations among multiple cameras.

Side Grip
The side grip is located near the camcorder's centre of gravity. By tilting it to the front by approximately 10 degrees, it lightens the load on the operator's wrist during shooting.

Colour Viewfinder with Large Size Eye Cup
The HVR-V1E is equipped with a high-resolution colour LCD viewfinder of approximately 211,000 pixels in a widescreen aspect ratio of 16:9. Operators can choose to display pictures in colour or in black and white. In addition to a standard size eye cup, a large size eye cup is also supplied. This can be attached to the standard size eye cup to provide superb light-blocking capability, easy focusing and more comfortable use of the viewfinder.

HDMI (High Definition Multimedia Interface) Output Connector
The HDMI output connector transfers non-compressed, High Definition digital video and audio signals to other HDMI-equipped devices, such as consumer HDTV monitors, via a single cable.

3.5-inch Type Widescreen, Clear Photo LCD plus™ Monitor
The HVR-V1E is equipped with a 3.5-inch[1] type widescreen colour LCD monitor, which provides enhanced brightness and a high level of colour reproduction.

1 Viewable area, measured diagonally.

Marker
When shooting in 16:9 Manual/Auto Setting Switches Iris, gain, shutter speed, white balance and menu buttons are located on the left side of the rear panel to avoid them being accidentally pressed during operation.

Six Assign Buttons
Functions frequently used in the field can be assigned to six Assign Buttons (push buttons), allowing operators to make rapid changes depending on the shooting conditions. The assignable functions include: Last Scene Review, Marker, Hyper Gain, Digital Extender, All Scan Mode, Spot Light, Focus Infinity, Rec Review, End Search, Index, Peaking, SteadyShot, Colour Bar, Back Light, Fader, Display and Picture Profile.

Video Connectors
Video connectors such as i.LINK, analogue component output and multi-AV output connectors are located on the right side of the rear panel where they do not get in the way of camera operations during shooting.

> 13

> 14

> 15

01 Zoom Ring and Focus Ring
02 Exposure/Iris Dial
03 One-push AF Button
04 Six Assign Buttons
05 Audio Level Dials
06 Two Audio Cable Clamps
07 On-handle Zoom Lever and Rec Start/Stop Button
08 Carrying Handle
09 Side Grip
10 Colour Viewfinder with Large-size Eye Cup
11 HDMI (High Definition Multimedia Interface) Output Connector
12 Headphone Connector
13 Manual/Auto Setting Switches & Video Connectors
14 3.5-inch Type Widescreen, Clear Photo LCD plus™ Monitor
15 Optional SH-L35WBP LCD Hood

Operational Versatility

25p Progressive Shooting Capability

Thanks to the 3 ClearVid CMOS Sensor imaging system and Enhanced Imaging Processor (EIP), the HVR-V1E supports 25p progressive scan mode, in addition to typical 50i. The signals generated by the 3 ClearVid CMOS Sensor imaging system are processed in the progressive domain as 1920 x 1080p signals, allowing high-resolution progressive footage to be captured.

The 25p progressive scan signals are recorded to tape as 50i signals by dividing each frame into two fields. This HDV material can be reverted to its original 25p form, as captured by the camera, upon ingestion to a compatible non-linear editor[1]. This approach allows 25p progressive footage to be played back or fed to an editing suite using any of Sony's thousands of HDV solutions already in use throughout the world (see diagram below).

1 Please contact Sony's local office or authorised dealer for information on compatible non-linear editors.

A Variety of Gamma Settings

The HVR-V1E offers a choice of various gamma setting functions, which makes it ideal for use in creative productions (see diagram on opposite page).

Cinematone Gamma

The HVR-V1E provides a special gamma feature – the Cinematone Gamma™ – which allows operators to quickly set up and load a gamma curve with similar contrast characteristics to a film gamma curve. Three gamma curves can be selected from "OFF" (normal gamma), "TYPE1", or "TYPE2" (see image on opposite page).

Black Stretch and Black Compress

Black Stretch: Enhances the video signal levels in dark picture areas for clear reproduction of dark contrast, without sacrificing highlight contrast of the same picture. Black Compress: Suppresses video signal levels in dark picture areas to emphasise the depth of dark picture tones.

Knee Correction

The knee correction function compresses the wide dynamic range acquired by the CMOS sensors into the standard video-level range. The knee point is the video level from which the signal is compressed. By changing the knee point, the image contrast above the knee point can be changed. The HVR-V1E can select knee points from high, middle, low and auto modes to meet various production needs.

Cinematone Color™

The Cinematone Color function has been developed based on a thorough analysis of the colour tone of cinema film and the voices of colourists engaged in digital cinema productions.

The Cinematone Color function provides cinematic colour for deep-colour and high-contrast images approaching cinema film. In combined use with the Cinematone Gamma function, more cinema-quality images can be captured (see image below).
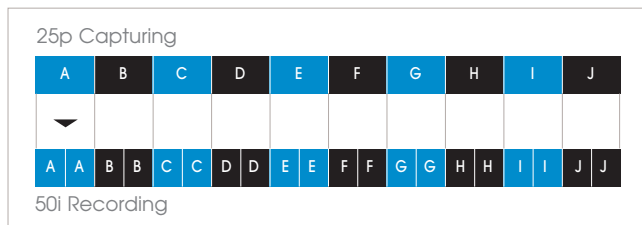
Easy Operation for Cinematographers

The HVR-V1E can display setting values in a format that film camera operators are familiar with.

Focal Length Display in Metres or Feet

The focal length can be displayed on the LCD monitor and viewfinder in either feet (ft) or metres (m).
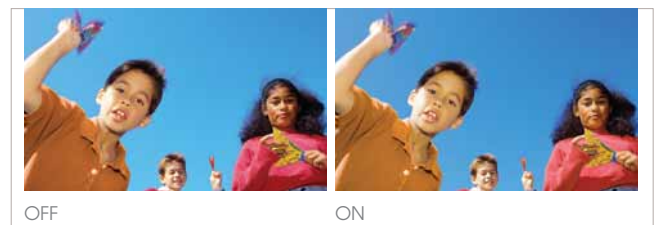
Shutter Speed Display in Units of Rotation Angles

Shutter speeds can also be displayed on the LCD monitor and viewfinder in units of rotation angles converted from shutter speeds.

Other Convenient Functions

– Still Picture Recording to Memory Stick Duo Media
– 2-channel Independent Audio Level Control
  with Audio Level Meter on LCD Monitor
– Simultaneous Operation of LCD Monitor and Viewfinder
– AE Shift
– Hyper Gain
– All Scan Mode
– AF Assist
– Expanded Focus
– Peaking
– Status Check
– Battery Info
– Histogram Indicator
– Zebra Patterns (100% or 70%)

25p Progressive Shooting Capability

Cinematone Color

OFF   ON

Gamma Characteristics

Output (%)

120
100
80
60
40
20
0

0   20   40   60   80   100   120   140

Input (%)

● Normal Gamma
● Cinematone Gamma Type 1
● Cinematone Gamma Type 2

Cinematone Gamma

Normal

TYPE1

TYPE2

System Diagram

AC-VQL1BP

NP-F970/F770/F570*

HVR-DR60

HVL-LBP

UWP-C1

(on cold shoe)

ECM-673

HVR-DR60

VF-62CPK

VCT-1BP

HVR-V1E

VCL-HG0862K

SH-L35WBP (on LCD Monitor)

VCT-PG11RMB

Battery Adapter for HVL-LBP

33
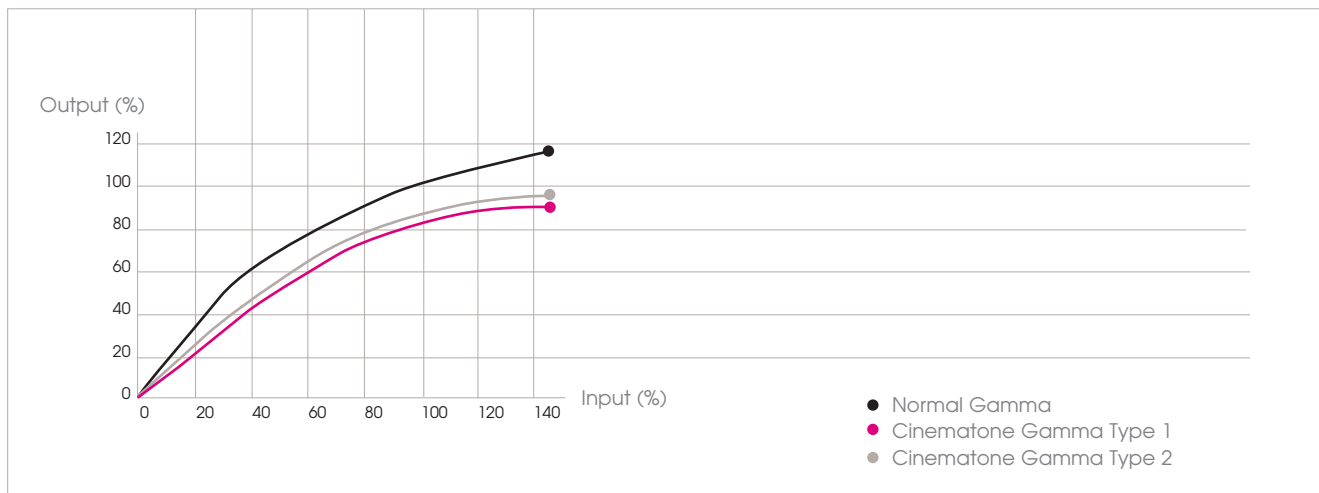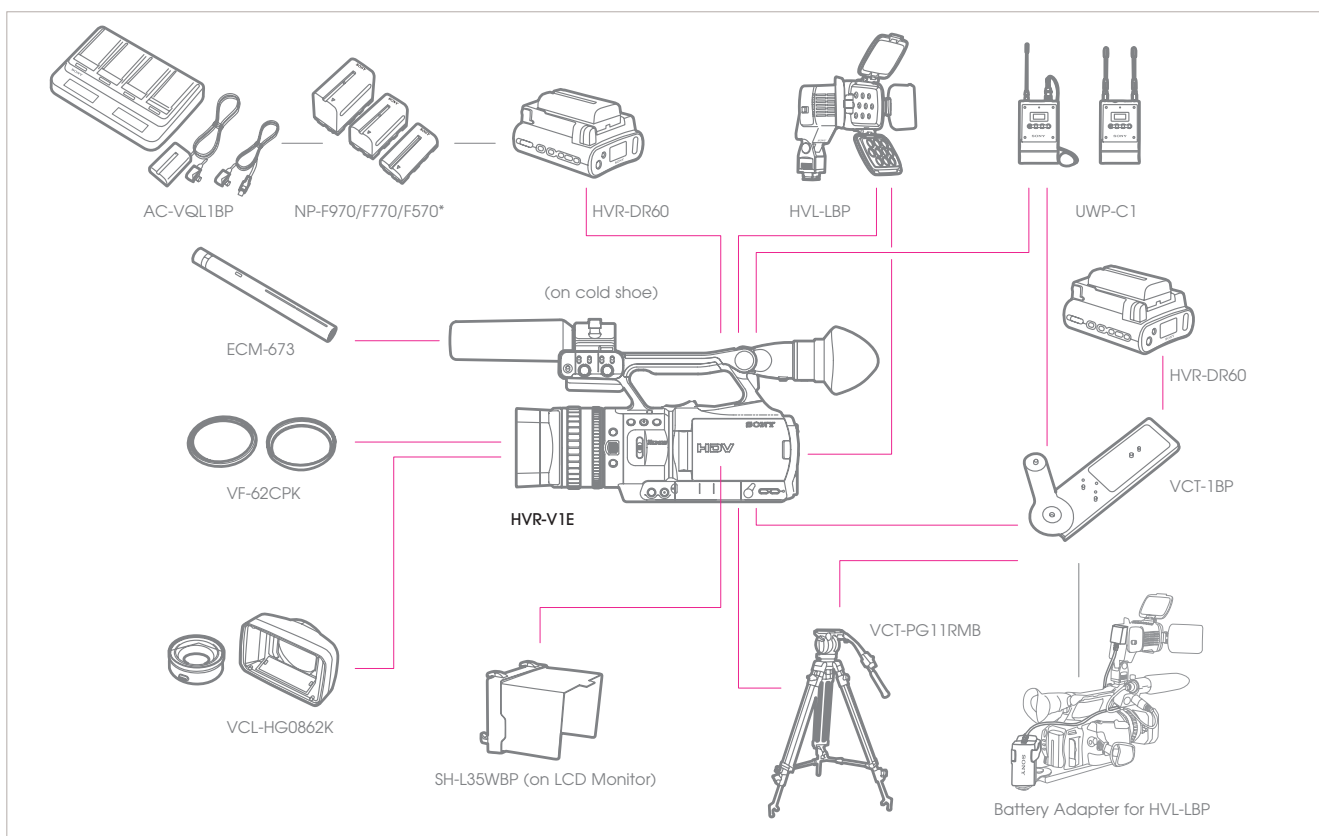
HVR-A1E

Boasting an incredibly small size and providing HDV with the 1080i standard, the HVR-A1E offers a host of advanced features for professional use.

Using CMOS technology allows the HVR-A1E to be an ultra-compact camcorder capable of providing HDV in full 1080 line resolution. Building on the affordability of HDV, the HVR-A1E provides users with a migration path from Standard Definition whilst retaining the qualities of the popular DVCAM range such as ease of use and i.LINK (IEEE1394) connectivity.

1/3-inch Type, 2.97-megapixel CMOS Sensor

The HVR-A1E incorporates one 1/3-inch type primary colour CMOS (Complementary Metal Oxide Semiconductor) sensor with 2.97 million total pixels and a 4:3 aspect ratio, this has been developed based on Sony's many years of experience in imaging devices. This CMOS sensor can produce high-quality images with high sensitivity and low noise levels. This is superior to most traditional CMOS sensors due to advantages such as its unique pixel design and advanced noise reduction technique. Another key advantage of this CMOS sensor is its high-speed processing capability. Since data captured using a single CMOS sensor for High Definition format recording is extremely large, it would take considerable time to transfer and process by traditional methods. With Sony's CMOS sensor, such large data can be processed at an incredibly high speed thanks to its flexible multi-channel readout structure. Use of the CMOS sensor also allows even large amounts of HD-resolution data to be processed with amazingly low power requirements, thus making the camcorder's overall size extremely compact. Lastly, CMOS sensors eliminate vertical smear, even though the pixel size is small (see image right).

Enhanced Imaging Processor (EIP)

The EIP is Sony's newly developed image processing IC intended for high-speed processing of large amounts of data captured by the CMOS sensor. In addition, the EIP employs the unique algorithm that first separates image data into texture patterns and brightness components and then processes these two elements independently. This makes it possible to have high details in the dark as well as in brightly illuminated areas of the picture, delivering a clear image with a wide dynamic range even under backlight conditions[1].Combined use of the EIP and CMOS sensor allows the camcorder to provide extremely high image quality with a high level of gradation and detailed image reproduction (see image right).

1 Available when the new Backlight Compensation function is activated.

Optical 10x Carl Zeiss Vario-Sonnar T* Zoom Lens

The HVR-A1E is equipped with the new Carl Zeiss Vario-Sonnar T* High Definition lens with 10x zoom function. Its fully coated glass is the same as used on Carl Zeiss prime lenses, producing sharp, high-contrast images, with virtually no chromatic aberration.

Electronic Super SteadyShot System

The Super SteadyShot™ system used in the HVR-A1E detects horizontal and vertical movements and electronically compensates for unsteady camera handling. The active image area (the number of pixels used) in the CMOS sensor is automatically adjusted for the Super SteadyShot system to achieve the best performance at each zoom position.
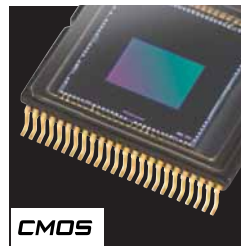
CMOS

1/3-inch Type, 2.97-megapixel CMOS Sensor

Enhanced Imaging Processor (EIP)

HD Codec Engine

Full Scan Mode

The HVR-A1E camcorder offers a Full Scan mode, which allows the camcorder to capture images with the resolution of approximately two million pixels at every zoom position when the Super SteadyShot system is off. With this mode, images of higher picture quality can be obtained.

Switchable Recording and Playback HDV 1080i/DVCAM/DV[1]

The HVR-A1E can switch between HDV 1080i, DVCAM and DV recording, providing full flexibility to record in either Standard or High Definition format depending on production needs.

1 The HVR-A1E supports DV SP mode only; no support for DV LP mode.

Down-conversion Playback Capabilities

The HVR-A1E can convert material from 1080i down to 576i and output these video signals through its i.LINK™ [2] interface. In addition, these signals can also be output via either analogue component, composite, or S-Video connectors. This allows editing of recorded material with a non-linear editing system using current DV editing software as well as recording SD signals to an external VTR, while simultaneously recording HDV signals with the HVR-A1E. The HVR-A1E can also down-convert to 576P and output these signals through its analogue component video connectors.

When down-converting these signals, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze, Letterbox, or Edge crop (see diagram right).

2 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact Sony's local office.

HD Codec Engine

The HVR-A1E employs the highly advanced HD Codec Engine™ feature, which efficiently compresses base band HD signal data at approx. 25 Mb/s with MPEG-2 compression, while maintaining optimal HD quality. Designed for reduced energy consumption, this powerful digital signal processor fits perfectly inside the compact and streamlined body of the HVR-A1E (see image on opposite page).

Still Picture Recording to Memory Stick Duo Media

The HVR-A1E incorporates a high-resolution digital camera function. Thanks to the 2.97-megapixel CMOS sensor, still pictures with 1,920 x 1,440 pixels can be recorded to Memory Stick Duo™ media. Still pictures can be captured by pressing the dedicated 'Photo' button and this can be done even when recording video to tape, without any interruptions. In addition, any desired video frame recorded on tape can be captured as a still image with 1,440 x 810 pixels[3] and recorded onto Memory Stick Duo media after video shooting (see diagram right).

3 When captured from a tape recorded in the HDV format.

16:9 Widescreen Acquisition in DVCAM and DV Formats

The HVR-A1E is capable of native 16:9 widescreen image capturing, with a high resolution of 720 x 576 pixels in DVCAM and DV formats and providing true 16:9 images in Standard Definition.

i.LINK Interface

The HVR-A1E is equipped with a 4-pin i.LINK interface. This allows for on-cable digital transfer[4] of audio, video and command signals to a connected, compatible VTR or non-linear editing system in the HDV, DVCAM and DV formats.

4 Insert and assemble editing using HDV material is not recommended with the HVR-A1E.

2-channel XLR Audio Input

The HVR-A1E provides two XLR audio input connectors for connecting professional microphones or for feeding an external-line audio source. Phantom power of approx. 48 V can be supplied for the external condenser microphone. INPUT 1 audio can be recorded on CH1 only, or on both CH1 and CH2 audio tracks, with easy selection via a switch. The HVR-A1E also comes equipped with two types of microphones; an external directional microphone and a built-in stereo microphone (see image below).

2-channel Independent Audio Record Level Control with Audio Level Meter

Down-conversion Playback Capabilities
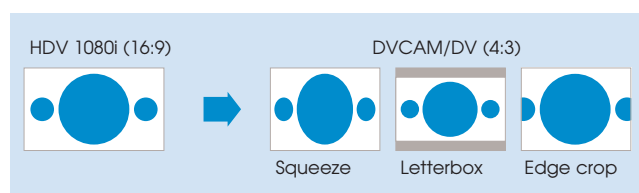
Recording, Playback and Down-conversion Formats

Recording Format	Playback/Down Conversion Format	i.LINK	Output		
			Analogue Component	Analogue Composite	S-Video
1080i/50i	1080/50i	n	n	—	—
	576/50p (16:9/4:3)	—	n	—	—
	576/50i (16:9/4:3)	n	n [1]	n [2]	
576/50i (16:9)	576/50i (16:9/4:3)	n	n [1]	n [2]	
576/50i (4:3)	576/50i (4:3)	n	n [1]	n [2]	

n Available
n Either 1 or 2 connection is available. When cables are connected to both, the 1 connection has priority.

Resolution of Still Pictures

Resolution of Still Pictures	Still Picture Mode	Video Recording Mode	Video Playback Mode
1920 x 1440 (4:3)	1	—	—
1440 x 1080 (4:3)	1	—	—
1080 x 810 (4:3)	—	1	—
640 x 480 (4:3)	1	—	1
1920 x 1080 (16:9)	1	—	—
1440 x 810 (16:9)	—	1	1
640 x 360 (16:9)	—	—	1

HDV
HDV 1080i

Operational and Creative Versatility

Compact and Lightweight Design
The HVR-A1E features an extremely compact and lightweight body, providing an unprecedented level of mobility in HD field acquisition. The camcorder itself weighs only 670 g (1 lb 7 oz) and just 1.3 kg (2 lb 14 oz) including the lens hood, XLR audio adaptor, directionalmicrophone, NP-QM91D InfoLITHIUM™ Rechargeable Battery Pack and PHDVM-63DM Digital Master Mini Cassette Tape.

16:9, Colour/Black-and-White Switchable LCD Viewfinder
The 0.44-inch type colour LCD viewfinder displays high-resolution colour pictures of approx. 252,000 pixels in a widescreen aspect ratio of 16:9. Operators can select to display pictures in either colour or black and white to match the user's preference.

2.7-inch[1] Type, 16:9 Widescreen, Hybrid, Colour LCD Monitor
The HVR-A1E includes a 2.7-inch type colour LCD monitor with a high resolution of approx. 123,200 pixels, which allows the input source to be viewed during recording or the playback picture to be checked on location in a widescreen aspect ratio of 16:9. This large screen is also helpful in setting menus or audio recording levels, as well as monitoring the camera and audio status. The hybrid LCD monitor used in the camcorder combines the characteristics of both transmissive and reflective LCD panels, providing clear viewing even in bright daylight conditions as well as in dark conditions. This LCD monitor also provides touch-panel control for easy operations.

1 Viewable area, measured diagonally

Variety of Zoom Operations
The HVR-A1E provides four types of zoom control functions to offer diverse shooting styles:

Zoom Lever located on the camera body

Zoom/Focus Ring located on the lens body
– allows fine adjustments in zoom position

Zoom Buttons located on the LCD monitor
– convenient for low-angle shooting

Supplied Wireless Remote Commander unit

Exposure Lever
The HVR-A1E enables exposure control both manually and automatically. The Exposure Lever provides two types of exposure control:

Manual Exposure control to manually change exposure settings using the Exposure Lever.

AE (Auto Exposure) Shift function to adjust AE level by 15 steps using the Exposure Lever, while the AE mode is activated, for more accurate automatic exposure settings.
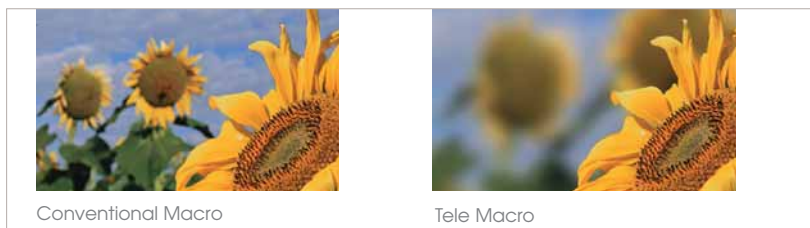
Tele Macro
The Tele Macro function allows operators to capture a macro image from a distance, which is especially useful for shooting small moving objects. With this function, close-up images can be shot without
the camcorder casting a shadow on the subject. In addition, the image of the subject is shot in proper focus, while the background is unfocussed, allowing the subject to stand out (see image below).

New Backlight Compensation
The new Backlight Compensation function allows the HVR-A1E to produce natural and rich tones for both light and dark areas of an image under backlight conditions. Conventional systems of backlight compensation tend to compromise details in light areas, but the new Backlight Compensation function of the HVR-A1E can deliver superior images with a very wide dynamic range by increasing only the brightness of dark areas while properly retaining the brightness of light areas.

Macro

Conventional Macro

Tele Macro

Images simulated

01 Zoom Ring and Focus Ring
02 Built-in Stereo Microphone
03 TELE MACRO Button /
   EXPANDED FOCUS Button /
   BACK LIGHT Compensation Button
04 Exposure Lever/Button
05 HDV/DV Interface (i.LINK) Jack / USB Jack
06 COMPONENT OUT Jack / A/V OUT Jack
07 DC IN Jack
08 Zoom Buttons

Operational and Creative Versatility

Marker

Four types of markers can be displayed on the LCD monitor and viewfinder and can be displayed simultaneously (see image on opposite page).

Assign Button

A function frequently used in the field can be assigned to the Assign Button (push button), located on the right side of the camera body, allowing operators to make rapid changes under field conditions. The assignable functions include Status Check, Super SteadyShot, One Push Auto White Balance, Histogram Indicator and Colour Bars (two types).

Histogram Indicator

The Histogram Indicator for brightness can be displayed on the LCD monitor and viewfinder, allowing operators to easily evaluate the brightness of currently captured images for proper exposure (see image on opposite page).

Time Code Preset

The time code can be preset using any number in H/M/S/F (hours/minutes/seconds/frames) to record desired tape-position information. The time-code mode can be selected between "REC RUN" and "FREE RUN". In addition to the time code, user bits can also be set.

Cinema-like Image Shooting

Two powerful features to produce cinematic and film-like pictures are provided on the HVR-A1E. The Cinematone Gamma™ feature allows operators to quickly set up and load a gamma curve with similar contrast characteristic to a film gamma curve. The Cineframe™ feature allows picture movement to be reproduced like a film of 25 frames/s.

Long Operating Time

With the optional NP-QM91D InfoLITHIUM Rechargeable Battery Pack attached, the HVR-A1E can continuously record in HDV mode for up to 300 minutes, or up to 340 minutes in DVCAM/DV mode (see diagram below).

Shot Transition

The Shot Transition™ function allows for smooth automatic scene transitions. The operator can program start and end settings for zoom, focus and white balance into the A/B buttons and, by pressing the start button, a smooth transition will take place according to the set time, because the camera automatically calculates the intermediate values during the scene transition. The start of this function can be synchronised with the camera's REC start function. The transition progress can be checked using an indicator displayed on the LCD monitor. In addition, a start timer function is also available for the Shot Transition function, helping to prevent operators from missing a shot. This function is very useful when complex camera settings are required during the scene transition – for example, when shooting subjects moving from the background to the foreground of a scene (see image on opposite page).

Other Convenient Functions

Simultaneous Operation of LCD Monitor and Viewfinder.

Expanded Focus – magnifies the centre of the screen on the LCD monitor and viewfinder to about twice the size.

Peaking – enhances the outline of the image where the camera focuses on most and displays the enhanced outline with colour in the LCD monitor and viewfinder.

Zebra – displays a striped pattern in the LCD monitor and viewfinder across highlighted areas, helping manual exposure settings (100% or 70 to 100% (adjustable by 5% steps)).

Quick REC – shortens the time until the recording starts from stop mode.

Status Check – displays camera setting menus for audio, output signal, assign button and exposure level functions and hours meter on the LCD monitor with the touch of a button.

Personal Menu – allows operators to customise the setting menu to display frequently used menu items.

Battery Info – displays the attached battery's current charge level and its current remaining recording time on the LCD monitor with the touch of a button, when the power is turned off.

Super Night Shot™ – allows operators to capture images in black and white using a built-in infrared light, even in no light conditions.

Skin Tone Detail – reduces detailed signal for skin colour, for a smooth reproduction of human skin.

Black Stretch – allows more contrast to be seen in dark parts of the picture without affecting mid-tones while maintaining the absolute black level.

Colour Bar – Two types

White Balance – Auto, One Push Auto, Indoor (3200 K) and Outdoor (5800 K)

Long Operating Time: Battery Life

Continuous Recording Time[1]	With LCD Viewfinder On		With LCD[2] Monitor On		With LCD[2] Viewfinder and Monitor On	
	HDV	DVCAM/DV	HDV	DVCAM/DV	HDV	DVCAM/DV
NP-FM50 (supplied)	80 min	90 min	75 min	70 min	80 min	105 min
NP-QM71D (optional)	200 min	225 min	220 min	180 min	200 min	220 min
NP-QM91D (optional)	300 min	340 min	300 min	275 min	300 min	335 min

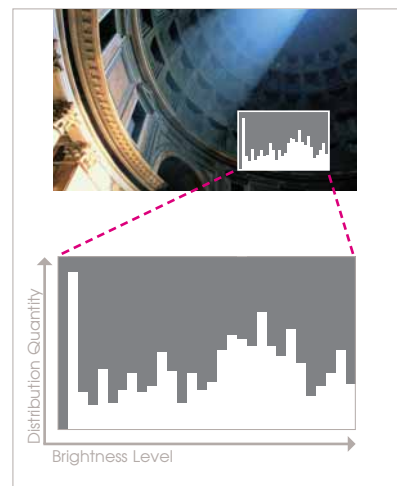1 Continuous recording time, indoors at 25 °C
2 With the LCD backlight on

01 Photo Button
02 Zoom lever
03 2-channel XLR Audio Connectors
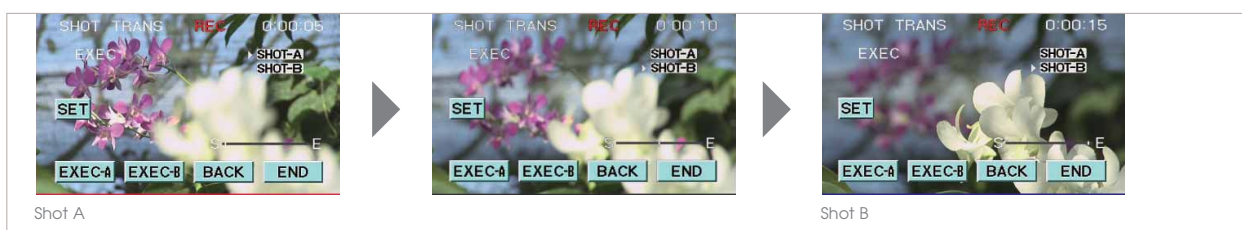04 MemoryStick Slot
05 Assign Button and NightShot Switch

Marker

Centre

4:3

Safety Zone

Guide Frame

Images simulated

Histogramme Indicator

Distribution Quantity

Brightness Level

Shot Transition

Shot A

Shot B

HDV
HDV 1080i

HVR-M25E / HVR-M15E

In 2004, Sony introduced affordable, high-performance HD recording systems adopting the HDV 1080i specification of the HDV format for a wide range of professional productions. Our HDV systems gained a rapid and wide acceptance thanks to their high picture quality, outstanding performance and cost-effectiveness.

Affordable High Definition

Thanks to Sony's HDV 1080i video tape recorders (VTRs), there's no need to keep your camcorder in-house during edit sessions. These affordable, professional VTRs record and play HDV at all the same frame rates as our HDV camcorders. What's more, the VTRs record and play DVCAM and miniDV tapes, to support your smooth migration from SD to HD.

Long Recording Time

These VTRs support both mini and standard cassettes, for extended recording and playback time. Using a single DigitalMaster™ standard size cassette from Sony, you can record up to 276 minutes in HDV and DV mode or 184 minutes in DVCAM mode.

SMPTE Time Code and External Time Code Copy

As true professional VTRs, the HVR-M25E and HVR-M15E both offer SMPTE time code to identify each hour, minute, second and frame. Both VTRs can also copy external time code thanks to the HDV/DV in TC. The HVR-M25E goes further with the Duplicate Plus dubbing function which carries audio, video, time code and user bits over the i.LINK IEEE 1394 interface[1]. Duplicate Plus enables you to copy an HDV, DV or DVCAM work tape with the original time code intact by activating the Duplicate Plus function on the recorder.

1 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. All products with an IEEE 1394 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.

Point of Information Display

The HVR-M25E and HVR-M15E can also be used as High Definition players at retail, tradeshows and other points of information. The HVR-M15E offers a playback repeat function, while the HVR-M25E adds programmable Custom Repeat and an HDMI™ output for High Definition consumer televisions.

Common Features

– HDV 1080i recording/playback for superb High Definition imagery.
– DVCAM and DV recording/playback integrates with SD infrastructure and SD tapes.
– Down-conversion of HDV 1080i recordings to SD via the i.LINK IEEE 1394 interface.
– Conversion from 1080i to 720p via analogue component outputs.
– Choice of edge crop, letterbox or squeeze in HD to SD down-conversion.
– i.LINK IEEE 1394 input/output in HD and SD enables digital transfer of A/V.
– Analogue component video output in HD and SD.
– S-Video and composite video input and output in SD.
– Audio Dubbing in SD and HD for flexible post-production.
– SMPTE time code with reset.
– HDV/DV IN time code copies external time code.
– Auto repeat.

HVR-M25E Exclusive Features

– 2.7-inch (viewable area measured diagonally) Clear Photo LCD Plus™ monitor.
– SMPTE time code with user bit and reset.
– Duplicate Plus with time code and user bit.
– HDMI™ output for connection to consumer HD televisions.
– Edge crop adjustment enables you to customise the down-conversion from HD to SD.
– Assignable buttons.
– Custom Repeat enables you to pre-set repeat times, cycle and start time.
– Audio recording level controls.
– Headphone jack.

HVR-M15E Exclusive Features

– Vertical or horizontal operation saves precious desktop space.
– Audio recording level -6/0/+6 dB settings and Automatic Gain Control (AGC).

Record and Play DVCAM and Digital Master Tapes

HVR-M15E

HVR-M25E

1 Selectable Outputs
2 Selectable Inputs (HDV/DV – S-Video – Video)
3 2.7-inch Clear Photo LCD Plus™ Monitor
4 Audio Recording Level Controls
5 Delicate Plus

HDV
HDV 1080i

HVR-1500

The HVR-1500 is an HDV source feeder/recorder[1] positioned at the top of Sony's HDV Series. Inheriting the design concept of the market-acclaimed DSR-1500AP, the HVR-1500 offers the same convenient features that professional users demand, such as quick mechanical response, multi-format DV playback and a rich set of professional video/audio interfaces ranging from analogue to digital SDI and AES/EBU.
The HVR-1500 can also be used as a Standard Definition DVCAM recorder, in which case the same editing facilities as the DSR-1500AP are offered.

Versatile Recording & Playback

Switchable Recording – HDV 1080i/DVCAM/DV and 60i/50i
The HVR-1500 can be switched between HDV 1080i[1], DVCAM and DV (SP)[2] recording modes, providing full flexibility to record in either Standard Definition or High Definition depending on your production needs. In addition, it can be switched between 60i and 50i modes, eliminating the need for two separate VTRs, one for each standard.

1 In HDV mode, editing capabilities are not available
2 The HVR-1500 supports DV (SP) mode only; DV (LP) mode is not available. Assemble or insert editing is not supported in DV (SP) mode.

Playback Compatibility with DV (25 Mb/s) Family Formats
For operational versatility, the HVR-1500 is designed to play back DV (25 Mb/s) family format recorded tapes without a mechanical adaptor and without having to switch playback modes on the menu. DVCPRO™ 25 recorded tapes (M-size cassettes) can also be played back.

Long Recording Time
The HDV format adopts the same track pitch and tape speed as the DV format, thus offering the same recording time – a maximum of 276 minutes when recording on a PHDV-276DM Digital Master standard cassette tape and 63 minutes when recording on a PHDVM-63DM Digital Master mini cassette tape. The DVCAM format adopts a wider track pitch than the HDV/DV format (15 μm compared to 10 μm) and offers a maximum recording time of 184 minutes on a PDV-184N standard cassette tape and 40 minutes on a PDVM-40N mini cassette tape.

DV Family Format Tapes

Down-conversion Capability
The HVR-1500 has a built-in down-conversion capability that allows 1080i recordings to be output as 480i and 576i signals from the i.LINK and SD-SDI interfaces. These signals can also be output from the analogue component, composite, or S-Video connectors.
This allows 1080i recordings to be edited using non-linear editing systems running DV editing software or to be viewed on an SD monitor. When down-converting the 1080i recording, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze or Edge crop (see diagram on opposite page).

Professional Interfaces

HD-SDI Interface
The HVR-1500 provides an HD-SDI output[3], capability, through which 1080/60i or 1080/50i HDV recordings can be output in normal playback and search modes. Time code and audio signals are embedded in this HD-SDI output.
This interface allows operators to integrate HDV footage and assets easily into existing HD-SDI-based editing systems such as the HDCAM™ and XDCAM™ HD systems.

3 HDV signals fed to the HVR-1500's i.LINK interface cannot be converted and output from the HD-SDI interface. The i.LINK input signal must be recorded to the HDV tape first. DVCAM/DV playback signals cannot be up-converted for HD-SDI output.

SD-SDI Interface
The HVR-1500 also provides SD-SDI input[4]/output capability. Time code and audio signals are embedded in the SDI signal. This allows the HVR-1500 to connect with a wide variety of digital equipment including SDI-based editing systems.

4 SD-SDI signals fed to the HVR-1500's SD-SDI interface cannot be up-converted to HDV signals for recording to tape or to HD-SDI signals for output from the HD-SDI interface.

01 Built-in 2.7-inch Monitor
02 Switchable Recording
03 Assignable Buttons
04 Pictures Search / Menu Keys

AES/EBU Interface

For professional digital audio needs, the HVR-1500 offers AES/EBU digital audio inputs/outputs.
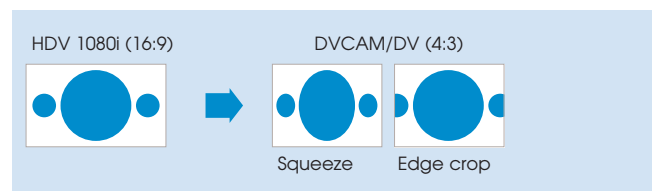
i.LINK Interface

The HVR-1500 is equipped with a 6-pin i.LINK™ [1] interface. This allows it to transfer digital video, audio and command signals (in HDV, DVCAM and DV format) to a compatible VTR or non-linear editing system via just a single cable.

1 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connector, please contact Sony's local office. DVCAM/DV signals fed to the HVR-1500's i.LINK interface cannot be up-converted to HDV signals for recording to tape or to HD-SDI signals for output from the HD-SDI interface.

Analogue Interfaces

As standard, the HVR-1500 provides analogue output interfaces for video and audio. These include composite, component and S-Video (Y/C) outputs and two channels of audio output (via XLR connectors). Using these interfaces, the HVR-1500 can act as a source feeder for an analogue editing system and as a simple playback viewer in various applications such as broadcast station studios, OB vehicles and production offices. By installing the optional HVBK-1505 Analogue Input Board, a full range of analogue video and audio inputs also become available, allowing a smooth transition to digital systems.

Down-conversion Playback Capabilities

HDV 1080i (16:9) → DVCAM/DV (4:3)

Squeeze   Edge crop

Down-conversion Formats and Interfaces – 50i System

Recording Format		Playback/Down-conversion Format	Output					
			HD-SDI	SD-SDI	i.LINK	Analogue Component	Analogue Composite	S-Video
HDV	1080/60i*	1080/60i*	n	—	n	n	—	—
		576/60i*	—	n	n	n	n	n
DVCAM	576/50i*	576/60i*	—	n	n	n	n	n
DV (SP)			—	n	n	n	n	n
DVCPRO 25**			—	n	—	n	n	n

Down-conversion Formats and Interfaces – 60i System

Recording Format		Playback/Down-conversion Format	Output					
			HD-SDI	SD-SDI	i.LINK	Analogue Component	Analogue Composite	S-Video
HDV	1080/60i*	1080/60i*	n	—	n	n	—	—
		480/60i*	—	n	n	n	n	n
DVCAM	480/60i*	480/60i*	—	n	n	n	n	n
DV (SP)			—	n	n	n	n	n
DVCPRO 25**			—	n	—	n	n	n

*   "60i" indicates a field rate of 59.94 Hz.
** The HVR-1500 can play back but cannot record DVCPRO 25 signals.

HDV

HDV 1080i

Professional Control

RS-422A Control
The HVR-1500 is equipped with an RS-422A interface, which is the industry standard for professional editing. This allows the VTR to interface with other VTRs from Sony, editing controllers such as Sony's RM-280 Editing Controller and non-linear editing systems.
The RS-422A offers frame-accurate insert and assemble editing in DVCAM mode. It can also be used for source feeding[1] in HDV mode.

1 The availability of frame-accurate control is dependent on the connected editing controller. For information on compatible editing controllers, please contact Sony's local office.

HD and SD Reference Inputs
The HVR-1500 accepts both HD and SD reference signals.

Time Code Input/Output
The HVR-1500 has a time code input/output capability to synchronise time code when making tape copies.

Built-in Signal Generator
Equipped with a built-in signal generator, the HVR-1500 can generate colour bars or black burst for video and a 1-kHz tone or silent signal for audio. These signals can be recorded to tape when the HVR-1500 is operating in DVCAM or DV mode[2] to create a pre-striped tape prior to editing. They can also be output from the analogue and digital interfaces to adjust other equipment in the system.

2 Recording these signals to tapes in the HDV format is not available.

Operational Reliability

Quick Response Mechanism
Quick mechanical response is an essential requirement for professional video production. The HVR-1500 provides this feature by using a reliable direct reel and drum motor mechanism. Fast forward and rewind speeds are an impressive 85 times normal play speed. In HDV mode, the colour picture search[3] speeds are ±8 and ±24 times normal play speed and in DVCAM mode they are between -60 and +60 times normal play speed.
In editing environments, where speed and time are critical, this mechanism reduces the frustration editors often feel when they are searching for specific scenes.

3 The colour picture search function can be controlled through the RS-422A interface.

Tape and Head Cleaner for Reliable Operation
The HVR-1500 incorporates a tape cleaner that adopts a high-grade sapphire blade. This tape cleaner helps prevent signal dropouts by cleaning away particles that accumulate while the tape is running. The recorder also incorporates a head cleaner to maintain the performance of the drum heads. These cleaners improve the reliability of recording and playback.

Operational Convenience

Built-in 2.7-inch LCD Monitor
The HVR-1500 is equipped with a 2.7-inch[4] colour LCD monitor with a high resolution of 211 K dots. This allows operators to view the input source during recording and check the playback picture in a 16:9 widescreen aspect ratio. It can also display the 4-channel audio level meters and time code, as well as setup menus for video, audio and VTR settings. Three different display modes can be selected, as shown at the bottom of the page.

4 Viewable area, measured diagonally.

Auto Repeat
The HVR-1500 has a convenient auto repeat function. This enables the VTR to automatically rewind the tape to either the beginning of the tape or to a user-defined index point and to start playback again from there. Repeat start and stop index points can also be defined by setting time code values.

Full Screen Display Mode

Status Display Mode

Small Screen Display Mode

Images simulated

Picture Search (in HDV Mode)

With an editing controller, such as Sony's RM-280 Editing Controller, the HVR-1500 provides a convenient colour picture search function for HDV recordings[1] (see diagram right).

1 In HDV mode, audio jog search is not supported and video jog search is supported in forward mode only.

Picture Search Using Menu Keys

The HVR-1500 provides a picture search function via the menu keys on its front panel. By pressing the →/🔒 and ←/🔒 buttons, forward and reverse search of 8 and 10 times normal play speed is available in HDV and DVCAM/DV modes, respectively. The ↑ and ↓ buttons allow frame-by-frame picture search, as well as slow-motion playback (see diagram right).

Assign Button

Functions frequently used for VTR operations can be assigned to an ASSIGN button located on the front panel of the HVR-1500.

Digital Slow Motion and Jog Sound (in DVCAM mode)

When used with an editing controller, such as Sony's RM-280 Editing Controller, the HVR-1500 can provide excellent digital slow motion and jog sound for DVCAM recordings. It offers variable speed playback within the range of -0.5 to +0.5 times normal play speed. This allows operators to locate editing points quickly and accurately using noiseless slow-motion playback pictures.

Audio Level Control

Audio levels can be adjusted via the control knobs on the front panel. In recording mode, the input audio level of the analogue XLR, SD-SDI, AES/EBU and i.LINK[2] interfaces can be adjusted. In playback mode, the analogue XLR, SD-SDI, HD-SDI, AES/EBU and i.LINK output audio levels can be controlled.

2 In HDV mode, the input/output audio levels cannot be adjusted.

Other Features

Compact Design (half-rack wide, 3U high)
AC Operation (100 to 240V, 50/60 Hz)
Low Power Consumption (approximate 60 W)
VITC (Vertical Interval Time Code) (DVCAM format only)
Video Processor Control via Menu
SIRCS (Sony Integrated Remote Control System) Interface

Picture Search

HDV Mode

Playback speed	Image quality
x24	Coarse
x8	Coarse
x1	Normal
x1/5	Normal
x1/10	Normal
x1/30	Normal
Forward frame-by-frame	Normal
STILL	Normal
x-1	Coarse
x-8	Coarse
x-24	Coarse

Using the Menu Keys

Button operation	Slow motion playback	Recording format	
		HDV	DVCAM/DV
→/🔒	FWD search	x 8	x 10
←/🔒	REV search	x -8	x -10
↑	FWD frame-by-frame	Yes	Yes
↓(held down)		x 1/5	x 1/2
↓	REV frame-by-frame	No	Yes
↓(held down)		x -1	x -1/2

HVR-DR60

Speed, reliability, operability and versatility are key concerns in any video production. Sony's HVR-DR60 Hard Disk Recording Unit offers stunning innovations for all aspects of the production process – from acquisition to editing and onto material archiving. Extremely compact and lightweight, the HVR-DR60 can be mounted on a camcorder, thereby converting it to a 'hybrid' recording system consisting of both hard disk and tape.

The Benefits

The benefits of integrating the HVR-DR60 with a tape-based camcorder are limitless. After a shoot, you can simply connect the unit to a compatible non-linear editor and edit your footage instantly. The HVR-DR60 offers direct access to recordings, which makes the time-consuming digitising process a thing of the past.

And for peace of mind in the field, the HVR-DR60 not only secures your footage by acting as a backup recording device, but also extends recording time to 4.5 hours, allowing long events to be recorded continuously without any cumbersome tape exchanges.

And finally, by using the HVR-DR60 as your edit source feed, you can immediately archive the footage recorded on tape. This provides a safe copy of your all-important source footage and eliminates the time and effort usually required to dub work tapes. Combine the HVR-DR60 with your HDV or DVCAM camcorder for a true taste of workflow innovation.

HVR-DR60 mounted on Sony's HVR-V1E

Professional Features

Hybrid Operation for Reliable Recording and Archiving

The HVR-DR60 offers a hybrid recording function, in which video and audio material along with its time code is recorded simultaneously to the hard disk and camcorder tape, limiting the possibility that important shots could get lost or accidentally deleted. This hybrid function also facilitates instant archiving of source footage – which in many cases does not allow for retakes. After a shoot, operators can immediately archive the source tape and use the HVR-DR60 material as work footage. This saves the time and effort required to copy the source footage to a separate high-capacity medium (see diagram on opposite page).

Direct File Access from a Computer

When connected to a computer via an i.LINK connection, the HVR-DR60 is recognised by the computer as a standard external drive and its recorded footage can be accessed directly like any normal video file. This saves the time previously required for digitising material from the tape to the computer. Furthermore, video files stored on the HVR-DR60 can be transferred to a computer running compatible non-linear editing software at a high speed of approximately 80 Mb/s (around three times faster than real time), which drastically reduces the time needed to copy source material to the editor's local drive. These features allow operators to focus on more creative and productive editing tasks (see image below)
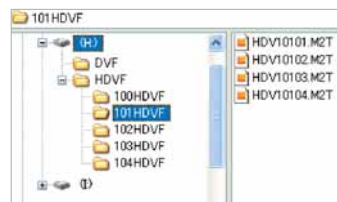
Files Stored on the HVR-DR60 Displayed on a PC Monitor

Long Recording Time of 4.5 Hours

Via its simple i.LINK[1] connection, the HVR-DR60 Hard Disk Recording Unit can record HDV 1080i streams from a compatible HDV camcorder or DVCAM/DV streams from a compatible DVCAM camcorder. The internal 1.8-inch hard disk drive (HDD) offers a large capacity of 60 GB, which translates into a long 4.5 hours (270 minutes) recording time for both formats. HDV 1080i streams are recorded as native HDV files (.m2t)[2], while DVCAM/DV streams are recorded as DV-AVI (Type1)[2] or RAW-DV[2] files (see diagram on opposite page).
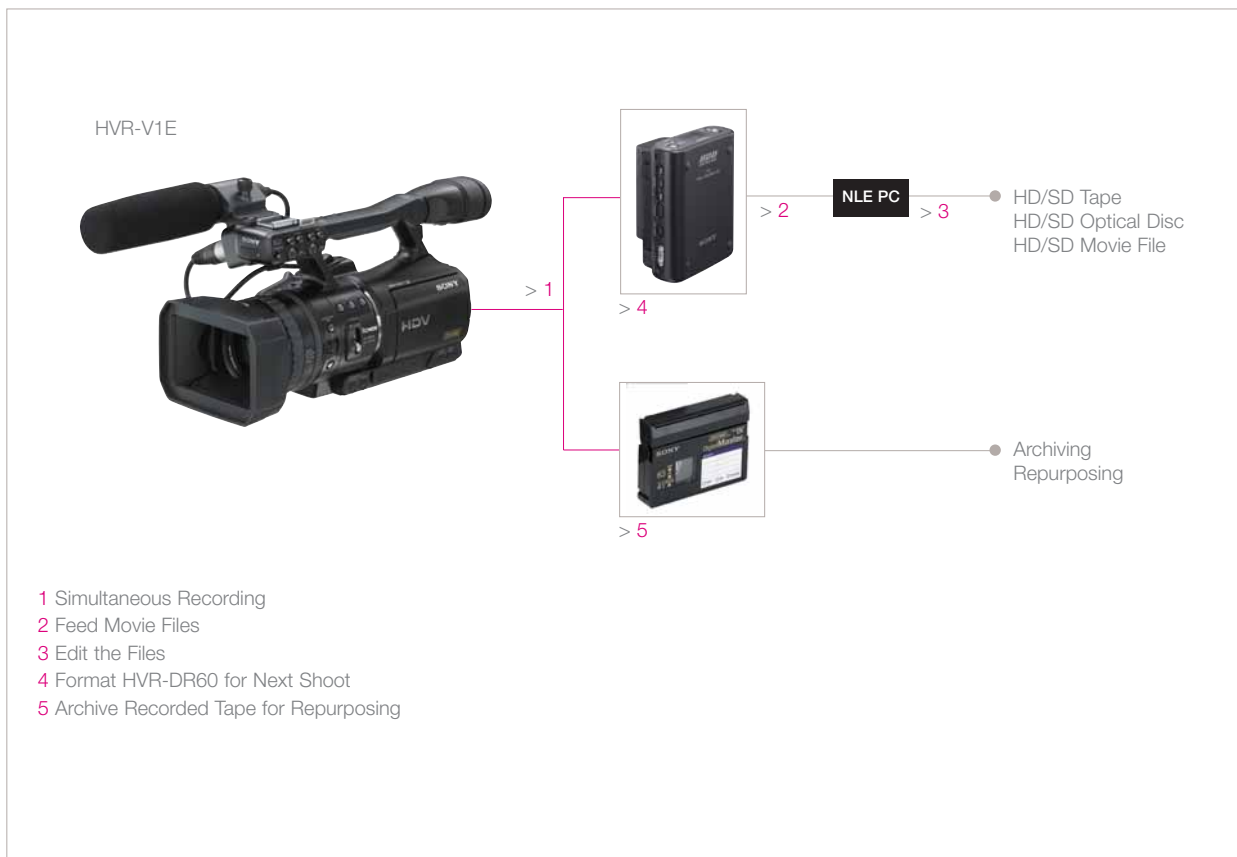
1 i.LINK is a trademark of Sony used only to designate that a product contains an IEEE 1394 connector. Not all products with an i.LINK connector will necessarily communicate with each other. For information on compatibility, operating conditions and proper connection, please refer to the documentation supplied with any device with an i.LINK connector. For information on devices that include an i.LINK connection, please contact Sony's local office.

2 During playback, interruptions in video may appear between recordings. These interruptions do not occur after the recordings are copied to an i.LINK compatible non-linear editor system via the i.LINK connection and the recordings can be correctly edited. For information on compatible non-linear editors, please contact Sony's local office or authorised dealer.

Long Recording Time of 4.5 Hours

HDV 1080i Camcorder

HDV 1080i stream

i.LINK

● M2T file

DVCAM Camcorder

DV stream

i.LINK

● DV-AVI/RAW-DV file

Hybrid Operation

HVR-V1E

> 1

> 2

NLE PC

> 3

● HD/SD Tape
HD/SD Optical Disc
HD/SD Movie File

> 4

> 5

● Archiving
Repurposing

1 Simultaneous Recording
2 Feed Movie Files
3 Edit the Files
4 Format HVR-DR60 for Next Shoot
5 Archive Recorded Tape for Repurposing

Versatile Recording Modes

The HVR-DR60 can be used with HDV and DVCAM camcorders that are equipped with an i.LINK connector. Three recording modes can be selected to support various camcorder models and operational needs.

SYNCHRO Mode

When using camcorders that support external rec control, such as the HVR-Z7E, HVR-S270E, HVR-V1E, HVR-Z1E, DSR-450WSP, DSR-400P and DSR-250P, recording to the HVR-DR60 is directly controlled by the press of the camcorder's rec start button[1].

1 In this mode, a rec start delay of approximately 0.5 seconds may occur after the camcorder rec start button is pressed.

FOLLOW Mode

When using camcorders that do not support external rec control, such as the HVR-A1E and DSR-PD170P, the FOLLOW mode can be used to start and stop recording of the HVR-DR60. In this mode, the HVR-DR60 periodically checks whether the camcorder is in rec mode or not and follows this status[2].

2 In this mode, a rec start delay of up to 2 seconds may occur after the camcorder rec start button is pressed.

Independent Recording

The HVR-DR60 can disregard the rec trigger or recording status of the camcorder and allow recording to be started and stopped using its own control buttons. This allows control of the HVR-DR60 independent of camcorder operations[3].

3 In HDV mode, interruptions in time code and video may appear in the recording when the camcorder rec control buttons are pressed.

Cache Recording

The HVR-DR60 offers a cache recording function, in which up to 14 seconds of video and audio are continuously buffered in the memory. This helps prevent the loss of important scenes or events that occur 14 seconds before the rec start button is pressed[4], as that footage is automatically recorded to the hard disk.

4 In HDV mode, approximately 0.5 seconds of the video captured before and after the camcorder rec start button is pressed may be lost.

VTR-like Controls

The HVR-DR60 is equipped with buttons that provide VTR-like control for functions such as record, play, stop, next, previous, fast forward (approximately three times normal speed) and fast rewind (approximately three times normal speed). Using these buttons, the unit can output HDV/DVCAM/DV streams with time code via the i.LINK connector.

Quick Review of Recordings

Using the control buttons of the HVR-DR60, stored footage can be instantly accessed and previewed on the LCD monitor of the connected camcorder for a quick review of recordings.

Repeat Playback

The HVR-DR60 offers a repeat playback function that allows for one desired clip or all clips to be repeated and transferred via the i.LINK connector to an i.LINK compatible device.

Additional Features When Used with the HVR-Z7E/S270E/V1E HDV Camcorders

When used with the HVR-V1E camcorder, the HVR-DR60 offers additional unique convenient features.

Checking the Operational Status on the HVR-Z7E/S270E/V1E

On the LCD monitor and viewfinder of the HVR-V1E, the operational status of the HVR-DR60 such as connection, recording format, battery level, remaining recording time, recording folder name, etc. can be checked. This keeps operators informed of both the camcorder and hard drive status, without taking their eyes away from what is being shot (see image below).

Supported Camcorder Models

	SYNCHRO Mode	FOLLOW Mode	Independent Recording	HDV	DVCAM	DV
HVR-Z7E	O*	O	O*	O	O	O
HVR-S270E	O*	O	O*	O	O	O
HVR-V1E	O*	O	O*	O	O	O
DSR-450WSP	O*	O	O*	—	O	O
DSR-400P	O*	O	O*	—	O	O
DSR-570WSP	O*	O	O*	—	O	—
DSR-390P	O*	O	O*	—	O	—
HVR-Z1E	O	O	O*	O	O	O
DSR-250P	O	O	O*	—	O	O
HVR-A1E	—	O	O*	O	O	O
DSR-PD170P	—	O	O*	—	O	O
DSR-PD150P	—	O	O*	—	O	O
DSR-PDX10P	—	O	O*	—	O	O

*Recordable without a tape

Status Check

Rubber Shock Absorbers

3G Sensor

Tapeless Recording

To trigger recording of the HVR-DR60, most HDV camcorders require a tape to be loaded. However, this is not the case when using it with the HVR-Z7E/S270E/V1E. These camcorders send the same rec start/stop trigger that controls its tape transport to the HVR-DR60. This feature offers operators the choice of tapeless operation or hybrid operation.

User-free Area

The HVR-DR60 has a user-free area of approximately 1 GB in the hard disk, where common data files such as still images and project files of non-linear editing systems can be stored.

HDD Smart Protection – Robust Recording and Shock Resistance

Three advanced technologies are used in the HVR-DR60 to provide reliable recording performance:

Rubber Shock Absorbers

hold the HDD unit in place, helping to prevent external shock from being transmitted when the HVR-DR60 chassis is subject to impact (see image left).

A 3G Sensor

detects gravitational acceleration in three dimensions, so however the HVR-DR60 may be oriented, the sensor can detect if it has been dropped. Should this occur, power to the HDD is shut off and the recording heads are retracted from the disk platter, pausing read/write operations.

This helps protect the HDD from being damaged when the unit is accidentally dropped and subject to strong impact (see image left).
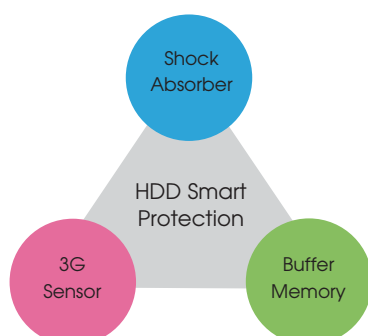
A Buffer Memory

can store approximately 14 seconds of video and audio footage. Recordings are made by first writing the data to the buffer and then writing the buffer data to the disk platter. Consequently, if the 3G sensor temporarily interrupts disk writes, video footage is not lost. Thanks to such advanced technologies, the HVR-DR60 should continue to record stably even when dropped from as high as 100 cm (39 3/8 inches) (based on Sony's testing).

Long Operating Hours Using Common Camcorder Batteries

The HVR-DR60 uses the same infoLITHIUM™ L Series batteries as the HVR-Z7E, HVR-V1E, HVR-Z1E and DSR-PD170P camcorders. With the smallest capacity NP-F570 battery, the HVR-DR60 can run continuously up to 5.5 hours (330 min) and with the largest capacity NP-F970, this increases up to 18 hours (1080 min). Long operating hours are offered using the same camcorder batteries HDV operators already have at hand.

Compact and Lightweight
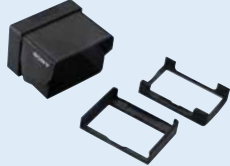
The HVR-DR60 measures just 81 x 45 x 100 mm (3 1/4 x 1 3/4 x 4 inches) in size and only about 230 g (8 oz) in weight. It can be mounted on a camcorder's cold shoe using the supplied shoe adapter, or attached using an optional VCT-1BP Bracket.

Shock Absorber

HDD Smart Protection

3G Sensor

Buffer Memory

ACCESSORIES

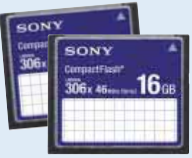|				
BP-GL95/GL65 `HVR-S270E` Lithium-ion Rechargeable Battery Pack	**BP-L80S/L60S** `HVR-S270E` Lithium-ion Rechargeable Battery Pack	**2NP-F970/B** `HVR-V1E HVR-Z1E HVR-Z7E` InfoLITHIUM Rechargeable Battery Pack (NP-F970 x2)	**NP-F570/ F770/F970** `HVR-V1E HVR-Z1E HVR-Z7E` InfoLITHIUM Rechargeable Battery Pack	**NP-QM71D/ QM91D*** `HVR-A1E` InfoLITHIUM Rechargeable Battery Pack

2NP-QM91D/B[1] `HVR-A1E`
InfoLITHIUM Rechargeable Battery Pack (NP-QM91D x 2)
	AC-DN10 `HVR-S270E`
	AC Adaptor (for BP-GL95/GL65/ L80S/L60S)
		AC-VQL1BP `HVR-V1E HVR-Z1E HVR-Z7E`
		AC Adaptor Charger
		`NEW`
			> 4 slots battery charger (A pair of parallel charge)
			> 2 charge mode selectable (Normal/Full)
			> Charging information
			  Remaining time to charge complete
			  Current available time for shooting
			> Battery Log information
			  Total charge time
			  Total charge cycle
			  Last operation date
			  Month and year of last use
				BC-L70 `HVR-S270E`
				Battery Charger (for BP-GL95/GL65/ L80S/L60S)

BC-M150 `HVR-S270E` Battery Charger (for BP-GL95/GL65/ L80S/L60S)	**BC-L500** `HVR-S270E` Battery Charger (for BP-GL95/GL65/ L80S/L60S)	**AC-SQ950B** `HVR-A1E` AC Adaptor/Charger	`NEW` **VCL-308BWS** `HVR-S270E` Optional Wide Lens **VCL-308BWH** `HVR-Z7E` Optional Wide Lens For details on the release date, please contact Sony's local office or authorised dealer.	**VCL-HG1737C** `HVR-A1E` Tele Conversion Lens
VCL-HG0737C `HVR-A1E` Wide Conversion Lens	**VCL-HG0862K** `HVR-V1E` 0.8x Wide Conversion Lens	**VCL-HG0872** `HVR-Z1E` Wide Conversion Lens	**VF-72CPK** `HVR-Z1E` PL Filter Kit (Ø 72 mm) **VF-62CPK** `HVR-V1E` PL Filter Kit (Ø 62 mm)	**LA-100W** `NEW` α lens adaptor For details on the release date, please contact Sony's local office or authorised dealer.
ECM-673/674/678 `HVR-A1E HVR-S270E HVR-V1E HVR-Z1E HVR-Z7E` Electret Condenser Microphone	**HVL-LBP** `HVR-S270E HVR-V1E HVR-Z1E HVR-Z7E` LED Battery Video Light `NEW`	> LED reliability and low power consumption of 16W > Battery power from NP-F770/F970 > Wide compatibility for flexible installation (Cold shoe/Screw bolt/Screw hole) > Ideal for Wide-angle shooting and interviews > Spot (600lx@1m) or flood-lighting (300lx@1m) with attached condensing lens ON or Off > Light diffuser attached to soften shadows and reduce contrast > Long Operating time: approximately 3 hours with the NP-F970 (at maximum brightness)	**UWP-C1** `HVR-A1E HVR-V1E HVR-Z1E HVR-Z7E` UHF Synthesised Wireless Microphone Package	**UWP-C2** `HVR-A1E HVR-V1E HVR-Z1E HVR-Z7E` UHF Synthesised Wireless Microphone Package
UWP-C3 `HVR-A1E HVR-V1E HVR-Z1E HVR-Z7E` UHF Synthesised Wireless Microphone Package	**RM-280** `HVR-1500` Editing Controller	**DSRM-10** `HVR-1500` Remote Control Unit	**RM-1BP** `HVR-A1E HVR-S270E HVR-Z1E HVR-Z7E` LANC Remote Controller	**HVBK-1505** `HVR-1500` Analogue Input Board

1 When the NP-QM91D battery pack is attached to the HVR-A1E, the battery pack protrudes past the viewfinder.
Some of the above accessories may not be available in certain countries. For details, please contact Sony's local office.

VMC-IL4408A/ IL4415/IL4435 i.LINK Cable (4-pin to 4-pin)	HVR-A1E HVR-M15E HVR-M25E HVR-V1E HVR-Z1E	**VMC-IL4615** i.LINK Cable (4-pin to 6-pin 1.5 m)	HVR-1500 HVR-A1E HVR-M15E HVR-M25E HVR-M35E HVR-V1E HVR-Z1E HVR-Z7E	**VMC-30VC** 3m Component Video Cable	HVR-V1E HVR-Z1E HVR-Z7E	**VMC-30FS** 3m Multi AV Cable (with S-Video)	HVR-A1E HVR-V1E HVR-Z1E	**RCC-5G** 9-pin Remote Control Cable (5 m)	HVR-1500

VMC-15HD/ 30HD HDMI Cable (1.5m/3m)	HVR-M15E HVR-M25E HVR-V1E HVR-Z7E	**VCT-FXA** Shoulder Brace	HVR-Z1E	**SH-L32WBP** LCD Hood **NEW**	HVR-S270E HVR-Z7E	> LCD Hood for 3.2″ LCD monitor > Adjustable shade (360° shade) > Folding structure - no need to remove from camcorder	**SH-L35WBP** LCD Hood	HVR-V1E

VCT-1BP Bracket	HVR-V1E HVR-Z1E HVR-Z7E	**VCT-SP1BP** Camcorder Support **NEW**	HVR-A1E HVR-V1E HVR-Z1E HVR-Z7E	> Weight support for stable/ comfortable shooting > Support for several shooting styles (e.g., high-angle shooting) > Quick-release function from harness for excellent mobility > Perfect design for a camcorder Monopod > Carbon shaft for light weight and rigid design > RM-1BP Remote Controller supplied as standard	**VCT-PG11RMB** Tripod with RM-1BP Remote Controller	HVR-Z1E HVR-A1E HVR-V1E HVR-Z7E	**LCS-VCB** Soft Carrying Case	HVR-Z1E

LCS-G1BP Soft Carrying Case	HVR-A1E HVR-V1E HVR-Z1E HVR-Z7E	**LCR-FXA** Rain Jacket	HVR-Z1E	**LCH-FXA** Hard Carrying Case	HVR-V1E HVR-Z1E	**LCH-HCE** Hard Carrying Case	HVR-A1E		

NCFD16GP 16GB 306x CompactFlash Card (available from Spring 2008) **NCFD8GP 8GB 306x** CompactFlash Card	HVR-S270E HVR-Z7E

PHDV-276DM/186DM/ 124DM/64DM
Digital Master Standard Cassette Tape
PHDVM-63DM
Digital Master Mini Cassette Tape

PDVM-12N/22N/32N/40N
Digital Videocassette (Non-IC type/Mini size)
PDV-34N/64N/94N/124N/184N
Digital Videocassette (Non-IC type/Standard size)
PDVM-12ME/22ME/32ME/40ME
Digital Videocassette (IC-type/Mini size)

PDV-34ME/64ME/94ME/124ME/184ME
Digital Videocassette (IC-type/Standard size)
PDV-12CL
Cleaning Cassette Tape (Standard size)
PDVM-12CL
Cleaning Cassette Tape (Mini size)

HVR-Z7E/HVR-S270E Specifications

		HVR-Z7E	HVR-S270E
Camera section			
Supplied Lens		Carl Zeiss Vario-Sonnar T* zoom lens, 12x (optical), f = 4.4 to 52.8 mm, f = 32.0 to 384 mm* at 16:9 mode f = 39.5 to 474 mm* at 4:3 mode, filter diameter: 72 mm	
Built-in filter		Clear, 1/4, 1/16, 1/64	
Imaging system		1/3-inch, progressive 3 ClearVid CMOS Sensor system with Exmor technology	
Picture elements		Approx. 1,037,000 pixels (effective), approx. 1,120,000 pixels (total)	
Focus		Auto, manual (focus ring/one push auto/infinity/AF assist/ focus macro)	
White balance		Auto, one-push auto (A/B positions), indoor (3200 K), outdoor (selectable level -7 to +7, approx. 500K/step), manual WB Temp (selectable 2300K to 15000K, 100K/step)	
Manual shutter	Auto	1/50 - 1/1750	
speed	Manual	50i/25p: 1/3 - 1/10000	
Gain		-6, -3, 0 , 3, 6, 9, 12, 15, 18, 21 dB	
Minimum illumination		1.5 lux (auto gain, auto iris, 1/25 shutter)	
VTR section			
Recording format		HDV1080/50i, DVCAM, DV SP 576/50i (PAL)	
Play out/Down conversion format		HDV1080/50i, DVCAM, DV SP 576/50i (PAL)	
Playback/	HDV/DV SP	Max. 63 min with PHDVM-63DM cassette	Max. 276min with PHDV-276DM Max. 63 min with PHDVM-63DM cassette
Recording time	DVCAM	Max. 41 min with PHDVM-63DM cassette	Max. 184min with PHDV-276DM Max. 41 min with PHDVM-63DM cassette
Input/Output conectors			
Audio/Video output		10-pin connector A/V OUT jack (composite, unbalanced audio x2ch with the supplied cable)	Composite video (BNCx1) Unbalanced auido (pin x2ch)
Component video output		Component out jack (special connector)	BNC x3
HDV/DV input/output		i.LINK interface (IEEE 1394, 6-pin)	
XLR audio input		XLR 3-pin female x 2ch	XLR 3pin female x 4ch
Headphone		Stereo mini jack (ø3.5 mm)	
LANC		Stereo mini-mini jack (ø2.5 mm)	
Digital video output		HDMI connector	HD/SD-SDI BNC x1
Built-in output devices			
LCD view finder		0.45-inch type (Viewable area measured diagonally), approx. 1,226,880 dots (852x3(RGB)x480), 16:9 aspect ratio	
LCD monitor		3.2-inch type (Viewable area measured diagonally), XtraFine LCD, approx. 921,600 dots, hybrid type, 16:9 aspect ratio	
General			
Mass		Approx. 2.4 kg (5 lb 4 oz) (w/ the supplied lens, w/o tape, battery)	Approx. 6.3kg (13 lb 15 oz) (w/ the supplied lens, w/o tape, BP-GL95battery)
Power requirements		DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)	DC 12 V (battery pack), DC 14.4 V (AC adaptor)
Power consumption	HDV	Approx. 7.0 W (with ECM-XM1 / LCD EVF ON)	Approx. 12.2 W (with ECM-XM1 / EVF ON)
	DVCAM/DV	Approx. 6.8 W (with ECM-XM1 / LCD EVF ON)	Approx. 11.7 W (with ECM-XM1 / EVF ON)
Power output		—	Output DC (2-pin)
Operating temperature		0 to 40 °C (32 to 104 °F)	0 to 40 °C (32 to 104 °F)
Storage temperature		-20 to +60 °C (-4 to 140 °F)	-20 to +60 °C (-4 to 140 °F)
Supplied accessories		AC-VQ1050 AC adaptor/charger, NP-F570 infoLITHIUM rechargeable battery pack, A/V connecting cable, component video cable, lens hood with lens cover, lithium battery (CR2025), shoe adaptor, large size eye-cup, additional normal shoe kit, RMT-831 wireless Remote Commander, ECM-XM1 monaural electret condenser microphone, Operating instructions (CD-ROM), Printed operating instructions, memory recording unit kit	lens hood with lens cover, lithium battery (CR2025), large size eye-cup, additional normal shoe kit, ECM-XM1 monaural electret condenser microphone, Shoulder Belt, Operating instructions (CD-ROM), Printed operating instructions, memory recording unit kit
Supplied memory recording unit			
Recording media		CompactFlash card (2GB or bigger, 133x or faster) (not supplied)	
File system		FAT32	
File format	HDV	.M2T	
	DVCAM/DV	.AVI (DV-AVI, type 1) or .DV (Raw-DV)	
Connectors		special hot shoe i.LINK-6pin (on the supplied cradle) DC power input (on the supplied cradle) infoLITHIUM L series battery slot (on the supplied cradle)	

HVR-M35E Specifications

		HVR-M35E
Recording/playback performance		
Recording format	HDV	HDV1080/60i, 1080/50i, 1080/24p, 1080/25p, 1080/30p
	DVCAM / DV SP	DVCAM, DV SP 480/60i (NTSC), 576/50i (PAL)
Playout format	HDV	HDV1080/60i, 1080/50i, 1080/24p, 1080/25p, 1080/30p, HDV720/24p, 720/25p, 720/30p
	DVCAM / DV SP	DVCAM, DV SP 480/60i (NTSC), 576/50i (PAL)
Playout video signal		1080/60i, 1080/50i, 480/60i (NTSC), 576/50i (PAL), 480/60P, 576/50P, 720/60P, 720/50P
Tape speed	HDV/DV SP	Max. 18.812 mm/s
	DVCAM	Max. 28.218 mm/s
Playback/	HDV/DV SP	Max. 276 min with PHDV-276DM cassette – Max. 63 min with PHDVM-63DM cassette
recording time	DVCAM	Max. 184 min with PHDV-276DM cassette – Max. 41 min with PHDVM-63DM cassette
Fast forward/rewind time		Approx. 2 min with PHDV-276DM cassette
Input/output connectors/devices		
Video input/output		BNCx1 / BNCx1
Monitor video out		RCA pin x1
S-video input/output		Mini-DIN 4-pin x1 / Mini-DIN 4-pin x1
Component video output		BNC x 3
i.LINK interface (HDV /DV)		6-pin (no power)
HD/SD-SDI output		BNC x1
Audio input		RCA pin x 4ch
Audio output		XLR 3pin x 4ch
Monitor audio out		RCA pin x 1
AES/EBU output		BNC x2
TC out		BNC x1
Phones		Stereo minijack (ø3.5 mm)
LANC		Stereo mini-minijack (ø2.5 mm)
Control S input		Stereo minijack (ø3.5 mm)
LCD monitor		2.7-inch type (Viewable area measured diagonally), approx. 211,200 dots (960 x 220), Clear Photo™ LCD Plus
General		
Weight		Approx. 9 lb 12 oz (4.4 kg)
Dimensions (WxHxD)		Approx. 212 x 88 x 390.3mm (8 3/8 x 3 1/2 x 15 3/8 inch)
Power requirements		AC 120 V, 60 Hz
Power consumption		16 W (playback mode with LCD monitor on)
Operating temperature		41 to 104 °F (5 to 40 °C)
Storage temperature		-4 to 140 °F (-20 to +60 °C)
Supplied accessories		Remote Commander Unit (1), power cord (1), size AA batteries (2), cleaning cassette (1), operating instructions (1)

HVR-Z1E/V1E/A1E Specifications

	HVR-Z1E	HVR-V1E	HVR-A1E
Camera section			
Lens	Carl Zeiss Vario-Sonnar T* zoom lens, 12x (optical), f = 4. 5 to 54 mm (³⁄₁₆ to 2 ¼ inches), f = 32.5 to 390 mm (1 ⁵⁄₁₆ to 15 ³⁄₈ inches)* at 16:9 mode, f = 40 to 480 mm (1 ⁵⁄₈ to 19 inches)* at 4:3 mode, F = 1.6 to 2.8, filter diameter: 72 mm (2 ⁷⁄₈ inches)	Carl Zeiss Vario-Sonnar T* zoom lens, 20x (optical), f = 3.9 to 78 mm, f = 37.4 to 748 mm* at 16:9 mode, f = 45.7 to 914 mm* at 4:3 mode, F = 1.6 to 2.8, filter diameter: 62 mm	Carl Zeiss Vario-Sonnar T* zoom lens, 10x (optical), f = 40 to 400 mm in 16:9 mode and 49.3 to 493 mm in 4:3 mode (full scan mode on)* f = 41 to 480 mm in 16:9 mode and 50 to 590 mm in 4:3 mode (full scan mode off)* f = 40 to 400 mm in 16:9 mode and 37 to 370 mm in 4:3 mode (still picture mode)* f = 1.8 to 2.1, filter diameter: 37 mm
Built-in filter	1/6 ND, 1/32 ND	1/4 ND, 1/16 ND	—
Focus	Auto, manual (focus ring/infinity position), one push auto	Auto, manual (focus ring/one push auto/infinity)	Auto, manual, spot focus (touch panel control)
Imaging device	3-chip 1/3-inch type CCDs	1/4-inch type, 3 ClearVid CMOS Sensor system	1-chip, 1/3-inch type primary colour CMOS sensor
Picture elements	Approx. 1,070,000 pixels (effective), approx. 1,120,000 pixels (total)	Approx. 1,037,000 pixels (effective), approx. 1,120,000 pixels (total)	Approx. 2,969,000 pixels (total)
White balance	Auto, one-push auto, indoor (3200 K), outdoor (5800 K ±7 steps)	Auto, one-push auto (2 positions), indoor (3200 K), outdoor (5800 K +15steps)	
Shutter speed 50i/PAL mode	1/3, 1/6, 1/12, 1/25, 1/50, 1/60, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000 s	1/3, 1/6, 1/12, 1/25, 1/50, 1/60, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000 s	1/3, 1/6, 1/12, 1/25, 1/50, 1/60, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000 s
60i/NTSC mode	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	Auto, manual (Type1/Type2)	—
Gain	0, 3, 6, 9, 12, 15, 18 dB (adjustable for H, M and L gain positions)	0, 3, 6, 9, 12, 15, 18 dB	
Minimum illumination	3 lx with F1.6 at 18 dB	4 lx with F1.6 at 18 dB	7 lx with F1.8
VTR Section			
Recording format 1080/50i, 576/50i		1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC)	1080/50i, 576/50i (PAL)
Playout/Down-conversion format	1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC) 576/50p, 480/60p	1080/50i, 576/50i (PAL)	1080/50i, 576/50i, 576/50P
Tape speed HDV/DV SP DVCAM		Max. 18.812 mm/s with PHDVM-63DM cassette Max. 28.218 mm/s with PHDVM-63DM cassette	
Playback/ HDV/DV SP Recording time DVCAM		Max. 63 min with PHDVM-63DM cassette Max. 41 min with PHDVM-63DM cassette	
Fast forward/Rewind time	Approx. 2 min 40 s with PHDVM-63DM cassette	Approx. 2 min 40 s with PHDVM-63DM cassette (using a fully charged battery) Approx. 1 min 45 s with PHDVM-63DM cassette using an AC adaptor)	Approx. 2 min 40 s with PHDVM-63DM cassette (using a fully charged battery) Approx. 1 min 45 s with PHDVM-63DM cassette (using an AC adaptor)
Input/Output connectors			
Audio/Video input/output	AUDIO/VIDEO jack x1 Video signal:1 Vp-p, 75 Ω unbalanced, sync negative Audio signal: 327 mV (at load impedance 47 kΩ) input impedance more than 47 kΩ output impedance less than 2.2 kΩ	A/V OUT jack, 10-pin connector Composite video: 1 Vp-p, 75 Ω unbalanced, sync negative Y: 1 Vp-p, 75 Ω unbalanced C: 0.3 Vp-p (burst signal), 75 Ω unbalanced Audio: 327 mV, input impedance more than 47 kΩ, output impedance less than 2.2 kΩ	A/V OUT jack, 10-pin connector Composite video: 1 Vp-p, 75 Ω unbalanced, sync negative Y: 1 Vp-p, 75 Ω unbalanced, sync negative C: 0.3 Vp-p, 75 Ω unbalanced Audio: 327 mV, input impedance more than 47 kΩ output impedance less than 2.2 kΩ
S-video input/output	Mini-DIN 4-pin x 1 Y: 1 Vp-p, 75 Ω unbalanced, sync negative C: 0.3 Vp-p (PAL), 0.286 Vp-p (NTSC), 75 Ω unbalanced		—
Component video output	COMPONENT OUTPUT jack Y: 1 Vp-p (0.3 V, sync negative) Pr/Pb (Cr/Cb): 525 mVp-p (75% colour bar), input impedance 75 Ω	COMPONENT OUT jack Y: 1 Vp-p, 75 Ω unbalanced Pr/Pb (Cr/Cb): 700 mVp-p, 75 Ω unbalanced	COMPONENT OUT jack Y: 1 Vp-p (0.3 V, sync negative), 75 Ω unbalanced Pr/Pb (Cr/Cb): 525 mVp-p (75% colour bar)
i.LINK		i.LINK interface (IEEE 1394, 4-pin connector S100)	
XLR audio input	XLR 3-pin female x 2, 327 mV, -60 dBu: 3 kΩ, +40 dBu: 10.8 kΩ, power supply: approx. 40 V	XLR 3-pin female x 2, 327 mV, -60 dBu: 3 kΩ, +40 dBu: 10.8 kΩ, power supply: approx. 48 V	
Headphone		Stereo minijack (Ø 3.5 mm)	
MIC	—	—	Minijack x 1, 0.388 mV, low impedance with DC 2.5 to 3.0 V, output impedance 6.8 kΩ (Ω 3.5 mm), stereo type
LANC		Stereo mini-minijack (Ø 2.5 mm)	
USB	—		Mini-B connector
HDMI Output	—	HDMI connector	—
Built-in input/output devices			
LCD viewfinder	0.44-inch type, approx. 252,000 pixels (1120 x 225), hybrid type	0.54-inch** type, approx. 252,000 dots, 16:9 aspect ratio	0.44-inch type, approx. 252,000 pixels (1120 x 225) hybrid type, 16:9 aspect ratio
LCD monitor	3.5-inch type, approx. 250,000 pixels (1120 x 224), hybrid type	3.5-inch** type, Clear Photo LCD plus , approx. 211,200 dots hybrid type, 16:9 aspect ratio	2.7-inch type, approx. 123,200 (560 x 220) pixels, hybrid type, 16:9 aspect ratio
Speakers		Ø 16mm	
Microphone	Stereo type, noise reduction on/off	—	Stereo type, noise reduction on/off
General			
Mass	Approx. 2.1 kg (4 lb 10 oz) (camcorder only)	Approx. 1.5 kg (3 lb 6 oz) (camcorder only)	Approx. 670 g (1 lb 7 oz) (camcorder only)
Power requirements	DC 7.2 V (battery pack)	DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)	DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)
Power HDV: consumption	Approx. 8.0 W (recording mode with LCD viewfinder on)	Approx. 6.8 W (recording mode with LCD viewfinder or monitor on)	Approx. 5.6 W (recording mode with LCD viewfinder on)
DVCAM/DV:	Approx. 7.6 W (recording mode with LCD viewfinder on)	Approx. 6.6 W (recording mode with LCD viewfinder or monitor on)	Approx. 5.1 W (recording mode with LCD viewfinder on)
Operating temperature	0 to 40 °C (32 to 104 °F)	0 to 40 °C (32 to 104 °F)	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to +60 °C (-4 to 140 °F)	-20 to +60 °C (-4 to 140 °F)	-20 to +60 °C (-4 to 140 °F)
Supplied accessories	AC-VQ850 AC adaptor/charger, power cord, connecting cord, lens hood, large eye-cup, RMT-841 wireless Remote Commander, A/V connecting cable, component video cable, shoe adaptor, NP-F570 InfoLITHIUM rechargeable battery pack, size AA (R6) batteries (2), cleaning cassette, shoulder strap, operating instructions	AC-L15 AC adaptor, Power cord, NP-F570 infoLITHIUM rechargeable battery pack, A/V connecting cable, component video cable, USB cable, lens hood with lens cover, RMT-831 Wireless Remote Commander™, ECM-NV1 monaural electolet condenser microphone, operating instructions (CD-ROM), operating instructions	AC-L15 AC adaptor, Power cord, NP-FM50 InfoLITHIUM, rechargeable battery pack, lens hood with lens cover, RMT-831 wireless Remote Commander unit, A/V connecting cable with S video, component video cable, USB cable, Memory Stick Duo (16 MB), Memory Stick Duo adaptor, ECM-NV1 monaural electret condenser microphone, XLR audio adaptor, shoulder strap, operating instructions

* These values are calculated to be equivalent to 35mm film

HVR-M25E/HVR-M15E Specifications

	HVR-M25E	HVR-M15E
Recording/playback performance		
Recording format	1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC)	
Playout/down conversion format	1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC), 576/50P, 480/60P, 720/50P, 720/60P	1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC), 576/50P, 480/60P
Tape speed HDV/DV SP DVCAM	Max. 18.812 mm/s Max. 28.218 mm/s	
Playback/ recording time HDV/DV SP DVCAM	Max. 276 min with PHDV-276DM cassette Max. 63 min with PHDVM-63DM cassette Max. 184 min with PHDV-276DM cassette Max. 41 min with PHDVM-63DM cassette	
Fast forward/rewind time	Approx. 2 min with PHDV-276DM cassette	
Input/output connectors/devices		
Video input/output	BNC x 2 Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative	RCA pin x 2 Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative
S-video input/output	Mini-DIN 4-pin x 2 Y: 1 Vp-p, 75 Ω unbalanced, sync negative C: 0.286 Vp-p (NTSC), 0.3 Vp-p (PAL), 75 Ω unbalanced,	
Component video output	BNC x 3 Y: 1 Vp-p (0.3 V, sync negative) Pr/Pb (Cr/Cb): 700 mVp-p (100% colour bar), input impedance 75 Ω	RCA pin x 3 Y: 1 Vp-p (0.3 V, sync negative) Pr/Pb (Cr/Cb): 700 mVp-p (100% colour bar), input impedance 75 Ω
i.LINK	4-pin	
HDMI output	19-pin (type A), video: 1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC), 720/50P, 720/60P, 576/50P, 480/60P, audio: PCM 48 kHz/16-bit	—
Phones	Stereo minijack (Ø 3.5 mm), 8 Ω loading	—
LANC	Stereo mini-minijack (Ø 2.5 m)	
Control S	Stereo minijack (Ø 3.5 mm)	
Audio input	RCA pin x 2 Input level: -10/-2/+4 dBu, input impedance: min. 47 kΩ unbalanced, max. input level: -10: +18 dBu (approx. 6 Vrms), -2: +24 dBu (approx. 12.5 Vrms), +4: +30 dBu (approx. 25 Vrms)	RCA pin x 2 Input level: -10 dBu, input impedance: min. 10 kΩ unbalanced, max input level: +16 dBu (approx. 5 Vrms) in 60i mode, +14 dBu (approx. 4 Vrms) in 50i mode
Audio output	RCA pin x 2 Output level: -10 dBu (full bit -20 dB), impedance 47 kΩ, unbalanced in 60i mode, -10 dBu (full bit -18 dB), impedance 47 kΩ, unbalanced in 50i mode – Impedance: max. 1 kΩ unbalanced	
LCD monitor	2.7-inch type, approx. 211,200 dots (960 x 220), Clear Photo LCD Plus	
General		
Mass	Approx. 4.3 kg (9 lb 8 oz)	Approx. 2.3 kg (5 lb 1 oz)
Power requirements	AC 120 V, 60 Hz	DC 8.4 V
Power consumption	12 W (playback mode with LCD monitor on)	8 W (playback mode)
Operating temperature	5 to 40 °C (41 to 104 °F)	
Storage temperature	-20 to +60 °C (-4 to 140 °F)	
Supplied accessories	Remote commander (1), power cord (1), size AA batteries (2), cleaning cassette (1), operating instructions (1)	Remote commander (1), AC adaptor (1), power cord (1), stand (1), size AA batteries (2), cleaning cassette (1), operating instructions (1)
Optional accessories	VMC-IL4408A/IL4415/IL4435 i.LINK Cable (4-pin to 4-pin, 0.8/1.5/3 m), VMC-IL4615/IL4635 i.LINK Cable (4-pin to 6-pin, 1.5/3.5 m), DLC-HM15/HM30/HM50 HDMI Cable (1.5/3/5 m), PHDV-276DM/186DM/124DM/64DM Digital Master Standard Cassette Tape, PHDVM-63DM Digital Master Mini Cassette Tape	

HVR-1500 Specifications

		HVR-1500	
		60i system	50i system
Recording/playback performance			
Recording format		1080/60i [1], 480/60i [1] (NTSC)	1080/50i, 576/50i (PAL)
Playback & down conversion format		1080/60i [1], 480/60i [1] (NTSC)	1080/50i, 576/50i (PAL)
Tape speed	HDV/DV SP	18.812 mm/s	18.831 mm/s
	DVCAM	28.193 mm/s	28.221 mm/s
Playback/ recording time	HDV/DV SP	Max. 276 min with PHDV-276DM cassette Max. 63 min with PHDVM-63DM cassette	
	DVCAM	Max. 184 min with PDV-184N cassette Max. 40 min with PDVM-40N cassette	
Fast forward/rewind time		Approx. 3 min with PHDV-276DM and PDV-184N cassette	
Video Input			
Digital video	SD-SDI (BNC x1)	Conforms to Serial Digital Interface (270Mb/s), SMPTE 259M	Conforms to Serial Digtal Interface (270Mb/s), ITU-R BT. 656
Analogue video	Ref. video (HD/SD)	BNC x2, loop-through connection [3] HD: bipolar tri-level sync, 0.3 Vp-p, 75 Ω , sync negative SD: black burst or composite sync, 0.286 Vp-p, 75 Ω , sync negative	BNC x2, loop-through connection [3] HD: bipolar tri-level sync, 0.3 Vp-p, 75 Ω , sync negative SD: black burst or composite sync, 0.3 Vp-p , 75 Ω , sync negative
	Component [2]	BNC x3 [3] Y: 1.0 Vp-p, 75 Ω , sync negative R-Y: 0.7 Vp-p, 75 Ω , (75% colour bars) B-Y: 0.7 Vp-p, 75 Ω , (75% colour bars)	BNC x3 [3] Y: 1.0 Vp-p, 75 Ω , sync negative R-Y: 0.7 Vp-p, 75 Ω , (100% colour bars) B-Y: 0.7 Vp-p, 75 Ω , (100% colour bars)
	Composite [2]	(BNC x2, loop-through connection)[3] 1.0 Vp-p, 75 Ω , sync negative	
	S-Video [2] (BNC x2) [3]	Y: 1.0 Vp-p, 75 Ω , sync negative C: 0.286 Vp-p, 75 Ω (at burst level)	Y: 1.0 Vp-p, 75 Ω , sync negative C: 0.3 Vp-p, 75 Ω (at burst level)
Audio Input			
Digital audio	AES/EBU (BNC x2)	Conforms to AES-3id-1995	
	Analogue audio [2]	Audio (XLR 3-pin female x2)	+4/0/-6 dBu high impedance, balanced
Video Output			
Digital video	HD-SDI (BNC x2)	Conforms to Serial Digital Interface (1.485, 1.485/1.001 Gb/s), SMPTE 292M	
	SD-SDI (BNC x2)	Conforms to Serial Digital Interface (270 Mb/s), SMPTE 259M	Conforms to Serial Digital Interface (270 Mb/s), ITU-R BT.656
Analogue video	Component (HD) (BNC x3) [4]	Y: 1.0 Vp-p, 75 Ω , sync negative R-Y: 0.7 Vp-p, 75 Ω B-Y: 0.7 Vp-p, 75 Ω	
	Component (SD) (BNC x3) [4]	Y: 1.0 Vp-p, 75 Ω , sync negative R-Y: 0.7 Vp-p, 75 Ω , (75% colour bars) B-Y: 0.7 Vp-p, 75 Ω , (75% colour bars)	Y: 1.0 Vp-p, 75 Ω , sync negative R-Y: 0.7 Vp-p, 75 Ω , (100% colour bars) B-Y: 0.7 Vp-p, 75 Ω , (100% colour bars)
	Composite (BNC x1) [4]	1.0 Vp-p, 75 Ω , sync negative	
	S-Video (BNC x2) [4]	Y: 1.0 Vp-p, 75 Ω , sync negative C: 0.286 Vp-p, 75 Ω (at burst level)	Y: 1.0 Vp-p, 75 Ω , sync negative C: 0.3 Vp-p, 75 Ω (at burst level)
	Monitor video (BNC x1)	Composite, 1.0 Vp-p, 75 Ω , sync negative, with superimposed text information	
Audio Output			
Digital audio	AES/EBU (BNC x2)	Conforms to AEC-3id-1995	
Analogue audio	Audio (XLR 3-pin male x2) Monitor (RCA pin x1) Headphones (JM-60 jack x1)	+4/0/-6 dBu, 600 kΩ loading, low impedance balanced –∞ to -11 dBu ±1 dB (-20 dBFS), 47 kΩ , unbalanced –∞ to -13 dBu (-20 dBFS), 8 Ω , unbalanced	+4/0/-3/-6 dBu, 600 kΩ loading, low impedance, –∞ to -9 dBu ±1 dB (-18 dBFS), 47 kΩ , unbalanced –∞ to -11 dBu (-18 dBFS), 8 Ω , unbalanced
i.LINK Interface			
	i.LINK 6-pin x1 [5]	IEEE 1394-based	
Time Code Input/Output			
TC In	BNC x1	0.5 Vp-p to 18 Vp-p, 3.3 kΩ , unbalanced	
TC Out	BNC x1	2.2 Vp-p ±3 dB (when 600 Ω terminated), unbalanced	
Remote			
RS-422A		D-sub 9-pin (female) x1	
Control-S (SIRCS)		Stereo mini jack x1	
General			
Mass		Approx. 6.9 kg (15 lb 3 oz)	
Dimensions		211(W) x 130 (H) x 420 (D) mm (8 3/8 x 5 1/8 x16 5/8 inches)	
Power requirement		AC 100 V to 240 V, 50/60 Hz	
Power consumption		Approx. 60 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 relative humidity		Less than 80%	
Storage relative humidity		Less than 90%	
Supplied Accessories		AC power cord x1, Operating instructions x1	

1 "60i" indicates a field rate of 59.94 Hz.
2 The HVBK-1505 Analogue Input Board is required.
3 Component, composite and S-Video inputs share the same BNC connectors.
4 Component, composite and S-Video outputs share the same BNC connectors.
5 HDV and DV streams share the same i.LINK connector.

HVR-DR60 Specifications

	HVR-DR60
Hard disk drive	
Recording capacity	60 GB[1]
Disk size	1.8 inches
File system	FAT32
Interface	
i.LINK	IEEE 1394a, 6-pin connector
File format	
HDV	MPEG-2-TS (.m2t)
DVCAM/DV SP	AVI-Type1 (.AVI), RAW-DV (.DV)
Built-in output device	
LCD monitor	23.02 x 11.5 mm (picture size), 128 x 64 dots
OS compatibility	Windows® 2000 Professional (Service Pack 4), Windows XP Home Edition (Service Pack 2), Windows XP Professional (Service Pack 2), Mac® OS X (v10.3)
General	
Mass	230 g (8 oz)
Power requirements	DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)
Power consumption	2.7 W (in recording mode with LCD monitor on)
Operating temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to +60 °C (-4 to 140 °F)
Supplied accessories	i.LINK cable (6-pin to 4-pin, 80 cm) Shoe adaptor Operating instructions

1 In this specification, 1GB indicates 1 billion bytes. A portion of the recording capacity is used for data management.

Connector Panels

HVR-M25E
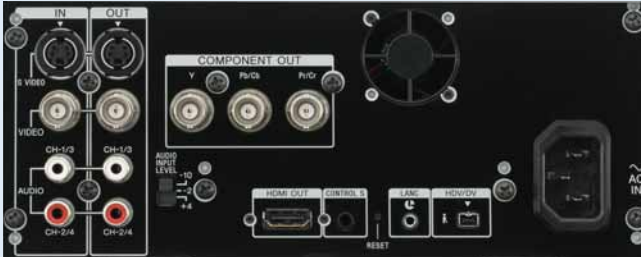
HVR-M15E

HVR-M35E

HVR-1500 with the optional HVBK-1505 board

Services

Services from Sony

> **Working with you, working for you**
Recognising that every company and every challenge is unique, we offer a complete and comprehensive range of services all the way through consulting, planning, financing, implementation, training, servicing, maintenance and support. Choose exactly what's right for you, when and where you need it.

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Silver Support

> **2-year Support**
Included with all sales in the EU, Norway and Switzerland, the Silver Support Pack extends the support period from the standard 1-year warranty to 2 years with the option to extend to a 3-year period. Not only that, the following extra features and services are also included.

> **Operational Helpdesk**
Operational phone support is provided to give advice and help so that you can get the most out of your Professional HDV equipment and maximise its performance. The multi-lingual helpdesk is available from Monday to Friday 0900-1800 Central European Time.

> **Collection Anywhere**
In the event of equipment failure, Sony will arrange for the collection, repair and return of the unit directly to your location, anywhere in mainland EU, Norway or Switzerland. That makes it simpler, quicker and even more convenient for you.

> **Repair within 7 days**
Sony will collect, repair and return the unit to your preferred location within 7 working days. So, minimum downtime, increased confidence and the ability to plan your business are guaranteed.

> **Loan**
If the repair is likely to exceed 7 working days, Sony will contact you and offer to send a loan unit for the remainder of the repair.

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