HDV Product Range 2010.

SONY
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 used 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 introduced two new HDV camcorders that delivered the enhanced choice professionals had been waiting for: an interchangeable lens system, native progressive recording and solid-state memory recording. The HVR-Z7E is 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 CF solid-state memory card.

In early 2009, built on the success of not only the industry-standard HVR-Z1E, but also incorporating the new technology of the HVR-Z7E, Sony launched the HVR-Z5E redefining a new standard for the fixed lens HDV compact camcorder market. With a new ‘G’ lens, 1/3-inch ClearVid sensors and optional HVR-MRC1K memory recording unit, the HVR-Z5E will surely be a worthy successor to the HVR-Z1E.

Sony’s professional HDV products are aimed at professional videographers, documentary makers and feature film makers working to tight budgets. Professional 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 2009 models will only serve to increase the breadth of Professional HDV.

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An Introduction to Hybrid Recording

In 2008, Sony launched a new way of working, a hybrid solution offering customers all the benefits of both tape based acquisition and solid-state acquisition. The first products to demonstrate this ‘hybrid’ operation were the HVR-Z7E and HVR-S270E with their detachable HVR-MRC1 memory recording unit. In 2009 Sony has expanded this concept to offer the HVR-MRC1K as a stand-alone product opening up tapeless acquisition to the huge Professional HDV customer base. Alongside this launch, Sony have also launched the HVR-Z5E which allows connection of this new optional accessory directly on the rear of the camcorder.

HYBRID Format
You can record video in HD and SD formats simultaneously. When using the built-in down-converter of the camcorder, SD images can be recorded on non-linear media while HD images are recorded to tape.

Alternatively, you can use high quality uncompressed Linear-PCM audio data in a DV file instead of the compressed audio of HDV. So it is possible to integrate HDV video with Linear-PCM audio on the timeline of HDV-compatible NLE (non-linear editing) software.

HYBRID Media
HYBRID recording allows you to use two different types of recording media at one time. The tape and non-linear media provide dual media recording simultaneously.

HYBRID Workflow
Tape is still one of the most reliable storage media. HYBRID recording with the HVR-MRC1K allows you to keep the master source tape in a safe place, while having a video file for streamlined NLE work.

HYBRID-Recording

“HD + HD” HYBRID-Recording
- Tape: HDV1080i signal
- CF card: HDV1080i signal
- Archiving
- Repurposing
- HD Delivery
- HD

“HD + SD” HYBRID-Recording
- Tape: HDV1080i signal
- CF card: Down-converted DV signal
- Archiving
- Repurposing
- SD Delivery
- SD

“SD + SD” HYBRID-Recording
- Tape: DVCAM or DV signal
- CF card: DV signal
- Archiving
- Repurposing
- SD Delivery
- SD
Expanding the HDV Format as a Global Standard

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 tape. It adopts the MPEG-2 compression format, using 8-bit digital component recording at approximately 25Mb/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 and Digital Master. 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).

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

2 Year PrimeSupport Contract

> 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.
Sony’s commitment to HDV has resulted in the remarkable evolution of cutting-edge technology equipment, such as the HVR-Z7E and HVR-S270E and the new HDV-Z5E, 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 at efficient bit-rates.

HVR-Z5E and HVR-Z7E provide 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 HVR-MRC1K CompactFlash (CF) Memory Recording Unit\(^3\), images can be stored on a CF card\(^4\) for quick non-linear editing.

\(^1\) 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.

\(^3\) The HVR-Z7E and HVR-S270E are supplied with the memory recording unit. For the HVR-Z5E and the HVR-MRC1K it is an option.

\(^4\) When Sony’s recommended professional CF Card Model NCFD-8GP is used, approx. 36 min recording time.

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**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.
1/3 inch-type 3 “Exmor” CMOS Sensor System with ClearVid array

The 1/3 inch-type 3 “Exmor” CMOS Sensor System with ClearVid array 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 “Exmor” CMOS Sensor System with ClearVid array 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 “Exmor” CMOS Sensor System with ClearVid array is different. It always produces maximum resolution, regardless of the balance between colour elements, thanks to its unique and sophisticated interpolation technology.

Enhanced “Exmor” Technology

The HVR-Z5E, HVR-Z7E and HVR-S270E offers cutting-edge “Exmor” technology developed by Sony, which utilises the full potential of the ClearVid Sensor array.

“Exmor” technology, which features column-parallel A/D conversion and dual noise cancelling is also used in other new camera products from Sony, such as the PMW-EX1 and PMW-EX3.

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. “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 “Exmor” CMOS Sensor System with ClearVid array enables the HVR-Z5E, 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.
Interchangeable Lens System Offers Unlimited Flexibility

Carl Zeiss Lens for HD Video as Standard
A high quality, multi-purpose Carl Zeiss lens 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 these HDV camcorders the same functionality as popular fixed-lens camcorders like the HVR-Z5E 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.

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.

<table>
<thead>
<tr>
<th>Lens</th>
<th>Optical Zoom</th>
<th>Focal Length¹</th>
<th>F Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard lens (supplied)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCL-412BWH (for HVR-Z7E)</td>
<td>12x</td>
<td>32mm–384mm (16:9)</td>
<td>1.6 – 2.0</td>
</tr>
<tr>
<td>VCL-412BWS (for HVR-S270E)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Wide lens (option)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCL-308BWH (for HVR-Z7E)</td>
<td>8x</td>
<td>24mm–192mm (16:9)</td>
<td>1.6 – 2.4</td>
</tr>
<tr>
<td>VCL-308BWS (for HVR-S270E)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
Some lenses may not be compatible and not all lens functions may be available
New Manual Camera Settings

Three ND filters
The HVR-Z5E, 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.

One-touch Clip-type Microphone Holder
A one-touch clip-type microphone holder makes it easy to attach and remove the microphone for quick storage.

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.

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

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

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 leveller function makes it possible to obtain a horizontal level reading even when shooting without a tripod.
Creative Versatility

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

WR (White Balance) Shift
The WR Shift function allows users to create an impressive colour or to adjust the colour temperature of the camcorder. There are two WR 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.

Shot Transition™ Function
The Shot Transition function allows for smooth automatic scene transitions. After you have programmed a shot’s START and END point settings (e.g., for zoom, focus, iris, gain, shutter speed and white balance) and pressed the start button, a smooth picture 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 object to a close object. Transition types can be selected from a choice of “LINEAR”, “SOFT STOP” and “SOFT TRANS”, transition time can be set from 2 to 90 seconds and start delay time can be selected from 5, 10 and 20 seconds.

Smooth Slow Rec
The Smooth Slow Rec function of the camcorders enables smooth slow-motion playback by capturing images 4x faster than normal (200 fields/s). In this mode, for example, 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 seconds1. This allows recorded images to be checked immediately in the field. Recording durations are available in three, six and 12 seconds depending on the picture quality. Picture quality is slightly degraded, but this quad-speed imaging capture is the fastest speed available in compact HD camcorders. Smooth Slow Rec is ideal for sports or nature photography, where the action can be viewed more easily in slow motion and opens up many creative possibilities.

1 Audio cannot be recorded while shooting in this mode.

Colour Correction
The Colour Correction function of the HVR-Z1E has been improved in the HVR-Z5E, 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.

WB (White Balance) Shift
The WB 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:
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Selectable Progressive Modes

Two types of progressive shooting modes are available.

25p HDV Native Progressive Recording Mode
These camcorders feature a 25p HDV native progressive recording mode. The 3 “Exmor” CMOS Sensor System with ClearVid array and EIP create true 1080p images, which can then be recorded as a progressive signal by the camcorders in the 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.

25p Progressive Scan Mode
In this mode, the 1080p image captured by the 3 “Exmor” CMOS Sensor System with ClearVid array 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.
Supplied Memory Recording Unit

Hybrid Memory Recording Unit.

HDV with an IT Workflow using the CompactFlash Memory Recording Unit
The Memory Recording Unit is supplied with the HVR-Z7E and HVR-Z270E to support tape recording. It captures the HDV/1080i, 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) card¹, which offers secure recording, high-speed access, large data capacity, removable media convenience and high durability against external vibration. This memory recording unit is also available as a stand alone product. The HVR-MRC1K offers this functionality with the HVR-Z7E.

¹ Not supplied.

HDV/DVCAM/DV File Recording on CompactFlash Card²
The recording time on a 16GB CF card² in HDV, DVCAM and DV format³ is approximately 72 minutes.

² At least 133x speed and 2GB capacity is required.
³ The recording time may change according to the CF card type and recording format.

Note: For full product details on the HVR-MRC1K Memory recording unit and Hybrid workflow please see page 34

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 connector⁴. 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 a 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.

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.
Introducing a truly amazing new professional HDV camcorder from Sony. The HVR-Z5E is a fixed lens compact HD camcorder designed to enhance creativity and deliver, the highest standard of optical and audio quality in many different applications.

Advanced Camera Features:

**Sony’s Exclusive High-performance “G Lens”**
Discover the exceptional optical performance of Sony’s “G Lens”. This sophisticated lens incorporates Sony’s unique optical technology and unparalleled quality control. Moreover, it’s been optimised to perfectly complement the camcorder’s advanced image sensor and image-processing technology, thus expanding your shooting possibilities. Express yourself more fully with the utmost precision of Sony’s “G Lens”.

**Major “G Lens” Features on HVR-Z5E**

1. The 29.5mm wide-angle “G Lens” (equivalent to 35mm film) on the HVR-Z5E offers a field of view that’s ideal for many shooting situations, ranging from broad landscape shots to conditions where sufficient distance from the subject is difficult to obtain. Its 20x optical zoom capability also enables shooting over a wide zooming range.
2. Two ED (Extra-low Dispersion) glass elements reduce chromatic aberrations caused by differences in light refraction to minimise colour fringing. The advanced 10-group, 15-element lens structure also includes compound aspheric lenses for images that are crisp and clear even when shooting movies at high zooming ratio.
3. Advanced optical lens technology makes the most of Sony’s 3 “Exmor” CMOS Sensor System with ClearVid array to realise sharper images with higher resolution and less noise even when shooting in very low light.
4. The six-blade iris diaphragm is nearly circular, enabling the creation of extremely beautiful background blur.

**Natural-touch Lens Operation**
Newly designed focus, zoom and iris control functions provide convenient lens operation. The zoom function is variable and can be controlled using the lens barrel ring, the lever at the lens grip, or the lever on the camera handle. Additionally, once you select the high-speed zoom mode, you can zoom from wide to telephoto modes about 1.5x faster than with the HVR-V1E.

The lens barrel ring controls the iris and a simple menu adjustment allows you to change the direction of rotation to open and close it. Furthermore, you can control overall exposure by changing the function of the iris ring. Exposure control automatically adjusts the optimum iris, gain and shutter settings. Using exposure control mode, you can also fix the gain and shutter settings.

This function is ideal for varied shooting environments that range from very dark to very bright, allowing easy one-handed control using single-ring operation. The ergonomic layout of the zoom, focus and iris control rings makes operation of these three functions possible with just one hand. Moreover, the built-in digital extender system increases the zoom ratio to approximately 30x. Sony’s Super SteadyShot system (optical) helps you achieve a stable picture even when camera handling is unsteady.

The HVR-Z5E also provides three built-in ND (Neutral Density) filters and accommodates the addition of an optional 0.8x wide conversion lens. These features provide enhanced shooting flexibility to suit your production requirements.

**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.

**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 into the base plate of the camcorder.
Operational Versatility:

XtraFine™ LCD Panel

A 3.2 inch-type XtraFine LCD is located on the HVR-Z5E in the same position as on the HVR-Z1E. It has approximately 921,000 pixels (1920x480), which is 4x greater than the LCD of the HVR-Z1E and this higher resolution allows for easier focus adjustment. The XtraFine LCD displays virtually 100% of the recorded picture area at a colour temperature of 6500K approximately.

XtraFine EVF

The 0.45 inch-type XtraFine EVF (Electronic View Finder) has approximately 1,227,000 pixels (852x3[RGB]x480). This device has three independent LEDs for Red, Green and Blue colours. This technology allows users to monitor objects with remarkable colour reproduction accuracy and high resolution. The EVF has a selectable display mode between Colour or Black and White. The XtraFine EVF displays virtually 100% of the picture area at a colour temperature of 6500K approximately.

InfoLITHIUM L Series Battery Compatibility

The HVR-Z5E uses the same batteries as the HVR-Z7E, HVR-Z1E, HVR-V1E and DSR-PD170P, so you can use your existing chargers and batteries.

HDMI Output Connector

Uncompressed digital HD video and audio signals are output from the HDMI connector. You can see stunning HD images on an HDMI-compatible monitor display. During shooting, a pre-compressed 1920x1080/4:2:2 signal is output from the HDMI connector.

Two Accessory Shoe Connectors

The HVR-Z5E features two accessory shoe connectors. One is a cold shoe on the top of the microphone unit at the front and the other is a screw-hole type shoe located on the handle. The rear side shoe can be changed to a cold shoe using supplied parts.
Versatile Audio Input Selection

The HVR-Z5E features versatile audio input selection with a newly designed high quality built-in stereo microphone, as well as two XLR audio input channels for professional microphones or connecting to an external-line audio source. Additionally, the ECM-XM1 high-sensitivity, low-noise monaural microphone is supplied. This microphone has an S/N ratio of 78dB and a sensitivity increase of 14dB over its predecessor, the ECM-NV1. By adjusting the INPUT ASSIGN switch located on the side panel of the HVR-Z5E, you can easily assign the two audio input channels to the built-in stereo microphone, external-line audio, or dedicate one channel to each and record them separately or mixed. When assigned to one channel, the built-in stereo microphone acts as a wide-directional monaural microphone.

Assignable Features

HVR-Z5E provides up to seven ASSIGN buttons for quick access to frequently used functions suitable for variable shooting conditions. Some default functions are pre-assigned by name. The assignable functions are AE Shift, Back Light, Colour Bars, Digital Extender, End Search, Expanded Focus, Fader, Focus Macro, Hyper Gain, Index Mark, Last Scene Review, Marker, Peaking, Photo, Picture Profile, Push AF Its, REC Review, Ring Rotate, Shot Transition, Smooth Slow REC, Spot Light, Steady Shot, TC Reset, TC Count Up and Zebra.

6 The ECM-NV1 is a supplied microphone with the DSR-PD170P, DSR-250P, HVR-A1E and HVR-V1E.
Sony’s one and only 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.

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.

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.
InfoLITHIUM L Series Battery Compatible
The HVR-Z7E uses the same batteries as the HVR-Z5E, 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 1920x1080/4:2:2 signal is output from the HDMI connector.

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.

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.
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.

Four-channel Audio Input
Four-channel audio recording is available for HDV and DVCAM recording 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.
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 was the first camcorder to feature advanced technologies such as the 3 ClearVid CMOS Sensor imaging system — and also offers a stunning optical 20x Carl Zeiss Vario-Sonnar T* zoom lens.

Innovative Technologies and Professional Features

3 ClearVid CMOS Sensor Imaging System

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 an 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 format¹. 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.
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 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\(^2\), or Edge crop (see diagrams right).

1. i.LINK is a trademark of Sony used only to designate that a product contains anIEEE 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.

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

16:9 Widescreen Acquisition in DVCAM and DV Formats

2-channel XLR Audio Input

Time Code Preset

Optical 20x Lens and Optional VCL-HG0868K 0.8x Wide Conversion Lens

Super SteadyShot (Optical)

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

### Recording, Playback and Down-conversion Formats

<table>
<thead>
<tr>
<th>Recording Format</th>
<th>Playback/Down Conversion Format</th>
<th>i.LINK</th>
<th>Analogue Component</th>
<th>HDMI</th>
<th>Analogue Component</th>
<th>S-Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDV1080i</td>
<td>1080i/50i</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>576i/50i (SQ/EC)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>576i/50i (LB)</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>DVCAM/DV</td>
<td>576i/50i (576/50i)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(\text{SQ} =\text{Squeeze, EC} =\text{Edge Crop, LB} =\text{Letter Box}\)
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 function enables clean slow-motion playback by capturing images at four times faster than the normal field rate (200 fields/s).

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
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.

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.

Playback Zoom
Using the playback zoom function, a selected area of the recorded HD images can be enlarged and played back on the LCD monitor and viewfinder, allowing operators to check them for certain details.

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-Z7E, a HVR-ZSE, 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, 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.

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.
Operational Versatility

Compact Lightweight Ergonomic 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). 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.

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.

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.

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.

25p Progressive Scan Mode
The HVR-V1E supports 25p progressive scan mode, in addition to 50i. The signals generated 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. 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.

Other Features
Zoom Ring and Focus Ring
One-push AF Button
On-handle Zoom Lever and Rec Start/Stop Button
3.5-inch Type Widescreen, Clear Photo LCD plus™ Monitor
HDMI (High Definition Multimedia Interface) Output Connector
Six Assign Buttons

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 page 26).

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 page 26).

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 Colour™
The Cinematone Colour 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 Colour 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).

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%)

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.
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 sensor with 2.97 million total pixels, which 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.

Enhanced Imaging Processor (EIP)
The EIP is Sony’s 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. 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.
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
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.

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).

Super Night Shot™
Ideal for natural history and documentary making where shooting in ultra-low-light conditions is required.

HD Codec Engine
The HVR-A1E employs the highly advanced HD Codec Engine™ feature, which efficiently compresses base band HD signal data at approx. 25Mb/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.

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 pixels3 and recorded onto Memory Stick Duo media after video shooting (see diagram below).

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 of audio, video and command signals to a connected, compatible VTR or non-linear editing system in the HDV, DVCAM and DV formats.

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.

HDV 1080i (16:9) DVCAM/DV (4:3)
Squeeze Letterbox Edge crop

Recoding, Playback and Down-conversion Formats

<table>
<thead>
<tr>
<th>Resolution of Still Pictures</th>
<th>Still Picture Mode</th>
<th>Video Recording Mode</th>
<th>VideoPlayback Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920 x 1440 (4:3)</td>
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<tr>
<td>1440 x 1080 (4:3)</td>
<td>o</td>
<td>-</td>
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<tr>
<td>1080 x 810 (4:3)</td>
<td>-</td>
<td>o</td>
<td>-</td>
</tr>
<tr>
<td>640 x 480 (4:3)</td>
<td>o</td>
<td>-</td>
<td>o</td>
</tr>
<tr>
<td>1920 x 1080 (16:9)</td>
<td>o</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1440 x 810 (16:9)</td>
<td>-</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>640 x 360 (16:9)</td>
<td>-</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

HD Codec Engine
The HVR-A1E employs the highly advanced HD Codec Engine™ feature, which efficiently compresses base band HD signal data at approx. 25Mb/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.

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 pixels3 and recorded onto Memory Stick Duo media after video shooting (see diagram below).

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 of audio, video and command signals to a connected, compatible VTR or non-linear editing system in the HDV, DVCAM and DV formats.

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.

HDV 1080i (16:9) DVCAM/DV (4:3)
Squeeze Letterbox Edge crop

Recording, Playback and Down-conversion Formats

<table>
<thead>
<tr>
<th>Recording Format</th>
<th>Playback/Down Conversion Format</th>
<th>L/R</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1080i/50i</td>
<td>1080i/50i</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>576/50p (16:9/4:3)</td>
<td>576/50p (16:9/4:3)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>576/50i (16:9)</td>
<td>576/50i (16:9/4:3)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>576/50i (4:3)</td>
<td>576/50i (4:3)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Available
Either 1 or 2 connection is available. When cables are connected to both, the 1 connection has priority.
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, directional microphone, 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-inch1 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 right).

Backlight Compensation
The 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.
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
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.

Shot Transition
The Shot Transition™ function allows for smooth automatic scene transitions. The operator can programme 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)
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

**Histogramme Indicator**
- Distribution Quantity
- Brightness Level

**Shot Transition**
- Shot A
- Shot B

*Images simulated*
A new camcorder has been created to meet the growing demand from users who are looking for mobility and professional appearance.

The HVR-HD1000E features a shoulder-mount design and black matte body similar to that of professional camcorders; making it perfect for weddings, corporate communications and sporting events where appearance makes a difference.

Premium design characteristics and High definition HDV™ 1080i recording are the main features of this new one-piece shoulder camcorder, ideal for working videographers on a budget. A built-in down-converter creates DV material, perfect for standard DVD productions. Plus, a special still photo mode is ideal for producing DVD cases and making wedding photo albums.

Whether you are recording weddings and corporate communications or helping students make a documentary, the HVR-HD1000E is the best choice.
Switchable Recording and playback HDV 1080i / DV Recording
The HDV-1000E can switch between HDV 1080i and DV recording offering flexibility to record in either standard or High Definition format depending on production needs.

Full Compatibility with your Current DV System
The HVR-HD1000E offers benefits for SD productions, as well as HD. It is easy to use HDV recordings for your current DV editing work. The HVR-HD1000E has a down-conversion feature that outputs converted DV signals through the i.LINK connector1 to your current DV non-linear editing system, while retaining a HD master on the tape for future use.

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 your nearest Sony office.

2 Letter box mode is not available from the i.LINK connector.

High quality Imaging System

1/2.9-inch ClearVid CMOS Sensor™
The next generation of Sony imaging sensor, the ClearVid CMOS Sensor used in the HVR-HD1000E camcorder, uses a unique pixel layout rotated 45 degrees to provide high resolution and high sensitivity. The ClearVid CMOS Sensor, coupled with an Enhanced Imaging Processor™ (EIP), generates stunning images. Moreover, thanks to the CMOS technology, bright objects do not cause vertical smear.

Optical 10x zoom by Carl Zeiss Vario-Sonner T*™ lens
The HVR-HD1000E camcorder can adapt to a wide range of shooting situations and features a Carl Zeiss Vario-Sonner T* lens with 10x optical zoom, as featured on higher end professional HDV camcorders. The T* lens coating suppresses unwanted reflections and faithfully reproduces colours for professional-looking results.

Super SteadyShot™ (Optical) Image Stabilizer
The Super SteadyShot (Optical) feature of the HVR-HD1000E is an image stabilizer using an active optical lens method that functions without any deterioration in image quality. The lens itself shifts vertically and horizontally to compensate for the polarized light axis in real time.
Shoulder-Mount Design

The HVR-HD1000E is lightweight and easy to use even for beginners. It provides a professional camcorder shoulder-mount design allows for easy balance and stable operation.

Wide Clear Photo LCD plus™ Monitor on Viewfinder Unit Provides Easy Viewing

A large, freely rotating 2.7-inch type LCD screen is located on the top of the viewfinder unit to provide easy viewing when the HVR-HD1000E camcorder is in a low-level position or on a tripod. This also makes it easy for a director or client to see what the camera operator is shooting. The LCD uses 211,200 dots widescreen Clear Photo™ LCD plus device that provides proper brightness and a high level of colour reproduction.

Camera Control Ring

A special camera control ring is located on the lens unit of the HVR-HD1000E camcorder. Any one of the following functions can be assigned to the ring for easy adjustment:

- Focus (default)
- Zoom
- Brightness
- Shutter
- Video: 1/3 ~ 1/10000 sec.
- Photo: 1/3 ~ 1/425 sec.
- AE Shift
- WB Shift

Ergonomically Designed Handle

The ergonomically designed handle of the HVR-HD1000E camcorder contains a convenient record button and zoom control, essential for low position shooting. There are two cold shoes on the front and rear of the handle. You can attach two accessories like the HVL-LBPA Battery Video Light and HVR-MRC1K Memory Recording Unit.
Other Features

Long Operating Time With infoLITHIUM™ L Series Battery
The HVR-HD1000E camcorder uses standard infoLITHIUM L series batteries, like the DSR-PD170P, HVR-Z5E, HVR-Z7E and HVR-V1E. With the NP-F970, a maximum operating time of approximately 10 hours can be achieved thanks to the power management system and low power consumption of the ClearVid CMOS Sensor.

Smooth Slow Rec
The Smooth Slow Rec function of the HVR-HD1000E camcorder enables slow-motion playback by capturing images at four times faster than the normal field rate (200 fields/s). In this mode, quad-speed images are captured for these seconds, stored in the built-in buffer memory and then recorded to tape (in either HDV or DV format) as slow-motion pictures lasting 12 seconds.¹

¹ When using this function, the resolution of the camera image is decreased. Sounds cannot be recorded while shooting in this mode.

Super NightShot™
The Super NightShot function of the HVR-HD1000E camcorder uses a built-in infrared light emitter that allows you to record an object in zero lux light levels. It also enables night-time monitoring and surveillance.

Diverse Range of Photo-creation Functions
While the HVR-HD1000E doesn’t contain all the features you’d find in a higher end professional camcorders, such as DVCAM recording/playback, XLR audio connectors and TC preset menu, it does boast a diverse range of photo-creation functions. These photo-creation functions are available at the touch of a button. You can store high quality still images on Memory Stick Duo™ media² and then use them to design DVD cases, website content, news, etc.

² Memory Stick Duo media is not supplied.

Photo Mode
In Photo mode of the HVR-HD1000E camcorder, you can take 6.1-megapixel, 2848 x 2136-quality, 4:3-aspect images.

Dual Rec
You can take 4.6-megapixel (16:9-aspect) photos while you are shooting HDV video simply by pressing the photo button.

Capturing from recorded video
In case you missed the perfect timing for your still photo while videotaping, you can capture and save still frames from recorded video by just pressing the photo button of the HVR-HD1000E camcorder during playback. HDV footage will give you a 1.2-megapixel, 1440 x 810 pixel still image of that magic moment.
Streamlining Your Workflow from Acquisition to Editing and Material Archiving with unique HYBRID Recording Solutions from Sony.

Speed, reliability, operability and versatility are key concerns in any video production.

The HVR-MRC1K Memory Recording Unit from Sony offers stunning innovation for all aspects of the production process – from acquisition to editing and on to material archiving.

The HVR-MRC1K consists of the HVR-MRC1 main unit, HVRA-CR1 cradle, cold-shoe adaptors and an i.LINK cable. Extremely compact and lightweight, the HVR-MRC1 can be mounted on any HDV™/DVCAM™ camcorder, thereby converting it to a ‘HYBRID’ recording system with CompactFlash® solid-state memory and tape. It allows the user to record video on a tape and CompactFlash (CF) card simultaneously.

The widely available CF card can be used to offer secure recording, removable media convenience, high durability against external vibration and high-speed file transfer to a computer. It is possible to record for about 72 minutes on a 16-GB CF card.

Important benefits of HYBRID recording

> **HYBRID Format**: Simultaneous HD and SD recording - HD on tape and SD on non-tape media
> **HYBRID Media**: Use of a tape and non-linear recording media - For reliable backup recording
> **HYBRID Workflow**: Files for quick editing and tape for archiving - For today’s production and HD value in the future

Combine the HVR-MRC1K with your HDV or DVCAM camcorder for a true taste of workflow innovation.
HVR-MRC1K Memory Recording Unit
The HVR-MRC1K is a memory recording unit kit which consists of the HVR-MRC1 memory recording unit, HVRA-CR1 cradle, cold-shoe adaptors and an i.LINK (IEEE1394) cable. First introduced as a supplied accessory with the HVR-Z7E and HVR-S270E, the memory recording unit is now available as a stand-alone option. The HVR-MRC1 can be connected directly to the HVR-Z5E without cabling or can be connected to any Sony professional HDV or DVCAM camcorder via an i.Link cable connection. The widely available standard CompactFlash® (CF) card¹ is used for HDV, DVCAM and DV file recording, with a 16-GB card providing approximately 72 minutes and an 8-GB card providing approximately 36 minutes of recording time.

¹ CF card is not included. At least 133x speed and 2-GB capacity is required. The NCFD8GP and NCFD16GP Sony’s CF cards are recommended. The recording time may change according to the CF card type and recording format.

File Type
For HDV1080i recording

M2T file
This is a file created by the HVR-MRC1. It has the file extension “.M2T”. The video, audio and auxiliary data are contained in an MPEG2-TS file format. The file conforms to the HDV1080i specification in which MPEG-2 MP@H-14 is used for its video codec and either MPEG-1 Audio Layer2 (for 2 ch) or MPEG-2 Audio Layer2 (for 4 ch) is used for the audio codec.

For DVCAM and DV recording
There are two options for DVCAM/DV file recording:

AVI file (DV type1)
This file has the extension “.AVI” and can be played by the standard movie player software of both Windows® and Mac® operating systems. Using this file type for DVCAM/DV recording is useful because it is compatible with many types of application software.

RawDV file
You can also choose this file type for DVCAM/DV recording, if needed. It has the file extension “.DV” and contains raw DVCAM or DV data. This file type can be played back via the QuickTime Player on the Mac® operating system. A compatible player may be needed for playback on the Windows® operating system.

FAT32 File System
The HVR-MRC1 uses FAT32 for its file system. Thanks to FAT32, your Windows® or Mac® computer can recognise the recording media as an external drive without having to install any driver software. The maximum recording file size allowed with FAT32 is approximately 4GB, which provides a recording time of around 20 minutes. Should your recording exceed this, the subsequent footage will be recorded as a separate new file. However, the Sony Recording Unit Utility software and compatible NLE software can connect the divided M2T files so they can be edited precisely in your NLE as a single file without any pauses.
Versatile Recording Modes
These 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-S270E, HVR-Z7E, HVR-Z5E, HVR-V1E, HVR-Z1E, DSR-450WP and DSR-400P, recording to the HVR-MRC1 is directly controlled by the press of the camcorder’s rec start button.  
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-MRC1. In this mode, the HVR-MRC1 periodically checks whether the camcorder is in rec mode or not and follows this status.  
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-MRC1 can disregard the rec trigger or recording status of the camcorder and allow recording to be started and stopped using its own control buttons.

Cache Recording
The HVR-MRC1 offer 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, as that footage is automatically recorded to the hard disk or CF card.  
3 In HDV mode, approximately 0.5 seconds of the video captured before and after the camcorder rec start button is pressed may be lost.

Control Buttons
The HVR-MRC1 are equipped with buttons that provide control for functions such as record, play, stop, next and previous. 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-MRC1, stored footage can be instantly accessed and previewed on the LCD monitor of the connected camcorder or deck for a quick review of recordings.

Repeat Playback
The HVR-MRC1 offer 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.

Status Check on Camcorder
On the LCD monitor and viewfinder of the HVR-S270E, HVR-Z7E, HVR-Z5E and HVR-V1E, the operational status of the HVR-MRC1 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 external device status, without taking their eyes away from what is being shot.

Tapeless Recording
Some camcorders such as the HVR-Z5E and HVR-V1E send the rec start/stop trigger that controls the HVR-MRC1 without needing to insert a tape. This feature offers operators the choice of tapeless operation or HYBRID operation.

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HDV in IT Workflow by CompactFlash Memory Recording Unit

The HVR-MRC1 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 standard CompactFlash (CF) card\(^8\), which offers secure recording, high-speed access, large data capacity, removable media convenience and high durability against external vibration.

\(^8\) Not supplied.

The CF card is used for HDV/DVCAM camcorders because the media is easily obtainable for file recording in the same way as miniDV tape is easily obtainable for HDV/DVCAM recording. This general versatility is very important for those who frequently need to obtain media quickly, such as someone shooting a documentary or news reports while moving from city to city.

HDV/DVCAM/DV File Recording on Easily Obtained CompactFlash Card

The recording time on a 16-GB CF card\(^9\) in HDV, DVCAM, and DV format\(^10\) is approximately 72 minutes.

<table>
<thead>
<tr>
<th>CF card capacity</th>
<th>Recording time (approximately)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16GB</td>
<td>72 minutes</td>
</tr>
<tr>
<td>8GB</td>
<td>36 minutes</td>
</tr>
<tr>
<td>4GB</td>
<td>18 minutes</td>
</tr>
<tr>
<td>2GB</td>
<td>9 minutes</td>
</tr>
</tbody>
</table>

\(^9\) At least 133x speed and 2-GB capacity is required. With other commonly used CF cards, there may be rare occasions when data will not be recorded correctly depending on the products. Such CF cards may have unstable data transfer speed. If you use a CF card other than those recommended, it is advisable to test it in advance in the following way.

1. Format the CF card in the Memory Recording Unit.
2. Shoot more than 20 pieces of footage of about 10 seconds each in HDV recording mode.
3. Import the files into your non-linear editing software to check if it can be edited properly.

\(^10\) The recording time may change according to the CF card type and recording format.

Integration Without Cabling

The HVR-MRC1 can be integrated to the HVR-Z5E without the need for cabling, simply by attaching it onto the special shoe connector\(^11\). This smart combination never interferes with shooting. The HVR-MRC1 automatically synchronizes with the recording action of the camcorder – i.e., when the camcorder starts or stops recording, so does the unit.

\(^11\) The intelligent shoe connector inputs and outputs an HDV/DV stream and supplies power to the HVR-MRC1. The i.LINK connector is not available when the unit is attached on the camcorder.
Independent Use With the Supplied Cradle

The HVR-MRC1 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 HVR-MRC1 is connected to a computer via i.LINK (IEEE1394), 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.

File Name and Folder Structure

In the HVR-MRC1, all files are stored in one folder. Each file is named in line with the following format:

```
xx_nnnn_YYYY-MM-DD_HHMMSS.extension
```

**Explanation:**
- **xx:** This is a two-digit number (00 - 99) that you can set via the "CAM No." menu of the HVR-MRC1. This prefix number is useful when multiple CF cards are used.
- **nnnn:** This is a sequential clip number. It is incremented by one as each new recording begins.
- **YYYY-MM-DD_HHMMSS:** These numbers refer to the date and time of the recording (which are derived from the date and time data settings of the camcorder). Any subsequent files, divided by FAT32, will have new time data, but retain the same clip number.

1. The date and time digits of the file name will be listed as "0000-00-00_000000" if the i.LINK signal comes from any of the following devices:
   - A camcorder that doesn’t have date and time setting
   - A camcorder or VCR that is playing back a recorded tape which doesn’t contain data and time data
   - Other devices that don’t output date and time data via an i.LINK stream

**Note:** Interruptions in video output may appear between recordings during playback through the connected HDV/DVCAM/DV device.
For Quick File Import to Final Cut Pro

M2T and DVCAM/DV files stored on the CF card of the HVR-MRC1 can be imported correctly to your Final Cut Pro 6 project by installing the Sony Recording Unit RAD Plug-in software. This software allows the video and audio stored on these devices to be transferred into Final Cut Pro using the Log and Transfer feature.

Please ensure that your version of Final Cut Pro is upgraded to 6.0.2 or higher before installing this plug-in software. The plug-in software can be downloaded from www.sonybiz.net/hdv.

For detailed operating instructions of Final Cut Pro 6 and its Log and Transfer window, please ask your local Apple reseller or refer to the “Using the Log and Transfer Window” section of the HD and Broadcast Formats document. This document is available under Final Cut Pro’s Help menu.

Log and Transfer window

1. Choose Final Cut Pro > System Settings, then click the Scratch Disk tab.
2. Select a scratch disk or folder to which you want to transfer your media.
3. Choose File > Log and Transfer.
4. The contents and thumbnails of the mounted devices will appear automatically in the Log and Transfer window. If the file structure of the device has been copied into a different location, you can use the “Add Folder” button on the upper left corner. More information on using the Add Folder button can be found in the Final Cut Pro documentation.
5. Please select the files that you want to transfer, then press the “Add Selection to Queue” button or drag and drop them onto the Transfer Queue area. Note: the preview area is not available for the M2T file transfer.
6. The transfer will start and the files will appear in the bin window of the editing project. The transferred files maintain their original quality and their original time code data in the QuickTime® format. The FAT32 divided files are merged during transfer.
The perfect choice for cost-effective HD productions, Sony’s HVR-M35E, HVR-M25AE and HVR-M15AE HDV 1080i VTRs

Sony has introduced affordable, yet high-performance HD recording systems incorporating the HDV™ 1080i specification for use in its products, thereby offering the HDV format to a wide range of professional videographers. Since they were introduced, HDV systems have gained rapid and wide acceptance due to their high picture quality, outstanding performance and cost effectiveness. Today, in response to the demands for greater levels of operability, such as longer recording time and progressive format playback/record capabilities, Sony has introduced its latest HDV recorders – the HVR-M35E, HVR-M25AE and HVR-M15AE.

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

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 DigitalMaster standard cassette tape and a maximum of 63 minutes when recording on a DigitalMaster mini cassette tape.

Switchable Recording and Playback – HDV 1080i/DVCAM/DV SP and 50i/60i

The HVR-M35E/M25AE/M15AE 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. In addition, they can be switched between 50i and 60i modes (PAL and NTSC), which allows for flexible production operations without the need for two separate VTRs of each standard. These models also support HDV native progressive recording format, so they can playback/record:

> HDV 1080i: 50i/60i/24p/30p/25p
> DVCAM/DV: 50i/60i

1 The HVR-M35E/M25AE/M15AE supports DV SP mode only; no support for DV LP mode.

Dual-size Cassette Mechanism

The HVR-M35E/M25AE/M15AE has a dual-size cassette mechanism that accepts both mini- and standard-sized DigitalMaster, DVCAM and DV cassette tapes – without using any special adaptor. This feature allows the six different types of cassette tape to be used without the cumbersome process associated with additional mechanical hardware.
Down-conversion Playback Capabilities

The HVR-M35E/M25AE/M15AE can convert material from 1080i down to 480i and 576i and output these video signals through its i.LINK interface. In addition, these signals can also be output via the other 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. Video material can also be down-converted to 480P and 576P (as well as 720P on the HVR-M35E/HVR-M25AE) and output via the VTR's SDI (on the HVR-M35E), HDMI (on the HVR-M25AE) or analogue component video connector. 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.

### Recording Formats

<table>
<thead>
<tr>
<th>[SD/HD SEL]</th>
<th>Input Terminal</th>
<th>Recording Format</th>
<th>Input Format</th>
<th>HDV</th>
<th>DVCAM</th>
<th>DV (SP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>LINK</td>
<td>1080/50i</td>
<td>576/50i</td>
<td>576/50i</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>LINK</td>
<td>1080/60i</td>
<td>480/60i</td>
<td>480/60i</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Playback Formats

<table>
<thead>
<tr>
<th>[SD/HD SEL]</th>
<th>Recorded Format</th>
<th>Menu setting (Component/HDMI/CMPNT)</th>
<th>Analogue Component</th>
<th>HDMI Component (M25AE only)</th>
<th>HDV-SD</th>
<th>MD/SD (M35E only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1080/50i</td>
<td>576/50i</td>
<td>576/50i</td>
<td>576/50i</td>
<td>576/50i</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>1080/60i</td>
<td>480/60i</td>
<td>480/60i</td>
<td>480/60i</td>
<td>480/60i</td>
<td></td>
</tr>
</tbody>
</table>

### Output Settings of i.LINK

<table>
<thead>
<tr>
<th>[SD/HD SEL]</th>
<th>Recorded Format</th>
<th>HDV DV/COM Menu setting</th>
<th>Output Format via i.LINK Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>1080/50i</td>
<td>DV CAM</td>
<td>same as the recorded format</td>
</tr>
<tr>
<td>60</td>
<td>1080/60i</td>
<td>DV CAM</td>
<td>same as the recorded format</td>
</tr>
</tbody>
</table>

DVCAM/DV signal is output via the i.LINK connector as it is.
Squeezed SD Video Image Output Type can be Selected
The HVR-M35E can convert squeezed SD video images to edge-cropped or letterbox video images for output. This function is convenient when viewing the squeezed SD video image on an SD monitor with 4:3 screen aspect ratio.

HDV Four Channel Audio Playback
The HVR-M35E can play back four-channel audio recorded with the HVR-S270E shoulder-mount camcorder. The audio data is output via an AES/EBU output terminal. Also the audio data is embedded in the i.LINK or the HD/SD-SDI output signal.

Edge Crop Adjust
When down-converting signals in the Edge Crop mode, the HVR-M35E/M25AE’s Edge Crop Adjust function is provided 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.

i.LINK Interface
The HVR-M35E/M25AE/M15AE are equipped with a 6-pin i.LINK interface. This allows for one cable digital transfer of video, audio and command signals to a compatible connected VTR or non-linear editing system in HDV, DVCAM or DV format.

Time Code Copy from External Devices
When the HVR-M35E/M25AE/M15AE records signals from the i.LINK port, the time code that was recorded on the original tape can be copied onto other tapes, along with the video and audio signals. This is effective when downloading edited material from non-linear editors or creating dubs from other VTRs.

Auto Repeat and Custom Repeat
The HVR-M35E/M25AE/M15AE has a convenient auto repeat function. This enables the VTR to automatically rewind the tape to either the beginning of the tape, the first complete blank portion, or an index point on the tape and start playback again from there. In addition, the HVR-M35E/M25AE has a Custom Repeat function that allows operators to set the number of repeat playbacks, the interval between each playback and the hour at which the playback should begin.

Colour Bar and 1-kHz Audio Tone Signal Output
The HVR-M35E/M25AE/M15AE can output several types of colour bar, as well as an audio tone signal of 1 kHz. These are useful when checking system conditions.

6. When outputting down-converted signals in the 4:3 aspect ratio via an i.LINK connector, the Letterbox mode cannot be selected.
7. 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 your nearest Sony reseller.
8. Please use a 4-pin i.LINK cable when you connect the HVR-M35E/M25AE/M15AE with a device which has a 4-pin i.LINK connector.
9. Insert-and-assemble editing using HDV material is not recommended with the HVR-M35E/M25AE/M15AE. 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.
10. The HVR-M35E/M25AE/M15AE ignores any blank or index point in the first 20 seconds of the tape.
External Control
The HVR-M35E/M25AE/M15AE comes equipped with a Remote Commander™ unit which enables users to control the recorder’s functions wirelessly. In addition, the HVR-M35E/M25AE/M15AE are equipped with a LAN interface, as well as a Control S terminal to connect with the optional DRRM-10 Remote Control Unit.

Built-in, 2.7-inch Type, Clear Photo LCD Plus™ Monitor
The HVR-M35E/M25AE are equipped with a 2.7-inch type widescreen colour LCD monitor with a high resolution of 211,200 dots. It adopts a newly developed Clear Photo LCD Plus™ panel which provides enhanced brightness and a higher level of colour reproduction than that used in the DSR-25. This LCD monitor allows operators to view the input source during recording and check the playback picture in a 16:9 widescreen aspect ratio. Setup menus, VTR/audio settings and audio level meters can also be displayed.

Non-compressed Digital HD Output
The HD/SD-SDI output of HVR-M35E allows straight duplication to a deck with HD/SD-SDI input such as HDCAM and XDCAM HD. The HVR-M25AE comes equipped with a HDMI interface. This interface allows the HVR-M25AE to transfer non-compressed, High definition digital video and audio to other HDMI-equipped devices via a single cable.

DUPLICATE PLUS
The DUPLICATE PLUS function makes it easy to copy video and audio from a VTR or camcorder onto the HVR-M35E/M25AE – 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/M25AE. The copying will then begin. This function can also be used for copying the content of multiple tapes onto a single tape, which is convenient when you need to compile multiple mini cassette tapes onto a single standard cassette tape. Another unique feature of DUPLICATE PLUS is the ability to selectively copy portions of material recorded in a designated format from a tape that contains mixed-format recordings. For example, you can choose to copy only HDV format recordings from a tape that includes DVCAM and DV video as well. This DUPLICATE PLUS function is available for any recordable formats (HDV/DVCAM/DV SP).

Playback Zoom
Using the playback zoom function of the HVR-M35E, a selected area of the recorded HD images can be enlarged and output in SD format via the i.LINK and analogue connectors. This function allows operators to cut out parts of the HD image and use them as SD material.

Built-in Monaural Speaker
The built-in monaural speaker of the HVR-M35E/M25AE allows quick and convenient checking of audio.

Time Code Preset
The time code of the HVR-M35E/M25AE 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.

Status Check
At the touch of the STATUS CHECK button of the HVR-M35E/M25AE, operators can display the menu settings for Audio Level Meter, Output Signal, Assignable buttons and Custom Repeat on the LCD monitor – allowing for easy status or setting checks during recording, playback and source feeding. It is also possible to display the status of the connected HVR-DRE60 hard disk recording unit or the HVR-MRC1K memory recording unit.

Assignable Buttons
The buttons for INDEX, COUNTER RESET and AUDIO DUB on the front panel of the HVR-M35E/M25AE can be used as assignable buttons, to which operators can assign other frequently used functions.
**Applications**

**Non-linear Editing**

<table>
<thead>
<tr>
<th>Feature</th>
<th>HVR-M35E/M25AE</th>
<th>HVR-M15AE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDV 4ch audio</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>LCD panel</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Speaker</td>
<td>Monoaural x1</td>
<td>Monoaural x1</td>
</tr>
<tr>
<td>HD/SD-SDI out</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>HDMI out</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>AES/EBU out</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>TC out</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Audio out</td>
<td>XLR x4</td>
<td>RCA x2</td>
</tr>
<tr>
<td>Main Power Switch</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Playback Zoom</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Colour Bar</td>
<td>4 types + BLACK</td>
<td>3 types</td>
</tr>
<tr>
<td>Squeezed SD output type</td>
<td>YES (SQ, UB, EC)</td>
<td>NO</td>
</tr>
<tr>
<td>Edge Crop Adjust</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>VCR profile</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Status check</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Status display of the HVR-DR60/MRCTK</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

**Dubbing with the Time Code Recording Capability**

**Dubbing to HD/SD-SDI Deck**

**Comparison**

<table>
<thead>
<tr>
<th>Feature</th>
<th>HVR-M35E/M25AE</th>
<th>HVR-M15AE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDV 4ch audio</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>LCD panel</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Speaker</td>
<td>Monoaural x1</td>
<td>Monoaural x1</td>
</tr>
<tr>
<td>HD/SD-SDI out</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>HDMI out</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>AES/EBU out</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>TC out</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Audio out</td>
<td>XLR x4</td>
<td>RCA x2</td>
</tr>
<tr>
<td>Main Power Switch</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Playback Zoom</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Colour Bar</td>
<td>4 types + BLACK</td>
<td>3 types</td>
</tr>
<tr>
<td>Squeezed SD output type</td>
<td>YES (SQ, UB, EC)</td>
<td>NO</td>
</tr>
<tr>
<td>Edge Crop Adjust</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>VCR profile</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Status check</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Status display of the HVR-DR60/MRCTK</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>
The HVR-1500A is an HDV source feeder/recorder1 positioned at the top of Sony’s HDV Series. Inheriting the design concept of the market-acclaimed DSR-1500AP, the HVR-1500A 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-1500A 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 50i/60i
The HVR-1500A can be switched between HDV 1080i1, 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 (25Mb/s) Family Formats
For operational versatility, the HVR-1500A is designed to play back DV (25Mb/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 PHDM-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.
Up-conversion Capability
With the optional HVBK-1520 Format Converter Board installed, the HVR-1500A has an up-conversion capability that allows DV recordings and SD signals3 fed to the HVR-1500A to be converted to 1080i or 720P signals and then output4 from the HD-SDI interface. This allows DV recordings to be integrated into existing HD editing systems that support the 1080i or 720P format. When up-converting the DV recording, the aspect ratio displayed can be converted from 4:3 to 16:9. Display modes can be selected from Squeeze, Edge Crop, or Letterbox.

3 DV signals fed to the HVR-1500A’s i.LINK™ interface cannot be up-converted and output from the HD-SDI interface.
4 There may be a delay of one frame in outputting up-converted signals from the HD-SDI interface.

Cross-conversion Capability
With the optional HVBK-1520 Format Converter Board installed, the HVR-1500A has a cross-conversion capability that allows 1080i recordings to be converted to 720P signals, as well as 720/30P (29.97 frames/s) recordings to be converted to 1080/60i (59.94 fields/s) signals. These signals are output5 from the HD-SDI interface. This allows source footage and assets in different HDV formats to be integrated into the same HD editing system.

5 There may be a delay of one frame in outputting cross-converted signals from the HD-SDI interface.

Down-conversion Capability
The HVR-1500A 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, Letter box, or Edge crop.

Down-conversion Capability

6 In this table, “60i,” “60P” and “30P” indicate a field rate of 59.94 Hz, a frame rate of 59.94 Hz and a frame rate of 29.97 Hz, respectively.
7 The HVBK-1520 Format Converter Board is required for up- or cross-conversion to these signals and output of these signals from the HD-SDI interface.
8 The HVR-1500A can play back but cannot record 720/30P signals. When 720/30P recordings are played back, their signals are converted to 720/59.94P signals.
9 "DV" indicates DVCAM, DV (SP) and DVCPRO 25 formats. The HVR-1500A can play back but cannot record DVCPRO 25 signals.
10 DVCPRO 25 signals cannot be output from the i.LINK interface.
11 Selectable via the menu.
### Professional Interfaces

A full range of professional interfaces are available, allowing for flexible analogue or digital configurations in both SD and HD systems. This allows operators to integrate the HVR-1500A exactly according to their system needs.

#### HD-SDI Interface

The HVR-1500A provides HD-SDI input/output capability. 1080/50i HDV signal or 1080/60i (59.94 fields/s) can be input in real time and these HDV recordings can be output in normal playback and search modes. Analogue component or analogue composite signals that are down-converted from 1080i HDV recordings can also be output from the HD-SDI interface. 720/50P (59.94 frames/s) and 720/60P signals that are upconverted from DV recordings or cross-converted from 1080i HDV recordings can also be output from the HD-SDI interface in normal playback and search modes.

Time code and audio signals are embedded in this HD-SDI signal. This interface allows operators to record programs directly from HD-SDI-based editing systems such as the HDCAM™ and XDCAM™ HD systems. The HVR-1500A can be utilised as a recorder that receives signals from a remote camera such as BRC Series camera. This interface also allows operators to integrate HDV footage easily into existing HD-SDI-based editing systems.

#### SD-SDI Interface

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

#### AES/EBU Interface

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

---

### Input Signals and Recording Formats

<table>
<thead>
<tr>
<th>Input Signal</th>
<th>Recording Format</th>
<th>Output Format Digital Video</th>
<th>Output Format Analogue Video</th>
<th>Output Format Analogue Audio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD-SDI</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>HD-SDI</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Digital audio (AES/EBU)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Analogue audio</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Analogue video (i.LINK)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Analog Composite</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Analog Component</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Analog S-video</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

1. With the HBK-1505 Analog Input Board (option) installed
2. It is not possible to input an HD component signal.
3. An SDI signal is not supported.
4. It is not possible to input an SDTI (SMPTE) signal.
5. It is not possible to input an HDV signal from other than 1080i 50i/60i.
6. HDV recording can only record HDV - 1080i/50i (audio: 2-channel mode). It is not possible to record MPEG-2 signals other than in HDV 1080i format. The unit also does not support HDV extended format.
7. With the HBK-1505 Format Converter Board (option) installed, signals can be upconverted and output.
8. HD signals can be downconverted and output.
9. HDV input signals cannot be downconverted and output from the i.LINK output connector.

**HDV-1500A cannot record 720/24P or 720/25P:**

1. **YES:** recording possible
2. **NO:** recording not possible
3. **YES:** signals output possible
4. **NO:** signals output not possible
i.LINK Interface

The HVR-1500A is equipped with a 6-pin LINK\(^{11,12}\) 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.

\(^{11}\) 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 your nearest Sony office.

\(^{12}\) DVCAM/DV signals fed to the HVR-1500A'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-1500A 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-1500A 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.

Operational Reliability

By packing sophisticated mechanical technologies into its robust aluminum diecast chassis, the HVR-1500A provides the reliable operations that today’s video professionals demand.

Quick Response Mechanism

Quick mechanical response is an essential requirement for professional video production. The HVR-1500A 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\(^{13}\) 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.

\(^{13}\) The colour picture search function can be controlled through the RS-422A interface.

Operational Convenience

Built-in 2.7-inch Colour LCD Monitor

The HVR-1500A is equipped with a 2.7-inch\(^{14}\) 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 right.

\(^{14}\) Viewable area, measured diagonally.
Auto Repeat
The HVR-1500A 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.

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

Digital Slow Motion and Jog Sound (in DVCAM mode)
When used with an editing controller, such as the Sony RM-280 Editing Controller, the HVR-1500A 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.

Picture Search (in HDV mode)
With an editing controller, such as the Sony RM-280 Editing Controller, the HVR-1500A provides a convenient colour picture search function for HDV recordings.1

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

<table>
<thead>
<tr>
<th>Playback speed</th>
<th>Image quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>x24</td>
<td>Coarse</td>
</tr>
<tr>
<td>x8</td>
<td>Coarse</td>
</tr>
<tr>
<td>x1</td>
<td>Normal</td>
</tr>
<tr>
<td>x1/5</td>
<td>Normal</td>
</tr>
<tr>
<td>x1/10</td>
<td>Normal</td>
</tr>
<tr>
<td>x1/30</td>
<td>Normal</td>
</tr>
<tr>
<td>Forward frame-by-frame</td>
<td>Normal</td>
</tr>
<tr>
<td>STILL</td>
<td>Normal</td>
</tr>
<tr>
<td>x-1</td>
<td>Coarse</td>
</tr>
<tr>
<td>x-8</td>
<td>Coarse</td>
</tr>
<tr>
<td>x-24</td>
<td>Coarse</td>
</tr>
</tbody>
</table>

Picture Search Using Menu Keys
The HVR-1500A provides a picture search function via the menu keys on its front panel. By pressing the → B and ← A 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.

<table>
<thead>
<tr>
<th>Button operation</th>
<th>Slow motion playback</th>
<th>Recording format</th>
</tr>
</thead>
<tbody>
<tr>
<td>← A</td>
<td>REV search</td>
<td>HDV</td>
</tr>
<tr>
<td>↑ (held down)</td>
<td>FWD frame-by-frame</td>
<td>HDV</td>
</tr>
<tr>
<td>↓ (held down)</td>
<td>REV frame-by-frame</td>
<td>DVCAM/DV</td>
</tr>
</tbody>
</table>

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.LINK2 interfaces can be adjusted. In playback mode, the analogue XLR, SD-SDI, HD-SDI, AES/EBU and i.LINK2 output audio levels can be controlled.

2 The availability of frame-accurate control is dependent on the connected editing controller. For information on compatible editing controllers, please contact your nearest Sony office.
3 In HDV mode, the input/output audio levels cannot be adjusted.
Professional Control

RS-422A Control
The HVR-1500A is equipped with an RS-422A interface, which is the industry standard for professional editing. This allows the VTR to interface with other Sony VTRs, editing controllers such as the Sony 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 feeding1 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 your nearest Sony office.

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

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

Built-in Signal Generator
Equipped with a built-in signal generator, the HVR-1500A 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-1500A is operating in DVCAM or DV mode2 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.

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

Application Examples

### HDV/HDCAM/DV Linear Editing System

- **Tape (HDV/DV)**
- **HD-SDI**
- **HVR-1500A**
- **RS-422A**
- **Editing Controller**

### HDV/XDCAM HD/DV Production System

- **XDCAM Disc**
- **XDCAM HD Recording Deck**
- **HD-SDI**
- **Dubbing or LINK Interface**
- **Tape (HDV)**
- **HVR-1500A**

### HD Non-linear Editing System

- **F35**
- **Tape (HDCAM SR)**
- **HDW-F900R**
- **Tape (HDCAM)**
- **Tape (HDV)**
- **HVR-1500A**

### HD Security System

- **Remote Camera (BRC Series)**
- **HD-SDI**
- **HVR-1500A**
- **Tape (HDV)**
Accessories - General

- BP-GL95/GL65 Lithium-ion Rechargeable Battery Pack
- BP-L80S/L60S Lithium-ion Rechargeable Battery Pack
- 2NP-F970/B InfoLITHIUM Rechargeable Battery Pack (2x)
- NP-F570/F770/F970 InfoLITHIUM Rechargeable Battery Pack
- NP-QM71D/QM91D* InfoLITHIUM Rechargeable Battery Pack

- AC-DN10 AC Adaptor (for BP-GL95/GL65/L80S/L60S)
- AC-VQL18P AC Adaptor Charger
- BC-L70 Battery Charger (for BP-GL95/GL65/L80S/L60S)
- BC-M150 Battery Charger (for BP-GL95/GL65/L80S/L60S)
- BC-L500 Battery Charger (for BP-GL95/GL65/L80S/L60S)
- BC-M120 Battery Charger (for BP-GL95/GL65/L80S/L60S)

- AC-SQ950B AC Adaptor/Charger
- VCL-HG0872K Wide Conversion Lens
- VCL-HG0862K 0.8x Wide Conversion Lens
- VCL-HG0737K High-resolution 0.7x wide conversion lens

- VF-72CPK PL Filter Kit (Ø 72 mm)
- VF-62CPK PL Filter Kit (Ø 62 mm)
- VCL-HG0872K Wide Conversion Lens

- LA-100W lens adaptor
- RM-280 Editing Controller
- DSRM-10 Remote Control Unit
- RM-1BP LANC Remote Controller

- HVBK-1520 Format Converter Board
- HVKB-1505 Analogue Input Board

- 2NP-QM91D/B InfoLITHIUM Rechargeable Battery Pack (NP-QM91D x 2)

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.
### Accessories - General

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VMC-IL4408A/IL4415/IL4435</strong></td>
<td>i.LINK Cable (4-pin to 4-pin)</td>
</tr>
<tr>
<td><strong>VCT-PG11RMB</strong></td>
<td>Tripod with RM-1BP Remote Controller</td>
</tr>
<tr>
<td><strong>VMC-15HD/30HD</strong></td>
<td>HDMI Cable (1.5m/3m)</td>
</tr>
<tr>
<td><strong>SH-L32WBP</strong></td>
<td>LCD Hood</td>
</tr>
<tr>
<td><strong>LCS-VCB</strong></td>
<td>Soft Carrying Case</td>
</tr>
<tr>
<td><strong>LCS-G1BP</strong></td>
<td>Soft Carrying Case</td>
</tr>
<tr>
<td><strong>LCR-FXA</strong></td>
<td>Rain Jacket</td>
</tr>
<tr>
<td><strong>LCH-HCE</strong></td>
<td>Hard Carrying Case</td>
</tr>
<tr>
<td><strong>LCS-BP18P</strong></td>
<td>Soft Carrying Case</td>
</tr>
<tr>
<td><strong>LCH-GT1BP</strong></td>
<td>Hard Carrying Case</td>
</tr>
<tr>
<td><strong>PHDV-276DM/186DM/124DM/64DM</strong></td>
<td>Digital Master Standard Cassette Tape</td>
</tr>
<tr>
<td><strong>PHDVM-63DM</strong></td>
<td>Digital Master Mini Cassette Tape</td>
</tr>
<tr>
<td><strong>PDVM-12N, 22N/32N/40N</strong></td>
<td>DVCAM Tapes</td>
</tr>
<tr>
<td><strong>PDVM-12N/22N/32N/40N</strong></td>
<td>Digital Videocassette (Non-IC type/Mini size)</td>
</tr>
<tr>
<td><strong>PDV-34N/64N/94N/124N/184N</strong></td>
<td>Digital Videocassette (IC-type/Standard size)</td>
</tr>
<tr>
<td><strong>PDV-12CL</strong></td>
<td>Cleaning Cassette Tape (Standard size)</td>
</tr>
<tr>
<td><strong>PDVM-12CL</strong></td>
<td>Cleaning Cassette Tape (Mini size)</td>
</tr>
</tbody>
</table>

### Notes
- SH-L32WBP: LCD Hood for 3.2” LCD monitor
- Adjustable shade (360° shade)
- Folding structure - no need to remove from camcorder
- Custom backpack carrying case with shoulder and waist straps
- Supplied storage for accessories in protective pouches
- Optional "VCT-SP1BP Camcorder Support" can be attached
- Hard shell carrying case, custom designed for Sony’s handheld camcorders and accessories
- Integrated wheels for easy transport
## Accessories - General

### Flexible Operation

- On a stable surface
- Hand held
- Attached to equipment

### RM-1000BP

**Remote Commander**
- Multifunction LANC remote commander
- Controls main camcorder functions
- Better Human User Interface (HUI) for professional applications

### VCT-SP1BP

**Camcorder Support**
- Perfect design for camcorder Monopod
- Carbon shaft for light weight and rigid design
- Quick-release function from harness for excellent mobility
- Weight support for stable/comfortable shooting

### RM-1BP Remote Controller

- Supplied as standard
- Support for several shooting styles (e.g., high-angle shooting)

### VCT-SP28P

**Dual-function Camcorder Shoulder Support**
- A compact & light-weight, fully adjustable camcorder shoulder support
- Excellent three-point support - at the camcorder handle, shoulder, and chest
- Unique collapsible design allowing tripod mounting within seconds
- Allows additional accessories to be mounted at the rear
- Compatible across DVCAM, HDV & XDCAM EX handheld and semi-shoulder camcorder ranges

### HVL-LBPA

**LED Battery Video Light**
- LED reliability and low power consumption at 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)
- Supplied indoor/outdoor filter kit (5,500K to 3,200K)

### Support for several shooting styles (e.g., high-angle shooting)

- Quick shoe plate
- Bolt bolt for hand tightening with balancing weight (no screw head)
- Two bolts (removable) for more stable adjustment
- Counter balance adjustment
- Rubber foam

### NEW

- HVR-Z5E
- HVR-Z7E
- HVR-S270E
- HVR-Z5E
- HVR-Z7E
- HVR-A1E
- HVR-V1E
- HVR-Z5E
- HVR-Z7E

### NEW

- HVM-1000E
- HDV-1E
- HDV-2E
- HDV-270E

### NEW

- HVR-A1E
- HVR-Z7E
- HDV-270E

* A Firmware upgrade may be necessary for use with HVR-Z7E and HVR-Z520E, please check with your specialist dealer.
Microphone Packages

UWP Wireless Microphone Product Range

The Sony UWP Series UHF Wireless Microphone Package, introduced in 2003, set a milestone in the history of wireless microphone systems with its uncompromised ease-of-operation. It brought a number of significant benefits to wireless applications; including highly stable signal reception by utilising a space diversity reception system and proven interference-free multi-channel operation. Since its introduction, the UWP Series has been widely adopted around the world for a variety of applications such as news gathering, interviewing, professional video production, entertainment, live events and conferences to name just a few.

Now, Sony has further evolved the UWP Series by introducing five new packages – the UWP-V1, UWP-V2, UWP-V6, UWP-X7 and UWP-X8 – for a much higher level of stability, mobility, robustness and operational convenience. Each package comes with both a transmitter and a receiver, allowing you to get up and running straight from the box.

UWP-V1

UHF Wireless Microphone Package Consists of UTX-B2 bodypack transmitter and URX-P2 portable receiver

- Extremely compact, lightweight and robust metal body
- Switchable MIC/LINE input level and adjustable attenuator (0 to 21 dB, 3 dB steps)
- Supplied omni-directional lavalier microphone utilizes a newly developed miniature metal body

UWP-V2

UHF Wireless Microphone Package Consists of UTX-H2 handheld transmitter and URX-P2 portable receiver

- Incorporates a uni-directional dynamic microphone capsule with minimised popping and wind noise

UWP-V6

UHF Wireless Microphone Package Consists of UTX-B2 bodypack and UTX-P1 plug-on transmitters with a URX-P2 portable receiver

- Extremely compact, lightweight and robust metal body
- Supplied omni-directional lavalier microphone utilizes a newly developed miniature metal body

Headphones

MDR-7505

Professional Headphone

* MS microphone signal of the ECM-680S is internally decoded to L and R (stereo outputs.

MDR-7502

Professional Headphone

Thanks to an acoustic design that positions the sound field very close to the ears, the MDR-7502 headphone makes detailed listening possible, even in noisy environments. An Auto-Swivel earpiece enables single-sided monitoring.
## Accessories Audio

### Suggested Camcorder Wireless and Wired Microphone Combinations

<table>
<thead>
<tr>
<th>Camcorders</th>
<th>Shotgun Mic Supplied</th>
<th>DC Output for Wireless Tuner</th>
<th>Front Mic Input Connector</th>
<th>Rear Mic/Line Input Connector</th>
<th>Applicable Shotgun Microphone (Stereo/Mono)</th>
<th>Applicable Wireless Tuner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HDV Camcorders</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVR-S270E</td>
<td>Yes</td>
<td></td>
<td>XLR-3-pin x1</td>
<td>XLR-3-pin x2</td>
<td>ECM-680S Requires XLR-3P XLR-3P (2) Cable</td>
<td>ECM-673 ECM-674 ECM-678</td>
</tr>
<tr>
<td>HVR-Z7E</td>
<td>Yes</td>
<td>No</td>
<td>XLR-3-pin x2</td>
<td>-</td>
<td>ECM-680S Requires XLR-3P XLR-3P (2) Cable</td>
<td>ECM-673 ECM-674 ECM-678</td>
</tr>
<tr>
<td>HVR-Z5E</td>
<td>Yes</td>
<td>No</td>
<td>XLR-3-pin x2</td>
<td>-</td>
<td>ECM-680S Requires XLR-3P XLR-3P (2) Cable</td>
<td>ECM-673 ECM-674 ECM-678</td>
</tr>
<tr>
<td>HVR-V1E</td>
<td>Yes</td>
<td>No</td>
<td>XLR-3-pin x2</td>
<td>-</td>
<td>ECM-680S Requires XLR-3P XLR-3P (2) Cable</td>
<td>ECM-673</td>
</tr>
<tr>
<td>HVR-A1E</td>
<td>Yes</td>
<td>No</td>
<td>XLR-3-pin x2</td>
<td>-</td>
<td>ECM-680S Requires XLR-3P XLR-3P (2) Cable</td>
<td>ECM-673</td>
</tr>
<tr>
<td>HVR-HD1000E</td>
<td>Yes</td>
<td>No</td>
<td>Stereo minijack x1</td>
<td>-</td>
<td>-</td>
<td>ECM-673</td>
</tr>
</tbody>
</table>

* The ECM-674 can be driven by external DC power (40 to 52V) or battery (AA-size).
Sony Professional Monitors

Sony LMD Series monitors – the professional choice

Developed specifically for the most demanding broadcast applications where picture quality, consistency and reliability are paramount, the Sony LMD Series of professional LCD monitors offers several important advantages over flat-panel monitors for consumer and IT use.

Outstandingly consistent at this market level, these high-grade LMD monitors deliver bright and beautifully rendered high definition still and motion pictures with very low artefact counts – a performance approaching that of our industry-acclaimed broadcast CRT displays.

They are perfect for top-end videography productions and are available at highly accessible prices.

Multiformat High Grade LCD Monitors

- Multiformat HD/SD inputs
- Versatile video and computer inputs
- Precise colour and gamma reproduction
- Pixel to pixel reproduction
- Wide viewing angle
- Waveform and Audio level meter selection (LMD-2450W/2050W only)
- Ethernet and Parallel remote function
- Picture & Picture display mode

Entry Level LCD Monitors

- Cost effective professional monitors
- Wide viewing angle
- Parallel remote function
- Optional rack mount kit
- Colour temperature & Gamma adjustment
- Multiformat HD/SD video inputs - LMD-2030W
- HD analogue components inputs - LMD-2030W
- HDMI input - LMD-2030W

To find out more about Sony Professional monitors talk to your Sony Specialist Dealer or go to www.sonybiz.net/monitors
### Camera Section

<table>
<thead>
<tr>
<th>Lens</th>
<th>HVR-Z5E</th>
<th>HVR-Z7E</th>
<th>HVR-S270E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens</td>
<td>Sony G Lens, 20x (optical), f = 4.1 to 82mm, f = 29.5 to 590 mm at 16:9 mode, f = 36.1 to 722 mm at 4:3 mode, filter diameter: 72mm</td>
<td>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: 72mm</td>
<td>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: 72mm</td>
</tr>
</tbody>
</table>

### Built-in filter

- Clear
- 1/4
- 1/16
- 1/64

### Imaging system

- 1/3-inch, progressive 3 "Exmor" CMOS Sensor System with ClearVid array

### Picture elements

- Approx. 1,037,000 pixels (effective), approx. 1,120,000 pixels (total)

### Focus

- Auto, manual (focus ring/push auto/infinity/AF assist/rough focus)

### 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 speed

- Auto: 1/50 - 1/2000 1/50 - 1/1750
- Manual: 1/4 - 1/10000 50i/25p: 1/3 - 1/10000

### Gain

- -6, -3, 0, 3, 6, 9, 12, 15, 21 dB

### Minimum Illumination

- 1.5 lux (auto gain, auto iso, 1/25 shutter)

### VTR section

- **Recording format**: HDV1080/50i/25p, DVCAM, DV SP 576/50i (PAL)
- **Play out/Down conversion format**: HDV1080/50i/25p, DVCAM, DV SP 576/50i (PAL)

### Playback/Recording time

- **HDV/DV SP**: Max. 63 min with PHDV-M63DM cassette
- **DVCAM**: Max. 276min with PHDV-276DM cassette

### Input/Output connectors

- Audio/Video output: 10-pin connector A/V OUT jack (component, composite and unbalanced audio x2ch with the supplied cables)
- Component video output: Component out jack (special connector)
- HD/SDI output: HDMI connector HD/SD-SDI BNC x1
- Component video input: Component in jack (special connector) BNC x3
- XLR audio input: XLR 3-pin female x 2ch
- Headphone: Stereo mini jack (ø3.5 mm)
- Digital video output: HDMI connector HD/SDI BNC x1
- Built-in output devices: LCD view finder: 0.45 inch type (Viewable area measured diagonally), approx. 1,226,880 dots (852 x 3[RGB] x 480), 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. 2.2 kg (5 lb 1 oz) (w/o tape, battery) Approx. 2.4 kg (5 lb 4 oz) (w/o tape, battery) Approx. 6.3kg (13 lb 15 oz) (w/o the supplied lens, w/o tape, BP-GL95battery)
- **Power requirements**: DC 7.2 V (battery pack), DC 8.4 V (AC adapter) DC 12 V (battery pack), DC 14.4 V (AC adapter)
- **Power consumption**: HDV: Approx. 7.1 W (with ECM/XM1 / LCD viewfinder ON) Approx. 7.0 W (with ECM/XM1 / LCD EVF ON) Approx. 12.2 W (with ECM/XM1 / EVF ON)
- **Power output**: Output DC (2-pin)
- **Operating temperature**: 0 to 40 °C (32 to 104 °F)
- **Storage temperature**: -20 to 60 °C (4 to 140 °F)

### Supplied accessories

- AC-VA1050 AC adapter/charger, NP-F570 infoLITHIUM rechargeable battery pack, AV multi-connecting cable, Component AV cables, lens hood with lens cover, lithium battery CR2025, shoe adaptor, large size eye-cups, RMF-63i wireless Remote Commander, ECM-XM1 monaural electret condenser microphone, operating instructions (CD-ROM), printed operating instructions
- AC-VA1050 AC adapter/charger, NP-F570 infoLITHIUM rechargeable battery pack, AV connecting cable, component video cable, lens hood with lens cover, lithium battery CR2025, shoe adaptor, large size eye-cups, additional normal shoe kit, RMF-63i wireless Remote Commander, ECM-XM1 monaural electret condenser microphone, Operating instructions (CD-ROM), Printed operating instructions, memory recording unit kit

### Memory recording unit

- **Recording media**: CompactFlash card (2GB or bigger, 133x or faster) (not supplied)
- **File system**: FAT32
- **File format**: M2T
- **Connectors**: special hot shoe, LINK-6pin (on the supplied cradle), DC power input (on the supplied cradle), InfoLITHIUM L series battery slot (on the supplied cradle)

### Supplied accessories

- AC-VA1050 AC adapter/charger, NP-F570 infoLITHIUM rechargeable battery pack, AV connecting cable, component video cable, lens hood with lens cover, lithium battery CR2025, shoe adaptor, large size eye-cups, additional normal shoe kit, RMF-63i wireless Remote Commander, ECM-XM1 monaural electret condenser microphone, Shoulder Belt, Operating instructions (CD-ROM), Printed operating instructions, memory recording unit kit
### HVR-V1E/HVR-A1E/HVR-HD1000E Specifications

<table>
<thead>
<tr>
<th>Camera Section</th>
<th>HVR-V1E</th>
<th>HVR-A1E</th>
<th>HVR-HD1000E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lens</strong></td>
<td>Carl Zeiss Vario-Sonnar 1” zoom lens, 20x (optical), f = 3.9 to 78 mm, f = 3/4 to 748 mm &lt;sup&gt;1&lt;/sup&gt; at 16.9 mode</td>
<td>Carl Zeiss Vario-Sonnar 1” 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 only)</td>
<td>Carl Zeiss Vario-Sonnar 1” zoom lens, 10x (optical), f = 5.4 to 54 mm, filter diameter: 37 mm</td>
</tr>
<tr>
<td><strong>Built-in filter</strong></td>
<td>1/4 ND, 1/16 ND</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Auto, manual (focus ring), spot focus (touch panel control)</td>
<td>Auto, manual (ring/panel)</td>
<td>Auto, manual (ring/panel)</td>
</tr>
<tr>
<td><strong>Imaging device</strong></td>
<td>1/4-inch type, 3 ClearVid CMOS Sensor system</td>
<td>1-chip, 1/3-inch type primary colour CMOS sensor</td>
<td>1/2.9-inch, ClearVid CMOS Sensor system</td>
</tr>
<tr>
<td><strong>Picture elements</strong></td>
<td>Approx. 1,037,000 pixels (effective), 219,000 pixels (total)</td>
<td>Approx. 2,969,000 pixels (total)</td>
<td>Approx. 2,969,000 pixels (total)</td>
</tr>
<tr>
<td><strong>S-video input/output</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Playout/Down-conversion format</strong></td>
<td>1080/50i, 576/50i (PAL)</td>
<td>1080/50i, 576/50i, 576/50P HDV</td>
<td>1080/50i, DV/DV(LP) 576/50i (PAL)</td>
</tr>
<tr>
<td><strong>Gain</strong></td>
<td>0, 3, 6, 9, 12, 15, 18 dB</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Minimum illumination</strong></td>
<td>4 lx with F1.6 at 18 dB, 7 lx with F1.8, Auto Slow Shutter ON</td>
<td>5 lux (1/25 shutter speed)</td>
<td>5 lux (1/25 shutter speed)</td>
</tr>
<tr>
<td><strong>Built-in filter</strong></td>
<td>1/4 ND, 1/16 ND</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)</td>
<td>DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)</td>
<td>DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>Approx. 1.5 kg (3 lb 6 oz) (camcorder only)</td>
<td>Approx. 1.5 kg (3 lb 6 oz) (camcorder only)</td>
<td>Approx. 1.5 kg (3 lb 6 oz) (camcorder only)</td>
</tr>
<tr>
<td><strong>General</strong></td>
<td>Approx. 7.5 kg (16 lb 6 oz) (camcorder only)</td>
<td>Approx. 7.5 kg (16 lb 6 oz) (camcorder only)</td>
<td>Approx. 7.5 kg (16 lb 6 oz) (camcorder only)</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>AC-L15 AC adaptor, Power cord, NP-F570 InfoLITHIUM rechargeable battery pack, AV connecting cable, component video cable, USB cable, lens hood with lens cover, RM-813 Wireless Remote Commander *1, ECM-N1 monaural electret condenser microphone, operating instructions (CD-ROM), operating instructions</td>
<td>AC-L15 AC adaptor, Power cord, NP-F570 InfoLITHIUM rechargeable battery pack, lens hood with lens cover, RM-813 Wireless Remote Commander unit, AV connecting cable with 3 video cables, component video cable, USB cable, Memory Stick Duo (16 MB), Memory Stick Duo adaptor, ECM-N1 monaural electret condenser microphone, AV audio adaptor, shoulder strap, operating instructions</td>
<td>AC adaptor AC-100 Rechargeable Battery Pack NP-F570, AV Cable, Lens Cap (small), Lens Hood, Microphone, Windscreen, Large size eye cup</td>
</tr>
</tbody>
</table>

*1 These values are calculated to be equivalent to the 35 mm film.  
*2 Viewable area, measured diagonally.  
*3 Including a battery and a tape (60 min.)
# HVR-MRC1K Specifications

<table>
<thead>
<tr>
<th>HVR-MRC1K</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recording media</strong></td>
<td>Compact Flash&lt;br&gt;At least 133x speed and 2-GB capacity is required.</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>i.LINK with HVRA-CR1&lt;br&gt;IEEE 1394, 6-pin connector</td>
</tr>
<tr>
<td><strong>File format</strong></td>
<td>HDV&lt;br&gt;MPEG-2 TS (.m2t)&lt;br&gt;DVCAM/DV SP AVI-Type1 (.AVI), RAW-DV (.DV)</td>
</tr>
<tr>
<td><strong>Built-in output device</strong></td>
<td>LCD monitor&lt;br&gt;23.02 x 11.5 mm (picture size), 128 x 64 dots</td>
</tr>
<tr>
<td><strong>OS compatibility</strong></td>
<td>OS&lt;br&gt;Windows® 2000 Professional (Service Pack 4), Windows XP Home Edition (Service Pack 2), Windows XP Professional (Service Pack 2), Windows Vista, Mac® OS X (v10.3)</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>HVR-MRC1&lt;br&gt;130g (4 oz)&lt;br&gt;HVR-MRC1 with HVRA-CR1&lt;br&gt;210g (7 oz)</td>
</tr>
<tr>
<td><strong>Power requirements</strong></td>
<td>DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>2.2 W (in recording mode with LCD monitor on)</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>0 to 40 °C (32 to 104 °F)</td>
</tr>
<tr>
<td><strong>Storage temperature</strong></td>
<td>-20 to +60 °C (-4 to 140 °F)</td>
</tr>
<tr>
<td><strong>Supplied accessories</strong></td>
<td>i.LINK cable (6-pin to 4-pin, 80 cm), Shoe adapter, Conversion adapter for HVR-Z1, HVRA-CR1 (cradle)</td>
</tr>
</tbody>
</table>

## Dimensions

![Dimensions Diagram](image)

Unit: mm (inches)
In this table, "60i", "60P" and "30P" indicate a field rate of 59.94 Hz, a frame rate of 29.97 Hz, respectively. Recordings are played back, their signals are converted to 720/59.94P signals.

Playback/Recording time: Approx. 3 min with PHDV-276DM and PDV-184N cassette.
**Recording/playback performance**

- **Recording format**
  - HDV: 1080/50i, 1080/60i, 1080/24p, 1080/25p, 1080/30p
  - DVCAM, DV SP

- **Playback format**
  - HDV: 1080/50i, 1080/60i, 1080/24p, 1080/25p, 1080/30p
  - DVCAM, DV SP

- **Playout video signal**
  - HDV: 1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC)
  - DVCAM: 576/50i (PAL), 480/60i (NTSC), 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/recording time**
  - HDV/DV SP: Max. 276 min with PHDV-276DM cassette
  - Max. 63 min with PHDVM-63DM cassette
  - DVCAM: Max. 184 min with PHDV-276DM cassette
  - Max. 41 min with PHDVM-63DM cassette

- **Fast forward/rewind time**
  - Approx. 2.5 min with PHDV-276DM cassette

**Input/output connectors/devices**

- **Video input/output**
  - RCA x 1 / RCA x 1
  - 1Vp-p, 75Ω, unbalanced, sync negative
  - Sync signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)
  - Burst signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)

- **S-video input/output**
  - Mini-DIN 4pin x 2
  - Y: 1Vp-p, 75Ω, unbalanced, sync negative
  - Sync signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)
  - Chrominance signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)

- **Component video output**
  - BNC x 3
  - Output at 480i NTSC
    - With [BETACAM] selected in [480i LEVEL] of the [IN/OUT REC] menu
      - Y: 1Vp-p, 75Ω, unbalanced, sync negative
      - Sync signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)
      - Chrominance signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)
    - With [SMPTE] selected in [480i LEVEL] of the [IN/OUT REC] menu
      - Y: 1Vp-p, 75Ω, unbalanced, sync negative
      - Sync signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)
      - Chrominance signal: 0.3Vp-p (50i / PAL), 0.286Vp-p (60i / NTSC)
  - Output with other settings
    - Y: 1Vp-p (output impedance 75Ω unbalanced)
    - Pb / Cb / B-Y, Pr / Cr / R-Y: 0.7Vp-p (output impedance 75Ω unbalanced)
      - (100% colour bar with no setup)
    - Output at 1080i/50i, 1080i/60i, 720p/50i, 720p/60i
  - Y: with 0.3Vp-p sync negative
  - Y / Pb / Pr: with 0.6Vp-p (level sync)

- **i.LINK**
  - 6-pin

- **Digital uncompressed output**
  - HDMI Connector x 1

- **Phones**
  - Stereo minijack (Ø3.5 mm)
  - Input level: -10 / -2 / +4dBu
  - Input impedance: min. 47Ω unbalanced
  - max Input level:
    - -10: +18dBu (approx. 6Vrms), -2: +24dBu (approx. 12.5Vrms), +4: +30dBu (approx. 25Vrms)

- **Audio input**
  - RCA x2, stereo
  - Input level: -10dBu
  - Input impedance: min. 47Ω balanced, max input level:
    - +18dBu (approx. 6Vrms), 16dBu (approx. 5.5mV)

- **Audio output**
  - RCA x2, stereo
  - Input level: -10dBu
  - Input impedance: min. 47Ω balanced
  - max input level:
    - +18dBu (approx. 6Vrms), 16dBu (approx. 5.5mV)

- **Audio input**
  - RCA x4, stereo
  - Input level: -10dBu
  - Input impedance: min. 47Ω balanced
  - max input level:
    - +18dBu (approx. 6Vrms), 16dBu (approx. 5.5mV)

- **Audio output**
  - RCA x2, stereo
  - Input level: -10dBu
  - Input impedance: min. 47Ω balanced
  - max input level:
    - +18dBu (approx. 6Vrms), 16dBu (approx. 5.5mV)

- **General**
  - **Mass**
    - Approx. 2.3 kg (5 lb 1 oz)
  - **Power requirements**
    - AC 8.4 V
  - **Power consumption**
    - 6 W (playback mode)
  - **Operating temperature**
    - 5 to 40°C (41 to 104°F)
  - **Supplied accessories**
    - Remote commander (1), AC adapter (1), power cord (1), cleaning cassette (1), operating instructions (1)

**Dimensions**

- **HVR-M15AE**
  - Width: 184 (1/2) mm
  - Depth: 241 (3/8) mm
  - Height: 375.5 mm

- **HVR-M35E / HVR-M25AE**
  - Width: 272 (3 1/8) mm
  - Depth: 395.2 (15 1/2) mm
  - Height: 471 mm
Front & Rear Panels

HVR-M15AE

HVR-M25AE

HVR-M35A

HVR-1500A
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