SONY

HDV Family 2005/2006

HDV

HDV 1080i

www.sonybiz.net/hdv

Compact and Cost-Effective

HD Acquisition, Recording and Playback

HVR-Z1E

HVR-A1E

HVR-M10E

The rapid transition to HD programming in broadcasting and postproduction has created tremendous demand for an entry-level path into the HD world. Sony have responded to this demand with the introduction of an exciting new range of Digital HD products: the HVR-Z1E – a compact hand-held camcorder, the HVR-A1E – a versatile palm-type camcorder and the HVR-M10E Videocassette Recorder.

They adopt the all-new, 1/4-inch HD format – the HDV 1080i specification of the HDV format – while maintaining the DVCAM/DV recording and playback capabilities provided on current Sony market-acclaimed DVCAM models. What's more, they all offer a down-conversion capability of their 1080i recordings.

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

The HVR-Z1E, HVR-A1E and HVR-M10E are aimed at professional videographers, documentary makers and feature film makers working to tight budgets. HDV is also an increasingly attractive option for mainstream broadcasters and corporate programme makers needing to acquire HD content in restricted or hard-to-reach locations. HDV also serves as an ideal source for contributing HD content into an HDCAM production environment. The format's quality, versatility and low operational costs also extend its appeal to educational establishments and hire companies.

Front cover image courtesy of www.futureplanet.tv

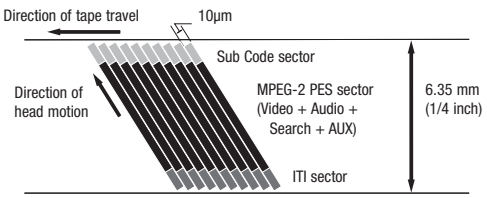
A New Addition to the HD Format that Broadens the Scope of HD Programme Production.

HDV 1080i Specification[1]

The HDV 1080i specification of the HDV format features 1080 effective scanning lines (interlace scanning system) and 1,440 horizontal pixels. It adopts the MPEG-2 compression format (MP@H-14 for video), which uses 8-bit digital component recording with a sampling rate of 4:2:0. MPEG-1 Audio Layer II is used as the audio compression format, allowing for two-channel recording with a sampling frequency of 48 kHz/16-bit. The HDV 1080i specification provides high picture quality that can be used for HDTV programme production.

1 The HDV format also defines the HDV 720p specification, which features 720 effective scanning lines (progressive scanning system) and 1,280 horizontal pixels.

Track Pattern of the HDV 1080i Specification



ITI: Insert and Track Information
PES: Packetised Elementary Stream

Compatible with Existing and New DV Videocassette Tape

As a member of the proven DV family of formats, the HDV format has, from the outset, been developed for compatibility with all grades of DV videocassette tape. This allows operators to use high-grade DV videocassette tapes for applications where high robustness is critical, or consumer-grade videocassette tapes for more economical operations. For heavy-duty applications, a new high-grade Mini Cassette tape has been developed; the DigitalMaster PHDV-63DM. This tape is compatible with the HDV, DVCAM and DV formats.

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 such as DigitalMaster tape.

Designed for Professional Use

As a professional, Sony recognises that your needs are different to those of a consumer. As a result the HVR-Z1E incorporates more than 40 extra functions over the consumer camcorder HDR-FX1 to help support you and your production needs.

The following are the key technical features and specifications only available on the Sony HVR-Z1E professional HDV camcorder.

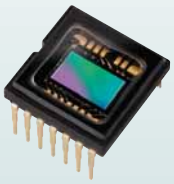
- 50Hz/60Hz (PAL/NTSC) Switchable
- Colour Correction
- DVCAM Support
- Versatile Time Code/Userbit Operation
- Multiple Assign Button Functions
- Viewfinder B/W and Colour Selectable
- Simultaneous Operation of LCD panel and Viewfinder
- All Scan Mode
- Auto Exposure Override
- Black Stretch
- 4:3 Output
- Edge Crop at 4:3
- Setup Level Select
- AF Assist
- External Record Control
- White Balance Outdoor Level Shift
- Hyper Gain
- All Display Off
- Zoom Display Selectable
- Selectable Peaking Level and Colour
- Expanded Focus Off Mode
- Safety Zone and 4:3 Marker
- Date and Time Stamp
- XLR Connectors and Mic Power Supply
- Independent Audio Record Level Set
- Audio Monitoring
- Microphone Setting
- Audio Mode
- Audio Lock
- Audio Limiter
- Mic Noise Reduction
- Wind Noise Reduction
- Mic Select
- Internal Mic Sensitivity
- Cineframe Mode
- Additional Cinematone Gamma Settings
- Shot Transition Start Timer
- Skin Tone Detail Level control
- 576p/480p Output for SD Component Output
- Smooth Handle Zoom
- Audio Output Select
- Select Audio Mode at i.LINK Down-convert
- Selectable SMPTE Colour Bars
- Hours Meter
- AC Adaptor/Charger supplied as standard
- Silver Support with 2 year warranty

HVR-Z1E

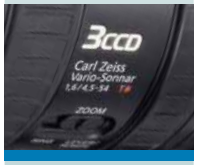
With a unique camcorder body design and a multitude of camera features, the HVR-Z1E offers maximum operability in the field, as well as opening up a new range of opportunities for creative shooting. Offered at a price comparable to Sony DVCAM camcorders, the HVR-Z1E paves the way for cost-effective but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

CAMERA FEATURES

New Technologies to Capture High-resolution Images of 1,440 (H) x 1,080 (V)



3CCD Camera System with 1080i HD CCDs



Carl Zeiss Vario-Sonnar T* lens

3CCD Camera System with 1080i HD CCDs

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

14-bit HD DXP

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

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

The HVR-Z1E is equipped with a new Carl Zeiss Vario-Sonnar T* High-Definition lens with a 12x zoom function. Its fully coated glass is the same as used on Carl Zeiss prime lenses, producing sharp, high-contrast images, with virtually no chromatic aberration. This lens is designed with a wide viewing angle and a focal length ranging from 32.5 mm to 390 mm in 16:9 mode[2] and from 40 mm to 480 mm in 4:3 mode[2], thanks to a large filter diameter of 72 mm.

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

Optical Super SteadyShot System

The HVR-Z1E employs the Super SteadyShot system, whereby horizontal and vertical movements can be detected independently by the sensors. The prism system located behind the lens adjusts and optically compensates for unsteady camera handling and a choice of SteadyShot function types – "HARD", "STANDARD", "SOFT" or "WIDE CONV" [3] – can easily be selected.

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

RECORDER FEATURES

Multi-format Recording and Playback Capabilities, Supporting HDV 1080i, DVCAM and DV.

Switchable Recording and Playback – HDV 1080i/DVCAM/DV[4] and 50i/60i

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

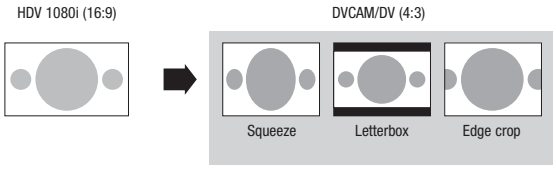
4 The HVR-Z1E supports DV SP mode only; no support for DV LP mode.

Down-conversion Playback Capabilities

The HVR-Z1E can convert material from 1080i down to 576i and 480i and output these video signals through its i.LINK interface. In addition, these signals can also be output via either analogue component, composite, or S-video connectors. This allows editing of recorded material with a non-linear editing system using current DV editing software[5] as well as recording SD signals to an external VTR, while simultaneously recording HDV signals with the HVR-Z1E. The HVR-Z1E can also down-convert to 576p and 480p and output these signals through its analogue component video connectors.

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

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



Recording, Playback and Down-conversion Formats

50i mode

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

60i mode

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

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

16:9 Widescreen Acquisition in DVCAM and DV formats

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

HD Codec Engine

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

i.LINK[6] Interface

The HVR-Z1E is equipped with a 4-pin i.LINK interface. This allows for on-cable digital transfer[7] of audio, video, and command signals to a connected VTR or non-linear editing system in the HDV, DVCAM and DV formats.

6 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 office.

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

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

The HVR-Z1E provides a high-quality, built-in stereo microphone as well as two XLR audio input connectors for connecting professional microphones or feeding an external-line audio source. Phantom power of approx. 40 V[8] can be supplied for the external condenser microphone. INPUT 1 audio can be recorded on CH1 only, or on both CH1 and CH2 audio tracks, with easy selection via a switch.

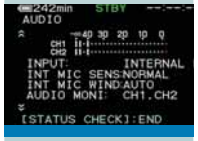
8 When using the phantom power for an external microphone, the specification of the input power supply must be checked.

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

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

HD Codec Engine

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



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

Eye-cup

OPERATIONAL VERSATILITY

Advanced Features for Professional Results

Large, 16:9 Widescreen Colour Viewfinder

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

Large, 16:9 Widescreen Hybrid LCD Monitor

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

Simultaneous Operation of LCD Monitor and Viewfinder

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

Long Operating Time

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

Battery Life

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

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

On-handle Zoom Lever and Rec Start/Stop Button

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

Variety of Zoom Operations

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

AE Override

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

Hyper Gain

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

Marker

Three types of markers can be displayed on the LCD monitor and viewfinder simply by pressing an Assign Button:

CENTRE Displays a marker at the centre of the screen

4:3 Displays a marker in the shape of 4:3 when using a widescreen monitor

SAFETY ZONE Displays a marker indicating the range that can be displayed on a standard TV (4:3 and 16:9) for home use (80%)

All Scan Mode

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

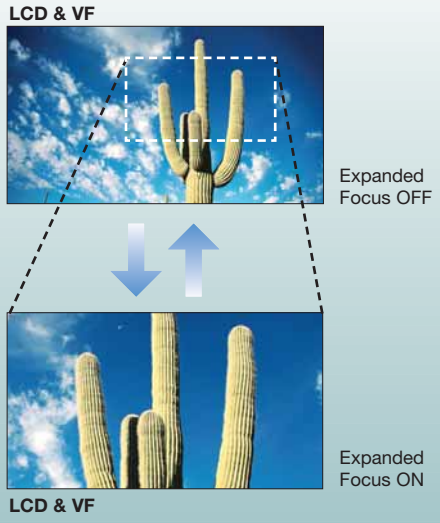
Six Assign Buttons

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

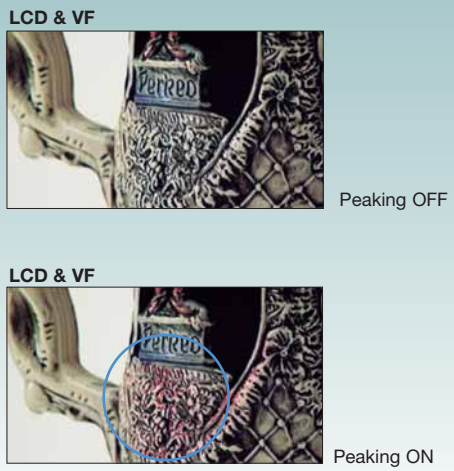
OPERATIONAL VERSATILITY

Advanced Features for Professional Results

Expanded Focus



Peaking



AF Assist

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

Expanded Focus

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

Peaking

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

Time Code Preset

The time code[9] 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.

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

External Record Control

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

Quick Rec.[10]

When operators do not want to miss a single recording opportunity, the time until the recording restarts from stop mode[11] can easily be shortened.

10 The transition from the last recorded scene may not be smooth.
11 When standby mode continues for more than three minutes, it is automatically switched to stop mode.

Status Check

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

Picture Profile

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

Personal Menu

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

Battery Info

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

Optimum Weight Distribution and Balance

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

Other Convenient Functions

In order to provide the flexibility required for professional shooting, the HVR-Z1E offers a variety of convenient functions:

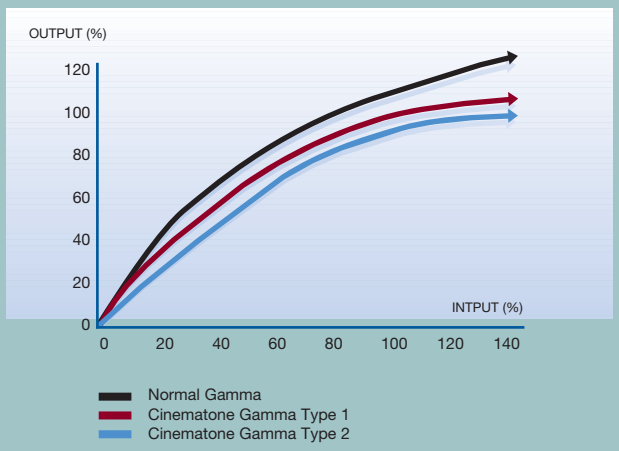
– AE Response
– Flicker Reduce (by AGC)
– Zebra Patterns (100% or 70 to 100% – adjustable by 5%)
– Date Stamping
– Audio Lock (DVCAM/DV mode only)
– Audio Limiter

CREATIVE VERSATILITY

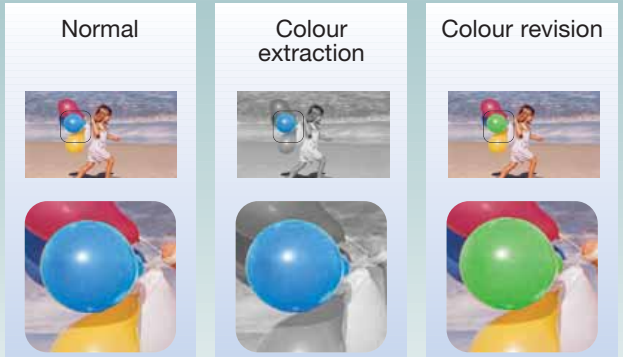
Unique Features for Creative Shooting

Shot Transition

Cinematone Gamma



Colour Correction



Shot Transition

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

Cinematone Gamma

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

Cineframe

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

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

Cineframe 24 and 30 Cineframe 24 and Cineframe 30 are used in 60i mode and can reproduce the picture movement like films of 24 or 30 frames/second[12] in HDV, DVCAM and DV formats.

12 Using Cineframe 24 or Cineframe 30 respectively.

Colour Correction

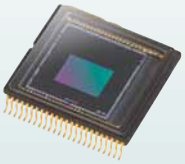
The Colour Correction feature provides two functions for creative shooting. The Colour Extraction function can retain up to two desired colours of monitored pictures in the screen by designating colour hue, saturation and range, while making the other colours black and white. This provides interesting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

HVR-A1E

Boasting an incredibly small size, and providing HDV with the 1080i standard, the HVR-A1E offers a host of advanced features for professional use. Using technology such as CMOS means the HVR-A1E is an ultra-compact camcorder capable of providing HDV in full 1080 line resolution.

Building on the affordability of HDV, the HVR-A1E provides users 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.

CAMERA FEATURES



CMOS

Enhanced Imaging Processor

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

The HVR-A1E incorporates one 1/3-inch type primary colour CMOS (Complementary Metal Oxide Semiconductor) sensor with 2.97 million total pixels and a 4:3 aspect ratio, this has been developed based on Sony's many years of experience in imaging devices.

This CMOS sensor can produce high-quality images with high sensitivity and low noise levels. This is superior to most traditional CMOS sensors due to advantages such as its unique pixel design and advanced noise reduction technique. Another key advantage of this CMOS sensor is its high-speed processing capability. Since data captured using a single CMOS sensor for high-definition format recording is extremely large, it would take considerable time to transfer and process by traditional methods. With the Sony CMOS sensor, such large data can be processed at an incredibly high speed thanks to its flexible multi-channel readout structure. Use of the CMOS sensor also allows even large amounts of HD-resolution data to be processed with amazingly low power requirements, thus making the camcorder's overall size extremely compact. Lastly, CMOS sensors eliminate vertical smear, even though the pixel size is small.

Enhanced Imaging Processor (EIP)

The EIP is Sony's newly developed image processing IC intended for high-speed processing of large amounts of data captured by the CMOS sensor. In addition, the EIP employs the unique algorithm that first separates image data into texture patterns and brightness components and then processes these two elements independently. This makes it possible to have high details in the dark as well as in brightly illuminated areas of the picture, delivering a clear image with a wide dynamic range even under backlight conditions[13].

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.

13 Available when the new Backlight Compensation function is activated.

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.

RECORDER FEATURES

HD Codec Engine

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

Switchable Recording and Playback – HDV 1080i/DVCAM/DV[14]

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.

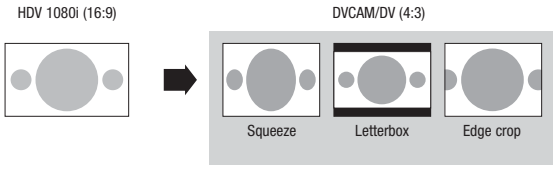
14 The HVR-A1E supports DV SP mode only; no support for DV LP mode.

Down-conversion Playback Capabilities

The HVR-A1E can convert material from 1080i down to 576i, and output these video signals through its i.LINK™[15] 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.

15 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.



Recording, Playback and Down-conversion Formats

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

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

HD Codec Engine

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

Still Picture Recording to Memory Stick Duo Media

The HVR-A1E incorporates a high-resolution digital camera function. Thanks to the 2.97-megapixel CMOS sensor, still pictures with 1,920 x 1,440 pixels can be recorded to Memory Stick Duo™ media. Still pictures can be captured by pressing the dedicated 'Photo' button, and this can be done even when recording video to tape, without any interruptions. In addition, any desired video frame recorded on tape can be captured as a still image with 1,440 x 810 pixels[16] and recorded onto Memory Stick Duo media after video shooting.

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

Resolution of Still Pictures

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

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

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

2-channel XLR Audio Input

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

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)[7] 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 DigitalMaster Mini Cassette Tape.

16:9, Colour/Black-and-white Switchable LCD Viewfinder

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

2.7-inch[18] 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.

18 Viewable area, measured diagonally

Variety of Zoom Operation

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.

New Backlight Compensation

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

Conventional Macro

Tele Macro

Images Simulated

Digital HD Video Camera Recorder

Marker

CENTRE | 4:3 | SAFETY ZONE | GUIDE FRAME

Images Simulated

Marker

Four types of markers can be displayed on the LCD monitor and viewfinder, and can be displayed simultaneously. (see above)

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.

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.

Battery Life

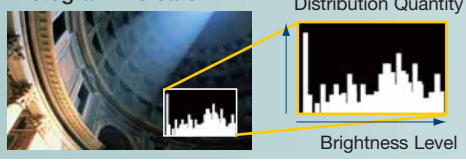
Continuous Recording Time*	With LCD Viewfinder On		With LCD Monitor On**		With LCD Viewfinder and Monitor On**	
	HDV	DVCAM/DV	HDV	DVCAM/DV	HDV	DVCAM/DV
NP-FM50 (supplied)	80 min	90 min	75 min	90 min	70 min	80 min
NP-QM71D (optional)	200 min	225 min	195 min	220 min	180 min	200 min
NP-QM91D (optional)	300 min	340 min	295 min	330 min	275 min	300 min

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

Shot Transition

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

Histogram Indicator



Shot Transition

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)

HVR-M10E

Highly powerful yet cost-effective, the HVR-M10E Digital HD Videocassette Recorder provides HDV 1080i recording and playback capabilities for a variety of roles such as a simple playback viewer and a feeder for non-linear editing systems.

In addition to basic VTR features inherited from the DSR11, the HVR-M10E also provides easy monitoring capabilities, with a built-in, 3.5-inch type LCD monitor to display important information such as the recorded image, audio level and set-up menu.

MAIN FEATURES

Advanced Recording and Playback Capabilities for Diverse Non-linear Editing Needs

Switchable Recording and Playback – HDV 1080i/DVCAM/DV[19] and 50i/60i

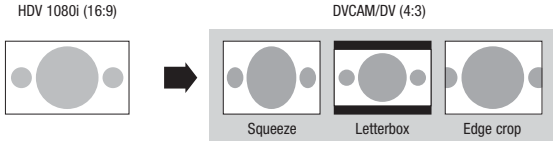
The HVR-M10E can switch between HDV 1080i, DVCAM and DV recording, providing full flexibility to record in either Standard or High-Definition depending on production needs. In addition, it can be switched between 50i and 60i modes (PAL and NTSC), allowing for flexible productions without the need for two separate VTRs with each standard.

19 The HVR-M10E supports DV SP mode only; no support for DV LP mode.

Down-conversion Playback Capabilities

The HVR-M10E can convert material from 1080i down to 576i and 480i and output these video signals through its i.LINK interface. In addition, these signals can also be output via either analogue component, composite, or S-video connectors. This allows editing of recorded material with a non-linear editing system using current DV editing software[20] as well as recording SD signals to an external VTR, while simultaneously recording HDV signals with the HVR-M10E. The HVR-M10E can also down-convert to 576p and 480p and output these signals through its analogue component video connectors. When down-converting these signals, the aspect ratio displayed can be converted from 16:9 to 4:3. Display modes can be selected from Squeeze, Letterbox or Edge crop.

20 Before using the HVR-M10E down-conversion capabilities with your current DV editing software, please contact your nearest Sony office to confirm compatibility.



i.LINK[21] Interface

The HVR-M10E is equipped with a 4-pin i.LINK interface. This allows for on-cable digital transfer[22] of audio, video and command signals to a connected VTR or non-linear editing system in the HDV, DVCAM and DV formats.

21 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 office.

22 Insert and assemble editing using HDV material is not recommended with the HVR-M10E. 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.

Recording, Playback and Down-conversion Formats

50i mode

Recording Format	Playback/ Down-conversion Format	i.LINK	Input		Output		
			Analogue Composite	S-Video	Analogue Component	Analogue Composite	S-Video
1080/50i	1080/50i	○	–	–	○	–	–
	576/50p (16:9/4:3)	–	–	–	○	–	–
	576/50i (16:9/4:3)	○	–	–	○		
576/50i (16:9)	576/50i (16:9/4:3)	□	Δ		○		
576/50i (4:3)	576/50i (4:3)	□	Δ		○		

60i mode

Recording Format	Playback/ Down-conversion Format	i.LINK	Input		Output		
			Analogue Composite	S-Video	Analogue Component	Analogue Composite	S-Video
1080/60i	1080/60i	○	–	–	○	–	–
	480/60p (16:9/4:3)	–	–	–	○	–	–
	480/60i (16:9/4:3)	○	–	–	○		
480/60i (16:9)	480/60i (16:9/4:3)	□	Δ		○		
480/60i (4:3)	480/60i (4:3)	□	Δ		○		

○ Available
Δ Switchable
□ Switchable (input)/available(output)

MAIN FEATURES

Compact, Unique Design

The HVR-M10E is compact, with a small footprint that enables it to be unobtrusively added to existing work environments. The HVR-M10E is also unique – it can be placed either horizontally or vertically. In addition, it includes a control panel lid and a cassette compartment lid on its front.

Built-in, 16:9 Widescreen LCD Monitor

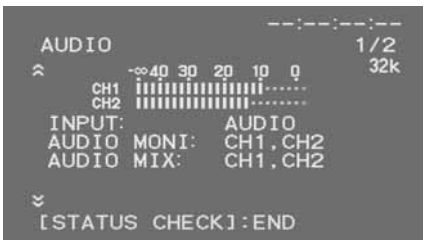
The HVR-M10E includes a 3.5-inch type colour LCD monitor with a high-resolution of approx. 250,000 pixels, allowing operators to view the input source during recording or check the playback picture, in a widescreen aspect ratio of 16:9. This large screen is also helpful when setting menus or audio recording levels, as well as for monitoring the VTR and audio status.

Status Check

At the touch of a button, operators can display the menu settings, mode of operation, time code and audio level indications superimposed over the video on the LCD monitor, allowing for easy status or settings checks during recording, playback and feeding.

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

Each input level for CH1 and CH2 can be independently adjusted using two audio level controls on the control panel and viewed with an audio level meter on the LCD monitor. The audio level meter can be recalled quickly and easily by a Status Check function.



Time Code Preset

The time code[23] 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.

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

External Control

The HVR-M10E comes equipped with the wireless Remote Commander, which provides control of basic functions. In addition, the HVR-M10E is equipped with a LANC terminal.

Battery Operation

With the optional NP-F970 InfoLITHIUM Rechargeable Battery Pack attached, the HVR-M10E can continuously record in HDV mode for up to 545 minutes, or up to 630 minutes in DVCAM/DV mode with the LCD monitor off. Battery information, such as the current charge level and current remaining recording time, can be displayed on the LCD monitor at the touch of a button.

Noiseless Design, with No Cooling Fan

The HVR-M10E requires no cooling fan, providing quiet programme-production environments.

Other Convenient Functions

In order to provide the flexibility required for professional recording, the HVR-M10E offers a variety of additional convenient functions:

– Audio Dub (DVCAM mode only)
– Headphone Jack
– Index Marking
– Index Search

3.5-inch Colour LCD Monitor

Status Check

Audio Level Controls

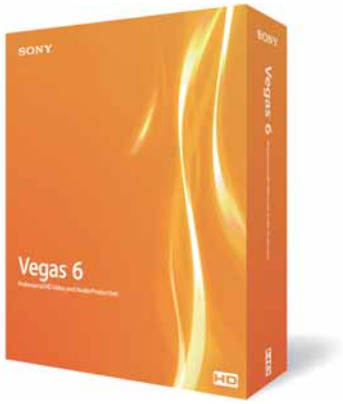
Control Panel Lid Open

Rear panel

Cassette Compartment Lid Open

Vegas® 6

Only Vegas® 6 software combines real-time SD, DV, and HDV video editing with unrivaled audio tools to provide the ultimate all-in-one environment for creative professionals — high-definition and high-fidelity.
With its unique, visual approach to digital video and audio production, Vegas delivers tremendous power, incredible speed, and maximum productivity in an uncomplicated, efficient platform.
Key features include: HDV support, unlimited tracks for audio and video, real-time play back and editing, and over 190 video effects and 175 2D and 3D transitions.
Vegas also includes Boris® Graffiti LTD titling software and a limited-edition Sony Pictures Sound Effects™ Series sampler CD.



Vegas®+DVD Production Suite

The Vegas+DVD Production Suite combines Vegas 6, DVD Architect™ 3, and Dolby Digital® AC-3 encoding software to offer an integrated environment for all phases of video, audio, DVD, and broadcast production.
A must for the professional media producer, this suite lets you edit and process DV, HDV, and SD/HD-SDI in real-time, manipulate audio with unparalleled precision, and efficiently author menu-based and single-title DVDs.
Key features include: HDV support, unlimited tracks for audio and video, customisable 2D and 3D effects, project nesting, subtitles, multiple camera angle support, and advanced media management.
The Vegas+DVD Production Suite also includes a limited-edition Sony Pictures Sound Effects™ Series sampler CD, and the Boris® Graffiti LTD, Boris FX LTD for Vegas, and Magic Bullet Movie Looks™ HD 50 plug-ins.

Optional Accessories

2NP-F970/B
InfoLITHIUM Rechargeable Battery Pack

HVR-Z1E HVR-M10E

NP-F570/F770/F970
InfoLITHIUM Rechargeable Battery Pack

HVR-Z1E HVR-M10E

NP-QM71D/QM91D*
InfoLITHIUM Rechargeable Battery Pack

HVR-A1E

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

HVR-A1E

AC-VQ1050B
AC Adaptor/Charger

HVR-Z1E HVR-M10E

AC-SQ950B
AC Adaptor/Charger

HVR-A1E

VCL-HG2037Y
2.0x Tele Conversion Lens

HVR-A1E

VCL-HG0737Y
0.7x Wide Conversion Lens

HVR-A1E

VCL-HG0872
Wide Conversion Lens

HVR-Z1E

VF-72CPK
PL Filter Kit

HVR-Z1E

HVL-20DW2
Battery Video Light

HVR-Z1E

HVL-20DMA
Battery Video Light

HVR-A1E

ECM-678/ECM-674
Electret Condenser Microphone

HVR-Z1E HVR-A1E

VCT-FXA
Shoulder Brace

HVR-Z1E

LCS-VCB
Soft Carrying Case

HVR-Z1E

LCR-FXA
Rain Jacket

HVR-Z1E

* When the NP-QM91D battery pack is attached to the HVR-A1E, the battery pack protrudes past the viewfinder.

LCH-FXA
Hard Carrying Case

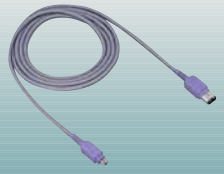
HVR-Z1E

LCH-HCE
Hard Carrying Case

HVR-A1E

VMC-IL4408A/IL4415/IL4435
i.LINK Cable (4-pin to 4-pin)

HVR-Z1E HVR-M10E HVR-A1E



VMC-IL4615/IL4635
i.LINK Cable (4-pin to 6-pin)

HVR-Z1E HVR-M10E HVR-A1E

VMC-30VC
3m Component Video Cable

HVR-A1E HVR-Z1E

VMC-30FS
3m Multi AV Cable (with S Video)

HVR-A1E

PHDVM-63DM
Mini Cassette

HVR-Z1E HVR-M10E HVR-M10E

UWP-C1
UHF Synthesised Wireless Microphone Package

HVR-Z1E HVR-A1E

UWP-C2
UHF Synthesised Wireless Microphone Package

HVR-Z1E HVR-A1E

UWP-C3
UHF Synthesised Wireless Microphone Package

HVR-Z1E HVR-A1E

RM-1BP
LANC Remote Controller

HVR-Z1E HVR-A1E

VCT-PG11RMB
Tripod with RM-1BP

HVR-Z1E HVR-A1E

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

Specifications

HVR-Z1E

CAMERA SECTION		
Lens		Carl Zeiss Vario-Sonnar T* zoom lens, 12x (optical), f = 4. 5 to 54 mm (3/16 to 2 1/4 inches), f = 32.5 to 390 mm (1 5/16 to 15 3/8 inches)* at 16:9 mode, f = 40 to 480 mm (1 5/8 to 19 inches)* at 4:3 mode, F = 1.6 to 2.8, filter diameter: 72 mm (2 7/8 inches)
Built-in filter		1/6 ND, 1/32 ND
Focus		Auto, manual (focus ring/infinity position), one push auto
Imaging device		3-chip 1/3-inch type CCDs
Picture elements		Approx. 1,070,000 pixels (effective), approx. 1,120,000 pixels (total)
White balance		Auto, one-push auto, indoor (3200 K), outdoor (5800 K ±7 steps)
Shutter speed	50i/PAL mode	1/3, 1/6, 1/12, 1/25, 1/50, 1/60, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000 s
	60i/NTSC mode	1/4, 1/8, 1/15, 1/30, 1/60, 1/90, 1/100, 1/125, 1/180, 1/250, 1/350, 1/500, 1/725, 1/1000, 1/1500, 1/2000, 1/3000, 1/4000, 1/6000, 1/10000 s
Exposure		Auto, manual
Gain		0, 3, 6, 9, 12, 15, 18 dB (adjustable for H, M and L gain positions)
Minimum illumination		3 lx with F1.6 at 18 dB

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

VTR SECTION		
Recording format		1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC)
Playout/Down-conversion format		1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC) 576/50p, 480/60p
Tape speed	HDV/DV SP	Max. 18.812 mm/s with PHDVM-63DM cassette
	DVCAM	Max. 28.218 mm/s with PHDVM-63DM cassette
Playback/ Recording time	HDV/DV SP	Max. 63 min with PHDVM-63DM cassette
	DVCAM	Max. 41 min with PHDVM-63DM cassette
Fast forward/Rewind time		Approx. 2 min 40 s with PHDVM-63DM cassette

INPUT/OUTPUT CONNECTORS	
Audio/Video input/output	AUDIO/VIDEO jack x1 Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative Audio signal: 327 mV (at load impedance 47 kΩ), input impedance more than 47 kΩ, output impedance less than 2.2 kΩ
S-video input/output	Mini-DIN 4-pin x 1 Y: 1 Vp-p, 75 Ω unbalanced, sync negative C: 0.3 Vp-p (PAL), 0.286 Vp-p (NTSC), 75 Ω unbalanced
Component video output	COMPONENT OUTPUT jack Y: 1 Vp-p (0.3 V, sync negative) Pr/Pb (Cr/Cb): 525 mVp-p (75% colour bar), input impedance 75 Ω
i.LINK	4-pin
XLR audio input	XLR 3-pin female x 2, 327 mV, -60 dBu: 3 kΩ, +40 dBu: 10.8 kΩ, power supply: approx. 40 V
Headphone	Stereo minijack (Ø 3.5 mm)
LANC	Stereo mini-minijack (Ø 2.5 mm)

BUILT-IN INPUT/OUTPUT DEVICES	
LCD viewfinder	0.44-inch type, approx. 252,000 pixels (1120 x 225), hybrid type
LCD monitor	3.5-inch type, approx. 250,000 pixels (1120 x 224), hybrid type
Microphone	Stereo type, noise reduction on/off

GENERAL		
Mass		Approx. 2.1 kg (4 lb 10 oz) (camcorder only)
Power requirements		DC 7.2 V (battery pack)
Power consumption	HDV	Approx. 8.0 W (recording mode with LCD viewfinder on)
	DVCAM/DV	Approx. 7.6 W (recording mode with LCD viewfinder on)
Operating temperature		0 to 40 °C (32 to 104 °F)
Storage temperature		-20 to +60 °C (-4 to 140 °F)
Supplied accessories		AC-VQ850 AC adaptor/charger, power cord, connecting cord, lens hood, large eye-cup, RMT-841 wireless Remote Commander, A/V connecting cable, component video cable, shoe adaptor, NP-F570 InfoLITHIUM rechargeable battery pack, size AA (R6) batteries (2), cleaning cassette, shoulder strap, operating instructions

HVR-A1E

CAMERA SECTION	
Lens	Carl Zeiss Vario-Sonnar T* zoom lens, 10x (optical), f = 5.1 to 51 mm f = 40 to 400 mm in 16:9 mode and 49.3 to 493 mm in 4:3 mode (full scan mode on)* f = 41 to 480 mm in 16:9 mode and 50 to 590 mm in 4:3 mode (full scan mode off)* f = 40 to 400 mm in 16:9 mode and 37 to 370 mm in 4:3 mode (still picture mode)* f = 1.8 to 2.1, filter diameter: 37 mm
Focus	Auto, manual, spot focus (touch panel control)
Imaging device	1-chip, 1/3-inch type primary colour CMOS sensor
Picture elements	Approx. 2,969,000 pixels (total)
Shutter speed	1/3, 1/6, 1/12, 1/25, 1/50, 1/60, 1/100, 1/120, 1/150, 1/215, 1/300, 1/425, 1/600, 1/1000, 1/1250, 1/1750, 1/2500, 1/3500, 1/6000, 1/10000 s
Minimum illumination	7 lx with F1.8

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

VTR SECTION		
Recording format		1080/50i, 576/50i
Playout/Down-conversion format		1080/50i, 576/50i, 576/50P
Tape speed	HDV/DV SP	Max. 18.812 mm/s with PHDVM-63DM cassette
	DVCAM	Max. 28.218 mm/s with PHDVM-63DM cassette
Playback/ Recording time	HDV/DV SP	Max. 63 min with PHDVM-63DM cassette
	DVCAM	Max. 41 min with PHDVM-63DM cassette
Fast forward/Rewind time		Approx. 2 min 40 s with PHDVM-63DM cassette (using a fully charged battery) Approx. 1 min 45 s with PHDVM-63DM cassette (using an AC adaptor)

INPUT/OUTPUT CONNECTORS	
Audio/Video input/output	A/V OUT jack, 10-pin connector Composite video: 1 Vp-p, 75 Ω unbalanced, sync negative, Y: 1 Vp-p, 75 Ω unbalanced, sync negative, C: 0.3 Vp-p, 75 Ω unbalanced Audio: 327 mV, input impedance more than 47 kΩ, output impedance less than 2.2 kΩ
Component video output	COMPONENT OUT jack Y: 1 Vp-p (0.3 V, sync negative), 75 Ω unbalanced Pr/Pb (Cr/Cb): 525 mVp-p (75% colour bar)
HDV/DV input/output	i.LINK interface (IEEE 1394, 4-pin connector S100)
XLR audio input	XLR 3-pin female x 2, 327 mV, -60 dBu: 3 kΩ, +40 dBu: 10.8 kΩ, power supply: approx. 48 V
Headphone	Stereo minijack (Ø 3.5 mm) x 1
MIC	Minijack x 1, 0.388 mV, low impedance with DC 2.5 to 3.0 V, output impedance 6.8 kΩ (Ø 3.5 mm), stereo type
LANC	Stereo mini-minijack (Ø 2.5 mm) x 1
USB	Mini-B x 1

BUILT-IN INPUT/OUTPUT DEVICES	
LCD viewfinder	0.44-inch type, approx. 252,000 (1120 x 225) pixels hybrid type, 16:9 aspect ratio
LCD monitor	2.7-inch type, approx. 123,200 (560 x 220) pixels, hybrid type, 16:9 aspect ratio
Microphone	Stereo type, noise reduction on/off
Speaker	Ø 16 mm

GENERAL		
Mass		Approx. 670 g (1 lb 7 oz) (camcorder only)
Power requirements		DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)
Power consumption	HDV	Approx. 5.6 W (recording mode with LCD viewfinder on)
	DVCAM/DV	Approx. 5.1 W (recording mode with LCD viewfinder on)
Operating temperature		0 to 40 °C (32 to 104 °F)
Storage temperature		-20 to +60 °C (-4 to 140 °F)
Supplied accessories		AC-L15 AC adaptor, power code, NP-FM50 InfoLITHIUM rechargeable battery pack, lens hood with lens cover, RMT-831 wireless Remote Commander unit, A/V connecting cable with S video, component video cable, USB cable, Memory Stick Duo (16 MB), Memory Stick Duo adaptor, ECM-NV1 monaural electret condenser microphone, XLR audio adaptor, shoulder strap, operating instructions

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RECORDING/PLAYBACK PERFORMANCE		
Recording format		1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC)
Playout/Down-conversion format		1080/50i, 1080/60i, 576/50i (PAL), 480/60i (NTSC), 576/50p, 480/60p
Tape speed	HDV/DV SP	Max. 18.812 mm/s with PHDVM-63DM cassette
	DVCAM	Max. 28.218 mm/s with PHDVM-63DM cassette
Playback/ Recording time	HDV/DV SP	Max. 63 min with PHDVM-63DM cassette
	DVCAM	Max. 41 min with PHDVM-63DM cassette
Fast forward/Rewind time		Approx. 2 min 40 s with PHDVM-63DM cassette

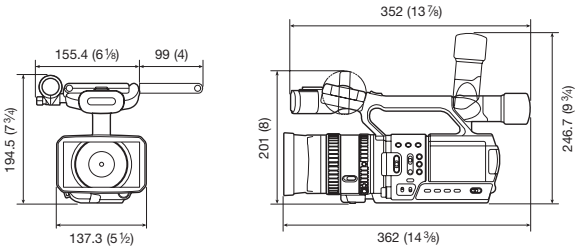
INPUT/OUTPUT CONNECTORS/DEVICES	
Video input/output	RCA pin x 2 Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative
S-video input/output	Mini-DIN 4-pin x 2 Y: 1 Vp-p, 75 Ω unbalanced, sync negative C: 0.3 Vp-p (PAL), 0.286 Vp-p (NTSC), 75 Ω unbalanced
Component video output	RCA pin x 3 Y: 1 Vp-p (0.3 V, sync negative) Pr/Pb (Cr/Cb): 700 mVp-p (100% colour bar), input impedance 75 Ω
i.LINK	4-pin
Phones	Stereo minijack (Ø 3.5 mm), 8 Ω loading
LANC	Stereo mini-minijack (Ø 2.5 mm)
Audio input	RCA pin x 2 Input level: max. 4 Vrms, input impedance: min. 47 kΩ unbalanced
Audio output	RCA pin x 2 Output level: 2 Vrms (full bit), output impedance: max. 1 kΩ
LCD monitor	3.5-inch type, approx. 250,000 pixels (1120 x 224), hybrid type

GENERAL		
Mass		Approx. 1.8 kg (3 lb 15 1/2 oz)
Power requirements		DC 8.4 V (DC IN jack), DC 7.2 V (Battery jack input)
Power consumption	HDV	6.5 W (playback mode with LCD monitor on)
	DVCAM/DV	5.7 W (playback mode with LCD monitor on)
Operating temperature		5 to 40 °C (41 to 104 °F)
Storage temperature		-20 to +60 °C (-4 to 140 °F)
Supplied accessories		Wireless Remote Commander, AC adaptor, power cord, stand, size AA batteries (2), cleaning cassette, operating instructions

DIMENSIONS

Unit: mm (inches)

HVR-Z1E



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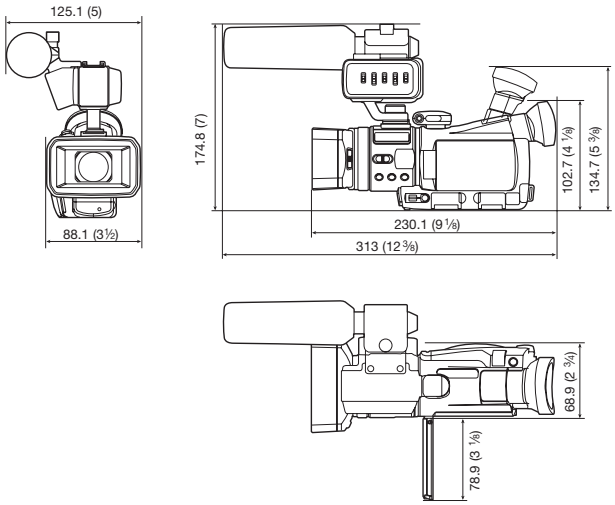

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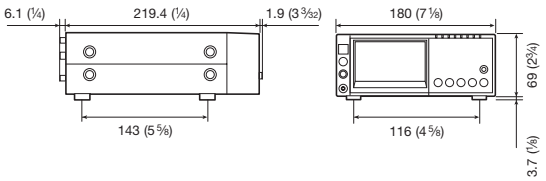

SILVER SUPPORT

Silver Support DVCAM HDV

2-year Support

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, 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 HDV and DVCAM equipment and maximise its performance. The multi-lingual helpdesk is available from Monday to Friday.

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

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