



HVR-Z5E

1/3-inch 3 ClearVid CMOS Professional HDV Camcorder

Introducing a truly amazing new compact professional HDV camcorder from Sony. The HVR-Z5E is designed to enhance creativity and deliver the highest standard of optical and audio quality.

Sony's newly designed G Lens™ is incorporated into the camcorder, boasting excellent resolution, colour and contrast, for breathtaking images.

3 ClearVid CMOS Sensor™ system utilising the technology of Exmor™ provides excellent low-light sensitivity. This new compact camcorder is ideal when high performance in available light conditions is a requirement. The ergonomically designed body allows flexible shooting under any conditions, while maintaining Sony's worldwide reputation for quality and high performance.

The HVR-Z5E's standard features include 1080/25p HDV native progressive recording modes.

Sony's new cutting-edge HYBRID recording system offers use of an optional HVR-DR60 or HVR-MRC1K. This allows simultaneous recording of HDV and/or standard DV/DVCAM to dual media for improved NLE and archive workflow efficiency.

Features

Major "G Lens" Features on HVR-Z5E

- The 29.5mm wide-angle "G Lens" (equivalent to 35mm film) on the HVR-Z5E offers a field of view that's ideal for shooting situations ranging from broad landscape shots to conditions where sufficient distance from the subject is difficult to obtain. A 20x optical zoom also enables shooting over a wide zoom range.
- 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 zoom ratios.

- Advanced optical lens technology makes the most of Sony's 3 ClearVid CMOS Sensor to realise sharper images with higher resolution and less noise even when shooting in very low light.
- 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 iris ring, located next to the zoom ring as with traditional professional lenses, allows users to adjust exposure with great precision. The zoom function is variable and can be controlled by using the lens barrel ring, the lever at the lens grip or lever on the camera handle. Additionally, once you select the high-speed zoom mode, you can zoom from wide to telephoto 1.5x faster than with the HVR-V1E.

The HVR-Z5E also provides 3 built-in ND (Neutral Density) filters and allows the use of an optional 0.8x wide conversion lens.

1/3 inch-type 3 ClearVid CMOS Sensor system

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

In combination with Enhanced Imaging Processor™ (EIP), the 3 ClearVid CMOS Sensor system achieves high resolution, high sensitivity, wide dynamic range, and excellent colour reproduction. The pixel shift interpolation technique has been traditionally used in small 3CCD camcorders. However, it normally requires the combination of all three colour element (RGB) signals to maximise resolution. If an object lacks one or more colour elements, the resolution of the object may be degraded.

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

Enhanced functionality with the technology of Exmor

Exmor technology, which utilises the full potential of the 3 ClearVid CMOS Sensor system. Exmor features the column-parallel A/D conversion technique and the dual noise cancelling method also used in the Sony's top-of-the-line models.

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 ClearVid CMOS Sensor system enables the HVR-Z5E to achieve a low light sensitivity of just 1.5 lux*

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

Switchable Recording and Playback - HDV1080i/DVCAM/DV

The HVR-Z5E can switch between HDV 1080i, DVCAM and standard DV recording, providing the ultimate flexibility to suit your production needs. 60Hz operation for 1080/60i/24p/30p plus SD 480i is available through a chargeable service upgrade

Selectable Progressive Modes

The HVR-Z5E has two types of progressive shooting modes.

- 25p HDV Native Progressive Recording Mode

The HVR-Z5E camcorders newly feature 25p native progressive recording mode. The 3 ClearVid CMOS Sensor system and EIP create true 1080p images, which can then be recorded as progressive signals by the HVR-Z5E camcorder in HDV format.

The progressive HDV stream can be output from an i.LINK connector and used for progressive editing with compatible NLE software. Native progressive recording modes are 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 ClearVid CMOS Sensor system is also recorded as an interlaced signal by dividing each frame into two fields. This enables compatibility with current editing and monitoring equipment that only accept interlaced signals, while maintaining the quality of the 1080p image.

Built-in Down-converter for SD Production

Output a down-converted video signal through the i.LINK interface and other SD output connectors. This allows users to edit recorded material with a compatible non-linear editing system using current DV editing software, as well as record SD signals to an external VTR.

* 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 your nearest Sony service centre.

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.

By adjusting the INPUT ASSIGN switch located on the side panel of the HVR-Z5E, you can easily assign the 2 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.

The high quality ECM-XM1 monaural microphone is a supplied accessory with the HVR-Z5E.

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. With approximately 921,000 pixels, this is 4x greater than the LCD of the HVR-Z1E. The XtraFine LCD displays virtually 100% of the recorded picture area at 6500K colour temperature.

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 Xtra Fine EVF displays virtually 100% of the picture area at 6500K colour temperature.

* 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.

InfoLITHIUM™ L Series Battery Compatibility

The HVR-Z5E uses the same batteries as the 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 1920x1080i/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.

One-touch Clip-type Microphone Holder

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

Smooth WB (white balance)

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

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.

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 level can be achieved with this function.

AGC Range Configuration

The range of the AGC (Automatic Gain Control) function can be set by assigning its upper and lower limits. The use of minus gain can be achieved by setting the lower limit of the AGC. Once MINUS AGC is set to ON, the minimum AGC parameter is set to approximately -3dB. If you set it to OFF, the minimum AGC parameter set to 0dB.

Advanced Histogram

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

Picture Profile™

Up to six different picture-quality settings, including gamma and colour settings can be registered in the memory as picture profiles.

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 vivid colour - is realized by 3D-LUT* colour processing.

Colour Correction

The Colour Correction function of the HVR-Z1E has been improved in the HVR-Z5E. Colour Correction provides two functions for creative shooting. The Colour Extraction function can retain up to two desired colours of monitored pictures on 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 memorize the centre colour of the captured image

The Colour Revision function can change the hue of the colour specifically 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 normalize 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 a custom colour or to adjust the colour temperature of the camcorder. There are two WB Shift options to choose from:

- LB-CC type: adjusting the LB axis (colour temperature) and CC filter effect.
- R-B level type: adjusting the red and blue levels

Skintone Detail

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

Smooth Slow Rec

The Smooth Slow Rec function of the HVR-Z5E camcorder enables smooth slow-motion playback of images capturing 4x faster than normal (200 fields/s). In this mode, quad-speed images are captured for three seconds, stored in the built-in buffer memory, and then recorded to tape (in either HDV, DVCAM, or DV format) as slow-motion pictures lasting 12 seconds*.

This allows recorded images to be checked immediately in the field. Picture quality is slightly degraded due to high-speed capture, but it's much better than converting standard definition images to slow motion using NLE software. This function is ideal for sports or nature photography, where the action can be viewed more easily in slow motion, and opens up many creative possibilities.

*Audio cannot be recorded while shooting in this mode.

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.

Assignable features

The HVR-Z5E provides 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 AT Iris, REC Review, Ring Rotate, Shot Transition, Smooth Slow REC, Spot Light, Steady Shot, TC Reset, TC Count Up and Zebra.

Benefits

Sony's exclusive high-performance "G Lens"

The HVR-Z5E benefits from 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 optimized to perfectly complement the advanced image sensor and image-processing technology, thus expanding your shooting possibilities.

1/3inch ClearVid CMOS Processor

Newly developed 1/3inch x 3 ClearVid CMOS processor offers high resolution, high sensitivity, wide dynamic range and excellent colour reproduction.

- Offers greater resolution than existing pixel-shift technologies regardless of the balance between colour elements.
- Offers great low-light capabilities especially important for camera operators who cannot control their ambient lighting, e.g. wedding videographers.
- Lower power consumption than traditional CCD's.
- 'Exmor' technology employed in the the new CMOS processor reduces noise in the A/D process.

Selectable 25p Progressive Modes

The HVR-Z7E offers the ability to choose between a 25p scanning mode (same as HVR-V1E) but also a 25p 'native' recording mode. In this native recording mode the picture is both scanned and recorded as a progressive image.

- Further improves the progressive reproduction by both scanning and recording progressively.
- Provides further flexibility of use. e.g. The camera can be used for a variety of applications from budget-movie making in 25p mode to standard interlace TV productions.
- Offers camera operators the use of the progressive 'filmic look', coupled with gamma curve correction makes the camera ideal for movie production.
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HYBRID Solution for Media, Format & Workflow

The HVR-Z5E is ready for HYBRID operation with the optional HVR-MRC1K Memory Recording Unit. In HYBRID operation you can simultaneously record video footage and audio to tape and to a standard CompactFlash (CF) card. This will allow an operator to shoot HD on tape and CF card, SD on tape and CF card or HD on tape and SD on CF card - depending on their requirements.

The HVR-Z5E has a special shoe connector* for direct attachment of the HVR-MRC1K without the use of a cable. This smart combination never interferes with shooting operations. The ergonomically integrated design provides easier handling in any shooting situation. The HVR-MRC1K automatically synchronises with the recording commands of the HVR-Z5E.

Various recording options are available when using the HVR-MRC1K in HYBRID operation. These include Synchronous recording, Relay recording or HVR-MRC1K only recording.

Furthermore, the HVR-Z5E can display HVR-MRC1K status information on its LCD for convenient reference. The display data includes Connection status, REC status and the remaining CF recording time. It is very convenient to be able to monitor the HVR-MRC1K's operation without having to check the rear display panel.

* The intelligent shoe connector inputs and outputs an HDV/DV stream and supplies power to the Memory Recording Unit HVR-MRC1K. The i.LINK connector is not available when the unit is attached to the camcorder.

Technical Specifications

Camera section

Lens	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
Built-in filter	Clear, 1/4, 1/16, 1/64
Imaging system	1/3 inch-type, progressive 3 ClearVid CMOS Sensor system with technology of Exmor
Picture elements	Approx. 1,037,000 pixels (effective), approx. 1,120,000 pixels (total)
Focus	Auto, manual (focus ring/one push auto/infinity/AF assist/focus macro)
White balance	Auto, one-push auto (A/B positions), indoor (3200 K), outdoor (selectable level -7 to +7, approx. 500K/step), manual WB Temp (selectable 2300K to 15000K, 100K/step)
Manual shutter speed	Auto 1/50 - 1/2000 Manual 1/4 - 1/10000
Gain	-6, -3, 0, 3, 6, 9, 12, 15, 18, 21 dB
Minimum	Illumination 1.5 lux (auto gain, auto iris, 1/25 shutter)

VTR section

Recording format	HDV1080/50i/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 PHDVM-63DM cassette DVCAM: Max. 41 min with PHDVM-63DM cassette

Input/Output connectors

Audio/Video output	10-pin connector A/V OUT jack (component, composite and unbalanced audio x2ch with the supplied cables)
HDV/DV input/output	i.LINK interface (IEEE 1394, 4-pin)
XLR audio input	XLR 3-pin female x 2ch
Headphone	Stereo mini jack (ø3.5 mm)
LANC	Stereo mini-mini jack (ø2.5 mm)
Digital video output	HDMI connector

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)
Dimension (W x H x D)	Approx. 169 x 188 x 451mm (6 3/4 x 7 1/2 x 17 7/8inch) (with lens hood, microphone and large eye cup)
Power requirements	DC 7.2 V (battery pack), DC 8.4 V (AC adaptor)

Power consumption	HDV Approx. 7.1 W (with ECM-XM1 / LCD viewfinder ON) DVCAM/DV Approx. 6.8 W (with ECM-XM1 / LCD viewfinder ON)
Battery operating time	HDV 395min (NP-970) DVCAM/DV 415min (NP-970)
Operating temperature	0 to 40 °C (32 to 104 °F)
Storage temperature	-20 to 60 °C (-4 to 140 °F)

Accessories

Viewfinders



SH-L32WBP

LCD Hood

Batteries and Power Supplies



2NP-F970/B

Rechargeable Battery Pack (2 Batteries)



AC-VQL1BP

Intelligent Quad Battery Charger and Dual AC adaptor

Cases



LCS-G1BP

Soft Carry Case

Tripods



VCT-PG11RMB

Tripod



VCT-SP1BP

Multi-purpose Camcorder Support System



VCT-1BP

Bracket For Camera Rear Mount

Remote Controls



RM-1BP

Remote Commander

Camera Adaptors



HVL-LBP

LED Battery Video Light