SONY

PMW-EX1

A Compact Full-HD Camcorder With SxS PRO Recording, for an Evolving Era of HD

XDCAM EX - New Generation HD Recording System

The PMW-EX1 is the first in a new range of professional HD products - called XDCAM EX - which record onto memory-based SxS ExpressCard media. Designed from the ground up to exploit the ultimate high performance of SxS PRO memory cards, the PMW-EX1 combines a state-of-the-art, non-linear XDCAM workflow with simply the best HD quality yet seen in a compact camcorder. It is also the first handheld camcorder to carry the legendary CineAlta 24P brand with multiple frame rate recording capability such as 59.94i, 50i, and native 23.98P, as well as being 1080i/720P switchable.

There is also a choice of a 35Mb/s High Quality mode or a 25Mb/s, HDV 1080i compatible mode. To take advantage of this high performance recording capability, the PMW-EX1 uses an all-new imaging system consisting of three ½-inch type CMOS sensors, each with an effective pixel count of 1920x1080 to produce images in full HD resolution. In addition, there's a purpose-built Fujinon Professional HD ½-inch 14x lens and a unique dual focus ring mechanism.

In fact, there are innovations in every detail of the PMW-EX1, from its IT-friendly MP4 file recording to advanced creative features, such as selectable gamma curves and 'Slow & Quick Motion' capability.

To maximise recording time, the PMW-EX1 has two memory card slots which means with a pair of 16 GB SxS PRO memory cards, it can record up to 140 minutes of HD footage.

A wide variety of accessories are also available, including a USB Reader/Writer, a wide-conversion lens, battery and charger.

The PMW-EX1 HD compact camcorder is the ideal solution for a wide range of customers from broadcasters through to independent videographers and film makers who want exceptional HD picture quality and state-of-the-art workflow from a compact and affordable camcorder.

Features

New Nonlinear Recording Media, "SxSPRO" - For Greater Efficiency, Operability, and Reliability

The XDCAM EX series adopts the SxSPRO memory card for its recording media, which Sony and SanDisk Corporation jointly developed specifically for professional content creation applications. The SxS PRO memory card is an ultra-compact nonlinear medium that uses flash memory with a number of key features:

- Compatible with ExpressCard3/4 interface slot which is common on modern Windows PCs and Macs
- Uses PCI Express interface and achieves an extremely high "read" speed of 800 Mb/s*
- Large storage capacity: SBP-8 (8 GB) and SBP-16 (16 GB) memory cards are available. One SBP-8 (8 GB) memory card is supplied with the PMW-EX1
- Can record up to 70 minutes of HD video and audio (using one 16-GB memory card)
- Compact size: approx. 75 × 34 × 5 mm (excluding the projecting parts) - half the size of the older PC Card standard
- Low power consumption

- Highly reliable: can resist shocks (up to 1500 G) and vibrations (up to 15 G)

*This data-transfer speed is a theoretical value. Actual data-transfer speed depends on the file type and the performance of the PC.

1920 x 1080 HD Recording Using the "MPEG-2 Long GOP" Codec

The PMW-EX1 camcorder records 1920 x 1080 HD images using the "MPEG-2 Long GOP" codec, which conforms to the MPEG-2 MP@HL compression standard. "MPEG-2 Long GOP" is a mature codec - also adopted by the XDCAM HD and HDV 1080i series of products - which enables users to record stunning-quality HD video and audio with highly efficient, reliable data compression.

Selectable Bit Rates

The PMW-EX1 camcorder offers a choice of bit rates - either 35 Mb/s (HQ mode) or 25 Mb/s (SP mode) - depending on the desired picture quality and recording time. The HQ mode supports both 1920 x 1080 and 1280 x 720 resolutions. The SP mode supports 1440 x 1080 resolution at 25 Mb/s, which provides compatibility with HDV 1080i products.

Footage recorded in this SP mode can be seamlessly integrated into HDV-compatible editing systems by transferring the stream from the camcorder via the i.LINK™ (HDV™) interface. It can also be recorded on XDCAM HD's optical disc through the use of the supplied Clip Browser software.

Long Recording Time

Utilising a mature and highly efficient compression format together with high performance SxS memory cards, the PMW-EX1 can record superb quality HD images for an exceptional 70 minutes* on a single 16Gb SxS card. As the PMW-EX1 features two memory card slots, this recording time is easily doubled to 140 minutes (with two 16Gb cards) and when recording across two cards, the transition is seamless without any frame loss. This feature makes the PMW-EX1 an ideal camcorder for a wide variety of content production applications, including wedding and event shooting, that require a long recording time.

*When recording in HQ (35 Mb/s) mode, recording time may be more than the above specified figure depending on the actual bit rate that is adopted during VBR encoding.

Multiple-format Recording - 1080/720 and Interlace/Progressive Switchable Operation

The PMW-EX1 camcorder offers a wide array of recording formats for multiple content creation applications. Scanning mode is switchable between 1920 x 1080, 1280 x 720, and 1440 x 1080 resolutions. Frame rate is also selectable from interlace and progressive - 59.94i, 50i, 29.97P, 25P, and native 23.98P*.

In addition, 59.94P and 50P progressive recording is available in 1280 x 720 mode. The SxS memory card can simultaneously hold multiple files of any of these recording formats, allowing for flexible use of the memory card.

*In 1440 x 1080/23.98P (SP) mode, images are handled as 23.98P and recorded as 59.94i signals through means of 2-3 pull-down.

High-quality Uncompressed Audio Recording

In addition to HD video recording, high-quality audio is an equally significant feature in the XDCAM EX system. The PMW-EX1 camcorder records and plays back high-quality, two-channel 16-bit, 48-kHz linear PCM uncompressed audio.

IT Friendly

With the XDCAM EX series, recordings are made as data files in the "MP4" format, which is widely used in a number of recent electronic portable devices and has been standardized by ISO.

The file-based recording allows material to be handled with great flexibility in an IT-based environment - easily available for copying, transferring, sharing, and archiving. All these operations are accomplished without any "digitizing" process required.

File-based data copying allows for degradation-free dubbing of AV content, which can be performed easily on a PC. The file-based recording system also allows for material to be viewed directly on a PC - simply by inserting the SxS memory card into the ExpressCard slot on a PC or Mac, or by linking a PC/Mac to the XDCAM EX unit via a USB2 connection. This works in just the same way as a PC reading files on an external drive. The file-based operation can dramatically improve the efficiency and quality of professional video applications.

Immediate Recording Start and No Overwriting Footage

By virtue of recording on flash memory card, the XDCAM EX can start recording virtually the instant the camcorder is turned on. Moreover, the XDCAM EX system automatically records on an empty area of the card - there's no danger of overwriting existing content.

This is extremely convenient, as camera operators do not have to worry about accidentally recording over good takes, and they don't have to search through footage for the correct position to start the next recording. In short, it means the camera is always ready for the next shot!

Instant-access Thumbnail Search with "Expand" Function

Each time a recording is started and stopped on the XDCAM EX camcorder, the video and audio signals are recorded as one clip. During playback, users can cue-up

to the next or previous clip simply by pressing the 'Next' or 'Previous' button, as you would do on a CD or DVD player.

Furthermore, thumbnails are automatically generated for each clip as a visual reference, allowing operators to cue-up to a desired scene simply by guiding the cursor to a thumbnail and pressing the 'Play' button.

For further convenience, the 'Expand' function allows one selected clip in the Thumbnail display to be divided into 12 even-time intervals, each with their own thumbnail identifier. This is useful if you want to quickly search for a particular scene within a lengthy clip.

1/2-inch type Three Exmor™ CMOS Sensors

The PMW-EX1 is equipped with three newly developed 1/2-inch type Exmor™ CMOS Sensors, each with an effective pixel count of 1920 (H) x 1080 (V), which delivers excellent picture performance with full HD resolution. This 1/2-inch type image sensor, using Sony's advanced accumulated sensor technologies, allows the camcorder to provide an excellent sensitivity of F10, a remarkable signal-to-noise ratio of 54 dB, and a high horizontal resolution of 1000 TV lines*.

In addition, this large 1/2-inch type image sensor can capture images with a shallower depth of field than smaller-size image sensors, giving users more creative freedom of expression. What's more, the Exmor CMOS sensor is a unique design that deploys an A/D converter to each column of pixels, resulting in a much lower clock speed than conventional CMOS sensors. This makes it possible to greatly reduce power consumption of the camcorder.

*In 1920 x 1080/59.94i mode

Wide-angle Fujinon 14x Zoom Lens

The PMW-EX1 is equipped with a superb Fujinon 14x zoom lens specifically designed for the PMW-EX1 to offer optimum picture performance. It offers a wide angle of view of 5.8 mm (equivalent to 31.4 mm on a 35 mm lens), and many other convenient features for diverse shooting situations.

Unique Focus Operation ? Professional Manual Focus and Auto Focus

The lens adopts a newly developed and unique focus ring mechanism, which offers two types of manual focus, plus an auto focus operation. The PMW-EX1 camcorder is equipped with two independent focus wheel mechanisms, which can be switched by sliding the focus ring itself back and forth.

When the focus ring is in the front position, the lens works in the same way as a typical auto focus lens on a hand-held camcorder. In this case, either manual or auto focus mode can be selected by the AF/MF switch on the lens. On the other hand, when the focus ring is set to the back position, the lens has an absolute focus position, and works in the same way as interchangeable-lens cameras, which professional users are familiar with.

Three Independent Rings

In addition to the unique focus ring, the PMW-EX1 camcorder is equipped with independent rings for zoom and iris adjustment. These are located adjacent to the focus ring, in the same layout as is common on shoulder-type camcorders. This gives users a high level of operational comfort and control.

AF Assist

The AF (Auto Focus) Assist function enables operators to manually change focus positions using the focus ring during AF mode. This means that AF reference focus positions can be shifted to manually changed positions.

MF Assist

The MF (Manual Focus) Assist function helps to precisely focus on the target subject when shooting in MF mode. When the MF Assist is turned on, auto focus is momentarily activated and finely focuses on the subject closest to the focal point of the lens at that time.

Expanded Focus

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

Selectable Peaking

The Peaking function can help operators to adjust the camera's focus more accurately by altering the way pictures are displayed on the LCD monitor and viewfinder. It can enhance the outline of the image, which the camera focuses on most, and change its colour 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", "YELLOW", and "BLUE".

Optical Image Stabilizer

To minimize the blurring effect caused by hand-shake, the new lens incorporates an optical image stabilizer function that provides highly stable images.

23.98P Native Recording

The PMW-EX1 camcorder is the first handheld camcorder to be a member of the legendary Sony CineAlta™ family. It offers native 23.98P* recording which, in combination with advanced creative features such as selectable gamma curves, makes this camcorder ideal for cinema production.

*In 1440 x 1080/23.98P (SP) mode, images are handled as 23.98P and recorded as 59.94i signals through means of 2-3 pull-down.

Slow & Quick Motion Function

The PMW-EX1 offers a powerful Slow & Quick Motion function - commonly known as over-cranking and under-cranking in film shooting - that enables users to create unique 'looks' or special effects with slow- and fast-motion images.

The PMW-EX1 can capture images at frame rates selectable from 1 fps (frame per second) to 60 fps in 720P mode and from 1 fps to 30 fps in 1080P mode, in increments of 1 fps. For example, when viewed at 23.98P, images captured at 60 fps will appear 2.5 times slower than normal. Conversely, images captured at four fps will appear six times faster than normal.

With the Slow & Quick Motion function of this camcorder, images are recorded natively without interpolating the frames. This means the quality of the slow- and fast-motion images is extremely high and incomparable to those created in the editing process. In addition, these slow- and quick-motion images can be played back immediately after shooting, without using any converters or processing on nonlinear editing systems.

Slow Shutter Function

The PMW-EX1 camcorder offers a Slow Shutter function for capturing clear images in low-light environments. This allows the shutter speed to be extended to a maximum of 64 frames. The Slow Shutter function not only increases camera sensitivity but also produces a special blurring effect when shooting a moving object, for enhanced shooting creativity. The shutter speed is selectable from 2-, 3-, 4-, 5-, 6-, 7-, 8-, 16-, 32-, and 64-frame periods.

Selectable Gamma Curves

The PMW-EX1 camcorder offers a wide variety of gamma curves to flexibly handle contrast and give a specific 'look' to an image. In addition to four types of standard gamma curves, the PMW-EX1 provides four types of CINE Gamma (CINE 1, 2, 3, and 4), which are identical to those of other CineAlta camcorders. Operators can select the best-suited preset gamma curve, depending on scenes.

Interval Recording Function

The PMW-EX1 camcorder offers an Interval Recording function that records signals at pre-determined intervals. This is convenient for shooting over long periods of time, and also when creating pictures with special effects of extremely quick motion.

Frame Recording Function

Frame Recording is a unique feature of the PMW-EX1 camcorder that is especially useful for stop-motion/clay animation shooting. Using this function, images for pre-determined frames are recorded every time the Record button is pressed.

Shutter Angle Settings

In addition to the electronic shutter speed controls, the PMW-EX1 also has a "shutter angle" control - which is familiar to film users. By setting the shutter speed to "angle", the PMW-EX1 automatically operates with the proper exposure time, determined by the selected frame rate and the shutter angle.

Picture Profile™ Feature

The Picture Profile feature allows camera operators to easily call up customized picture-tonal settings to suit particular shooting conditions, rather than having to readjust the camera each time - giving users greater operational efficiency. Up to six different picture-tonal settings such as the parameters of matrix, colour correction, detail, gamma and knee can be saved in the memory. These settings are displayed on the LCD monitor at the touch of a button.

Depth-of-field Indicator

A Depth-of-field Indicator can be displayed on the LCD monitor and viewfinder to help camera operators easily recognize the depth-of-field of a scene, and thereby produce their desired images.

Brightness-level Display

The average brightness level of the centre of a frame can be displayed on the LCD monitor and viewfinder as a percentage. This is useful when a waveform monitor is not available for shooting.

Histogram Indicator

The Histogram Indicator can be displayed on the LCD monitor and viewfinder, allowing operators to easily evaluate the distribution of brightness on currently captured images. This enables proper exposure control of iris, gain and gamma.

3.5-inch* Hybrid Colour LCD Screen

The PMW-EX1 is equipped with a newly developed, large, easy-to-view, colour LCD screen with a high resolution of 1920 x 480 pixels. The LCD screen is located in an easy viewing position on top of the camera and can be flexibly rotated according to shooting angles - which is convenient when using it as a viewfinder. When not in use, it folds underneath the housing for the built-in stereo

microphone.

The LCD Screen can also be used to instantly review recorded footage, as well as access the camera's set-up menus and view thumbnail display status indications such as audio meters, depth-of-field indicators, and the remaining memory and battery time. What's more, the Hybrid LCD screen - which comprises transmissive and reflective panels - offers clear viewing even in bright sunlight..

*Viewable area measured diagonally.

Easy-to-see Colour LCD Viewfinder

The 0.54-inch colour LCD viewfinder displays high-resolution colour pictures of approximately 250,000 pixels in a wide-screen aspect ratio of 16:9. Operators can switch the display mode between colour and monochrome according to their preference.

Rotary Grip

The grip of the PMW-EX1 can rotate 90 degrees, which allows camera operators to flexibly adjust the angle of the grip. This gives users greater comfort during low-angle and high-angle shooting.

Four Assignable Buttons

Frequently used functions can be programmed onto four assignable buttons, allowing operators to make rapid changes when working in the field. These can be functions such as ATW, Freeze Mix, Rec Review, Expanded Focus, Depth-of-field and more.

On-handle Zoom Switch and REC Start/Stop Button

In order to facilitate zoom control and recording operation during low-angle shooting, an additional zoom switch and record start/stop button are located on the carrying handle.

Shot Transition™ Function

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. It works by automatically calculating the intermediate values during the scene transition. The start of this function can be synchronized 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.

Long Operating Time

With the supplied BP-U30 battery attached, the PMW-EX1 can record continuously for approximately two hours, while the optional BP-U60 battery extends the operating time to approximately four hours.

Wide Array of Interfaces

The PMW-EX1 camcorder comes equipped with a wide range of interfaces optimized for a variety of operational needs. These include an HD-SDI output, down-converted SD-SDI output, i.LINK (HDV) input/output, USB2 and analogue composite/component output.

Other Features

- ATW (Auto Tracing White Balance)
- Built-in ND filter wheel: 1: Clear, 2: 1/8ND, 3: 1/64ND
- Selectable gain: -3, 0, 3, 6, 9, 12, 18 dB
- High-speed picture search: x4, x15
- Freeze Mix function
- Skin-tone Detail control
- Low-key saturation
- IR Remote Commander™ unit

Additional Information

Only SxS memory cards are guaranteed for use with the XDCAM EX. USB based memory cards cannot be used with the XDCAM EX range. USB based memory cards might work with the XDCAM EX range in some cases, but Sony does not guarantee that all the functions will operate. The performance of USB based memory cards can vary.

Benefits

The PMW-EX1 is truly an innovation in compact camcorder development. Based around the popular hand-held camcorder design, the new camera offers enhanced workflow benefits over existing tape-based camcorders coupled with a superior picture performance, which overall provides camera operators maximum flexibility in whatever style of production is chosen.

Enhanced Workflow

Innovative solid state recording with SxS PROExpressCard memory cards offers the following benefits:

- Compatible with industry-standard ExpressCard interface available on most modern laptops
- No time lost to tape loading
- Robust storage media, impervious to shocks and vibrations
- Small, high capacity recording media offering over 2 hours of continuous HD content across 2 x 16GB cards.
- Common interoperability with HDV and XDCAM so ready to use immediately with most existing NLE.
- No need to worry about accidentally overwriting precious content
- Write and Re-Writable media with no degradation in picture quality
- Thumbnail images representing key scenes can be browsed and instantly accessed using on-camera colour screen
- ' Essence Mark' key scenes at the touch of a button
- No frantic fast-forward/rewinding to find the clips you want to review
- Non-proprietary media manufacture
- Supplied with Clip Browser Software for viewing and copying clips to HDD, DVD or Blu-ray Disc.

Superior Picture Performance

Newly developed Exmor™ CMOS processors offer true 1080 x 1920 resolution:

- Large ½ inch sensors for excellent sensitivity and depth of field characteristics
- Full 1080 x 1920 effective pixels
- Low power consumption compared to CCD technology
- 1080 / 720 switchable for international programme production

Professional 1/2inch HD Lens

The PMW-EX1 not only features an exceptional ½ inch Fujinon lens, but also introduces a uniquely flexible control system designed to appeal to both broadcasters and videographers

- 14x Fujinon Professional HD lens
- Unique focus operation offering full manual focus with absolute focus operation similar to the lens focus on an interchangeable lens or manual/auto focus operation as per standard handheld cameras
- AutoFocus Assist ensuring focus position can be altered
- Manual Focus Assist to ensure optimum focus at all times

Exciting and Creative Recording Modes

The PMW-EX1 is the first compact camcorder to carry the legendary CineAlta brand, which represents optimisation for feature film production and specifically support for 23.98P recording capability - the standard frame rate for feature film production. Alongside this, there are a myriad of creative recording modes available including:

- Slow and Quick motion offers a range of frame rates produced within the camera and available for instant review in the field
- New shutter setting emulates filmic operation
- Cine Gamma curves offer further filmic options for production
- Frame and Interval recording offers further creative scope for animation and extremely quick motion effects
- Slow Shutter for clear images in low-light environments

Technical Specifications

--General--

Mass	Approx. 2.4 kg (5 lb 4 oz) (body) Approx. 2.8 kg (6 lb 2 oz) (with lens hood, large eye cup, BP-U30 battery, one SxS PRO memory card)
Dimensions (W x H x D)	178 x 176 x 311.5 mm (7 1/8 x 7 x 12 3/8 inches) without projection
Power requirements	DC 12 V
Power consumption	Approx. 13 W (while recording, with color LCD OFF, 1920 x 1080/59.94i mode)
Operating temperature	0 to +40 °C (+32 to +104°F)
Storage temperature	-20 to +60°C (-4 to +140°F)
Continuous operating time	Approx. four hours with BP-U60 battery Approx. two hours with BP-U30 battery
Recording format	Video MPEG-2 Long GOP[br}HQ mode: VBR, maximum bit rate: 35 Mb/s, MPEG-2 MP@HL SP mode: CBR, 25 Mb/s, MPEG-2 MP@H14 Audio Linear PCM (2ch, 16-bit, 48-kHz)

Recording frame rate	NTSC setting HQ mode: 1920 x 1080/59.94i, 29.97P, 23.98P, 1280 x 720/59.94P, 29.97P, 23.98P SP mode: 1440 x 1080/59.94i PAL setting HQ mode: 1920 x 1080/50i, 25P, 1280 x 720/50P, 25P SP mode: 1440 x 1080/50i
Recording/Playback time	HQ mode Approx. 50 min. with SBP-16 (16 GB) memory card, Approx. 25 min. with SBP-8 (8 GB) memory card SP mode Approx. 70 min. with SBP-16 (16 GB) memory card, Approx. 35 min. with SBP-8 (8 GB) memory card

--Lens--

Zoom ratio	14x (optical), servo/manual selectable
Focal length	f = 5.8 to 81.2 mm (equivalent to 31.4 to 439 mm on 35 mm lens)
Iris	F1.9 to F16 and Close, servo/manual selectable
Maximum relative aperture	1:1.9
Focus	AF/MF/Full MF selectable 800 mm to infinity (MACRO OFF), 50 mm to infinity (MACRO ON, Wide), 735 to infinity (MACRO ON, Tele)
Image stabilizer	ON/OFF selectable, shift lens
Filter thread	M77 mm, pitch 0.75 mm (on lens)

--Camera--

Pickup device	3-chip 1/2-inch type Exmor CMOS
Effective picture elements	1920 (H) x 1080 (V)
Optical system	F1.6 prism system
Built-in filters	ND filter OFF: Clear, 1: 1/8ND, 2: 1/64ND
Sensitivity (2000 lx, 89.9% reflectance)	F10 (typical) (1920 x 1080/59.94i mode)
Minimum illumination	0.14 lx (typical) (1920 x 1080/59.94i mode, F1.9, +18 dB gain, with 64-frame accumulation)
S/N ratio	54 dB (Y) (typical)
Horizontal resolution	1000 TV lines or more (1920 x 1080i mode)
Shutter speed	1/33 to 1/2000 sec.
Shutter angle	180, 90, 45, 22.5, 11.25 degrees
Slow Shutter (SLS)	2-, 3-, 4-, 5-, 6-, 7-, 8-, 16-, 32-, and 64-frame accumulation
Slow & Quick Motion function	720P Selectable from 1 to 60 fps as recording frame rate 1080P Selectable from 1 to 30 fps as recording frame rate

--Audio performance--

Sampling frequency	48 kHz
Quantization	16 bits
Headroom	20 dB
Frequency response	20 Hz to 20 kHz, +3 dB/-3 dB
Dynamic range	90 dB (typical)
Distortion	Less than 0.1% (with input level of -40 dBu)

--Signal inputs/outputs--

Audio input	XLR-3-pin (female) (x 2), line/mic/mic +48 V selectable Mic: -8 dBu to -65 dBu (reference level) Line: +4 dBu
A/V output	AV multi (x 1) Audio: -10 dBu (reference level), 47 kΩ Analogue composite: 1.0 Vp-p, 75 Ω unbalanced S-Video: Y: 1.0 Vp-p, 75 Ω unbalanced, sync negative
Component output	Mini D (x 1), Y: 1.0 Vp-p, 75 Ω, Pb/Pr: 0.7 Vp-p, 75 Ω
SDI output	BNC (x 1), HD-SDI/SD-SDI selectable
i.LINK input/output	IEEE1394, 4-pin (x 1), HDV stream input/output, S400
USB	Mini-B (x 1), USB 2.0 High-speed

Headphone output	Stereo mini-jack (x 1), 16 Ω, 30 mW
Speaker output	Monaural, 300 mW
DC input	DC jack
Battery input	5-pin
--Built-in LCD monitor--	3.5-inch* type colour LCD monitor, approx. 921000 effective pixels, 640 (H) x 3 (RGB) x 480 (V), 16:9, hybrid type
--Viewfinder--	0.54-inch* type colour LCD, 1120 (H) x 225 (V), 16:9

--Built-in microphone--

Capsule type	Omni-directional stereo electret condenser microphone
Frequency response	50 to 15000 Hz

--Media slot--

Type	ExpressCard/34 (x 2)
Interface	ExpressCard compatible

Accessories

Lapel (ECM-series)

ECM-673

Short Shotgun Electret Condenser Microphone.

ECM-674

Electret Condenser Microphone

ECM-678

Electret Condenser Shotgun Microphone

ECM-680S

Shotgun electret condenser microphone

XDCAM

SBAC-US10

SxS Memory Card USB Reader/Writer

Batteries and Power Supplies

BP-U30

Lithium-ion Battery*

BP-U60

Lithium-ion Battery*

Headphones

MDR-7505

MDR-7505 compact professional headphones

Tripods

VCT-SP1BP

Multi-purpose Camcorder Support System

SONY

Cases

LCS-G1BP

Soft Carry Case

LCS-BP1BP

Soft Carrying Case