

SONY®



HDR-FX1000

High Definition MiniDV (HDV) Handycam® Camcorder

HDNA
High Definition. It's in our DNA.





ADDING 1080-24P/30P IMAGE CAPTURE TO THE SONY® HDV™ FAMILY OF CAMCORDERS

The HDR-FX1000 HDV Camcorder

Since their sensational debut in 2004, Sony HDV camcorder products adopting the HDV 1080i specification have provided and continue to provide cost-effective HD program production. With high picture performance and superb functionality, Sony is trusted around the world for a wide range of HD applications. In line with its commitment to the HDV format, Sony introduces the HDR-FX1000 – a stunning new model that extends the HDV line-up into the world of digital cinema and drama productions.

The HDR-FX1000 offers 24p and 30p progressive scanning, in addition to 60i interlaced. The images captured at 24p are recorded on tape at a 60i field rate through means of 2:3 pull-down.

In its compact, lightweight and ergonomically designed chassis, the HDR-FX1000 camcorder integrates advanced technologies such as the newly developed 1/3" ClearVid™ CMOS Sensors with Exmor™ derived technology imaging system - which is only made possible by Sony's industry-leading semiconductor technology - and a stunning 29.5mm Wide-Angle to 590mm Telephoto (20x optical zoom) G-Lens. Such features enable operators to capture vibrant, highly detailed HDV images with an extreme level of mobility, ease of use and operational comfort suited for any shooting scenario.

In addition to HDV 1080i recording and playback*, the camcorder also offers DV recording and playback capabilities. This bridge between HD and SD allows the camcorder to be used in any DV-compatible system, whether it uses the HDV, or DV format.

* HD viewing requires compatible HDTV and HDMI™ cable, both sold separately.

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HDV Format

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

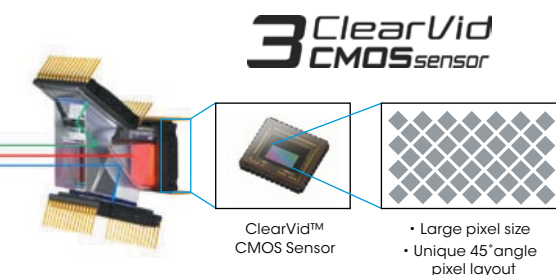
For example, more than 60 minutes of high-quality HD images can be recorded on a MiniDV cassette. As with the DV format, the HDV format allows an i.LINK®2 connection to compatible nonlinear editors, enabling a cost-effective HD production system.

The sheer volume of HDV 1080i professional and consumer equipment used around the world is a clear indication that HDV 1080i has become one of the most popular HD formats.

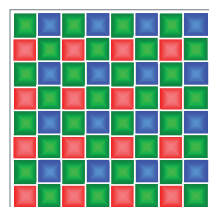
Innovative Technologies

3x 1/3" ClearVid™ CMOS Sensors with Exmor™ derived technology

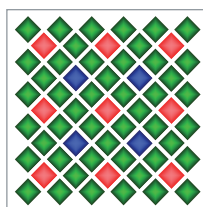
The HDR-FX1000 features three 1/3" ClearVid™ CMOS Sensors, each having 1,120K total pixels which produces high-resolution 1920 x 1080 images (HDV captures 1440 x 1080) with rich and natural colors. The three independent CMOS sensors each handle one of the color elements - red, green, blue (RGB) - improving the color reproduction of video recordings. Dark scenes can be captured with low noise thanks to Exmor™ derived technology that features a new column A/D converter and dual noise reduction.



Sensor resolution has been optimized and the photosensitive surface area has been maximized thanks to the unique grid arrangement of the photo diode sensors, in which each is rotated by 45 degrees.



Square Layout



ClearVid™ CMOS Sensor Pixel Distribution

Enhanced Imaging Processor (EIP) Technology



This model also features a signal processing circuit, the Enhanced Imaging Processor (EIP), which uses Sony's unique image-processing technology. The EIP processor is able to rapidly process the vast amounts of pixel data read from the 3x 1/3" ClearVid™ CMOS Sensor and record beautiful HD and colorful video. The ClearVid™ CMOS Sensor has been developed using the most advanced technologies in the semiconductor industry. Combined use of the 3x 1/3" ClearVid™ CMOS Sensor imaging system and the EIP technology provides extremely high image quality with a smooth gradation and detailed image reproduction, enabled through a precise interpolation scheme, which concludes within each R, G and B channel. This allows a higher resolution for each R, G and B channel than is offered by equivalent-class camcorders that resort to spatial offset techniques to improve resolution. Unlike CCD sensors, there is no vertical smear in the ClearVid™ CMOS Sensor imaging system when shooting high-intensity subjects, further reducing shooting-condition constraints.

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



Superior Optics

G-Lens: 29.5mm Wide-Angle to 590mm (20x) Telephoto



The HDR-FX1000 is equipped with a 29.5mm wide-angle G-Lens made of an advanced 10-group, 15 element lens structure that includes compound aspheric lenses and Extra-low Dispersion glass, which reduces chromatic aberration caused by light refraction, to produce video with extremely low color fringing. This lens was designed for shooting situations ranging from broad landscape shots to conditions where sufficient distance from the subject is difficult to obtain. The 20x optical zoom (29.5mm-590mm: 35mm conversion) lets you zoom in to the subjects you can't get close to. The optical zoom takes maximum advantage of the lens performance, so image quality does not suffer even at a zoom ratio of 20x, allowing you the ability to reproduce the subject's impact. In addition, the digital extender increases the zoom ratio by approximately 1.5 throughout the range and up to approximately 30x at full zoom.

Optical 20x Lens and Optional 0.8x Wide Conversion Lens

The G-lens on the HDR-FX1000 features a 20x zoom function. Moreover, the built-in digital extender increases the zoom ratio by approximately 1.5 to approximately 30x. The optional VCL-HG0872X 0.8x wide conversion lens uses the bayonet mount system for instant attachment or detachment. Combining these lens features, operators can effortlessly capture close-up or wide-angle shots as their video production requires.



Ultimate Viewing

3.2" Xtra Fine LCD™ display¹ (921K pixels)

The 3.2" Wide¹ (16:9) Xtra Fine LCD™ screen displays sharp, bright, vivid images, letting you compose a shot more easily - even outdoors, while enabling you to change settings to best represent the scene. With 921K pixels resolution and a wide viewing angle, the Xtra Fine LCD™ screen¹ is like having a HDTV built into your camcorder.



Superior low-light (1.5 LUX) shooting capabilities

The new G-lens affords a superior low-light ability with high sensitivity that enables clear shooting of subjects in light as low as 1.5 lux (at 1/30 fixed shutter speed with auto iris and auto gain). This allows you to capture sharp detail and brilliant colors even in less than perfect lighting, especially when additional external lighting cannot be used.

Optical SteadyShot™ image stabilization

The Optical SteadyShot™ image stabilization system from Sony reduces blur caused by camera shake and vibration, so your images stay crisp and clear. This optical stabilization system achieves an even higher level of smoothness without the image degradation that can occur with some digital stabilization systems.

3x manual rings for superior control: zoom, focus and IRIS

The HDR-FX1000 has three independent manual rings (zoom, focus and IRIS) for superior control and flexibility while filming which make it easier to promptly make adjustments to meet shooting needs. The IRIS ring allows you to adjust the aperture to attain optimal brightness and express beautiful depth of field shots, highlighting a subject while blurring a foreground or background. Exposure can also be assigned to the IRIS ring enabling the camera to automatically select the optimal IRIS, gain or shutter speed, seamlessly enabling adjustment of exposure.



0.45" Xtra Fine View Finder

This camcorder features a high-resolution 0.45" Xtra Fine (1,227K pixels) View Finder that offers extra clear visibility.



Compact and Lightweight Design

The HDR-FX1000 is designed to be very compact and lightweight, for a high level of mobility in the field. It weighs approximately 4 lb 9 oz (2.1kg)³ with Lens hood and Lens cover.

Ergonomic Design

The design of the HDR-FX1000 is based on years of Sony experience in camera ergonomics and provides ease of use and operational comfort.

3x Built-in Neutral Density (ND) Filters

Gain more color control in extreme settings with three built-in ND filters for adjusting the amount of light entering the Image Sensor through the lens. Depending on shooting conditions, the operator can choose from Clear, 1/4, 1/16, or 1/64 filters. In strong, glaring sunlight these filters give users more flexibility in choosing the shutter speed and aperture for superior creative control.

3x Manual Rings for Superior Control: Zoom, Focus, and IRIS Filters

The HDR-FX1000 has three independent manual rings (zoom, focus and IRIS) for superior control and flexibility while filming which make it easier to promptly make adjustments to meet shooting needs. The IRIS ring allows you to adjust the aperture to attain optimal brightness and express beautiful depth of field shots, highlighting a subject while blurring a foreground or background. Exposure can also be assigned to the IRIS ring enabling the camera to automatically select the optimal IRIS, gain or shutter speed, seamlessly enabling adjustment of exposure.

Video Connectors

Video connectors such as i.LINK^{®2}, analog component output, and multi-AV output connectors are located on the right side of the HDR-FX1000's rear panel where they do not get in the way of camera operations during shooting.



On-Handle Zoom Lever and Record Start/Stop Button

In order to facilitate zoom control and recording operations during low-angle shooting, an additional zoom lever and a record start/stop button is available. Fixed speed zoom and VAR mode are also available on this On-Handle Zoom feature.

Carrying Handle

A large space is offered on the bottom of the HDR-FX1000's handle for secure carrying of the camcorder, even when wearing gloves.

0.45" Xtra Fine View Finder with Supplied Large-size Eye Cup

The HDR-FX1000 features a high-resolution 0.45" Xtra Fine (approximately 1,227K pixels) (852 x 3[RGB] x 480) View Finder that offers extra clear visibility in wide-screen aspect ratio of 16:9. In addition to a standard-size eye cup, a large-size eye cup is also supplied. This can be attached to the standard-size eye cup to provide superb light-blocking capability, easy focusing, and more comfortable use of the viewfinder.

Side Grip

The side grip is located near the HDR-FX1000 camcorder's center of gravity. By tilting it to the front by approximately 10 degrees, it lightens the load on the operator's wrist during shooting.

Six Assign Buttons

This feature allows you to assign features you use often to shortcut buttons. The commonly used features can be used quickly without going through a menu selection (default: Zebra, AE Shift and Record Review). Features that can be assigned: Extended Focus / Digital Extender (approximately 30x) / IRIS Ring Rotate Direction / AE Shift / Index Mark / SteadyShot / Back Light / Spotlight / Fader / Smooth Slow Rec / Color Bar / Rec Review / End Search / Zebra / Marker / Peaking / Pict. Profile / Shot Transition.



HDMI™ (High Definition Multimedia Interface) Output Connector

The HDMI™ output connector transfers non-compressed, high definition digital video and audio signals from and to the HDR-FX1000 and other HDMI-equipped devices, such as consumer HDTV monitors, via a single cable (cable sold separately).

Manual/Auto Setting Switches

Gain, shutter speed, white balance and menu buttons are located on the left side of the HDR-FX1000 for convenient access during shooting.

Audio Level Dial

The audio level dial is located on the side of the HDR-FX1000 where it is easy to adjust. The audio level can easily be switched between manual and auto modes.

One-push AF Button

The one-push auto focus button, which is used for temporary auto focus adjustments, make it easy to attain focus when in manual mode.

Marker

When shooting in 16:9 aspect ratio mode, markers such as "center marker" and "Guide Frame" can be displayed on the HDR-FX1000's LCD monitor and viewfinder, allowing scenes to be captured to match the aspect ratio of the edited master.

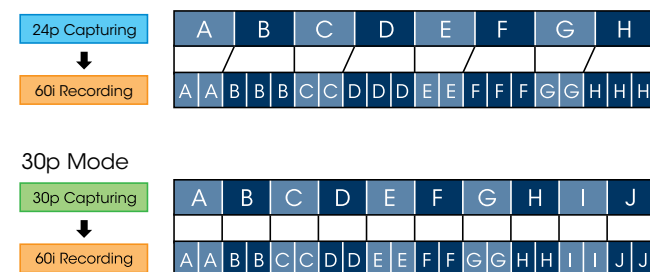
Creative Versatility IDEAL FOR CINEMA & DRAMA PRODUCTIONS

Progressive Shooting Capability Including 24p with 2:3 Pull-down and 30p

The 24p (progressive scan) images captured with the HDR-FX1000 are recorded using a method that allows them to be viewed on existing Sony HDV (60i) devices. Recordings made in this mode can also be edited as typical 60i material. The "24" mode should be selected when a 24p "film-like" look is desired on 60i material. In this case, there are no interruptions in the time code or video between recordings. Recordings made in this mode can be edited as typical 60i material.

The 24p progressive scan signals are recorded to tape as 60i through means of 2:3 Pull-down. A 30p signal is recorded as a 60i signal by dividing each frame into two fields. This approach allows 24p and 30p progressive footage to be played back or fed to an editing suite seamlessly at 60i.

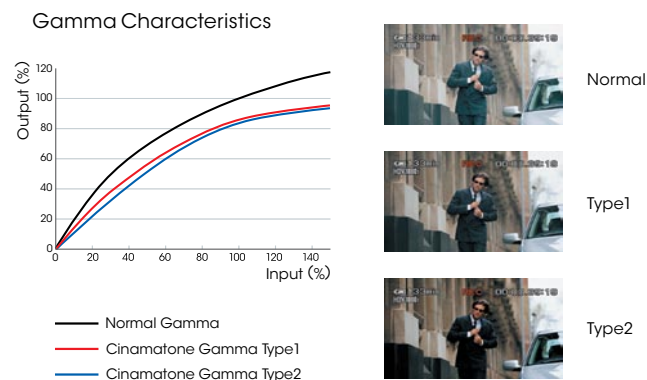
24p Mode (2:3 Pull-down)



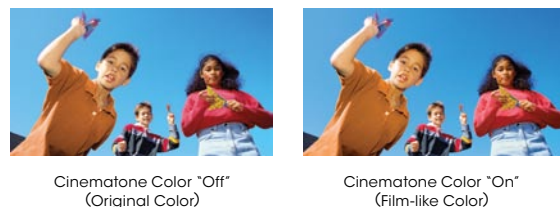
Cinematone Gamma™ and Cinematone Color

Users seeking extra control over image expression can use Cinematone Gamma™ technology to deepen the color and Cinematone Color to recreate film-like color tones. Cinematone Gamma™ allows operators to quickly set up and load a gamma curve with similar contrast characteristics to a film gamma curve.

The Cinematone Gamma 1 setting creates natural halftones with more film-like quality than standard video gamma. The slope of the gamma curve in dark areas is suppressed, creating a deep black tone, while the middle tone to highlight areas maintain detailed contrast. The Cinematone Gamma 2 setting suppresses the dark areas even further, creating a deeper black reproduction.



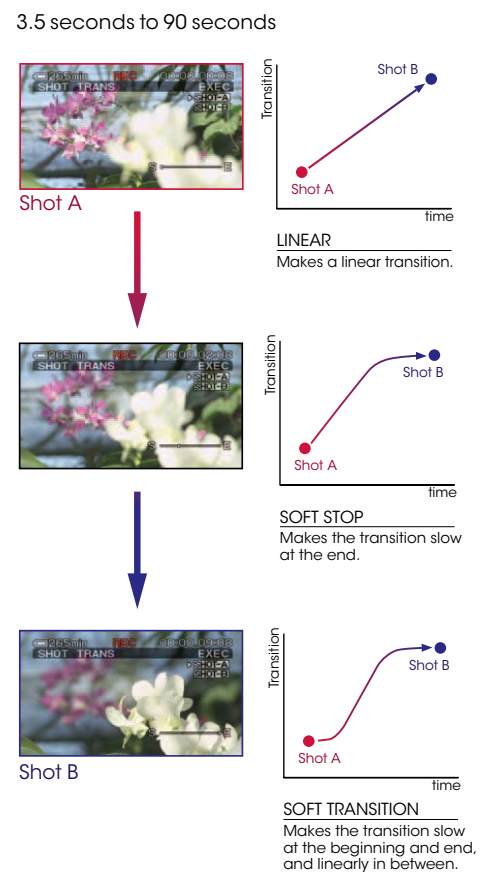
In addition, Cinematone Color function has been developed based on a thorough analysis of the color tone of cinema film. The Cinematone Color function provides cinematic color for deep-color and high-contrast images approaching cinema film. In combination with the Cinematone Gamma™ function, more cinema-like images can be captured.



Creative Shooting Functions

Shot Transition™ function

The Shot Transition™ function allows for smooth automatic scene transitions. After an operator has programmed a shot's start and end settings (e.g., for zoom, focus, iris, gain, shutter speed and white balance) and pressed the start button, a smooth transition takes place over the duration of the shot (3.5 seconds to 90 seconds) by automatically calculating intermediate setting values. This is very useful when complex camera settings are required during the scene transition - for example, when panning the camcorder from a distant subject to a close subject. Three Shot Transitions are available; Linear - makes a linear transition from start to end, Soft Stop - makes a linear transition from the start with a slow transition near the end, Soft Transition - makes the transition slow at the start and at the end and linearly in-between.



Interval Recording

Interval recording is a unique function that records signals at pre-determined intervals (0.5, 1, 5 or 10 minutes). This is ideal for recording subjects over long periods, such as the movement of clouds or the blossoming of flowers.

Smooth Slow Record

The Smooth Slow Record function enables clean slow-motion playback by capturing images at 4x the normal field rate (240 fields/s). Smooth Slow Record allows you to capture 6 seconds of fast motion which will play video back in 24 seconds. This video will be stored in the built-in buffer memory, then recorded to tape (in either HDV or DV format) as slow-motion pictures. Using the built-in buffer memory, shots can be set to start 6 sec. before, 6 sec. after or 3 seconds before record has been activated. Smooth Slow Record function can be activated by the record button or an audio trigger. This is particularly useful for difficult shots that can be simplified by starting record with an audio cue. For example; recording your own golf swing can be triggered by setting the camcorder on a tripod and triggering the record start by a simple noise, like calling out "Action."



Professional Features

Switchable Recording and Playback HDV 1080i/DV

The HDR-FX1000 can switch between HDV 1080i and DV recording, providing the full flexibility to record in either standard or high definition format according to different production needs.

16:9 Wide-screen Acquisition in DV Formats

When recording in DV formats, standard definition images can be captured by the HDR-FX1000 in either 16:9 or 4:3 aspect ratio.

Stereo Audio Input

The HDR-FX1000 has a single mini stereo audio input connector for connecting external microphones (sold separately). Easy audio-level adjustments can be made from a dial on the side of the camcorder.



Operational Versatility

Picture Profile™ Feature

Up to six different picture-tonal settings can be saved in the memory with custom 12-character names as picture profiles on the HDR-FX1000 and displayed on the LCD monitor at the touch of a button. This allows operators to easily call up customized picture-tonal settings to suit particular shooting conditions, rather than having to readjust the camera each time. The factory default setting includes six pre-loaded picture profiles for typical shooting conditions.

Assign Buttons

This feature allows you to assign features you use often to shortcut buttons. The commonly used features can be used quickly without going through a menu selection (default: Zebra, AE Shift and Record Review). Features that can be assigned: Extended Focus / Digital Extender (approximately 30x) / IRIS Ring Rotate Direction / AE Shift / Index Mark / SteadyShot / Back Light / Spotlight / Fader / Smooth Slow Rec / Color Bar / Rec Review / End Search / Zebra / Marker / Peaking / Pict. Profile / Shot Transition.

Rec Review

At the touch of a button, the video and audio of the last shot taken by the HDR-FX1000 can be instantly played back on the LCD monitor. This is achieved without even having to switch from "Camera mode" to "VTR mode." After playback, the tape is automatically cued up to the end of the last shot to continue back space editing. These features allow operators to seamlessly shoot and review material.

Playback Zoom

Using the playback zoom function of the HDR-FX1000, a selected area of the recorded HD images can be enlarged and played back on the LCD monitor and viewfinder allowing operators to perform a detailed evaluation of the material. These enlarged images can also be output in SD format via the i.LINK®2 and analog connectors, allowing operators to cut out parts of the HD image and use them as SD material.

Other Convenient Functions

Minus Auto Gain Control (Minus AGC)

When shooting in overly bright conditions, this feature enables the selection of gain settings in the negative range for satisfying results with minimal noise.

Memory Stick PRO Duo™ media slot

Capture still images directly onto Memory Stick PRO Duo™ media (sold separately) for easy transfer to compatible PCs for emailing, printing or sharing with other compatible Memory Stick® devices (sold separately). Memory Stick PRO Duo™ media slot captures still images directly onto Memory Stick PRO Duo™ media (sold separately) for easy reference to scenes. Memory Stick PRO Duo™ media also allows you to save frequently used settings and share saved settings with other HDR-FX1000 camcorders for easy setup.

Multi-Language Menu

Change the menu display from English to English (Simplified), Canadian French, Latin American Spanish, or Brazilian Portuguese.

Fader

To enhance viewing enjoyment, users can create transitions between scenes by using the White fader or Black fader to fade images in and out.

x.v.Color™ technology

x.v.Color™ technology can capture or display nearly twice as many (1.8x) viewable colors than possible with the traditional RGB color standard. This provides a more accurate and vivid color range, for a more natural, lifelike overall experience.

Center Marker/Guide-frame

The LCD and viewfinder feature a Center Marker that lets users identify the center of the screen at a glance. Users can also display a Guide-frame grid on the screen that simplifies the vertical and horizontal alignment of shots.

Histogram display

When the histogram feature is turned on, a graph of the image's brightness distribution appears. This gives you an objective determination of whether the video image as a whole is bright or dim. This makes it a handy guideline for brightness adjustment. You can adjust the camera's brightness and AE shift while checking this display.

Color Bar

Four types of Color Bars are available for use. These are convenient for color adjustment when playing back images on a TV or monitor.

Peaking

This feature emphasizes the screen's edge in the LCD and viewfinder, making it easier to adjust the focus. You can change the peaking color to white, red or yellow, according to the color of the subject, and you can also set the peaking level to high, medium, or low. This feature is handy when shooting with manual focus, because it makes it easy to tell where the focus is currently.

Zebra display

While you are shooting, you can add a striped pattern to bright areas of the video image and display it in the LCD and viewfinder. You can use this as a rough guide for adjusting brightness and help to prevent blocked highlights.



Specifications

General	
Imaging Device	1/3" ClearVid™ CMOS sensor
Technology	Exmor™ derived technology
Processor	EIP (Enhanced Imaging Processor)
Imager Pixel Gross Size	3x 1,120K each (Red, Green, Blue)
Optics and Lens	
Lens Type	G-Lens
35mm Equivalent 16:9	29.5 - 590mm
35mm Equivalent 4:3	36.1 - 722mm
Aperture	F1.6-3.4
Filter Diameter (mm)	72mm (G-Lens)
Focal Distance (mm)	4.1 - 82mm
Focus System	Full Range Auto, Manual (Ring), One Push Auto
Shutter Speed	1/4 - 1/10000 (60i/30p) 1/3 - 1/10000 (24p)
Minimum Illumination	1.5 lux (at 1/30 fixed shutter speed with auto iris and auto gain)
Optical Zoom	20x
Digital Zoom	30x approx. (When Digital Extender "ON")
Video	
Video Effective 16:9	3x 1,037K each (Red, Green, Blue)
Video Effective 4:3	3x 778K each (Red, Green, Blue)
Video Resolution (Movie Quality)	1080/60i, 1080/24p, 1080/30p
Video Signal System	NTSC color, EIA standards
Video Format(s) Supported	HD: HDV (MPEG2) / SD: DV (AVI)
Media Type	HDV / MiniDV
Record Time	SP: 60min/80min., LP (DV only): 90min/120min.
Audio	
Audio Recording Format	HD: HDV (MPEG1 Audio Layer II) / SD: DV (12/16 bit PCM Digital Stereo)
Microphone	Built-in Stereo Microphone
Photo	
Still Effective 16:9	1,440x810 (16:9)
Still Effective 4:3	1,080x810 (4:3)
Still Picture Resolution	1.2 megapixel
Media Type	Memory Stick PRO Duo™ media (sold separately)
Display	
Display	3.2" Xtra Fine LCD™ (16:9) LCD™ display¹ (921K pixels)
View Finder	0.45" Xtra Fine (16:9) Wide¹ LCD (1,227K pixels)
Hardware	
Memory Stick Slot	Memory Stick PRO Duo™ media slot
Manual / Auto Lens Cover	Manual
S/S & Zoom Button On Handle	Yes (Zoom Seesaw/ Ring/ Handle seesaw)

Inputs & Outputs	
Audio/Video Remote Terminal	Component / Video / S-Video / Audio
Analog Audio/Video Output(s)	Multi AV (video/audio out)
LANC Terminal	Yes (Stereo Mini)
Digital Audio/Video Output(s)	Yes (via i.LINK®²)
i.LINK®² Interface	Yes (4pin)
Component Video (Y/Pb/Pr) Output(s)	Yes (via multi AV)
S-Video Output(s)	Yes (via multi AV)
HDMI™ Connection Output(s)	Yes
Headphone Jack	Yes
Microphone Input	Yes
Active Interface Shoe	Cold Shoe
Convenience Features	
Image Stabilization	Optical SteadyShot™ image stabilization (Active Lens System)
x.v.Color™	Yes
White Balance	Auto / outdoor / indoor / One-push (A/B)
Fader Effects	Black, White
Picture Profile	Yes (up to 6 picture profiles)
Scene Selection Mode(s)	Picture Profile (up to 6 pre-set conditions)
Still Image Mode(s)	JPEG
Multiple Language Display	Yes
Smooth Slow Record	Yes (6 sec. at 240fps NTSC)
Power	
Power Consumption	6.5W
Supplied Battery Type	InfoLITHIUM® Rechargeable Battery (NP-F570)
Power Requirements	7.2V (battery pack); 8.4V (AC Adaptor)
Mass	
Dimensions (Approx.)	6 3/4 x 7 x 13 7/8 inch (169 x 178 x 349mm)³ including protrusions w/o gripbelt
Weight (Approx.)	4 lb 9 oz (2.1kg) w/ Lens hood with lens cover³
Supplied Accessories	
AC Adaptor	AC-L100
AV Connecting Cable	Yes
Rechargeable Battery Pack	InfoLITHIUM® Rechargeable Battery (NP-F570)
Remote Commander	Wireless Remote Commander® Remote Control (RMF-831)
Component Video Cable	Yes
Lens Hood	Lens hood with lens cover
Media	Operation Manual
Service	
Warranty information	1 Year Parts; 90 Days Labor

Features and specifications are subject to change without notice. Non-metric weights and measures are approximate. All TV reception, monitor pictures and print pictures are simulated. Except where noted, all photos are samples for illustration purposes only.

1. Viewable area, measured diagonally.
2. i.LINK is a trademark of Sony used only to designate that a product contains an IEEE1394 connection. The i.LINK connection may vary depending on the software applications, operating system and compatible i.LINK devices. All products with an i.LINK connection may not communicate with each other.
3. Non-metric weights and measurements are approximate and may vary.

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