

**SONY**®



**CX1**  
CINEALTA™

**HDCAM**™

**HDW-F900R**

Sony Digital Camcorder

[www.sonybiz.net/hdcam](http://www.sonybiz.net/hdcam)





## **CINEALTA™** AT THE HEART OF THE CREATIVE PROCESS

CineAlta – a name that symbolises the bond between cinematography and digital High Definition imaging. It distinguishes a Sony family of products and systems that offer new levels of creativity in the production, post-production, and exchange of HD pictures. It also brings together the quality and universality of 24-frame cinematography with the real-time capabilities, efficiency, and flexibility of digital High Definition technology. And it stimulates the convergence of motion picture film and digital High Definition production on a global basis.

CineAlta products, delivering cinema-quality pictures at selectable frame rates, have simplified international programme exchange by minimising the need for standards conversion. They have also opened up entirely new possibilities for international co-production. With real-time HD image evaluation on-set, instant replay of full colour high-resolution "takes", picture optimisation while shooting and a 50 minute shooting load, CineAlta brings new creative possibilities for programme creation.

CineAlta products provide a seamless bridge between 24-frame film originals and the final 24P digital master, giving each frame of film a one-to-one correspondence with progressive HD frames. The CineAlta environment readily interfaces with the computer graphics and post-production world, and the progressive 24P CineAlta master is the ideal platform from which to deliver pictures internationally either via SDTV and HDTV distribution formats, or via cinema release.

## THE WORLDWIDE STANDARD FOR DIGITAL PRODUCTION

In 2000, Sony introduced the HDW-F900, the first commercially available camcorder to record High Definition digital images onto tape at 24 frames per second. This totally new concept of 24P-based digital recording, together with the enabling Sony products, was named "CineAlta", and has since been embraced by the most prestigious producers, directors and cinematographers around the world. The HDW-F900, the first CineAlta camcorder, has become the camcorder of choice for movies, commercials and high quality television programme creation. It has brought new levels of picture quality, efficiency and flexibility to the production process, and has helped establish HDCAM as the global de-facto High Definition production format.

The original HDW-F900 camcorder has now evolved into the next-generation HDW-F900R, combining CineAlta performance with a variety of new features. This new camcorder acquires images in accordance with the CIF (Common Image Format) standard, which specifies a sampling structure of 1920 x 1080 active pixels (horizontal x vertical). In addition to recording at 24P, the HDW-F900R camcorder is switchable to record at 23.98P, 25P and 29.97P progressive scan and also at 50 or 59.94 Hz interlaced. The camcorder also provides a comprehensive range of features for creative shooting such as enhanced gamma features and colourimetry controls. The design of the HDW-F900R is highly compact and lightweight, giving users higher levels of mobility and comfort when shooting. To further enhance the creative and operational versatility of the camcorder, a wide range of optional accessories are available. These include a picture cache board, a 2-3 pull-down and down-converter board and a slow-shutter board. In combination with its 24P capability, these new features make the HDW-F900R the ideal camcorder for shooting television series, documentaries, commercials and movies.

The HDW-F900R is supplied without a viewfinder. The camcorders within this brochure are shown with an optional HDVF-C30W HD LCD colour viewfinder fitted.



## THE **HDCAM** FORMAT



The 24-frame progressive capability of the HDCAM format converges digital and film imaging, offering creative flexibility for high quality television, commercials and movie production. Since its introduction in 1997, HDCAM has become established worldwide as a format that offers mobile, compact and exceptional quality 1080-line digital recording. This reliable and robust format, based upon 1/2-inch tape technology, consistently delivers stunning picture and sound quality.

**The state-of-the-art, Sony HDCAM compression scheme is a frame-based digital compression technology, where every frame of the signal is compressed individually. HDCAM maintains exceptionally high picture quality and multi-generation performance for both progressive and interlace signals.**

Advanced digital pre-filtering and dynamic bit allocation for luminance and chrominance components (based on the statistical analysis of the picture content) are combined with a mild compression ratio of 4.4 to 1 to give a total on-tape recorded data rate of a modest 185Mbps. This provides high-integrity camcorder recording in hostile environmental conditions.

The frame rate of the camcorder can be switched between 23.98, 24, 25 or 29.97 progressive frames per second as well as a choice of either 50 or 59.94Hz interlace – all at the push of a button. In the same way that a film camera runs longer at a lower frame rate, the HDW-F900R records longer runs when operating at the lower frame rates.

Consequently, a BCT-40HD cassette records up to 48 minutes of 50i or up to 50 minutes of 24P material. The costs of HDCAM tapes are much less expensive than those of film, bringing significant cost benefits in shooting.



## **MOTION-CAPTURE** FOR CINEMATIC IMAGE MAKING

This is the area where film and video have, up until now, differed most. Every film camera exposes a succession of still images (most usually 24 frames per second) that, when projected, effectively reproduce motion. Because of the time required for a film transport to move from frame to frame, half of the action is not registered and this gives material originated on film its specific footprint. On the other hand, many digital cameras record interlaced images where two fields with temporal offset are used to capture one frame. This produces a smoother motion portrayal than film images captured at a lower frame rate.

When an HDW-F900R is set to a 24P frame rate and with a shutter speed of 1/48 second, it captures moving pictures in precisely the same manner as the film camera and produces results with the same motion footprint as footage shot on film. The overall result is comparable to 35 mm film origination.

As well as a 24P frame rate, the progressive CCD sensor in the HDW-F900R can capture progressive images at 23.98, 25 and 29.97 frames per second. Traditional interlace material can also be captured when an HDW-F900R is set to field rates of 50 and 59.94 Hz interlace. The extent of these frame rates provides the ability to shoot in both the film and television programme genres. It also offers the means for some creative speed change for special effects (for example shooting at 29.97P and playback at 24P slow motion).



## THE ART OF IMAGE-MAKING

The progressive scan CCD sensor at the heart of the HDW-F900R marks a significant advance in Sony HAD CCD technology. It is a development that now makes image capture possible over a range of frame rates, so that their quality is at the highest level. This progressive scan CCD sensor provides a sensitivity of f10 at 2,000 lux (at 59.94i) providing subjectively noise and grain-free pictures. At 24 fps, with a 1/48-second shutter speed (equivalent to a 180° film camera shutter setting), the exposure index of the HDW-F900R is approximately equivalent to 300 ISO\*.

It allows the acquisition of gain-free imagery in deeply shadowed areas of a scene. Superb CCD highlight-handling greatly extends the Exposure Latitude of the camera allowing directors the dramatic freedom to shoot and capture extreme highlights in otherwise low-key scenes.

\*Based on Sony's own measurements.

## ADVANCED DIGITAL SIGNAL PROCESSING

Picture Tonal Reproduction is substantially enriched in the HDW-F900R by the adoption of an advanced CCD with a wide dynamic range and a 12-bit A/D converter that is then followed by powerful, high-speed, Advanced Digital Signal Processing (ADSP). ADSP allows the active manipulation of many picture parameters to expand the use of in-camera effects.

## NEW ERGONOMICS

As part of Sony's continuous efforts to make the design of our camcorders user-friendly and practical, the new HDW-F900R has been designed to increase comfort and versatility. One of the most significant features in the HDW-F900R design is the camcorder's compact size – the length of the camera body is 20% shorter than the original model. In addition to its compact size, the HDW-F900R provides HD-SDI output directly from the camera body, compared with the analogue outputs of the preceding model. The more compact nature of the camcorder makes it extremely easy and flexible to use when shooting in space-constrained locations, such as in a car. The HDW-F900R is also extremely lightweight – 2.6 kg lighter than the previous model. Even with the viewfinder, battery, cassette, microphone, and a small variable or fixed-focal length lens, the total weight is only around 5.4 kg (12 lb). The streamlined design inherits the weight distribution and balance from the previous model, yet provides much higher mobility, making the camcorder particularly suitable for hand-held shots. It also sits comfortably on the shoulder and can be carried more easily.

The HDW-F900R incorporates a B-4 lens mount that facilitates quick lens replacement, which is also reinforced to support heavy lenses. All switches, meters and indicators are positioned in the most logical places for optimum functionality and ease of use. It can be readily mounted on a Steadicam™ system or mounted on a tripod, geared-head or motion-control system.

This compact and lightweight camcorder opens new possibilities for creative camera work, while delivering uncompromising picture quality.

## Cassette Loading

The cassette loading of the HDW-F900R is fast, simple and reliable. It takes less than 5 seconds\* to change a cassette. This facility and long recording runs (40-50 minutes depending on the selected frame-rate) offer higher levels of efficiency on location. The loading mechanism is robust and designed to be dust-, moisture- and drip-resistant. Vertical cassette loading also helps to minimise the risk of airborne contaminants from entering the loading mechanism.

\*Based on Sony's own measurements.

## Internal Light System

A two-pin socket in the HDW-F900R provides up to 50 watts of power from the attached lithium-ion battery. This can be used to power a variety of ancillary devices, including a front light that can be mounted on the upper part of the handle. The power can be switched on and off manually or, when in Auto mode, it can be set to be synchronised with the operation of the Record button.



## Adjustable Shoulder Pad

The position of the shoulder pad on the HDW-F900R can be adjusted – forwards and backwards – without using a screwdriver. This means the operator can always attain a comfortable and well-balanced camera position, even when docked with a range of lenses.



## Optical Filter Wheels

Two independent filter wheels (each with four filter positions) are provided on the HDW-F900R. One wheel contains Neutral Density (ND) filters and one contains Colour Correction (CC) filters.

## High Quality Audio Recordings

The HDW-F900R is equipped with a range of balanced audio interfaces; an analogue 5-pin XLR connector for stereo audio output, two 3-pin XLR connectors with selectable MIC/Line level input and the front microphone input.

The two 3-pin XLR connectors can also be switched to accept four channels of AES/EBU digital audio input, establishing a highly functional digital EFP audio system using the Sony DMX-P01 Digital Portable Mixer.

## Dual HD-SDI Outputs

In response to the strong requirements for convenient and high quality on-set monitoring, two HD-SDI outputs have been incorporated into the HDW-F900R body as standard. This is an enhancement to the previous model, which offered HD-SDI output only through the use of an external camera adaptor.

## Recording on Sony HDCAM-SR Recorders

The HDW-F900R can feed camera output signals via its HD-SDI connector for recording on external VTRs such as Sony SRW-1 HDCAM-SR™ portable recorders.



### Microphone Volume Protection

A protection cover located under the volume knob of the front microphone is provided to prevent operators from accidentally changing the volume.



### Electronic Shutter

The electronic shutter helps in capturing clear images of fast-moving objects by selectively minimising motion blur.

## LCD Status Panel and Diagnostic System

All the main operational controls and switches are located on the left-hand side of the camcorder. The LCD panel is on the same side and shows a wide range of status and diagnostic displays such as Tape Remaining, Battery Level, Audio Levels, etc.



### Assignable Button

Viewfinder Return, Record, and other functions can be assigned to this switch.

### Safety Zone Marker

To allow for individual production requirements, the camcorder provides a Safety Zone Marker user adjustable for any aspect ratio.



Simulated images

### Extended Clear Scan

The Extended Clear Scan function is particularly useful when shooting scenes that contain computer or TV screens as it minimises the horizontal bars that can appear. The ECS shutter speed is continuously variable. When the camcorder is operated at 24P with a 1/48-second shutter speed, it exactly emulates the motion blur of a film camera operating at 24 fps with a 180° shutter.





## CONTRAST RANGE

The HDW-F900R can handle a very impressive contrast range. For the most challenging of light settings and associated scene conditions, several powerful operational features are available that allow image optimisation in real-time to help capture the desired mood of a shot.

The first is RGB Gamma Balance. By changing gamma balance, it is possible to change the colour balance of the mid-tones without affecting black and white balance. The second feature, Black Gamma, allows fine adjustment of tonal reproduction in the shadows (black) to be made. This can help to bring out details from the dark parts of the picture without affecting mid-tones and with the absolute black level remaining unchanged. It is particularly helpful for dark scenes when the black has to stay black, but there is a requirement to pull out more detail.

The range of creative possibilities offered by modifying RGB Gamma Balance and changing Black Gamma offers a great advantage in achieving a desired "look".

## ENHANCED GAMMA FEATURES

In addition to artistic and skilful lighting, in-camera gamma setting plays an important role to deal with contrast range and to give a specific "look" to the image. In order to meet a broad array of customers' demands, the HDW-F900R offers flexible options to faithfully reproduce the desired "look" of the image.

### HYPERGAMMA

HyperGamma is a set of new transfer functions designed to provide powerful contrast handling by making maximum use of the capacity and wide dynamic range of the Power HAD CCD sensor.

HyperGamma adjustments can be made via the set-up menus where camera operators can select the curve - from a selection of four - that best suits the needs of the production. HyperGamma can be used to enhance natural reproduction in low light areas, to achieve a better look in wide dynamic scenes or to obtain best colour grading in the Digital Intermediate process.

## USER GAMMA CAPABILITY

This is a useful feature for cinematographers who demand custom-made gamma curves for their projects. It allows them to quickly set up and load the gamma curves being edited by the CVP File Editor\* gamma creation software running on a Microsoft® Windows® PC.

This software allows the gamma curve to be visually edited, using an easy-to-use GUI, by plotting the x and y values of each point of the curve. Once the gamma curve has been created, it can be loaded into the HDW-F900R using a Memory Stick.

\* For details of the CVP File Editor, please refer to the HDW-F900R Operation Manual.

## HIGHLIGHT HANDLING

Sony Advanced TruEye™ processing in the HDW-F900R allows much-improved highlight handling, with faithful colour reproduction.

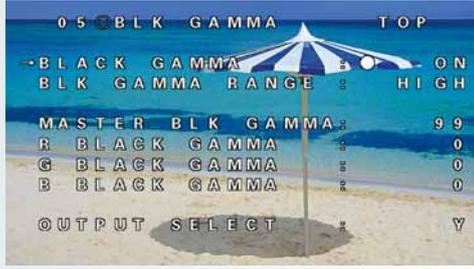
## COLOURIMETRY

The HDW-F900R produces pictures with astonishing colour reproduction accuracy. Its Multi Matrix function also provides selective colour enhancement or alteration. Multi Matrix allows a specific colour to be selected and its hue changed over a range of approximately 20 degrees. The level of saturation can also be modified. This permits some very interesting "in camera" effects - similar to the secondary colour correction normally reserved for post-production special effects work - and is performed at the full bit depth.

### Contrast Range



Standard Gamma



Black Gamma ON

Simulated images

### HyperGamma



Set-up Menu



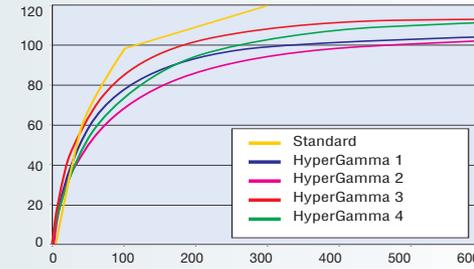
High Contrast Scene

Simulated images



Low Light Condition

Output [%]



Input [%]

### Colourimetry



Set-up Menu



Multi Matrix ON

Simulated images

### Highlight Handling



Conventional Video Equipment



TruEye

## DEFINITION – PICTURE SHARPNESS

The HDW-F900R produces breathtaking pictures. Three CCDs, each with 2.2 million pixels, faithfully capture superb natural images. The HDW-F900R also incorporates some new and innovative image enhancement functions, allowing very precise control of the way the picture texture and edges are represented.

The first of these new features is Soft Focus. The Soft Focus adjustment is particularly convenient for those who find conventional digital images to be too sharp and allows cinematic pictures to be created. It offers an additional tool to provide more creative control of image softness - and it can be optimised in real-time during shooting.

The second feature, Adaptive Detail Control (also known as Knee Aperture), allows the image detail enhancement in the highlight areas to look more natural.

The third feature is Skin Tone Detail. This controls the detail level of objects with specific colour tonality. It can be used to alter and soften the texture of an actor's facial appearance while retaining the crispness of the remainder of the scene. Within selected areas, details can be enhanced as well as softened. This can be a powerful imaging tool not available in film shooting. Three sets of correction parameters can be applied simultaneously.

## PICTURE STABILITY

By its very nature any digital or video camera delivers rock steady pictures. The HDW-F900R is no exception. The picture stability is particularly relevant for productions incorporating multi-layered compositing special effects.

## TEXTURE

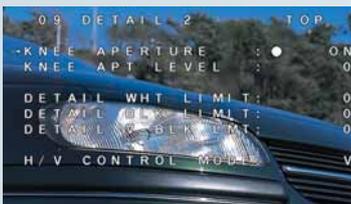
Because of its excellent signal to noise ratio, the HDW-F900R delivers subjectively noiseless and grain-free pictures. This is extremely beneficial in commercial production and is also useful when working on productions that require multi-layering and blue-screen effects. The separation between useful information and unwanted grain or noise is straightforward and delivers accurate and spectacular results.

## STOP MOTION AND TIME LAPSE

With the HKDW-703 Picture Cache Board installed, the HDW-F900R offers a frame-by-frame recording capability that provides stop-motion and time-lapse modes of operation in-camera. This offers new and innovative creative opportunities for both animation and model shooting.

\* The tape must be pre-stripped with LTC (at the desired frame/field rate) by the HDW-F900R that will be used for shooting.

### Soft Focus



Soft Focus OFF



Soft Focus ON

### Adaptive Detail Control



Conventional Video Equipment Ch 2 ON



Adaptive Detail Control

### Skin Tone Detail



Ch 1 ON



Ch 1 ON

### Stop Motion



Simulated Images



Ch 2 ON

Simulated Images

# OPTIONAL ACCESSORIES

A full range of optional accessories is available to take full advantage of the versatility and operational features of the HDW-F900R.

## DOWN CONVERTER BOARD

The HKDW-702 Down Converter Board\* provides down-converted Standard Definition (SD) output from the 1080/59.94i or 1080/50i HD signal with four-channel embedded audio. This makes it possible to monitor recording on-set using a conventional SD-based monitor. SD-SDI or analogue composite can be selected via the camcorder's set-up menu.

## PICTURE CACHE BOARD

The HKDW-703 Picture Cache Board, which was originally developed for the HDW-750P series camcorders, is compatible with the HDW-F900R. It provides up to eight seconds of loop recording using solid state memory. Thus, when the REC start button is pressed, everything that happened up to eight seconds before that moment can be recorded to tape. In addition, time-lapse and frame-by-frame recording capabilities, known as the interval recording function, can be provided by this option board.

## 2-3 PULL-DOWN/DOWN CONVERTER BOARD

In addition to the HKDW-702 board for down-conversion of 1080/59.94i or 1080/50i HD signals, the HKDW-902R\* is also available, which down-converts 1080/23.98P HD signals to SD signals via 2-3 pull-down circuitry. This allows on-set SD monitoring of 1080/23.98P signals on a conventional NTSC monitor. This board also enables SD output to the HDW-F900R's viewfinder or a monitor connected to the camcorder during 23.98P recording. With this function, users can check images on the viewfinder or monitor without the flicker that usually occurs from 23.98P recording. For the down-converted SD signal, SD-SDI or analogue composite can be selected via the camcorder's set-up menu.

Note: when outputting down-converted SD signals, one of the HD-SDI output connectors on the HDW-F900R will be utilised.

## SLOW SHUTTER/IMAGE INVERTER BOARD

The HKDW-905R Slow Shutter and Image Inverter Board\*\* enhances the operational and creative versatility of the HDW-F900R camcorder. With the HKDW-905R equipped, the camcorder can slow its shutter speed down to a 64-frame period\*. During this long frame period, electrical charges accumulate on the CCDs, dramatically increasing sensitivity. This helps camera operators to shoot in extremely dark environments. In addition, because more picture blur occurs when shutter speed is reduced, the HKDW-905R allows operators to produce creative pictures when shooting moving objects, through the intentional use of blurred images.

The image-inversion function of the HKDW-905R board also allows the use of a variety of image-inverting lenses, the Anamorphic Lens Adaptor, and cinema lenses with 2/3-inch adaptors.

\* The slow-shutter function and the image-inversion function cannot be used simultaneously. The shutter speed can be adjusted to a 1-, 2-, 3-, 4-, 5-, 6-, 7-, 8-, 16-, 32-, or 64-frame period.

\*\* The HKDW-905R is not compatible with the HDW-750P series camcorders.

## REMOTE CONTROL UNIT – RM-B750

The RM-B750 Remote Control Unit has been designed to establish a highly mobile and fully controllable camera system in the field by integrating control capability equivalent to a Master Set-up Unit into a compact unit powered from the device to be controlled.

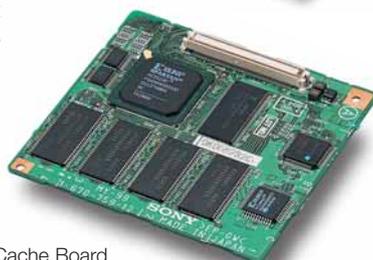
The RM-B750 can be connected directly to the HDW-F900R. The combination of an LCD touch-panel screen and direct push buttons enables full parameter adjustment of the camera to be controlled. When necessary, basic tape transport functions of the camcorder can be controlled. For further operational convenience, the RM-B750 has a Memory Stick slot so that various set-up parameters can be stored and transferred between camcorders.



Loop Recording, Time-Lapse and frame-by-frame (available with HKDW-703)



Down Converter Board



Picture Cache Board



Remote Control Unit

## COLOUR VIEWFINDERS – HDVF-C30W

The HDW-F900R is supplied without a viewfinder. The optional HDVF-C30W, 2.7-inch (viewable area, measured diagonally) is an HD LCD colour viewfinder. It is a full-colour and flicker-free TFT-LCD providing a resolution of 960 x 540 pixels for each R, G and B colour component, a luminance level of 300 cd/m<sup>2</sup> and a 200:1 contrast ratio. In addition, the HDVF-C30W has several unique features to improve operability. A grey scale signal can be generated for camera operators to easily adjust the exposure to the appropriate level. A 2x magnification function allows easier focussing especially when prime lenses are used, and its lightweight construction and low power consumption significantly improve the operating times under battery-powered mobile applications.



HDVF-C30W

LCD panel for direct viewing



Simulated image

## OPTIONAL DIGITAL CINEMATOGRAPHY ACCESSORIES

Recognising the acceptance of the original HDW-F900 camcorder for digital cinematography productions, many film-type accessories have been developed for it by film-related manufacturers. Many of these accessories can be now used with the new HDW-F900R. These include special digital cinematography zoom and prime lenses, base plates, matte boxes, follow focus units, etc. A range of special lenses optimised for the HDW-F900R are also offered by leading manufacturers. A number of these lenses are calibrated in T-stops rather than F-stops, have a cinematic-style focus ring and include the relevant gear teeth for follow focus kits. There is also a range of HD prime lenses for 2/3-inch type B-4 mounting.



## OTHER OPTIONS



**A-8314-798-A**  
Viewfinder Eyepiece (High-performance, x3)



**A-8262-537-A**  
Viewfinder Eyepiece (High magnification)

**A-8262-538-A**  
Viewfinder Eyepiece (Low magnification)

**A-8267-737-A**  
Viewfinder Eyepiece (Standard magnification with special compensation for aberrations)



**MSH-128**  
Memory Stick



**AC-DN10**  
AC Adapter



**BP-GL95**   **BP-GL65**  
Info Li-Ion Battery   Info Li-Ion Battery



**BP-L60S**  
Info Li-Ion Battery



**BC-M150**  
Battery Charger



**BC-L70**  
Battery Charger



**BC-L500**  
Battery Charger



**WRR-855B**  
Wireless Microphone Receiver



**WRR-862B\*\***  
Dual Diversity Microphone Receiver  
(Adapter required)



**BKW-401**  
Viewfinder Rotation Bracket



**ECM-678\***  
Electret Condenser Microphone



**LC-DN7**  
Carrying case



**RM-B150**  
Remote Control Unit



**RM-B750**  
Remote Control Unit



**HDFV-20A**  
CRT Viewfinder



**VCT-14**  
Tripod Adapter



**BCT-6HD/12HD/22HD/  
32HD/40HD**  
HDCAM Video Cassette Tapes (Small)

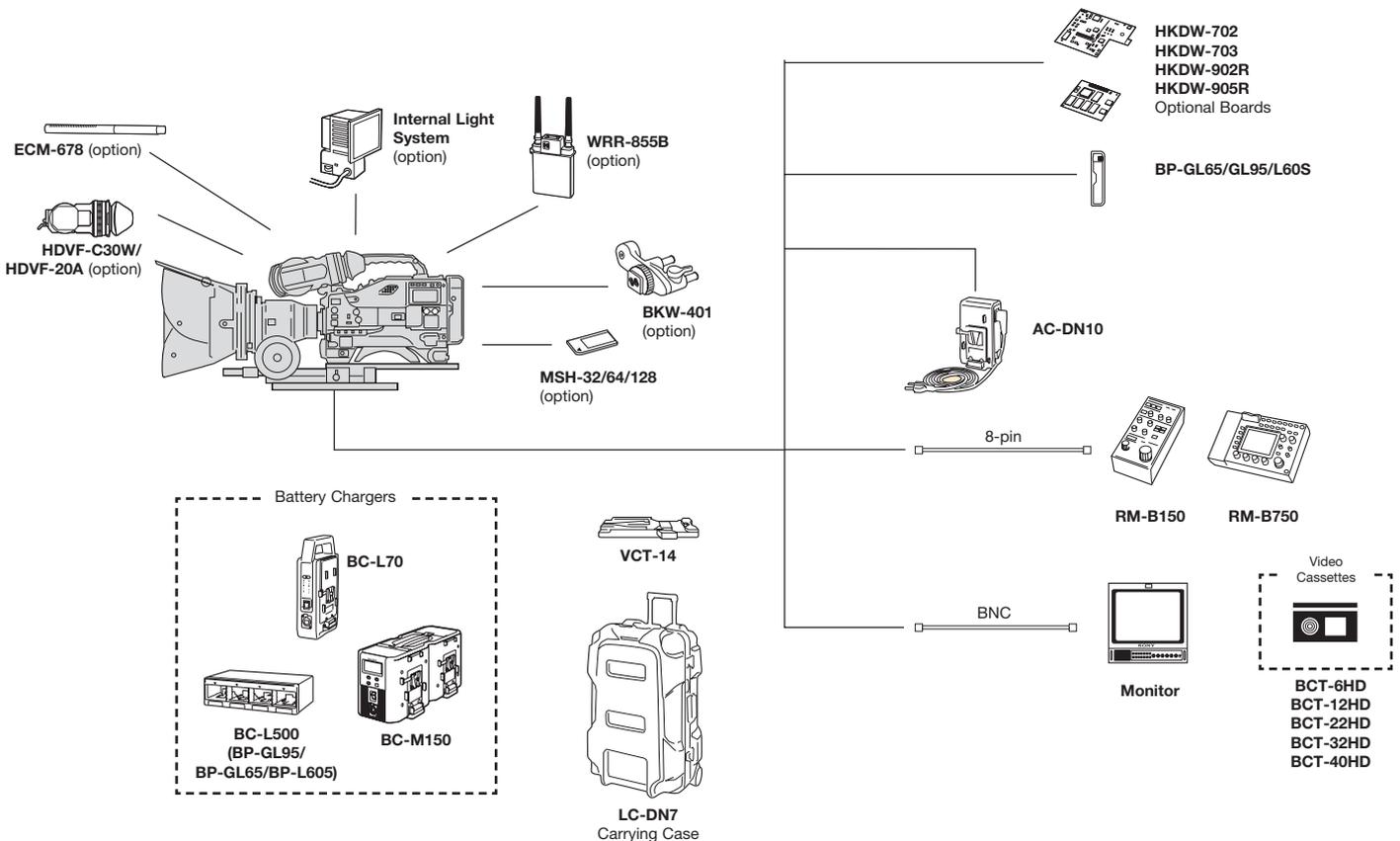
\*Requires the optional K-1502 3-pin to 5-pin conversion cable.

\*\* Requires the optional A-8278-057-A mounting bracket to attach the WRR-862B to the camcorder.

# SPECIFICATIONS

<b>GENERAL</b>	
Mass	5.4 kg (11 lb. 14 oz) with typical ENG lens, cassette and BP-GL95 Battery
Power requirement	DC 12 V (+5.0 V/-1.0 V)
Power consumption	38 W (With 12 V power supply, REC mode, with HDVF-20A)
Operating temperature	0 °C to +40 °C (+32 °F to +104 °F)
Storage temperature	-20 °C to +60 °C (-4 °F to +140 °F)
Operating humidity	25 % to 85 % (Relative humidity)
Continuous operating time	110 min (With BP-GL95)
<b>INPUT/OUTPUT</b>	
Genlock video input	BNC, 1.0 Vp-p, 75 Ω
Time code input	BNC, 0.5 V to 18 Vp-p, 10 kΩ
Audio CH1/CH2 input	XLR-3-pin type (Female), -60 dBu/-50 dBu /-40 dBu/+4 dBu/AES/EBU
MIC input	XLR-5-pin type (Female), -60 dBu/-50 dBu /-40 dBu LPF 14 kHz: -8 dB
Test output	BNC (1), 1.0 Vp-p, 75 Ω, unbalanced
HD-SDI output	BNC (2), 0.8 Vp-p, unbalanced
Audio output	XLR-5-pin type (Male), 0 dBm
Time code output	BNC, 1.0 Vp-p, 75 Ω
Earphone	Mini-jack, 8 Ω, -∞ to -18 dBs variable
DC input	XLR-4-pin type (Male), 11 to 17 V DC
DC output	11 to 17 V DC, Max. 100 mA
Lens	12-pin
Remote	8-pin
<b>VTR SECTION</b>	
Recording format	HDCAM
Tape speed	Approx. 77.4 mm/s (24P mode)
Playback/Recording time	40 min (59.94i, 29.97P), 48 min (50i, 25P), 50 min (24P, 23.98P), with BCT-40HD
Fast forward/rewind time	5 min with BCT-40HD
Recommended tape	Sony BCT-6HD/12HD/22HD/32HD/40HD
Sampling frequency	Y: 74.25 MHz, PB/PR: 37.125 MHz
Quantisation	12 bit/sample of input-output signals (8 bit sample for internal compression process)
Error correction	Reed-Solomon code
Error concealment	Adaptive three dimensional
<b>AUDIO PERFORMANCE (PLAYBACK WITH STANDARD HDW-F500)</b>	
Frequency response	20 Hz to 20 kHz, +0.5 dB/-0.8 dB
Dynamic range	More than 85 dB (Emphasis ON)
Distortion	0.08 % Max.
Cross talk	-70 dB
Wow & flutter	Below measurable limit
<b>CAMERA SECTION</b>	
Pickup device	3-chip 2/3-type FIT CCD
Picture elements (H x V)	1920 x 1080
Optical system	F1.4 prism system
Built-in filters	A: 5600 K B: 3200 K C: 4300 K D: 6300 K 1: Clear 2: 1/4 ND 3: 1/16 ND 4: 1/64 ND
Shutter speed (1080/24P mode)	1/32, 1/48, 1/50, 1/60, 1/96, 1/125, 1/250, 1/500, 1/1000 (s)
Clear scan	(ECS) 24 to 7000 Hz (Minimum setting depends on frame rate selected)
Lens mount	Special bayonet mount
Sensitivity	f10.0 at 2000 lux, 89.9 % reflective, At 24 fps, with a 1/48-second shutter speed (equivalent to a 180° film camera shutter setting), the exposure index is approximately equivalent to 300 ISO
<b>SUPPLIED ACCESSORIES</b>	
	Microphone, Super cardioid directional, external power supply type (1) XLR connector cover (4) Shoulder strap (1) Operation guide (1) Operation manual (1) Operation manual CD-ROM (1)
<b>OPTIONAL ACCESSORIES</b>	
	VCT-14, Tripod Adapter HDVF-C30W, HD LCD Colour Viewfinder (does not include microphone holder) HDVF-20A, CRT B/W Viewfinder (includes microphone holder) BP-GL65/GL95/L60S, Info Li-Ion Battery BC-M150/L70, BC-L500 Battery Charger AC-DN10, AC Adapter BCT-6HD/12HD/22HD/32HD/40HD, HDCAM Tape Cassette BKW-401, Viewfinder Rotation Bracket RM-B750, Remote Control Unit RM-B150, Remote Control Unit WRR-855B, Slot-in Wireless Diversity Receiver WRR-862B, Dual Diversity Microphone Receiver A-8278-057-A, Mounting Bracket for WRR-862B ECM-674/678, Shotgun Microphone CAC-12, Microphone Holder WRT-8B, Belt Pack Transmitter WRT-847B, UHF Handheld Microphone ECM-88B, Lavalier Microphone LC-DN7, Hard Carrying Case LC-DS300SFT, Soft Carrying Case Maintenance Manual HKDW-702, Down Converter Board HKDW-703, Picture Cache Board HKDW-902R, 2-3 Pull-down/Down Converter Board HKDW-905R, Slow Shutter/Image Inverter Board Part No. 1-547-341-11, Fog-proof Filter Part No. 3-174-685-01, 1/8 ND Filter Part No. 3-174-683-01, 1/32 ND Filter Part No. 3-174-682-01, Cross Filter Part No. 3-186-442-01, Mounting Ring Part No. A-8314-798-A, Viewfinder Eyepiece (High performance x3, with soft cushion) Part No. A-8262-537-A, Viewfinder Eyepiece (High magnification) Part No. A-8262-538-A, Viewfinder Eyepiece (Low magnification) Part No. A-8267-737-A, Viewfinder Eyepiece (Standard magnification with special compensation for aberrations)

# SYSTEM CONFIGURATION



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