SONY

CINE ALTA™

HDCAM™

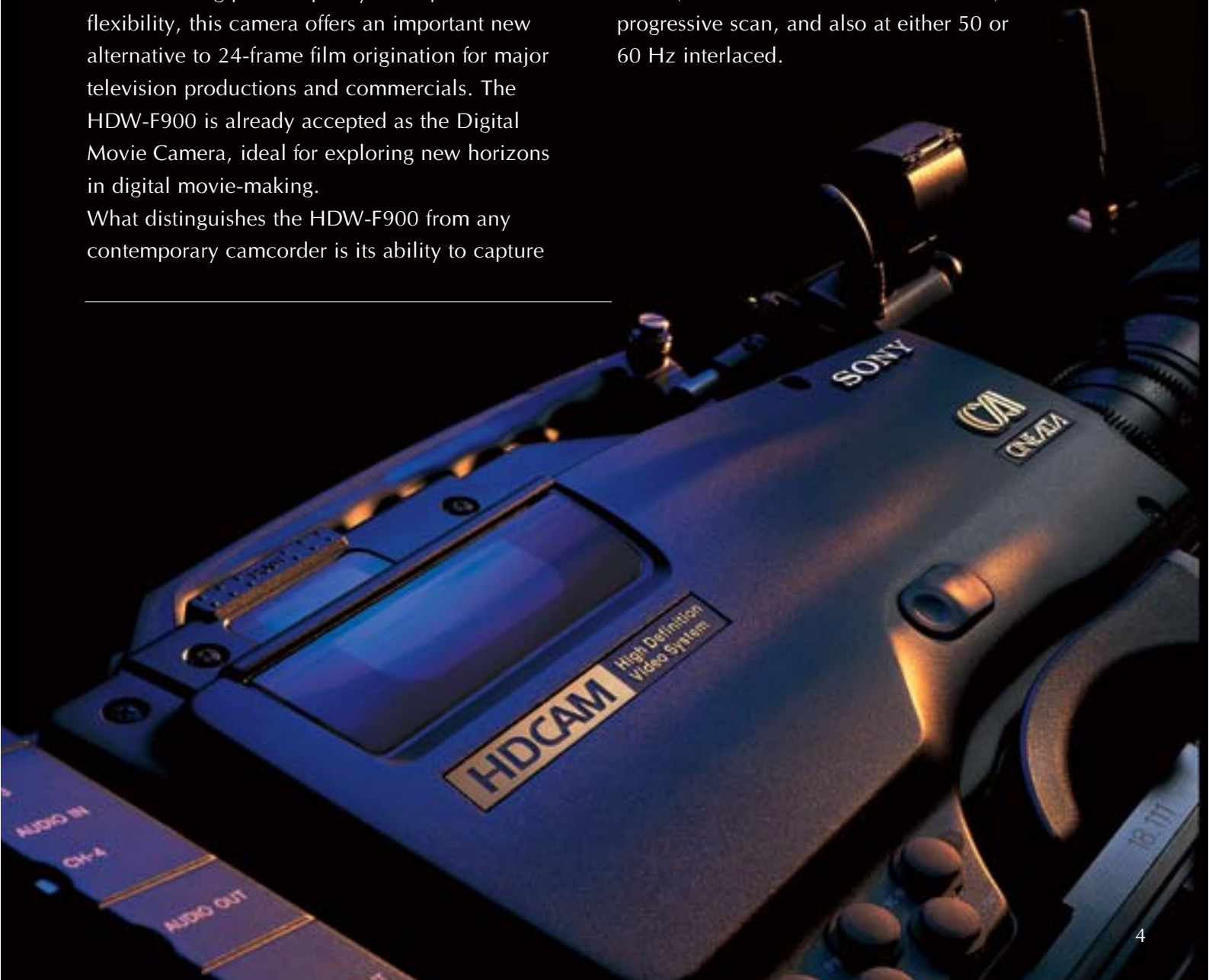
Sony Digital Camcorder

HDW-F900

Exploring New Horizons in Movie Making

The Sony HDW-F900 is a ground-breaking digital HDCAM™ camcorder that extends both the company's unique digital heritage and its unrivalled experience in the art of imaging. The physical resemblance of the HDW-F900 to the highly successful Digital Betacam™ camcorders is intentional, although there are some subtle but very relevant changes that further enhance operational familiarity and ease of use. Because of its outstanding picture quality and operational flexibility, this camera offers an important new alternative to 24-frame film origination for major television productions and commercials. The HDW-F900 is already accepted as the Digital Movie Camera, ideal for exploring new horizons in digital movie-making.

What distinguishes the HDW-F900 from any contemporary camcorder is its ability to capture and record digital high definition pictures – at 24 progressive frames per second – just like a conventional film camera. Moving pictures are digitally imaged in accordance with the CIF (Common Image Format) standard, which specifies a sampling structure of 1920 active pixels horizontally by 1080 active pixels vertically. What makes the HDW-F900 so universally exciting is that, as well as recording at 24P, it is switchable to record at 25P, 30P progressive scan, and also at either 50 or 60 Hz interlaced.



CineAlta™ — Liberating Movie Makers

CineAlta – a name that proudly symbolizes 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, postproduction, and exchange of motion 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, are simplifying International Program Exchange by minimizing the need for standards conversion. They are also opening up entirely new possibilities for international co-production. Movie making has been liberated by the creative empowerment of the cinematographer. It is facilitated by real-time HD image evaluation on-set, instant replay of full-color high-resolution digital "takes," real-time image optimization while shooting, a 50-minute shooting load, and most importantly, by the significant cost-benefits associated with this digital medium.

CineAlta products provide a seamless bridge between 24-frame film originals and a 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 world, liberating postproduction. And the final liberation is achieved through the direct color conversion of progressive 24P masters to film, and to a host of other international digital HDTV and SDTV distribution formats.

HDCAM – Cinema-quality Digital Recording

For a number of years, Widescreen Digital Betacam has achieved remarkable success in the 16 mm market area. The HDW-F900 camcorder offers high definition image-capture equivalent to the picture quality associated with 24-frame 35 mm film. Widescreen Digital Betacam rivals the image quality of Super 16 mm film reproduction (especially when the latter is "blown-up" to 35 mm for theatrical release). 24P HDCAM imaging elevates this image quality to the ranking of a 35 mm film release print derived from a 35 mm original capture.

The 24-frame progressive capability of HDCAM converges digital and film imaging, offering a new and novel creative flexibility for prime time television production and movie-making.

Since Sony introduced the HDCAM format in 1997, it has been well proven in the USA and Japan, where it has offered highly mobile and compact 1080/60i digital acquisition and recording solutions. This highly reliable and robust format delivers superb picture quality efficiently packaged onto 1/2-inch tape.

The state-of-the-art, Sony HDCAM compression scheme is a frame-based digital compression strategy, where every frame of the signal is treated as a single entity. HDCAM maintains exceptionally high picture quality and multi-generation robustness 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 only 4.4 to 1 to give a total on-tape recorded data rate of a modest 185 Mb/s at 60i. This, in turn, ensures high-integrity camcorder recording in the most hostile of environmental conditions.

The frame rate switchability of the camcorder allows 24, 25 or 30 progressive frames per second capture as well as a choice of either 50 or 60 Hz 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-F900 records longer runs when operating at the lower frame rates. Consequently a BCT-40HD cassette, the same size as the familiar 40-minute Digital Betacam cassette, records 40 minutes of 60i or records 50 minutes of 24P, cinema-quality, material. This is a major boon to film production.


SONY

‘In-Camera’ Creativity

The digital camcorder is a powerful new creative tool intended to allow the cinematographer to work smoothly and confidently, with minimum distraction. This is particularly relevant for picture acquisition systems that serve the most demanding and creative talents of the movie industry and high-end television production. The combination of camera design and operator’s skills has a profound effect on the final look of an entire production. With this in mind, and leveraging the digital heritage and unrivalled imaging expertise of Sony, we launched the design of the new Digital 24P HDCAM camcorder – something that many in the film community had long urged us to implement. The result is the HDW-F900, created with the sole purpose of producing superb pictures. From the very first camera shot in a production, the cinematographer is now empowered to make new and unique creative contributions during shooting. So much more can now be done “in-camera” that is in defiance of conventional wisdom. The new HDW-F900 delivers outstanding “in-camera” creativity.

Enhancing Digital Movie-making Creativity

Inside the compact and stylish body of the HDW-F900 are many technological innovations. They are brought together to enable creation of some of the most versatile and outstanding visual experiences of the coming century, which will certainly witness the widespread adoption of digital movie-making tools.

The Art of Image-making

The progressive scan CCD sensor at the heart of the HDW-F900 marks a significant advance in Sony HAD CCD technology. It is a development that now makes possible image capture over a range of frame rates, and ensures that their quality is at the highest possible level. This progressive scan CCD sensor provides a sensitivity of f10 at 2,000 lux (at 60i) 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-F900 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.

*Sony measurement.

The Mastery of Signal Processing

Picture Tonal Reproduction is substantially enriched by the adoption of a new, wide dynamic range CCD and innovative design of 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. Menu-driven camera set-up, pioneered by Sony, has become widely accepted among Digital Cinematographers. Naturally, it has been extended in the new HDW-F900. The well known Setup Card used to store set-up parameters in Digital Betacam camcorders is replaced by the novel Sony **Memory Stick**™. This allows five versions of the camera set up to be stored and recalled whenever they are required. This includes all the factors relating to colorimetry and tonal reproduction adjustment, so that at any time (such as scene re-shoot) these settings can always be readily accessible.

To help maximize the camera image-making capabilities, special attention has been paid to the careful design of the camera menus so that access to certain image parameters is user-friendly and intuitive.

New Ergonomics

There are very good reasons why every camera – photographic, movie or video – has its own fundamental shape and appearance. The way the lens is attached, how the recording medium is loaded, and the way in which the camera is most frequently operated, all influence its basic design. To make the new HDW-F900 appear like a movie camera would not do justice to its attributes. This is fundamentally a digital camera – so its body has been designed to serve the digital cinematographer in the most proficient manner. At Sony we have been perfecting camcorder body design over many years, always trying to make them user friendly and practical as well as stylish and appealing.

The HDW-F900 incorporates a B-4 lens mount that facilitates quick lens replacement and reinforced to accept heavy lenses.

All switches, meters and indicators are in the most logical places and are positioned for optimum functionality and ease of use. This has been achieved through meticulous consideration of the human physiology and the application of fundamental ergonomic principles. The operation of every single switch and button reflects our thorough understanding of the operator's needs and working practices. We have been making professional cameras for over 20 years, and for all that time we have listened very carefully to what users have had to say about refining camera body design.

The superb weight distribution and balance combined with a low optical axis make the HDW-F900 particularly suitable for hand-held shots. It also sits comfortably on the shoulder and can be carried with minimum fatigue. It can be readily mounted on a Steadicam™ or mounted on a tripod, geared-head or motion-control system. Even with the viewfinder, battery, cassette, microphone, and a small variable or fixed-focal length lens, the total weight is only 8 kilograms (about 17 pounds). This astonishingly compact and lightweight camera opens new possibilities for creative camera work while delivering uncompromising picture quality. Inside the familiar, compact and stylish body of the HDW-F900 are some highly innovative technologies. They are brought together to enable the creation of what will be some of the most versatile and outstanding visual experiences of the coming years.

Internal Light System

A two-pin socket 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 synchronized with the operation of the Record button.

Cassette Loading

The cassette loading is fast, simple and reliable. It takes less then 5 seconds* for cassette change. This facility and long recording runs (40-50 minutes depending on the selected frame-rate) offer new levels of efficiency on location. The loading mechanism is robust and designed to be dust and drip proof. The vertical cassette loading also helps to minimize the risk of anything unwanted getting into the tape mechanism.

*Sony measurement.

Optical Filter Wheels

For the optical picture treatment, two independent filter wheels (each with four filter positions) are provided, one with for Neutral Density (ND) and one with Color Correction (CC) filters are installed. An optional servo filter drive unit, the BKDW-701, can also be fitted allowing filter settings to be changed with the RM-B150 Remote Control Unit.

Extended Clear Scan

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

Safe Area Markers

To allow for individual production requirements, the HDW-F900 provides safe-area markers for any aspect ratio.

Stereo Audio Output

A stereo audio line output is available from the 5-pin XLR connector on the rear of the camcorder. This provides two analog audio output channels, which can be selected to be either Channel-1/2 or Channel-3/4.

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

You can assign Viewfinder Return, Record and other functions to this switch.

Electronic Shutter

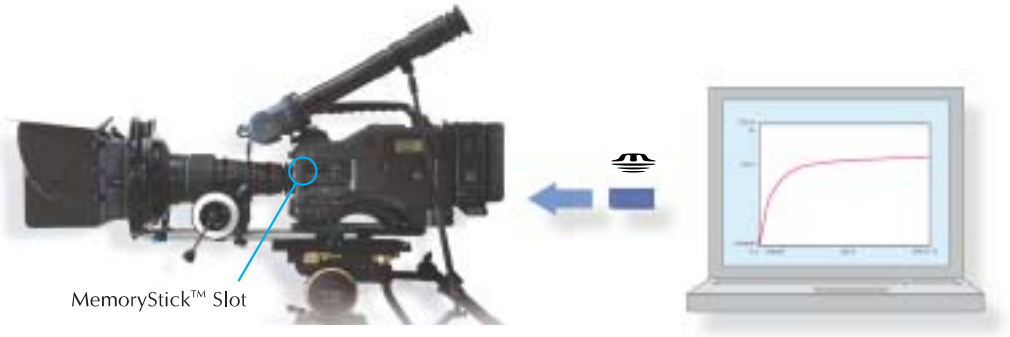
The electronic shutter helps in capturing clear images of fast-moving objects by selectively minimizing motion blur.

Creative Versatility

The journey from a scripted story to the “silver screen” is long and laborious, but also exciting and fascinating. Each story calls for different visual treatment and usually a specific look. To help this creative process we have made it very easy to customize the settings of many image parameters, and then digitally save and recall these settings. This is why we introduced a simple and intuitive menu driven set-up which has transformed camera set up from being an engineering exercise into a uniquely creative process. Various setup parameters can be stored and then transferred between camcorders via the Memory Stick storage medium.
This represents a major advance in operational flexibility and creative versatility when compared to some conventional techniques. In addition, the newly designed menu “page layout”, setting up an HDW-F900 is easier than ever. This combined with “page customization” speeds up the operation by allowing relevant parameters to be grouped together in the most appropriate way.
The camera setup menu features relating to the most important picture parameters are described in the following paragraphs.

Special Gamma Feature

The special gamma feature of the HDW-F900 allows operators to quickly setup and load an optimized gamma curve with similar contrast characteristics to a specified film gamma curve. It can also be effectively employed to achieve a special creative "look" within a given scene lighting environment. Optional Window® PC gamma-editing software allows the gamma curve to be visually edited by GUI on a PC simply by plotting the x and y values of each point of the gamma curve. Once the gamma curve has been created, it can be easily loaded into the HDC-F900 using a MemoryStick media card.



HDW-F900 PC

Colorimetry

The HDW-F900 produces pictures with astonishing color reproduction accuracy. Its Multi Matrix function also offers unique possibilities for creative intervention by allowing selective color enhancement or alteration. Multi Matrix allows a particular color 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 color correction normally reserved for post production special effects work – and is performed at the full bit depth.

Multi Matrix ON

Contrast Range

In a similar way to film, the HDW-F900 can handle a very impressive contrast range. For the most challenging of light settings and associated scene conditions, several useful operational features are available that allow image optimization in real-time to help capture the desired mood of a shot.

The first of these important functions is RGB Gamma Balance. By changing gamma balance it is possible to change the color 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 details.

The range of creative possibilities offered by modifying RGB Gamma Balance and changing Black Gamma is quite inspiring and, when mastered by a cinematographer, offers a great advantage in achieving a desired 'look'.

Standard Gamma

Black Gamma ON

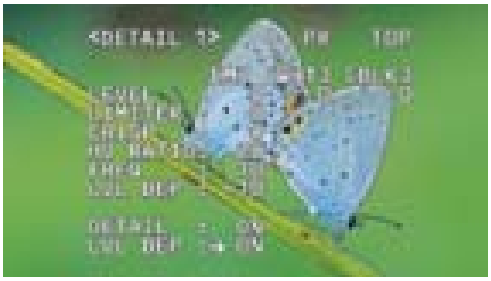
Definition – Picture Sharpness

The HDW-F900 produces extremely delicate pictures having fine detail that is similar to that of a 35 mm film release print. The CCDs, each with 2.2 million pixels, faithfully capture images with natural sharpness. The HDW-F900 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 or film-like pictures to be created. In concert with optical filtration, this additional digital filtration can add a new creative extension to the treatment of image softness – and it can be optimized in real-time on the shoot.

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 of these new features is Skin Tone Detail. This controls the detail level of objects with specific color tonality. It is particularly useful when shooting talents with the intent to creatively alter and soften the texture of their facial appearance while the remainder of the scene retains its full crispness. 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 such correction parameters can be applied simultaneously.



Conventional Video Equipment

Adaptive Detail Control

Ch 1 ON

Soft Focus ON

Ch 2 ON

Highlight Handling

Sony Advanced TruEye™ processing allows much improved highlight handling, with faithful color reproduction.

Conventional Video Equipment

TruEye

Picture Stability

By its very nature any digital or video camera delivers rock steady pictures. The HDW-F900 is no exception. There is none of the picture weave usually associated with material originated on film. The picture stability is particularly relevant for productions incorporating multi-layered compositing special effects. Image weave, compounded by noise, is the enemy of all compression algorithms. The emergence of highly compressed MPEG-based delivery systems, including DVD and digital transmission using multiple GOPs (Group of Pictures) calls for a high level of picture stability to maintain picture quality – and here digital acquisition is a major boon.

Texture

Because of the very good signal to noise ratio performance, the HDW-F900 delivers subjectively noiseless and grain-free pictures having the finest, most delicate and almost transparent texture. This can exploit the use of subtle cosmetics on the human face, as well as superb reproduction of fine-textured materials. This has high benefit in commercial production. It is also particularly 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.

Motion-capture

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, digital cameras record interlaced images where two fields with temporal offset are used to capture one frame. This covers almost the entire action, giving a smoother motion portrayal than film images captured at lower frame rate.
When an HDW-F900 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 HDW-F900 has a unique range of optional frame rates available. The progressive CCD sensor is able to capture progressive images at frame rates at 23.98, 24, 25, 29.97 and 30 frames per second. Traditional interlace material can also be captured when an HDW-F900 is set to field rates of 50, 59.94 and 60 Hz interlace. The extent of these frame rates provides the ability to shoot in both the film and television program genres. It also offers the means for some creative speed change for special effects (for example shoot at 30P and playback at 24P slow motion).

Stop Motion and Time Lapse

The HDW-F900 also has 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 in both animation and model shooting.

*The tape requires to be pre-striped on its LTC (at the desired frame/field rate) by the HDW-F900 that will be used in the actual shooting.

The Future Direction of Movie Making

The CineAlta brand is a guarantee of high production values ensured by outstanding picture quality and sophisticated digital image treatments. A high degree of production security is assured by the immediacy of the medium and the comfort of instant HD review of the material on location (direct playback from a camcorder or VTR). Improved production speed and cost-effectiveness is the result of a subsequent direct entry to digital post production. There are no costs for film processing and telecine transfer – and an absence of the associated time delays. The substantially lower cost of raw stock is a significant factor in enhancing production cash flow by substantially lowering up-front production costs. And the digital tape can always be reused if desired!
Over the years, Sony has carefully pioneered the concept of Digital Cinematography. With the arrival of the HDW-F900 this concept is strengthened. Undoubtedly this camera will produce some of the finest and most faithful pictures. A more cinematic or film-like look can be achieved with the use of appropriate camera settings, operational accessories and lenses, and of course, the added craftsmanship of the cinematographer. The creative versatility of this camcorder, together with cinematic-style shooting, lighting and appropriate grading in post production provides very rewarding results.
Program material produced under these conditions closely matches the performance of 35 mm film origination that is processed in the traditional manner and projected in cinemas.
Prominent lens and film accessory manufacturers are already developing the infrastructure required to make this new 24-frame progressive camcorder meet the expectations of cinematographers. Combining this with the close co-operation that has already developed between Sony and several distinguished moviemakers is encouraging continuous refinement of operational features, thus ensuring that the HDW-F900 will continue to meet the evolving requirements of the most demanding of productions.


SONY
HDCAM

One World – One Model

Sony's multi-frame-rate switchable HDCAM digital equipment complies with the new 1999 ITU 709-03 recommendation for High Definition Production and International Programme Exchange. All products with CineAlta mark are designed for worldwide use and for smooth, straightforward, international collaboration and program material interchange. They may conform and be certified to comply with the local regulations but fundamentally it is always the same model for the whole world. This heralds an important new era in professional program-making equipment.

Operational Accessories

A full range of operational accessories is available to take full advantage of the versatility and operational features of the HDW-F900. In many cases accessories developed for Digital Betacam and the HDW-750/730 Series are also be applicable for this 24P HDCAM camcorder.

HD-SDI Camera Adapter (Optional)

The HDCA-901 Camera Adapter attaches to the HDW-F900 HD Camcorder to provide access to all four tracks provided by the HD tape format. Tracks 1 and 2 are accessed via the Audio In Ch-1/Ch-2 connectors of the camcorder, and tracks 3 and 4 are accessed via the Audio In Ch-3/Ch-4 connectors of the HDCA-901 Camera Adapter. The HDCA-901 has the following features:

HD-SDI Outputs

Two HD-SDI output connectors to allow full monitoring of recorded video and audio signals, expanding flexibility in the field.

Monitoring Functions

An audio monitor output connectors (XLR-5-pin type, stereo) and a headphones output connector (stereo phone jack) are provided. The HDCA-901 can be used to select the monitoring signal to be either from Ch-1/Ch-2 connectors on the HDW-F900 or the Ch-3/Ch-4 connectors on the HDCA-901.

Alternative Power Supply Options

Power supplied to the DC In connector (XLR-4-pin type, Male) on the HDCA-901 can be used to power the HDW-F900 Camcorder. A connector is also provided to power other equipment, such as the Sony WRR-860A UHF Wireless Microphone Synthesised Diversity Receiver.

Remote Control Unit – RM-B750 (Optional)

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-F900. 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 media card slot so that various setup parameters can be stored and transferred between camcorders.

RM-B750

Color Viewfinders (Optional)

HDVF-C30W

The new HDVF-C30W, 2.7-inch type HD LCD color viewfinder has been designed to provide the optimum visual information with a full-color and flicker-free TFT-LCD providing a resolution of 960 pixels horizontally x 540 pixels vertically for each R, G and B color component, luminance level of 300 cd/m^2 and 200:1 contrast ratio. In addition, the HDVF-C30W has several unique features to improve operability. Gray scale signal can be generated for camera operators to easily adjust the exposure to the appropriate level. 2x magnification function will greatly assist easy focus operation especially when prime lenses are used. Detachable eye-piece construction allows camera operator for direct viewing. Moreover, its lightweight construction and low power consumption characteristic will tremendously improve the operability under battery-powered mobile applications.

HDVF-C30W

LCD panel for direct viewing

HDVF-C750W

The availability of the 6-inch type LCD color viewfinder, HDVF-750 is particularly relevant to crews used to film shooting with video-assist. It helps picture composition and framing. It also gives a good impression of overall color balance.

*The liquid crystal display fitted to this unit is manufactured with high precision technology, giving a functioning pixel ratio of at least 99.99 %. Thus a very small proportion of pixels (at most 0.01 %) may be "stuck", constantly on or constantly off. In addition, over a long period of use, because of the physical characteristics of the liquid crystal display, such "stuck" pixels may appear spontaneously. These problems have been kept to absolute minimum, but are an unavoidable characteristic of liquid crystal technology.

Optional Digital Cinematography Accessories

Recognizing the acceptance of the HDW-F900 for Digital Cinematography productions, many film-related manufacturers are now developing appropriate film-type accessories for this model. These include special digital cinematography zoom and prime lenses, base plates, matte boxes, follow focus units, etc. These initiatives have been welcomed by crews who principally work with film.

A range of special lens optimized for the HDW-F900 is now emerging from leading manufacturers. A number of these lenses are calibrated in T-stops rather than F-stops, have a cinematic-style focus ring, 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

Sony BVM-F24U/F24/F24A,
Color Video Monitor

Sony BVM-D9H5U,
Color Video Monitor

Sony VF-508,
Monitor ENG kit for Sony 9-type monitors

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

Sony Viewfinder Eyepiece,
A-8262-537-A (High magnification)
A-8262-538-A (Low magnification)
A-8267-737-A (Standard magnification with special compensation for aberrations)

Sony Memory Stick,
MSA-8A/16A/32A/64A

Sony AC-DN2B,
AC adapter

Sony BP-M50/M100,
Ni-MH Battery

Sony BP-IL75,
Info Li-ion Battery

Sony BC-M150,
Battery Charger

Sony BC-M50,
Battery Charger

Sony WRR-855A/855B,
Wireless Microphone Receiver

Sony WRR-862A/862B,
Dual Diversity Microphone Receiver
(Adapter required)

Sony BKDW-701,
Servo Filter Unit

Sony BKW-401,
Viewfinder Rotation Bracket

Sony LC-HD7,
Carrying case for HDW-F900

Sony RM-B150,
Remote Control Unit for HDW-F900

Sony Fog-proof filter, 1-547-341-12

Sony 1/8ND filter, 3-174-685-01

Sony 1/32ND filter, 3-174-683-01

Sony Cross filter, 3-174-682-01

Sony Mount ring, 3-186-442-01

Sony Memory Stick carrying case,
MSAC-A3

Sony HDVF-20A,
CRT-based Viewfinder

Canon HJ21 x 7.5B KLL-SC,
HD Digital Cinematography zoom lens

Canon HJ11 x 4.7B KLL-SC,
HD Digital Cinematography zoom lens

Canon HJ21 x 7.5B IRSD/IASD,
HD Electronic zoom lens

Canon HJ11 x 4.7B IRSD/IASD,
HD Electronic zoom lens

Canon HD Prime lens series,

Angenieux / Zeiss HD adapter,
for 35 mm prime lenses

Zeiss Ultra Prime series,
with Angenieux / Zeiss HD adapter

Zeiss Digiprime series,

Fujinon HA20 x 7.8B-10,
HD Digital Cinematography zoom lens

Fujinon HA17 x 7.8B-10,
HD Digital Cinematography zoom lens

Fujinon HA10 x 5B-10,
HD Digital Cinematography zoom lens

Fujinon CINE FIXED series,

OpTex HD Probe system,

OpTex HD Periscope system,

OpTex EC 120 MACRO,
HD EC lens

OpTex EC 40~300,
HD EC lens

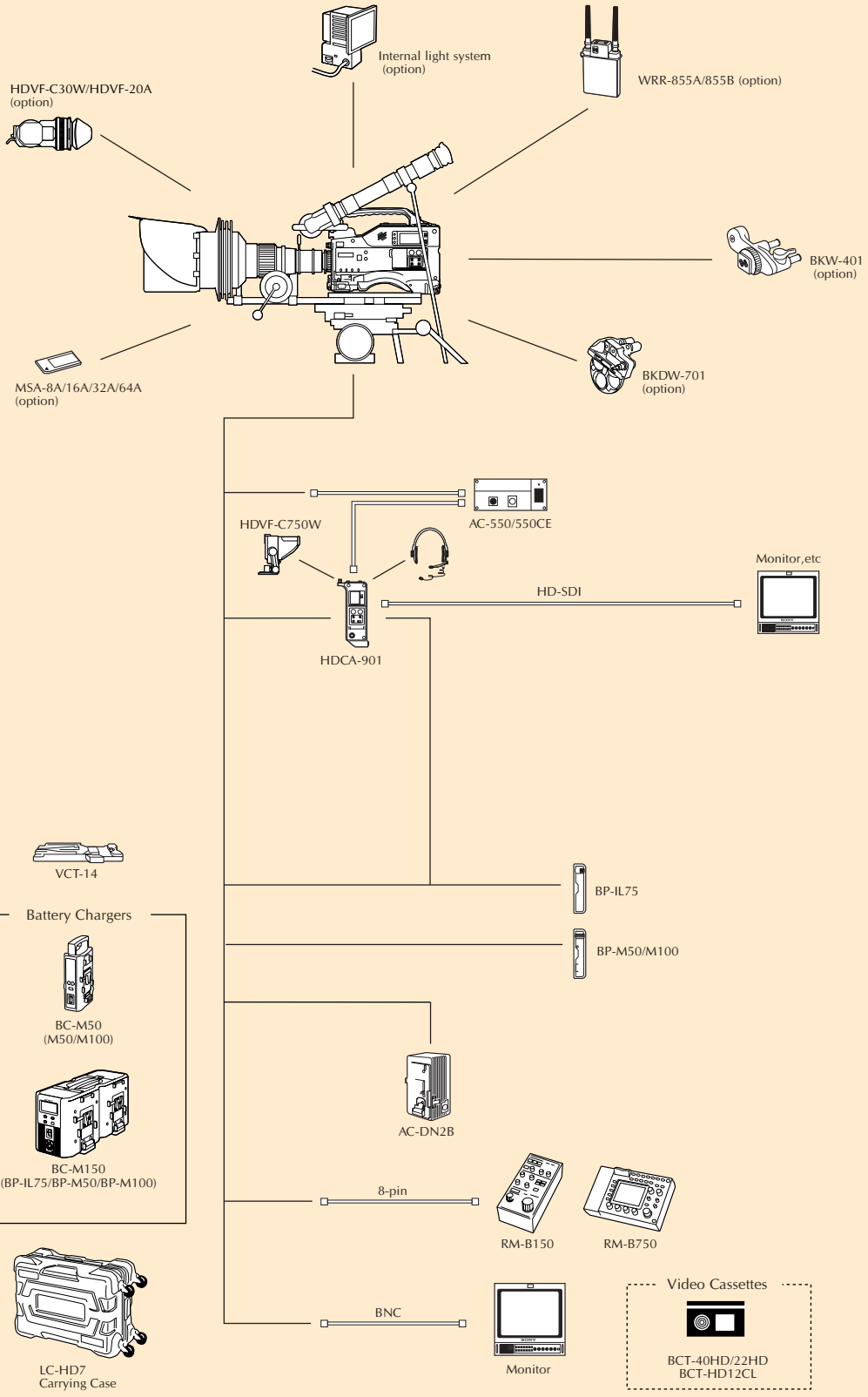
Angenieux 11.5 x 5.3,
HD Digital cinematography zoom lens

Angenieux 10 x 5.3,
HD Electronic zoom lens

Angenieux OPTIMO 12 x 9.7,
HD lens

* A certain model may not be available in some countries. For the detail, please contact each manufacturer.

System Configuration



HDW-F900 Specifications

General	
Mass	Approx. 8 kg (17 lb. 0 oz) with typical ENG lens, cassette and BP-L60A Battery
Power requirement	DC 12 V (+5.0 V/-1.0 V)
Power consumption	42 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 80 % (Relative humidity)
Continuous operating time	Approx. 80 min (With BP-L60A)
Inputs/outputs	
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/+4 dBu selectable, high impedance, balanced
MIC input	XLR-3-pin type (Female), -60 dBu
Monitor output	BNC (x3, Y/P_B/P_R), 1.0 Vp-p, 75 Ω, 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
VTR section	
Recording format	HDCAM
Tape speed	Approx. 77.4 mm/s (24P mode)
Playback/Recording time	Max. 50 min with BCT-40HD (24P mode)
Fast forward/rewind time	Approx. 6 min with BCT-40HD
Recommended tape	Sony BCT-40HD/22HD
Sampling frequency	Y: 74.25 MHz, P_B/P_R: 37.125 MHz
Quantization	10 bit/sample of input-output signals (8 bit sample for internal compression process)
Error correction	Reed-Solomon code
Error concealment	Adaptive three dimensional
Audio performance (Playback with standard HDW-F500)	
Frequency response	20 Hz to 20 kHz, +0.5 dB/-1.0 dB
Dynamic range	More than 85 dB (Emphasis ON)
Distortion	0.08 % Max.
Cross talk	-70 dB
Wow & flutter	Below measurable limit
Camera section	
Pickup device	3-chip 2/3-type FIT type CCD
Picture elements	2,200,000 pixels
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.
Supplied Accessories	
	Microphone, Super cardioid directional, external power supply type (1) VCT-14, Tripod Adapter (1) Shoulder strap (1) Rain cover (1) Operation manual (1) Maintenance manual (1)
Optional Accessories	
	HDCA-901, HD-SDI adapter HDVF-C30W, HDVF-C750W, HD LCD Color Viewfinder HDVF-20A, CRT B/W Viewfinder BP-IL75, Info Li-Ion Battery BP-M50/M100, Ni-MH Battery BC-M150/M50, Battery charger AC-550/550CE, AC adapter BCT-40HD/22HD, HDCAM tape cassette BKW-401, Viewfinder rotation bracket RM-B750, Remote control unit RM-B150, Remote control unit C-74, Microphone LC-HD7, Carrying case Part No. 1-547-341-12, 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)

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