

SONY®



# F23 Digital Cinema Camera

**CINEALTA**  
CINEALTA™



## The CineAlta™ Revolution

After building the world's first high definition camcorder, Sony went on to create the world's first camcorder to combine the real-time immediacy of HD with the traditional look of 24 frames per second. This was the landmark HDW-F900 CineAlta camcorder, launched in 2000.

Since that time, Sony CineAlta equipment has helped create more box office hits than any other digital system. CineAlta gear transformed movie-making with real-time HD image evaluation on-set, instant replay of full-color high-resolution digital "takes," digital image optimization while shooting and 50-minute loads – all with significant cost benefits. The CineAlta system also provides a seamless bridge from 24P digital capture to 24-frame film distribution, giving each HD frame a one-to-one correspondence to a frame of film.

Over the years, Sony has enhanced the CineAlta line with the HDW-F900R. We've pursued full-bandwidth 4:4:4 image capture with the HDC-F950 camera and SRW-1 HDCAM SR™ field recorder. Now we've taken the next step with our first film-style camera, the F23.

# F23. Digital Technology Meets Film Style

Decades of Sony leadership in digital cinematography have been leading up to this. We aspired to build a digital camera that met the highest expectations of film cinematographers. So we consulted with directors of photography, camera operators, camera assistants and digital imaging technicians, and we applied our latest and best technology to create something completely new. The F23 is the first Sony digital cinema camera with film-camera controls and ergonomics, plus a chassis that accepts traditional film camera accessories without modification.

## Extraordinary Image Quality

The F23 has been designed from the ground up for superlative imagery. It starts with a new prism block that enables the camera to capture Sony's widest color gamut ever - closer to the gamut of motion picture film. The three 1080/60P image sensors exceed the specifications of broadcast HDTV. Sony's 14-bit analog-to-digital converters and signal processing of up to 36 bits help achieve unprecedented color gradation in a digital camera and more than 12 stops of exposure latitude. So you get gorgeous handling of everything from specular highlights to deep shadows.

## Creative Possibilities

The F23 is designed to dock to the SRW-1 HDCAM SR field recorder, which mounts to the top or the back of the camera for all-in-one cable-free operation. The camera/recorder combination enables over- and undercranking, time lapse and speed ramps. And you can view all of these effects directly on the set and confirm that you got the shot. In addition, the option of log or conventional gamma encoding provides a choice of shooting style and postproduction path.

## Established Post Path

The F23 leverages the spectacular quality of full-bandwidth, 4:4:4 HDCAM SR recording -- the system that's already widely accepted by leading post houses, digital intermediate houses and movie studios. The HDCAM SR format enables simple delivery of cassette tapes into postproduction -- and simple duplication of original camera master tapes for archival and insurance backup. Thanks to these advantages, the F23 offers a powerful combination: the advantages of digital with the operating style of film.



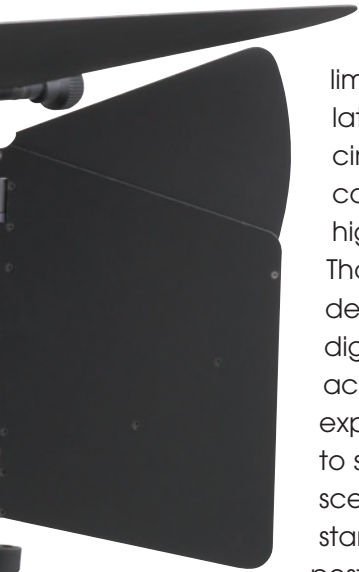
# Unprecedented Imaging



## 4:4:4 RGB Image Capture

The F23 was designed from the outset to preserve all the detail, contrast and color that the image sensors can capture. Most digital HD acquisition works within the ITU-R BT.709 standard, which specifies 4:2:2 sampling and Y/Cb/Cr encoding. The F23 exceeds this with full 4:4:4 RGB image capture and output. As a result, you get natural skin tones, rich color and exceptional resolution. The robust 4:4:4 signal is ideal for the most exacting green-screen compositing, aggressive color correction, and other image manipulations in post. The 4:4:4 signal excels in demanding feature film, commercial and episodic TV productions. For other projects, the F23 also supports high-quality 4:2:2 Y/Cb/Cr.

## Over 12 Stops of Exposure Latitude



Many HD cameras are limited to 9 stops of exposure latitude, forcing cinematographers to compromise between blown-out highlights or crushed blacks. Thanks to a revolutionary CCD design and 14-bit analog-to-digital conversion, the F23 achieves more than 12 stops of exposure latitude. This enables you to shoot challenging, high-contrast scenes, and create images that stand up better through vigorous post manipulation.

## 1080/60P Image Sensors

Because the F23 uses three separate image sensors for Red, Green, and Blue, there is no need for Bayer color filter arrays. And color values are never "interpolated" from neighboring pixels. You get the full resolution of 1920 (H) x 1080 (V) images at picture rates of up to 60 progressive frames per second. Even in deep shadows, image noise is remarkably low. And sensitivity is an ample T10 (in 23.98P mode).



## Wider Color Gamut

Most HD cameras are limited to the ITU 709 high definition color gamut. Thanks to an improved prism block and digital signal processing of up to 36 bits, the F23 can go beyond ITU color, ideal for projects destined for theatrical release. Of course, ITU 709 color is always available for projects that require it.

## Multiple Frame Rates

The F23 captures the Common Image Format (CIF): 1920 (H) x 1080 (V). To support a full range of cinema, episodic and commercial productions, the camera offers a choice of frame rates from 1 to 60 frames per second in 4:4:4 RGB or 4:2:2 Y/Cb/Cr. All of these frame rates can be recorded on the docking SRW-1 HDCAM SR field recorder. (For the SRW-1, Sony plans to support frame rates of 1 fps to 60 fps in 4:4:4 mode with the introduction of an additional HKSR-103 RGB 60P processor board.)

# Film-Style Operation

## Film-Style Body

Developed expressly for cinematographers, the F23 offers a compact, rugged design familiar to film camera operators. The F23 body weighs just 5 kg (11 lbs.) without viewfinder. Hard mounting points on the top as well as the bottom maximize camera mounting options, such as Steadycam® low mode.



## Docked or Tethered Shooting

The F23 camera docks to the companion SRW-1 HDCAM SR recorder, forming a combination that is self-contained, cable-free and highly portable. The recorder can dock to the top or back of the camera. Top mounting is ideal for cranes, jibs and dollies, while back mounting maintains a low profile for Steadycam shots. For helicopter gimbals, car interiors and other setups where space is limited, you can also separate the camera and recorder by up to 100 meters of Dual-Link HD-SDI cabling. (The SRPC-1 processor is required for tethered operation.)

## Ruggedized B4 Lens Mount

To better accommodate the weight of prime lenses, the F23 incorporates an extremely durable B4 lens mount. The mount's rigid material resists flexing and galling, to stand up to frequent lens changes. The B4 mount also offers high thermal stability for consistent back focus.

## 2/3-Inch Cine Lenses

Thanks to the boom in digital HD production, some of today's best cinematography lenses are available specifically for the 2/3-inch B4 mount. Zeiss, Canon, Fujinon and others have applied their expertise to produce exceptionally fast lenses to use with the F-23. Many are engineered to maintain full MTF performance when wide open. In this way, cinematographers can enjoy the best of both worlds: controlled depth of focus from lenses that are also fast, small and light. To accommodate the cinematic shooting style, these lenses are calibrated in T-stops instead of F-stops and have cinema-style focus rings and gear teeth for follow focus kits.



## Film Camera Accessories

Without modification to the camera, the F23 accommodates film camera bridge plates, follow focus units, lens focus/zoom/iris servo controls and more.



## Film-Style Control

Whether your background is film or digital, the F23 works the way you do, with a choice of "Cine Mode" and "Custom Mode" operation. Cine Mode preserves maximum latitude by applying S-LOG Gamma. Menus are strictly limited, as is in-camera signal processing. Cine Mode is ideal for productions where the look will largely be established in the color correction suite. If you prefer more hands-on operation, Custom Mode enables you to fine-tune camera parameters to produce your desired look on the set. Even the shutter accommodates film or digital-style operating, with a choice of control by seconds or angle.



## Supplied Assistant Panel

For operating in tight spaces where access to the camera body is limited, the F23 includes an Assistant Panel wired remote control. This duplicates the camera body's buttons and Electro-Luminescent display, making it easy to set frame rates, shutter angle and gain and to roll tape from a distance of up to two meters (six feet).



# HDCAM SR 4:4:4 Recording

## A Proven Recording System

The F23 docks directly to the SRW-1 recorder to deliver the proven performance of Sony's HDCAM SR system. The recorder can also be dismantled from the camera and connected by up to 100 meters of Dual-Link HD-SDI cabling. Launched in 2003 as the pinnacle of tape-based production, the HDCAM SR system has already delivered spectacular results for a wide range of cinematographers. The system also features affordable media, and rugged reliability.



## A Proven Postproduction Path

Unlike some systems, the SRW-1 records onto compact, convenient, removable cassettes. Generating backup or archival copies of your original camera master is as simple as dubbing a cassette in real time. HDCAM SR material also plays back in real time without the need for de-mosaicing or PC-based decompression. And HDCAM SR material is readily accepted by leading post, effects, and digital intermediate houses.

## 10-bit, 4:4:4 Recording

The HDCAM SR format is Sony's finest recording system. While most HD acquisition uses 8-bit recording, with less than 4:2:2 color, the HDCAM SR system uses 10-bit, 4:4:4 recording. The difference is profound, especially for projects that require highly precise green screen compositing, aggressive color correction and visual effects.

The HDCAM SR system features full-bandwidth, 4:4:4 RGB color sampling. So not only do the camera's three image sensors capture every pixel as independent Red, Green and Blue samples; but every one of these samples is also recorded. In addition, the system's 10 bit quantization achieves superb tonal gradation. Of course, the SRW-1 also supports 4:2:2 Y/Cb/Cr recording, which is well suited to television projects.



## Over- and Undercranking

The F23 camera and SRW-1 recorder put you in command of time itself with overcranking, undercranking and variable speed ramp effects. The SRW-1 can play these effects in the field, so you can confirm that you've got exactly the shot you want before you strike the set. There are no "pad frames," no sacrifice in picture quality, no external processing and no external hardware required.

Overcranking and undercranking require the optional HKSR-102 picture cache board. This enables variable frame rates from 1 fps to 60 fps in 4:2:2 mode, or 1 fps to 30 fps in 4:4:4 mode. Sony will support frame rates of 1 fps to 60 fps in 4:4:4 mode planned for the winter of 2007 with the additional HKSR-103 RGB 60P processor board.



SRW-1 shown with optional SRPC-1 processor.

## Time Lapse with Speed Ramps

To make the clouds race by or the sun set in an instant, the F23 and SRW-1 also provide Interval Recording, the electronic name for time lapse photography. You get gorgeous effects from 60 fps to 1 fps. Three automatic speed ramp modes plus manual speed ramp enable you to vary the effect at will. Time lapse requires the HKSR-102 picture cache board.

## Long Loads

A single BCT-40SR tape can hold up to 50 minutes of content (at 24P in Normal Quality 4:2:2 mode) or up to 25 minutes in high quality 4:4:4 mode. Using two SRW-1 recorders in tandem and the SRPC-1 processor, you can also record without time limits.

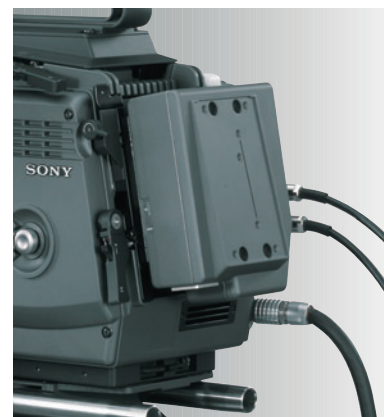
## In-Camera Sound Recording

When docked to the F23, the SRW-1 also captures two channels of digital audio with superb 24-bit quantization and 48 kHz sampling.

# Operational Versatility

## Supplied Interface Module

The interface module for the F-23 attaches to the camera for flexible connections to the outside world. Two HD-SDI outputs support dual- or single-link connection to a detached SRW-1 or other recorder. Two-channel analog audio inputs enable audio capture to tape. The interface module also supports the optional BP-GL95 battery pack with the BKP-L551 battery adaptor.



## HD-to-SD Downconversion

You can monitor the F23 on a standard definition display, thanks to built-in downconversion and an analog composite video output.

## 12 V and 24 V DC Accessory Power

Following traditional filmmaking conventions, the F23 can provide DC power directly to lens servos and other accessories through 12 V and 24 V DC power connections. (24 V power requires a dual-voltage battery that can supply both 12 V and 24 V DC simultaneously.)



## Twin Viewfinder Outputs

When several crew members need to see the viewfinder, the F23 shines. The camera supports simultaneous access to two viewfinders. For example, you can connect both the HDVF-C35W 3.5-inch viewfinder (viewable area, measured diagonally) and the HDVF-C950W 9.5-inch viewfinder (viewable area, measured diagonally).



## Memory Stick PRO Media for Setups

Take your hard-won setups from camera to camera and shoot to shoot via Memory Stick PRO™ media cards. Save and recall scene files, reference files and lens files. These can include camera parameters for individual scenes, custom gamma curves from CVPFileEditor™ software, plus your own personal camera setup preferences, such as viewfinder indicator settings. (The F23 is compatible with Memory Stick PRO media up to 2GB capacity. Operation is not guaranteed for every type of Memory Stick® media.)



## Assignable Switches

For instant access to the functions you use most, the F23 enables you to assign functions to three pushbuttons and one switch.



# Creative Options

## Versatile Gamma Settings

In addition to lighting techniques in front of the lens, in-camera gamma settings can play an important role in handling contrast range and producing a specific "look." The F23 expands the options of gamma handling for total flexibility.

## S-LOG Gamma

This setting takes advantage of the full latitude of high-contrast scenes, from the deepest shadows to the brightest specular highlights. S-LOG Gamma retains the full dynamic range of the CCD (700%). The setting also mimics the tonal response of a film negative, so you retain full flexibility in color correction and a seamless workflow with postproduction facilities geared toward LOG encoded material.

## HyperGamma

Like previous CineAlta camcorders, the F23 offers four preset HyperGamma curves. HyperGamma 1 and 3 enhance natural tonal reproduction in low-key areas, while HyperGamma 2 and 4 are suitable for scenes with a wide range of light intensity, such as exterior day.

## CVPFileEditor Software

The F23 also enables you to customize gamma curves with supplied Windows® PC software. An easy graphic user interface enables you to change the shape of the gamma curve, then load your curve into the camera via Memory Stick PRO media.





## Multi-Matrix Control

If you prefer to refine the "look" of a scene in-camera, the F23 empowers you with adjustments similar to secondary color correction. Multi-Matrix control adjusts the hue and saturation of 16 individual color ranges, each roughly 20 degrees on the vector scope. These adjustments are performed at full bit depth.

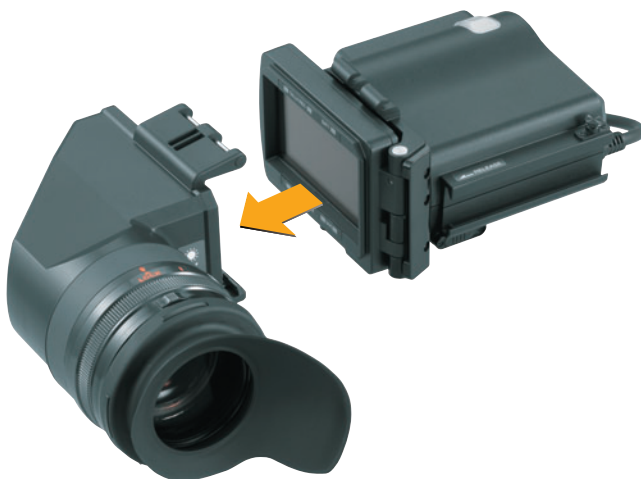


Multi Matrix OFF



Multi Matrix ON

Simulated image



## HDVF-C35W LCD Color Viewfinder

The HDVF-C35W viewfinder incorporates a high-resolution 3.5-inch LCD screen (viewable area, measured diagonally). The eyepiece adjusts to a full range of positions and angles, while an aspherical lens reduces aberration in the image corners. When several people need to see, you can also remove the eyepiece and view the LCD screen directly.

# Optional Accessories



HDVF-20A  
2.0-inch\* CRT B/W Viewfinder



HDVF-C35W  
3.5-inch\* LCD Color Viewfinder



HDVF-C950W  
9.0-inch\* LCD Color Viewfinder



RM-B750  
Remote Control Unit



RM-B150  
Remote Control Unit



MSU-900  
Master Setup Unit



MSU-950  
Master Setup Unit



MSX-256S/512S/1GS/2GS  
Memory Stick PRO Media



AC-DN2B\*\*  
AC Adaptor



AC-DN10\*\*  
AC Adaptor



BKP-L551\*\*  
Battery Adaptor



BP-GL95\*\*  
Lithium-ion Rechargeable Battery



BC-L500  
Battery Charger



BC-L70  
Battery Charger



BC-M150  
Battery Charger

\*Viewable area measured diagonally

\*\*Cannot be used when the F23 is directly docked to the SRW-1.

# Optional Accessories From Other Manufacturers

## ARRI



BP-5  
Bridge Plate



BP-8  
Bridge Plate



MB-20  
Matte Box



CLM-1  
Lens Servo Unit



CLM-2  
Lens Servo Unit



UMC-3  
Wireless Lens Control System



FF5-HD  
Follow Focus Unit

## Carl Zeiss



DigiPrime Lenses



DigiZoom Lenses



Sharpmax

## Fujinon



HD CINE SUPER ZOOM/Prime Lenses



HD CINE COMPACT C Lens  
HAC13x4.5



HD CINE COMPACT C Lens  
HAC15x7.3



HD CINE COMPACT C Lens  
HAC18x7.6

# Optional Accessories From Other Manufacturers

## Canon



HD-EC Prime Lens Series



HJ21x7.5B KLL-SC  
HD-EC Zoom Lens



HJ11x4.7B KLL-SC  
HD-EC Zoom Lens



HJ8x5.5B KLL-SC  
HD-EC Zoom Lens



ACV-235  
Anamorphic Converter

## Anton Bauer



ABF23BATT  
F23 12V & 24v High Capacity Battery



ABF23CHGR -  
Battery Charger

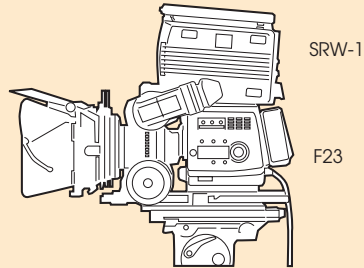


ABF23CHRCBL - Charger Cable  
ABF23POWERCBL - F23 Power Cable

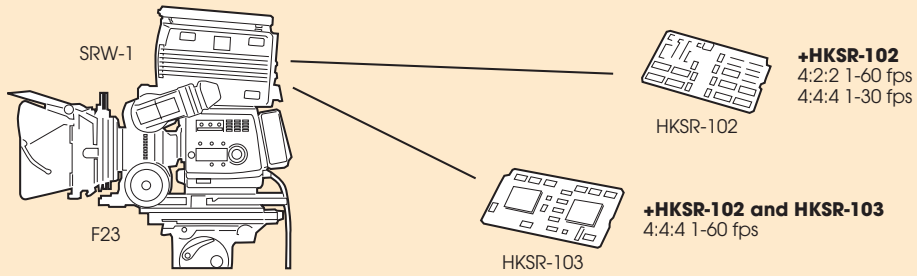
# System Configuration

## F23 + SRW-1 Direct Docking

RGB 4:4:4 Recording

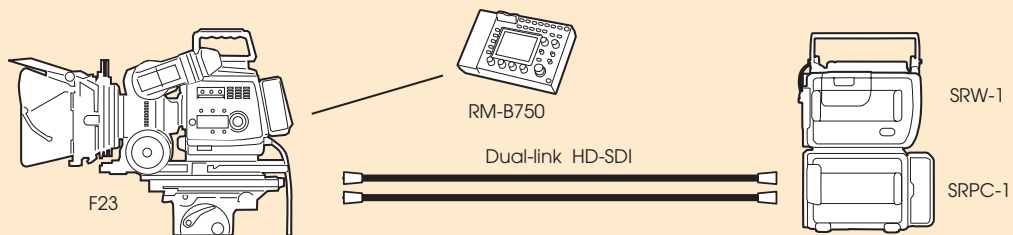


## Over- and Undercranking



## F23 + SRW-1/SRPC-1 Separate System

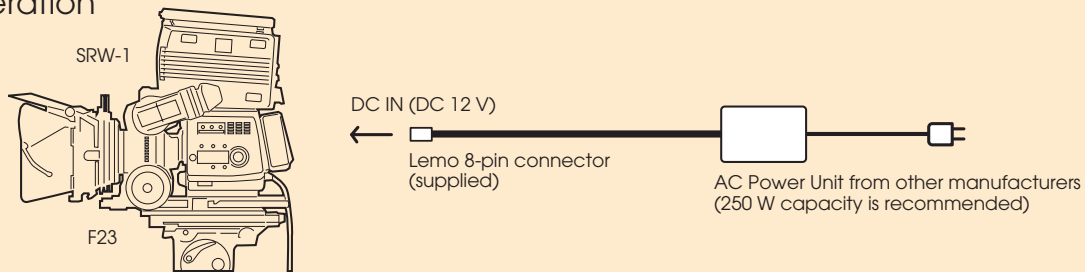
RGB 4:4:4 Recording (HD-SDI Dual-Link Connection)



# Power Supply Configuration

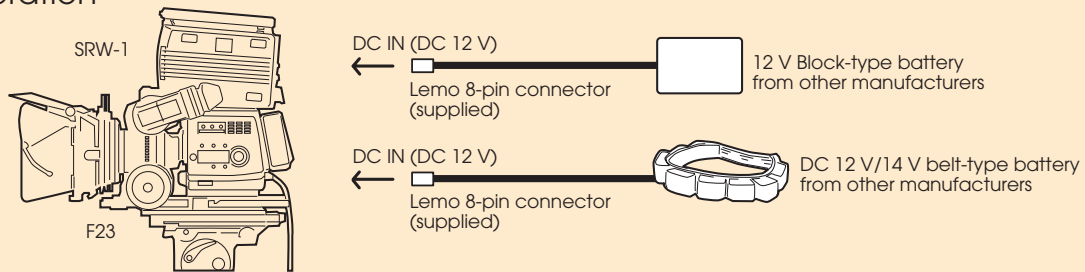
## F23 + SRW-1 Direct Docking

### AC Operation



Sony AC-DN2B/DN10 AC Adaptor cannot be used in this configuration.

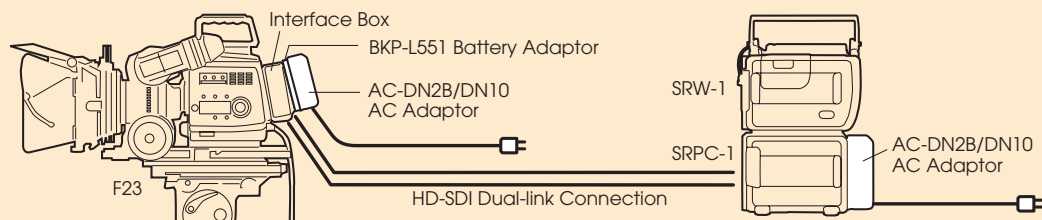
### DC Operation



Sony BP-GL95 battery cannot be used in this configuration.

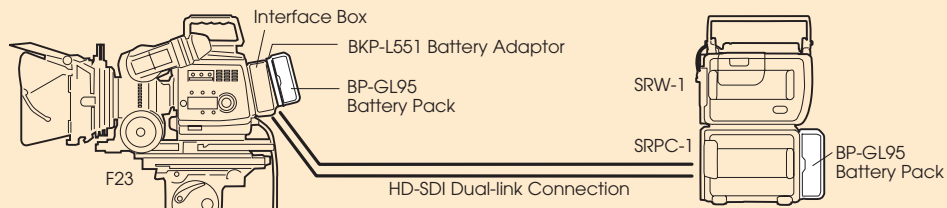
## F23 + SRW-1/SRPC-1 Separate System

### AC Operation (HD-SDI Dual-Link Connection)



AC-DN2B/DN10 are separately required for the F23 and the SRPC-1/SRW-1

### DC Operation (HD-SDI Dual-Link Connection)



Batteries are separately required for the F23 and the SRPC-1/SRW-1

# Specifications

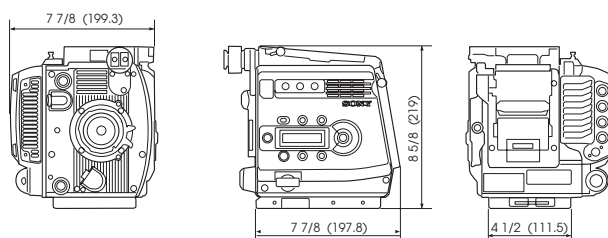
## F23 Specifications

General	
Weight	Approx. 11 lb (5.0 kg)
Power requirement	DC 10.5 V to 17 V
Power consumption	56 W (without lens, viewfinder, at 23.98PsF mode)
Operating temperature	32 °F to 104 °F (0 °C to 40 °C)
Storage temperature	-4 °F to +104 °F (-20 °C to +60 °C)
Camera Section	
Pickup device	3-chip 2/3-inch type Progressive CCD
Aspect ratio	16:9
Effective pixels (H x V)	1920 H x 1080 V
Optical system	F1.4 prism system
Built-in filters	A: 3200K, B: 4300K, C: 5600K, D: 6300K, E: ND0.3 (1/2ND) 1: Clear, 2: ND0.6 (1/4ND), 3: ND1.2 (1/16ND), 4: ND1.8 (1/64ND), 5: CAP
Lens mount	Sony bayonet mount (B4)
Sensitivity	T10 (at 23.98PsF)(at 2000 lx, 89.9% reflective)
Registration	Within 0.02% (all zones, without lens)
Distortion	Below measureable level (without lens)
Setup card	Memory Stick PRO Media
Horizontal resolution	1000 TV lines
Signal inputs/outputs	
Genlock video input	BNC type x1, 1.0 Vp-p, 75 Ω
Audio CH1/CH2 input	XLR-3-31 type (Female), line/mic/mic +48 V selectable (via supplied interface module)
Test output	BNC type x1, VBS/HD Y
Dual-Link HD-SDI output	BNC type x2 (via supplied interface module)
Monitor output	BNC type x2, HD-SDI (4:2:2)
DC input	Lemo 8-pin (Male) x1, DC 10.5 V to 17 V, DC 20 V to 30 V
DC input	XLR-4-pin type (Male) x1 (via supplied interface module)
DC output	DC 12 V: 11-pin x1, max. 4 A DC 24 V: 3-pin x1, max. 5.5 A
Lens	12-pin x1
Remote	8-pin x1
Viewfinder	20-pin x2
External input/output	Lemo 5-pin (Female) x1
Network	RJ-45 type x1, 10BASE-T/100BASE-TX
Supplied accessories	

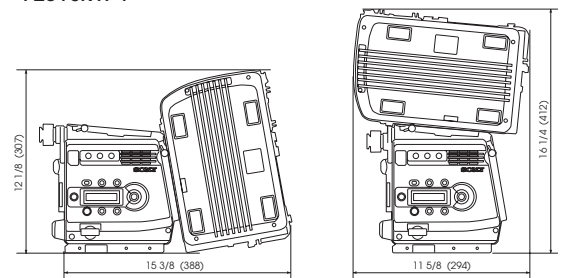
Interface module, Assistant panel, Cable for assistant panel, Assistant panel hanger, +B4x8 screw (x4), Center handle, Lemo 8-pin connector, Operation manual

## Dimensions

F23



F23+SRW-1



Unit: inches (mm)

**SONY**

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V-2364  
MK10406V1

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Printed in U.S.A. 7/07