SONY
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The Art and Technology of the F3

PMW-F3 Super 35mm XDCAM EX™ Camcorder

CINEALTA™

Our paintbrush. Your pictures.

A motion picture camera cannot entertain, enlighten or engage an audience until a cinematographer puts it to work. In this respect, the Sony® PMW-F3 Super 35mm digital camcorder has been exceedingly fortunate. Brilliant artists have used the F3 to create beautiful pictures in a full range of productions. These include everything from theatrical features to concert videos, TV commercials, news, reality TV, natural history and corporate.

Why the F3? Because it's affordable, knocking down barriers and making 10-bit Super 35mm cinematography accessible to more DPs. Because it's compatible, accepting the entire ecosystem of PL mount lenses, Sony cinema lenses using the camera's native FZ mount and other lenses via third-party FZ mount adaptors. Incredible low light performance with the latitude of 10-bit S-Log and the precision of 4:2:2 and uncompressed 4:4:4 RGB output. Previously optional, 10-bit S-Log and 4:4:4 are now standard capabilities.

The F3 is also a purebred Sony CineAlta™ camera, embodying the CineAlta heritage that began with the world's first 24p HD camcorder, the Sony F900. CineAlta products have helped create feature films that grossed over $13 billion, not to mention episodic TV that dominates the primetime schedule. The F3 fully reflects Sony's expertise in optics, image sensors, digital signal processors, digital encoding and professional-grade workflows. And the F3 comes from the same factory as the F35 and F65, cameras famous in high-end cinematography.

In just a few short months, the Sony PMW-F3 has made some amazing pictures. Imagine what it can do for you.

Clockwise from top left: Alister Chapman helped capture Simon Le Bon of Duran Duran in concert at the Manchester Arena; Billy Zane stars in "The Ghost of Goodnight Lane," directed by Alin Bijan; Dennis Dillon used the F3 to cover the Royal Wedding at Westminster Abbey; Zach Zamboni with Anthony Bourdain and Erik Shirai in Singapore for "The Layover;" Xiao Zheng in "The Princess and the Clown" directed by Andrew Jeric, MFA candidate at the USC School of Cinematic Arts.

Eight technologies in the service of art.

Super 35 imagery
Here is Super 35 depth of field, Super 35 angle of view and compatibility with 35mm cine lenses. It's all made possible by a Sony CMOS sensor designed expressly for the PMW-F3.

FZ lens mount
The gateway to a world of lenses, the native FZ mount accepts the supplied PL mount adaptor, plus a wide selection of third-party adaptors for Canon®, Nikon® and two-thirds inch lenses.

12.5 stops of latitude
Don't be afraid of the dark. Or the sun. The F3 has the exposure latitude and 14-bit A/D converter to pull detail out of the deepest shadows and brightest highlights.

Uncompressed 10-bit output
Compared with 8-bit, 10-bit output means higher coding precision, 64 times as many colors and smoother gradations in skin tones and sky. It's also better suited to corrections in post.

10-bit S-Log with LUTs
You want maximum highlight detail, maximum shadow detail and maximum range of adjustment in post. That's what 10-bit S-Log delivers. Formerly an option, it's now standard equipment.

1080/60p 4:2:2
Output 60 Full HD progressive frames per second, a perfect match for the SR-R1 SRMASTER™ recorder. Generate beautiful slow motion by adjusting the frame rate in post-production.

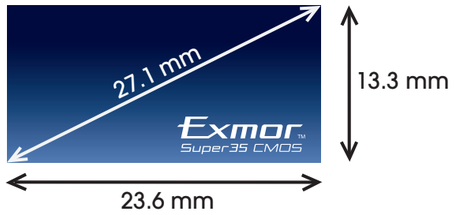
10-bit 4:2:2 & 4:4:4 RGB color
For the most demanding bluescreen and greenscreen compositing, the camera outputs both 10-bit 4:2:2 and 4:4:4 color sampling. This supplements the onboard 4:2:0 color of XDCAM EX recording.

3G-SDI
10-bit 3G-SDI 4:4:4 output supports up to 3 Gigabits per second, enabling one BNC cable to do the work of two.

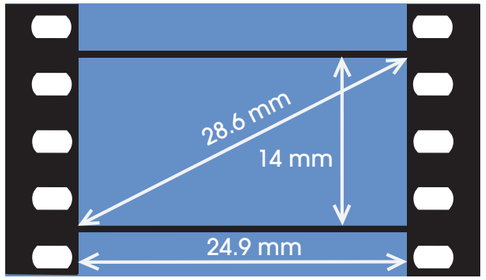
Exceptional cinematic imagery:

The visual language of motion pictures is inextricably tied to the image format of the camera. That's why Sony designed the PMW-F3 with a large single sensor, similar in size to the Super 35mm 3-perf film frame. With Sony's Exmor® Super35 sensor, you get angles of view like a film camera. You get shallow depth of field, to enable your subject to stand out gracefully from the background. You get beautiful bokeh. All the familiar cine lenses behave in all the familiar ways, to achieve predictable, comfortable results. The large sensor also provides high sensitivity and the clean, low-noise images that have so many cinematographers nodding with approval. Base sensitivity is ISO 800, specified at F11 with 63 dB signal-to-noise ratio.

Sony PMW-F3



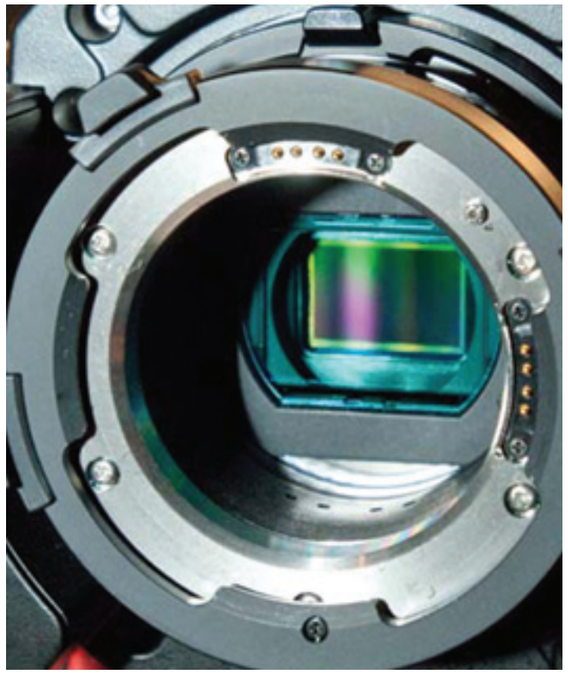
35mm motion picture film (3-perf)



Optimized resolution

The PMW-F3 sensor was designed from the ground up for moving images. Its 2.5 K resolution provides the optimum number of effective pixels for HD, with superb image detail, fine texture, high sensitivity and extreme exposure latitude.

The resemblance to the 3-perf 35mm film frame is not an accident.



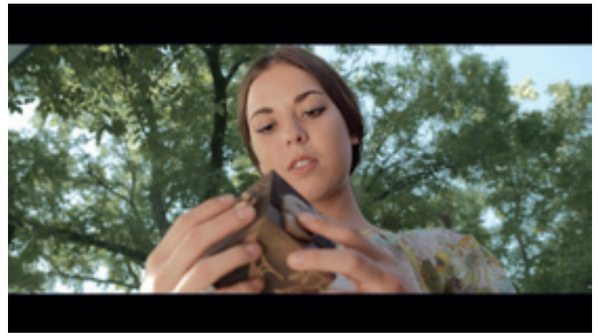
the Exmor Super35 sensor

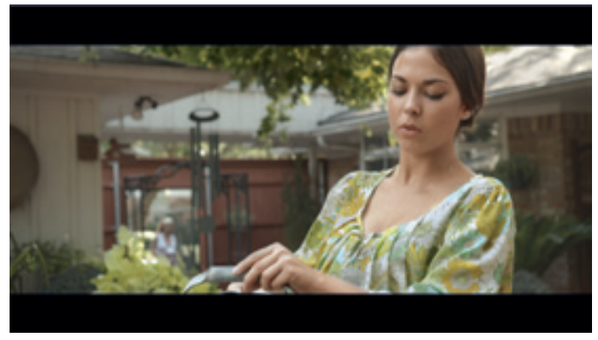
Exmor™ CMOS sensor

As a world leader in semiconductor image sensors, Sony sought to minimize the "rolling shutter" artifacts common among CMOS cameras. Conventional CMOS sensors use only a handful of analog-to-digital converters, creating a traffic jam that slows down the readout process and exacerbates rolling shutter. Sony's Exmor™ CMOS design supplies each column of pixels with its own, dedicated converter. The sensor has literally thousands of converters, reducing rolling shutter to a minimum. The sensor's high speed enables the F3 to read every pixel, even when overcranking at 60 frames per second. There's no sacrifice in resolution or focal length. The Exmor design also shortens analog signal paths for an extraordinary reduction in image noise.

OLPF tuned for motion pictures

The typical DSLR image sensor and its optical low-pass filter (OLPF) are optimized for stills. This can have a pernicious side-effect: aliasing, otherwise known as moiré can appear on repeating, lined patterns in clothing, buildings or household objects like venetian blinds. The patterns also move, distracting audiences and taking them out of the story. Because Sony incorporates an image sensor and OLPF designed from the ground up for moving pictures, the F3 minimizes these distortions.

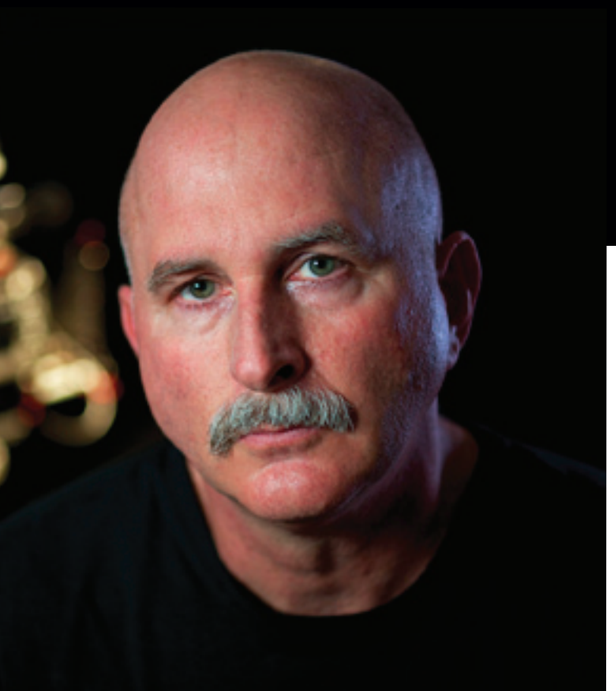




Shallow depth of field at work: frame grabs from Alin Bijan's "The Ghost of Goodnight Lane," shot with the F3.

"The Super 35 sensor really makes network news anchors punch out from the background."

—Dennis Dillon, freelance DP for "60 Minutes" and "48 Hours"



"My clients come from a 2/3-inch broadcast camera background. But the pictures out of the F3 are really opening people's eyes. Having a Super 35 sensor enables us to completely change our approach to shooting field interviews, where we've got to work in the room we're given. With 2/3-inch, I'd always be fighting the background, fussing with lights to create the least distracting, most flattering shot. With the F3, the background simply blurs out. It's the first time many of the anchors have seen themselves punch out from the background like this. They love the look. In fact, Scott Pelley of `60 Minutes' doesn't want to work with any other camera.

He suggested that I bring the F3 into the studio. I reminded him that his expensive set has been designed with 2/3-inch cameras in mind.

"I compare the F3 to Neapolitan ice cream: chocolate, strawberry and vanilla all in one. It's easy to light, gives you beautiful depth of field and incredible exposure latitude. I shot a time lapse of Westminster Abbey for the Royal Wedding and the way the F3 held the exterior day contrast blew my clients away. It really pulls detail out of the shadows.

"I also find myself using half the key light I'd need with a smaller imager. And the F3 sensor is so quiet, I think nothing of using 12 dB gain. In fact, I shot a pre-dawn scene for a `60 Minutes' piece on homeless families. The show typically runs a shot for three seconds. This picture was so beautiful, they let it run for eleven seconds."

One camera: two lens mounts

From Cooke to Angenieux, Fujinon, Zeiss and Leica, 35mm Positive Lock (PL) mount motion picture lenses inspire critical appreciation and passion among the professionals who use them. A broad infrastructure of movie production has arisen to exploit the creative potential of this glass. Not only does the PMW-F3 register beautiful pictures with these lenses, but the PL mount detaches from the camera, revealing Sony's innovative FZ mount. While some cameras restrict you to a single lens mount, the F3 provides this second mount at no extra charge. This opens up unique opportunities.

Native Sony FZ mount

The native FZ mount has a robust locking ring and a very short flange focal distance. This enables the F3 to accept FZ mount lenses directly, 35mm cine lenses via the supplied PL mount adaptor, plus a universe of SLR lenses and DSLR lenses via third-party adaptors—all without optical degradation. The FZ mount's electronic contacts help Sony provide Super 35mm cinematography with a full range of automatic features. Back focus can be optimized by a quick adjustment with an Allen wrench.

The hot shoe contacts are for the Cooke /i system (at the 12 o'clock position) and ARRI LDS system (at 3 o'clock).

PL mount with Cooke™ /i and ARRI™ LDS contacts

The camera's supplied PL mount adaptor locks securely on top of the native FZ mount. Instead of cumbersome shims, a simple Allen wrench helps you immediately nail back focus. Electronic contacts for both the Cooke /i and ARRI Lens Data System (LDS) interfaces enable rich transfer of lens metadata, including your settings for zoom, focus, iris and depth of field. The camera automatically captures these settings on a frame-by-frame basis to the onboard XDCAM EX recorder. The metadata is fully available in postproduction. It's even accessible in Sony's free XDCAM® Browser software.

The PL mount detaches to reveal the camera's native FZ mount.

Lens adaptors for even more choices

Because of flange focal distance, putting a still camera lens on a PL mount camera can be a major challenge. But putting a still lens on the FZ mount can be easy, with the use of commercially available lens adaptors. This can be a major advantage in meeting a budget or satisfying special needs.

• Adaptimax	Canon EF to FZ mount
• Birger Engineering	Canon EF to FZ mount
• MTF MTCANEFF3	Canon EF to FZ mount
• MTF MTCANFDF3	Canon FD to FZ mount
• MTF MTNIKGF3	Nikon G/DX to FZ mount
• MTF MTB4F3	2/3-inch B4 to FZ mount
• IB/E Optics HDx35	2/3-inch B4 to PL mount

Performance you can afford

Because still lenses are designed for still pictures, they can behave badly when pressed into service for moving pictures. Gotchas like focus breathing can become unwelcome guests in even the simplest shot. That's why Sony decided to match the affordable PMW-F3 with a new series of reasonably-priced lenses designed expressly for cinematography. Backed by decades of Sony expertise in lenses, these optics incorporate advanced glass for superb image fidelity. Together, the F3 and Sony lenses make legitimate Super 35mm production more accessible than ever.

Sony PL Mount Lenses

- **PMW-F3K kit primes.** The PMW-F3K kit includes the camera plus three Sony PL-mount prime lenses. Compact and cost-effective, all three have consistent operation, including a common location for the follow focus gear and a common 95 mm filter diameter. The set includes a 35mm, 50mm and 85mm, all with a maximum aperture of T2.0. Sony's design optimizes resolution while minimizing geometric distortion, vignetting and focus breathing. For beautiful bokeh, all three lenses incorporate an eight-blade iris.

- **11-16mm T3.0 PL zoom.** This wide-angle 1.5x zoom is sold separately as the SCL-P11X15.

Sony has decades of experience in pro lenses.

Sony FZ Mount Lens

- **18-252mm T3.9-6.8.** Ideal for run-and-gun projects, the SCL-Z18X140 delivers features you might not expect in Super 35mm shooting. These include auto/manual focus, auto/manual iris, servo/manual zoom and incredibly effective optical image stabilization. The rocker on the camera handgrip controls the zoom—just as muscle memory tells you it should.

Metadata from the SCL-Z18X140 lens can be viewed on a monitor connected to the PMW-F3 or stored on the SxS Pro card. Iris, focus and zoom data can be utilized in motion control rigs and VFX processing. This is also useful for continuity in re-shoots.

> “Pairing up the F3 with ARRI Alura and Optimo lenses, the images were jaw dropping.”
>
> *—Alister Chapman, Cinematographer, Duran Duran in Concert at the Manchester Arena, available on DVD and Blu-ray Disc, Summer 2012*

“I got a call from Den Lennie and James Gavin of Hangman Studios. Did I think we could shoot a Duran Duran concert with just 7 days to prepare? Of course I said yes. So James and Den got together with Director Gavin Elder who has been working with Duran Duran since 2003 and the magic started to happen.

“Shooting a concert with Super 35mm is a challenge. It’s not as easy as traditional broadcast, not in any way. But when you start pairing up 12 PMW-F3s with 1000 mm, yes 1 meter, lenses, beautiful ARRI Alura 18-80mm and Optimo 24-290 mm lenses, shooting an incredibly dynamic light show at a massive sell-out arena concert, I think you can see why this project was so exciting!

“My role: camera setup, creating a custom picture profile, helping on lens and kit choices, on-site tech support and then operating one of the two PMW-F3s using the MTF B4-to-S35 adaptors that I designed along with a Canon 10 to 400 mm zoom. When you add the 2.5x magnification factor of the adaptor, that equates to a 25mm to 1000mm zoom. My role was to shoot the close ups of lead singer Simon Le Bon from the Front of House area, 160 feet from the stage. With such a long lens the Depth of Field was tiny and the shoot was hard work, but incredibly rewarding.

“The end result was an electrifying atmosphere and from what I’ve seen so far, jaw dropping images. This is one of those projects I’ll remember for a long, long time.”

12.5 stops of latitude, 10-bit S-Log

Sony understands that you want the maximum highlight detail, shadow detail and range of adjustment in post. Even with conventional gamma, the PMW-F3 delivers a tremendous 12.5 stops of exposure latitude, while Hyper Gamma curves optimize grayscale response. Going further, 10-bit S-Log Gamma mimics the tonal response of film negative and preserves the full dynamic range of the image sensor. Previously an option, S-Log is now a standard feature of the F3. This logarithmic tonal curve optimally assigns the digital code values of the 10-bit RGB components from deep shadow to bright highlights. Higher coding precision throughout the tonal range preserves full flexibility in color correction. For seamless workflow, converters called Look-Up Tables (LUTs) transform S-Log gamma back to conventional gamma.

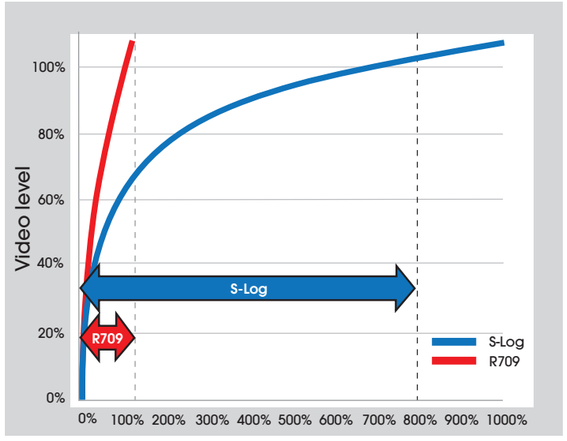
Viewing LUTs for client monitoring

In the S-Log workflow, the full beauty of the image can be somewhat hidden. Without the correct decoding, S-Log imagery has a "flat" look, missing punchy highlights and shadows. While DPs may be accustomed to looking at such Log encoded images, producers and clients may not. For this reason, S-Log operation uses LUTs (Look Up Tables). A Look Up Table is a small text file that maps the Red, Green and Blue conversion from S-Log. The F3 comes with four LUTs, which you can modify in Sony's free CVPFileEditor software. In addition, you can upload up to five custom LUTs. You can use these same LUTs in many popular editing and finishing tools including DaVinci™ Resolve™, Assimilate™ Scratch™, Baselight™ FilmLight™, Final Cut Pro™, Quantel™ Pablo™ and Autodesk™ Lustre™. One of the camera's built-in LUTs converts S-Log Gamma to conventional Rec. 709 video for real-time monitoring on the set and offline recording onto SxS memory cards. Simultaneous recording of online and offline material with identical time code enables efficient post-production workflow.

S-Log EI mode

With firmware version 1.20, Sony introduced a refinement to the monitor LUTs called S-Log EI mode. This enables you to optimize the monitor image by boosting the gain of the monitor LUT. You can select EI 800, 1600 or 3200—without affecting the recorded image.

From dark of night to exterior day to pyro, Sony S-Log delivers amazing images.



Conventional Rec 709 video encoding quickly runs out of gas in the image highlights. Sony's 10-bit S-Log Gamma bends the curve to dramatically extend the highlight handling to 800% of nominal peak white.

S-Log Output Options

- S-Log 4:2:0 capture to XDCAM EX internal recording
- S-Log 4:2:2 external recording via Link A HD-SDI output
- S-Log 4:4:4 external recording via Dual-Link HD-SDI
- S-Log 4:2:2 1080/60p external recording via Dual-Link HD-SDI (requires free version 1.31 software update)
- S-Log external recording via 3G-SDI output
- Simultaneous S-Log recording to HD-SDI output and LUT applied to XDCAM EX internal recording
- Simultaneous S-Log recording to HD-SDI A output and 4:2:2 monitor LUT to SDI output (requires free version 1.31 software update)
- Simultaneous S-Log recording to Dual-Link HD-SDI or 3G-SDI output at 4:4:4 and 4:2:2 monitor LUT to SDI output (requires free version 1.31 software update)

Original S-Log frame grab from Alin Bijan's 'The Ghost of Goodnight Lane', shot with the F3. The "flat," somewhat washed-out look is typical of uncorrected S-Log.

The same image, corrected. Thanks to S-Log Gamma, the face is beautifully exposed, yet darker areas retain phenomenal detail.

"S-Log has saved our butts more times than I can say."

—Ed David, DP for TV commercials, branded entertainment and documentaries

"With the Sony F3 and S-Log, we can walk into a visually gross shooting environment and still come away with great pictures. On more than one project, the F3 was B camera to a far more expensive camera. It's the ultimate B camera in this context. To many people's eyes it holds up so well. And the F3 is just a fraction of the price.

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"We had one doc-style shoot in a convention center with a disgusting pattern of old-school fluorescents. It was hideous. But S-Log was a lifesaver. It gave us so much latitude in post that the color became soft and quite beautiful. I had an interview shoot for the History Channel in the sun room of the subject's house. I only used a Joker 800 and bounced it on him. After bringing him up in post, his face was great and the outside was perfectly exposed.

"The combination of S-Log and the camera's color matrix controls also enables me to nail skin tones. The result is very organic and flattering. In fact, S-Log continues to give me happy surprises. Shots that maybe looked okay on the day end up looking fantastic in post. It's such a benefit to have that much image fidelity and latitude to work with."

“S-Log came through brilliantly.”

— Charles Papert, DP, “Key and Peele”

“We just wrapped Season 1 for the new Comedy Central sketch series ‘Key and Peele.’ The sketches are essentially mini-movies, each with a unique look and as much production value as we can give them. From my first conversation with the director it was apparent that we needed a camera with an S35 sized sensor and filmic quality. But the budget dictated that we move fast, always on location and with a limited crew for a network series. I was able to keep the lighting package modest for interiors and night exteriors, thanks to the incredible sensitivity and low noise of the F3.

“I also had to tackle a variety of day exteriors without the luxury of picking the perfect time of day or implementing serious grip artillery, so we absolutely had to capture maximum dynamic range. S-Log encoding came through brilliantly. We were able to tame the savage contrast, push and pull the footage extensively in post to create a multitude of looks and the resulting images were beautiful (if I may say so)!

“I received many compliments from the executive producers and the network on the visual quality of the show, especially given the humble circumstances. I consider the F3 to have been a major ally.”

Uncompromised 10-bit output

When it comes to recording quality, what works beautifully for reality TV and news magazines may not satisfy the requirements of cinematic special effects. That's why, in addition to on-board XDCAM EX recording, the PMW-F3 provides uncompressed 10-bit output with robust 4:2:2 color sampling. In addition, 4:4:4 RGB color, which was originally offered as an extra-cost option, now comes as a standard capability. As a result, the camera can adapt from project to project, supporting an incredible range of production requirements.

Uncompressed 4:2:2 10-bit output

The signal provided at the HD-SDI output offers full HD resolution and full HD picture quality, untouched by the camera's XDCAM EX compression. Some cameras are limited to 8 bits of precision, for 16 million total colors. In comparison, the F3 features 10-bit 4:2:2 output, which is capable of over 1 billion colors. You get beautiful gradations that minimize "banding" even in sensitive areas like skin tones and sky. The vivid, enriched output of the F3 works with a full range of third-party external recorders and is ideal for Sony's own SR-R1 SRMASTER recorder. The 10-bit output also supports real time monitoring at full resolution with or without LUTs. And the HD-SDI signal includes SMPTE RDD18 acquisition metadata—including ASC CDL (Color Decision List) information. Even if you're going outboard for your online recording, you can still benefit from the camera's internal XDCAM EX system for your offline recording.

Uncompressed 4:4:4 RGB 10-bit output

The camera's 4:4:4 RGB output offers high definition's highest color resolution, with an independent Red, Green and Blue sample for every pixel. It's ideal for cinema, for the most demanding greenscreen/bluescreen compositing and for the most rigorous color correction. The signal is perfect for recording onto Sony's remarkable SR-R1 SRMASTER recorder.

HD SDI connectors on the back of PMW-F3

Originally an option, 4:4:4 is now standard.

1080/60p 4:2:2 output

While high definition is limited to 1080/60i, the image sensor of the F3 achieves 1080/60p, which is available for recording at the dual-link HD-SDI output. The 60p frame rate enables overcranking for beautiful slow motion effects when played back at the cinematic frame rate of 24p. And the overcranked signal can even be S-Log encoded (requires v1.31 firmware). Expected with the F3's v1.4 firmware update, the SR-R1 SRMASTER recorder will be able to record at 17 to 60 progressive frames per second in full HD resolution.

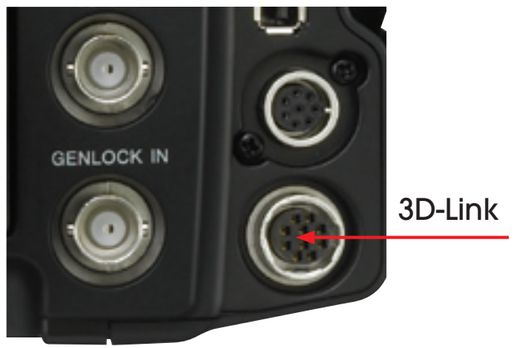
Built for stereoscopic 3D

Stereoscopic 3D has become part of the discussion everywhere from blockbuster movies to concert videos to live sports. And 3D has achieved creative success everywhere from action adventure to fairy tales, from rock & roll to ballet, from soccer to American football. Small and light, the PMW-F3 is perfect for mounting on 3D rigs. That's why Sony created the optional CBK-3DL01 3D-Link upgrade.

3D-Link upgrade

Sony's CBK-3DL01 upgrade enables you to match and operate a stereoscopic pair of F3 cameras from one remote controller. Simply connect the two cameras using the 3D-Link 10-pin cable and connect the master camera to the controller. The 10-pin cable carries the reference, timecode and control signals.

The operation of the two cameras is completely synchronized. Start and Stop are synced when you trigger recording on the master camera or the controller. Since there is genlock, time code is synced. You can copy setup data from the main camera to the sub camera without time-consuming manual adjustment. You can even compensate for variations in ND filtering between the two cameras and 3D-Link maintains this adjustment offset. 3D-Link also enables unified control of Focus, Iris and Zoom position with Sony's optional SCL-Z18X140 high power zoom lens.




Sony F3 camcorders on the set of the upcoming 3D motion picture "Battle of the Year."

On this camera, 3D isn't an afterthought. It's essential.

3D recording with a single SR-R1 SRMASTER Recorder

You can capture signals from both cameras onto a single Sony SR-R1 SRMASTER recorder. And you can expedite postproduction by simultaneously capturing on-line material to SRMemory cards and off-line material to SxS cards.

“Recording 10-bit uncompressed S-Log, the results were phenomenal.”

—Alin Bijan, Producer, “The Ghost of Goodnight Lane”

“In putting together our feature film, ‘The Ghost of Goodnight Lane,’ we were really asking for the moon. While my creative side wants the best possible pictures, we also needed a super-efficient post pipeline to make the most of our budget. For this project, the Canon 5D wasn’t enough of a camera. I’ve used the RED camera once before, but I couldn’t afford the time and cost of file conversions in post. Combining the F3 with the Cinedeck™ EX recorder worked beautifully.

“One key to the F3 is S-Log gamma, which retains absolutely everything the camera sees. When you switch to S-Log, the difference is phenomenal. It’s like a whole other camera. For VFX, we could record uncompressed, 10-bit, 4:4:4. To save space, we captured the rest of the show in Apple ProRes, and to tell the truth, it comes awfully close to uncompressed. Shooting in ProRes means you can go straight from the camera to the timeline. There are no conversions, no rewrapping, no nothing. You’re editing immediately.

“The F3 is fast and flexible, helping us to complete shooting in 22 days. It’s easy to strip down for tight spaces, like our shower scene. And it’s amazingly sensitive. We got plenty of shots with just practical lights. At ISO 800 the picture was beautiful—and still looking good at ISO 1200.”

“When you see the incredible dancing combined with 3D, it’s astounding.”

—Michael Barrett, DP, 3D feature “Battle of the Year: The Dream Team”

“We will have thirty-five days to do this movie. The script is 132 pages and we are going to need about 40 setups a day. Our cast consists primarily of b-boy dancers who have never acted before. There will be almost no prep time with the cameras because they ship to France. And, oh yeah, it’s going to be 3D. What could possibly go wrong?

“I was really surprised. I think the only downtime we had was our first day while we were still learning the system. After the second day, everything just went so smoothly. This was my fourth 3D film. Every other 3D experience you hear stories and I could tell you: ‘this went wrong, that went wrong.’ It wasn’t like we had fewer of those problems. We didn’t have any of them. Your main goal as a filmmaker is to tell a story, to convey emotion, to be true to those elements. The less attention you can pay to the technical aspects, the more you can focus on the storytelling. It certainly helps when you can rely on your cameras and equipment.

“We had six Sony F3s on 3ality™ TS-35 rigs, mostly on dollies, sometimes on Steadicam®. We had a few Sony TD300 camcorders for extra mobility. With the exception of the dance sequences, the 3D experience in ‘Battle of the Year’ will not be about gimmicks and gags so much as being more in that reality. In the climactic Battle, these guys are doing incredible feats with their bodies that you can’t imagine are physically possible. With the music and the tremendous energy of the crowd combined with the 3D, it’s pretty astounding.”

Built on the XDCAM EX platform

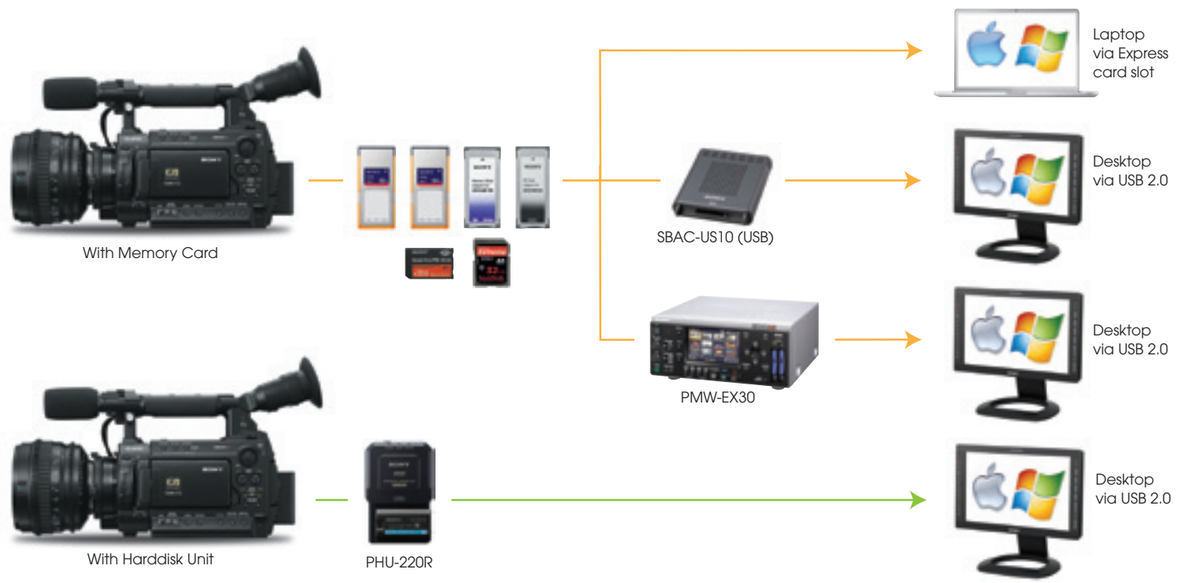
Your production isn't finished when the shooting stops. That's why the PMW-F3 is part of the robust XDCAM EX production platform, which includes reliable SxS recording media, compatible studio decks, direct-to-edit operation with major nonlinear editors and more.

By including XDCAM EX recording and two slots for solid-state SxS memory cards, the F3 offers a proven, versatile workflow solution right out of the box. Here is full-resolution 1920x1080 progressive scan imagery. For vivid detail, brilliant color and lifelike motion, Sony's XDCAM EX system records 4:2:0 signals at a choice of 25 or 35 Megabits per second. At 35 Mbps, you can capture up to six hours of material on a pair of 64 GB cards. Approximately 60 GB (64, 424, 509, 400 bytes) is available per card. A portion of the card capacity is used for system files and may vary.

XDCAM EX recording is easy to handle in every respect, from the solid-state SxS memory cards to the network-friendly data rates to the NLE-friendly codec.

A file-based platform of proven quality, efficiency and stability.

The F3 is your gateway to the complete XDCAM EX production platform.



SxS recording media

While CompactFlash® cards are consumer media, Sony SxS cards are specified, designed, and built by professionals for professionals. As Sony XDCAM EX users will tell you, SxS media is durable. For the highest performance, the new SBP-64A SxS PRO card reads and writes at speeds up to 1.2 Gbps through an ExpressCard slot. This means a fully recorded card can be ingested into a laptop in approximately eight minutes. (Based on Sony internal testing. Transfer speed dependent on host hardware.)

Recording Time	SxS PRO		SxS-1	
	SBP-64A	SBP-32	SBS-64G1A	SBS-32G1A
HQ (35 Mbps)	200min	100min	200min	100min
SP (25 Mbps)	280min	140min	280min	140min

Sony PHU-220R harddisk unit

Another XDCAM EX recording option is Sony's PHU-220R professional harddisk unit, which plugs directly into one of the two SxS card slots. This high-quality, shock-resistant module captures up to twelve hours of content at 35 Mbps. (Use the Drive Select switch to achieve maximum recording time.) It's ideal for direct recording or for backing up SxS cards straight from the camera.

With the PHU-220R you can enjoy the excellent cost-per-gigabyte ratio of recording to spinning harddisk without compromising on performance. The recorder offers several features that keep the unit recording even under adverse conditions such as low temperatures, vibration, and even camera drops.

Sony PHU-220R
Professional harddisk unit

Straight to edit

In the edit bay, the XDCAM EX codec provides straight-to-edit operation with leading NLEs from Sony, Avid, Apple, Adobe and Edius. The modest bitrate of XDCAM EX recording also enables fast, easy file transfers over data networks and affordable storage on hard disk arrays. Instead of burdening your production with data wrangling and backup headaches, Sony provides robust, reliable solutions.

Cinémon plug-in for Final Cut Pro 7

Final Cut Pro® 7 users can take advantage of Sony's affordable Cinémon® plug-in for native, straight-to-edit operation—no need to rewrap files. The plug-in provides a host of useful capabilities:

- Native playback of XDCAM EX files in FCP
- Playback directly from SxS cards
- Playback XDCAM EX files in QuickTime (with FCP installed)
- Drag and Drop or File Import directly to FCP
- Quicklook viewing of XDCAM EX files in Finder
- MOV rendering with FCP render engine
- MXF rendering using XDCAM Transfer tool

“A full set of cinematic tools and great sensitivity.”

—Zach Zamboni, DP, “Anthony Bourdain: No Reservations” and “The Layover”

“‘No Reservations’ has progressed from Panasonic DVX100s and Sony 2000 DV cameras to HVX200, Sony Z7U, and then Sony EX1s and EX3s with Canon 7D and 1D mixed in. With the Sony F3, I feel the shows are finally looking the way we always intended, entirely in digital 35 mm. Travel is supposed to be cinematic. In the F3 we have affordable Super 35 in a camera I can truly work on my shoulder and has all the functionality of professional video. We have access to great PL lenses coupled with terrific sensitivity and low noise. SxS integrates into our existing workflow.

“The sensitivity of the F3 is terrific. On ‘No Reservations’ we find ourselves in every sort of scenario, and often unexpected ones. Sensitivity is very important in situations where you don’t have a lot of time or control, or where you want to tread lightly. Bourdain often has dinner in the homes of ordinary families, people who have never been in front of the camera. Intensive lighting can be intimidating for them. The F3’s sensitivity allows us a smaller lighting footprint, which helps our hosts relax and feel a bit less like there’s a camera crew at the dinner table.

“We record native XDCAM EX 4:2:0 onto Sony SxS cards. To eliminate data wrangling in the field, we always travel with enough cards for the whole show—at least 70 hours. The EX stuff is very dependable. We’ve shot in 120 degree heat in Iraq, 99% humidity in Singapore, beaches, boats, and the snow—places where other cameras would certainly shut down. We’ve never lost a single frame. Post is very happy with the SxS card workflow.”

The perfect companion for the F3:

The Sony SR-R1 is the ultimate companion for the PMW-F3. Only the SR-R1 captures the full range of metadata available from the F3. Only the R1 captures clips with exactly the same timecode, start frame, stop frame and filenames as the onboard SxS cards. This is way beyond Rec Trigger. Only the R1 offers the superb quality of SR Codec recording onto Sony's remarkable SRMemory cards. And the R1 is the only recorder in its class to support 1080/60p.

- **In perfect sync with the F3.** Thanks to a unique communication protocol, the SR-R1 captures exactly the same timecode, start frame, stop frame and filenames as the onboard SxS cards.
- **SR Codec recording.** Uncompressed data is a fire hose that can quickly overwhelm your on-set storage, your server space and your network bandwidth. That's why so many of today's top digital cinema projects are mastered with the HDCAM SR™ compression codec (MPEG4 SStP). The SR-R1 applies this legendary codec to tapeless, file-based recording. Space-saving 220 Mbps SR-Lite and 440 Mbps SR-SQ modes are standard, while Sony offers the option of visually lossless 880 Mbps SR-HQ. Industry golden eyes cannot spot the difference between SR-HQ and uncompressed.
- **Overcranking at 17-60 fps.** Will enable gorgeous slow motion. Expected in F3 firmware update 1.4
- **Uncompressed DPX recording.** As an option, the R1 captures your images as a sequence of uncompressed DPX frames at 10 bits of depth and 4:2:2 or 4:4:4 color coding.

The first in a new generation of SRMASTER recorders.

SR-R1 SRMASTER recorder

- **MXF file-based recording.** When recording with the SR Codec, the SR-R1 uses industry-standard MXF wrappers with the same simple data structure as XDCAM HD 4:2:2 files.
- **File playback on a laptop.** While the SR Codec requires heavy computation on the recording side, it's amazingly easy to play back. Windows® and Macintosh® computers can decode the files using Sony's SR Viewer software, a free download.
- **Huge capacities; long loads.** The capacity of SRMemory cards is enormous: up to 1 Terabyte on a single card. This enables a single card to record up to 8 hours of material at 220 Mbps.*
- **Insanely fast file transfers.** Pity the data wrangler waiting hours for backups to complete while the rest of the crew is ordering their second round of drinks. Sony saves the day with guaranteed read/write speeds of up to 5.5 Gbps. You can transfer up to 8 hours of material (1 TB) in just 30 minutes.*
- **Complete infrastructure.** Sony looks beyond individual products to comprehensive workflows. The SR-R1 recorder is designed to work with a full line of SRMemory cards and the entire SRMASTER product line, including the SRPC-5 and SR-PC4 data transfer stations as well as the remarkable SR-R1000 memory storage unit, which can handle up to four simultaneous stereoscopic 3D HD streams.
- **Native editing and finishing.** The SR codec is supported for direct editing in Sony Vegas. Using free plugins, edit natively in Apple Final Cut Pro® 7, and the Avid platform. Finish in DaVinci Resolve, Filmlight Baselight, all without transcoding.

Shown is SR-D1 SRMemory reader

SRMemory Cards

The SR-R1 recorder accepts SRMemory™ cards, which deliver capacity, transfer speed and data security far beyond the ordinary. Sustained write speed is up to 5.5 Gbps. Made possible by dedicated memory controller circuits inside each card, this speed is a vital advantage when you're backing up your original camera masters after a day's shoot. The maximum capacity of 1 Terabyte (1,000 GB**) is a benchmark that leaves conventional media cards far behind.

Robust workflow

The SRMASTER platform works with the SR Codec's established postproduction ecosystem and offers a rich choice of data transfer options. For example, the SR-R1 supports a faster-than-real-time file transfer interface, called SRExpress. Offered in cooperation with AJA, SRExpress uses 3G-SDI to connect from the R1 to the AJA® Io XT or KONA 3G units. With this setup, you get five times faster-than-real-time transfers. For example, an hour of SR Lite material at 24p can transfer in just 10 minutes. (Transfer speed dependent on host hardware.)

SRMASTER data transfer options also include the SR-D1 memory drive, the SR-PC4 and SRPC-5 data transfer units and the SR-R1000 storage unit.

* Transfer speed dependent on host hardware. A portion of card capacity is used for system files and may vary.

**1 GB equals one billion bytes, a portion of which is used for data management functions.

"The most popular camera we've ever had."

—Douglas Wellman,
Assistant Dean,
USC School of Cinematic Arts

Director of photography David Aristizabal (left), director Tyrell Lloyd (center) and sound recorder Mark Manallo (rear) on the set at USC, with Sony F3s on a 3D FilmFactory rig.

"I've been here long enough to remember when digital was a sign of Satan. We had a program where students learned the fundamentals on 8mm, then moved up to 16 and 35. But we've been all-digital for years now. Until recently, the F900 was our top camera. Now it's the F3.

"Everybody loves this camera. The quality of the image is absolutely marvelous. I remember going to a thesis shoot and looking at the monitor. The scene was in a basement: all grays and deep shadows. But with the F3, the DP captured it all.

"The F3 is so sensitive you don't need to take the whole studio out with you. For thesis films, students have the opportunity to rent high-end 35mm and HD camera packages, but most of them come with multiple boxes of accessories. With the Sony F3, it's just two or three. The F3 gives us the flexibility of interchangeable lenses, the teaching advantages of full manual operation, Super 35 depth of field and tremendous latitude with S-Log. The F3 must be the most popular camera we've ever had. I can't keep them on the shelf."

In cinematography, you need the right connections

HD-SDI A:
Here is the full quality of uncompressed imagery with 10 bits of precision and 4:2:2 color sampling. You can apply a monitor LUT to the SDI output while recording S-Log to the A output. The F3 even provides 3G-SDI, enabling a single cable to transport signals that usually require two: RGB 4:4:4 or 1080/60p 4:2:2.

HD-SDI B:
For the dramatic effects of overcranking, dual-link HD-SDI combines the A and B outputs to support uncompressed 1080/60p of 10-bit 4:2:2 signals. For the most demanding green screen compositing and high-end color correction, the dual links provide the spectacular color resolution of uncompressed 10-bit 4:4:4 RGB output to external recorders, such as Sony's SR-R1 SRMASTER field recorder.

VIDEO OUT
The camera provides quick and easy analog output for HD-Y in HD output mode or composite video in SD mode.

They're not just jacks; they're an open door to a world of possibilities.

SDI OUT
The SDI output is capable of providing SD or HD signals up to a superlative uncompressed 10-bit 4:2:2. The output supports real time monitoring at full resolution with or without LUTs. And it enables you to supplement the camera's on-board XDCAM EX recording with outboard capture. In addition, the HD-SDI signal includes SMPTE RDD18 acquisition metadata—including ASC CDL (Color Decision List) information.

HDMI Output
The HDMI™ output supports connection up to 1080/60p for consumer televisions and compatible outboard recorders.

i.LINK® Interface
The i.LINK IEEE 1394 interface transfers DVCAM® or HDV™ signals to and from compatible PCs and hard drives.

USB Mini-B
Connects the F3 directly to a computer.

USB Type A
Connects to the optional CBK-WA01 Wi-Fi Adaptor for planning metadata workflow.

Remote Control
Whether it's DIT control in film-style shoots or camera shading in live television, you can "paint" the camera remotely using standard Sony RM-B150, B170 and B750 remote control boxes, as well as the RCP-1000/1001 series and RCP-1500/1501/1503 series remote control panels. These remote controls are compatible with the F65 and F35 for multi-camera shoots. The sleek RM-B150 operates 29 functions while the RM-B750 controls 52 functions.

3D-Link
The PMW-F3 was built from the ground up for stereoscopic 3D production. Sony's optional CBK-3DL01 upgrade enables 3D-Link functionality, which allows a single remote control to operate a pair of cameras. Included with CBK-3DL01 is a 10-pin cable that transfers genlock, timecode, and camera settings for matched imagery, synchronized operation and simultaneous recording start/stop. There's also unified iris, focus, and zoom control with compatible lenses.

TC IN/OUT
A true professional, the F3 provides BNC connectors for SMPTE Time Code input and output.

GENLOCK IN
The PMW-F3 is a team player, ready to work in multi-camera productions with its Genlock Input.

“The F3 is a game-changer. It really levels the playing field.”

—Matthew Cherry, Director, “The Last Fall”

“I entered the NFL as an undrafted free agent and was out after three years. It turns out that’s the average pro football career. After moving over to film production and directing some music videos, I wanted to make a movie about my NFL experience. But I didn’t have studio backing. I reached into my own pocket, did some online crowdfunding and eventually got the support of another ex-player. That’s how ‘The Last Fall’ came to be.

“I wanted it to look like any other movie you’d see on a Friday night. But I didn’t have a studio budget. The project never would have happened without the Sony F3. It’s a game-changer, a camera that really levels the playing field. Now you don’t need a million dollars to make your movie.

“We had a two ton package—small enough to fit in the van. There were three people on the camera crew, plus three on lighting and grip. Over the course of 15 days, we shot motion control, time lapse, techno crane, handheld, in cars, you name it. The size and weight of the F3 really helped us make our days. For the entire shoot we had no camera issues. None. At initial screenings, people have been amazed. And we’re on our way. ‘The Last Fall’ premiered last month at SXSW and we’re in negotiations for distribution.”

Features that make a difference

User upgradeable firmware

You can upgrade the firmware of the PMW-F3 to provide new capabilities and conveniences. In fact, Sony actively solicits end-users for suggestions as to how to make the system even better.

- **v1.00: Included standard**
  - o Released with the F3 at introduction
  - o 4:2:2 1080/50p, 60p, other base features

- **v1.10: Free update**
  - o Required for S-Log operation, 4:4:4 output and the CBK-3LD01 upgrade.
  - o Four Look Up Tables (LUTs) and five user LUTs for S-Log monitoring
  - o 4:2:2 10-bit 1080 23.98/25/29.97PsF
  - o Enables Dual-Link HD-SDI output
  - o Simultaneous HDMI and HD-SDI output
  - o Planning metadata function
  - o Menu navigation via the S&Q dial
  - o Display of Dual-Link output signal format in the Status window
  - o Vertical cursor movement in Thumbnail mode
  - o Timecode output follows the internal Timecode Generator
  - o One-click adjustment of LCD/EVF Peaking, Brightness and Contrast

- **v1.20: Free update**
  - o Enables S-Log EI mode, a feature originated on Sony's high-end F35 camera as "Cine EI mode"
  - o Adjusts monitoring gain from 800 EI (0 dB) to 3200 EI (+12 dB)
  - o Optimizes the monitor picture without affecting the recorded image

- **v1.31: Free update**
  - o Link A HD-SDI enabled for 4:2:2 output
  - o S-Log 4:2:2 1080 50/59.94p output on Dual-Link or 3G-SDI
  - o Simultaneous output of S-Log (Link A) and a monitoring LUT (SDI)
  - o Required for use with Sony's SCL-Z18X140 14x zoom lens

- **v1.40: Free update, May 2012**
  - o 4:2:2 1080/60p Slow & Quick Motion output with SR-R1 recorder enabling 17 to 60 fps recording with SR Codec in Full HD resolution, with or without S-Log encoding
  - o Same file naming on SxS media and SR-R1 recorder
  - o Same metadata on SxS media and SR-R1 recorder
  - o S-Log Gamma selectable in Picture Profile
  - o SCL-Z18X140 power zoom range limiter to avoid hitting matte box, vignetting with retainer ring
  - o Supports RM-B170 remote
  - o Supports XQD™ cards as secondary media using Sony QDA-EX1 ExpressCard™ adaptor

Built-in ND Filters

Exterior day? You don't need a matte box and a stack of filters to apply Neutral Density (ND). The F3 has a built-in optical ND filter with a space-saving up/down slide mechanism and positions for Clear (Off), 1/8 ND (0.9), and 1/64 ND (1.8).

Over- and undercranking

Film cameras enable the cinematographer to vary the frame rate: overcranking for dramatic slow motion to emphasize a crucial scene or undercranking for an often-humorous fast motion effect. Sony's Slow & Quick Motion delivers this capability for native 24p projects. The internal recorder supports frame rates of up to 30 fps at 1080p resolution or up to 60 fps at 720p resolution. The image sensor and image processor are also capable of 1080/60p high-speed shooting, which you can capture with a compatible outboard recorder via Dual-Link HD-SDI output. This overcranked signal can even be S-Log encoded (requires v1.31 firmware).

Slow Shutter

The PMW-F3 is already famous for its ability to generate a usable picture in amazingly low light. You'll find the camera reproducing scene colors that were invisible to the naked eye. To boost low-light performance further still, Sony's Slow Shutter accumulates from two to eight frames and records them as one. This not only increases camera sensitivity but also produces a ghost-like high-speed blurring of moving subjects.

Time lapse

To make a flower bloom before your eyes, speed the sunrise, or make the clouds rush by, the F3 shoots time lapse. The Interval Recording function captures individual frames at preset intervals from 1 to 50 seconds, 1 to 50 minutes or 1 to 24 hours.

Selectable Gamma Curves

Choose gamma curves to handle contrast and give a specific "look" to your image. In addition to six standard gamma curves, there are four Hyper Gamma curves identical to those on other CineAlta™ cameras. Other gamma choices include Rec. 709, SMPTE 240M, DVW, x3.5, x4.5 and x5.0 gain.

Picture Profile

Customize the F3 by saving up to ten different Picture Profiles to match familiar shooting situations, such as interior day, exterior night and office fluorescent. This enables you to store your carefully-tuned matrix parameters, color correction, detail, knee and gamma. The camera saves your Picture Profiles internally, and displays them on the LCD panel at the touch of a button. In addition, you can share any Picture Profile by saving it onto an SxS card and copying from camera to camera.

Power efficient, small and light

Even at high data rates, the camera is extraordinarily kind to your battery pack. Power consumption is a remarkably low 24 watts. Depending on conditions, you can get up to three hours of recording with a single BP-U60 battery (sold separately)*. The camera runs cool, minimizing fan noise and video noise. The PMW-F3 has a modest footprint and weighs just 5 lbs., 4 oz. (2.4 kg).

Supplied XDCAM Browser software

Compatible with Microsoft® Windows® and Macintosh® computers alike, Sony's supplied XDCAM® Browser software lets you browse XDCAM EX™ clips, select takes, make metadata notes and rewrap files as MXF. (Updates are available at sony.com/xdcam-software). An extra-cost plug-in from MainConcept AG also enables you to convert file formats, for example from 4:2:0 35 Mbps to 4:2:2 50 Mbps. (Visit: mainconcept.com/plugin4xdcambrowser)

Optional CBK-MH01 Monitor Hood

With 1.4x magnification, the optional LCD monitor hood helps achieve precise focus, even in exterior day and even with shallow depth of field. By using the LCD screen, you're not tying up an HD-SDI output. The hood quickly flips up when you want to share the picture with others. Other features include diopter adjustment, angle adjustment and quick release.

*Actual battery life may vary upon product settings, battery and environmental conditions.

"The F3 is a worthy point of entry into the ACES workflow."

— Curtis Clark, ASC

"Both 10-bit Cineon encoding and Rec. 709 HD have notable limitations when it comes to maintaining the ultimate image fidelity throughout post. In response, the Academy of Motion Picture Arts and Sciences has developed an image interchange framework called ACES (Academy Color Encoding System). It's a set of encoding specifications, transforms and recommended practices that enable the creation and processing of high fidelity images of greater dynamic range and wider color gamut with greater precision. A crucial part of ACES is the Academy Color Encoding Specification which uses 16-bit half-float precision.

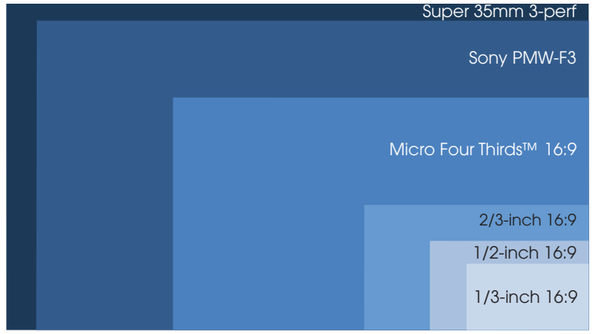
"While Rec. 709 HD recordings don't tap the potential of ACES, the Sony F3 is well-positioned to take advantage of ACES. First, the imager exceeds 12 stops of latitude and captures a wide color gamut. Then the camera's S-Log encoding, 10-bit output and 4:4:4 capability far exceed Rec. 709 to ensure that everything the imager sees can be recorded.

"As was done for Sony's high-end F35, SRW-9000PL and the new F65, an Input Device Transform (IDT) has been developed specifically for the F3. This accurately converts image output from the F3 into ACES images, which enables F3 images to be processed with the greatest fidelity and highest precision."

Technical Notes

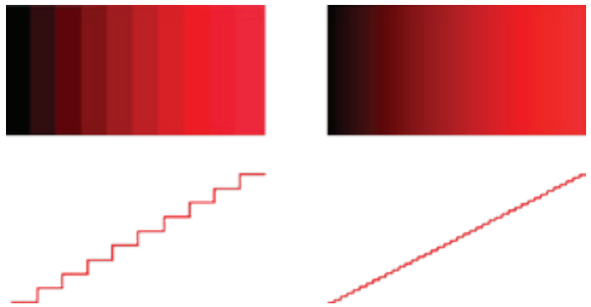
Size matters

The Sony PMW-F3 stands at the convergence of traditional film production and digital acquisition. Depending on your point of view, the F3 sensor is either slightly smaller than the Super 35mm 3-perf frame or a whopping six times the area of the 2/3-inch sensors used in conventional 3-chip broadcast cameras. The added size benefits you in both picture quality and optics. In terms of picture quality, you get superior highlight handling, superior low-light sensitivity and superior low-noise performance. Optically, it's far easier to control depth of field at apertures other than full wide open. And it's easier to find lenses with a wide angle of coverage.



8-bit on-board and uncompressed 10-bit outboard recording

Like most digital camcorders, the F3 records images with 8 bits of precision, courtesy of the built-in XDCAM EX recorder. This provides roughly 250 tonal gradations for each channel, for 16 million total colors. XDCAM EX recording has been hailed for quality and practicality in reality TV, network news and electronic field production. For the most demanding cinema projects, the F3 goes even further with available 10-bit output per color component. You get four times as many gradations per channel and over 1 billion total colors for incredibly supple rendition of gently shaded areas on the screen, especially skin tones and sky.



Compared to 8-bit recording (left), 10-bit recording provides four times the tonal values per channel, for smoother, more natural gradations. (8-bit color banding is exaggerated for illustration purposes.)

Color sampling at 4:2:0, 4:2:2 and 4:4:4

The on-board XDCAM EX recorder of the PMW-F3 captures color with 4:2:0 sampling. In the HQ recording mode, this means that the Y (black-and-white or luminance channel) records a sample for every pixel in the 1920 x 1080 array, while the Blue color difference (Cb) and Red color difference (Cb) channels capture every second pixel on every second scanning line. Because the human eye is far less sensitive to color detail than it is to black-and-white, the 4:2:0 color encoding scheme delivers superb pictures while enabling digital compression at very efficient data rates.

4:2:0 sampling. The three rectangles are in proportion to the number of samples recorded in each channel.

The supplied HD-SDI outputs provide an uncompressed 10-bit 4:2:2 signal to outboard monitors and recorders. 4:2:2 means that Cb and Cr samples are provided for every second pixel on every scanning line. Compared to 4:2:0, this sampling is more robust and better suited to bluescreen/greenscreen compositing.

4:2:2 sampling doubles the color bandwidth.

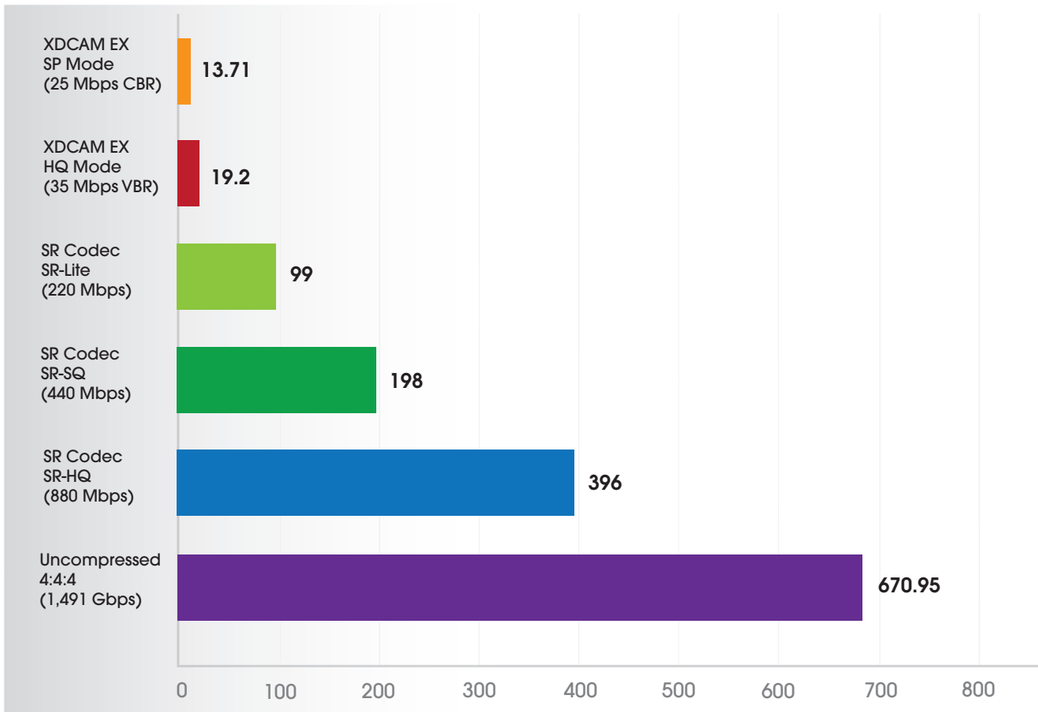
For the ultimate in outboard recording, the F3 provides an uncompressed 10-bit 4:4:4 RGB signal to external recorders. This is complete color information. In the place of Y/Cb/Cr channels, the system uses Red, Green and Blue channels, each of which carries the full 1920 x 1080 array.

4:4:4 RGB sampling delivers full color bandwidth for the most demanding applications

Bit rates and budgets

With a wide-open choice of internal and external recording options, the PMW-F3 supports an incredible range of recording bit rates. Be forewarned that the Gigabytes can really add up. Your choice of bit rate will dictate the recording media capacity you'll need, the hard disk storage your production will occupy and the bandwidth required to move assets across a data network.

Gigabytes of storage for one hour of material



Uncompressed 1920 x 1080 recording can require nearly 700 GB for a single hour of material. Compression codecs, such as the built-in XDCAM EX recording, offer enormous cost efficiencies.

PMW-F3 Optional Accessories

CBK-MH01
EVF Monitor Hood

AC-DN10
AC Adaptor

BC-L70
Two-channel
Simultaneous Charger /
Power Supply

BC-U2
Battery Charger

BP-U90
Lithium-ion Battery
Pack (85 Wh)

BP-U30
Lithium-ion
Battery Pack

BP-U60
Lithium-ion Battery
Pack (56 Wh)

BC-U1
Battery Charger
(For BP-U30/U60)

RCP-1000, 1000/1, 1500, 1500/1
Remote Control Panels

RM-B170
Remote Control Unit

RM-B750
Remote Control Unit

MS-HX8G, HX16G, HX32G
Memory Stick PRO-HG Duo
"HX" Series

San Disk
Class 10 SDHC Card

SBP-32/16
SxS PRO Memory Card

SBS-32G1A/64G1A
SxS Memory Card

MEAD-SD01
Media Adaptor for
San Disk Class 10 SDHC
Memory Card

MEAD-MS01
Media Adaptor for
Memory Stick PRO-HG
Duo "HX" Series

SBAC-US10
SxS Memory Card USB Reader/Writer

UWP-V1
Lav Mic, Bodypack TX and
Portable RX Wireless System

CBK-3DL01
3D-Link Software Option

PHU-220R
Professional Harddisk Unit

ECM-673/9X
Shotgun Microphone

ECM-680S
Stereo Shotgun
Microphone

PL mount cinematography

Carl Zeiss

Master Primes

Ultra Primes

Compact Primes

Light Weight Zoom LWZ-2

Cooke

S4/i Primes

5/I Primes

Panchro/i Series

S4/I CXX Wide Angle Zoom

Angenieux

Optimo DP 16-42 mm

Optimo DP 30-80 mm

Optimo DP 24-290 mm

Optimo DP 17-80 mm

Fujinon

HK3.1x14.5

HK4.7x18

HK7.5x24

HK5.3x75

Canon EF Cinema Lenses (PL Mount)

CN-E30-300 mm T2.95-3.7 L SP

CN-E14.5-60 mm T2.6 L SP

CN-E15.5-47mm T2.8 L SP

CN-E30-105 T2.8 L SP

Sony

SCL-P11X15 11-16 mm T3.0 Wide Angle 1.5X Zoom

50mm T2.0 Prime, 35 mm T2.0 Prime, 85 mm T2.0 Prime
(Supplied with PMW-F3K)

The PMW-F3 is compatible with all PL mount lenses using the supplied PL mount-to-FZ mount adaptor.

Sony does not support or endorse third-party accessories. Inclusion is for information purposes only.

PL mount is just the beginning

Canon EF Lenses (via third party adaptor)

Canon EF Cinema Lenses (EF Mount, via third party adaptor)

CN-E14.5-60 mm T2.6 L S

CN-E30-300 mm T2.95-3.7 LS

CN-E15.5-47mm T2.8 L S

CN-E24 mm T1.5 L F

CN-E50 mm T1.3 L F

CN-E85 mm T1.3 L F

CN-E30-105 T2.8 L S

Nikon Nikkor DX Lenses (via third party adaptor)

Sony

SCL-Z18X140 18-252 mm T3.9-6.8
Power Zoom (FZ Mount)

Adaptors

MTF

MTNIKGF3
Nikon G/DX to FZ Mount

MTCANFDF3
Canon FD to FZ Mount

MTB4F3
2/3-inch B4 to FZ Mount

Birger Engineering

Canon
EF to FZ Mount

IB/E Optics

HDx35 2/3-inch
B4 to PL mount optical

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PMW-F3 Technical Data

Recording Format

HD/SD	REC mode	Recording Resolution	Frame Rate							Audio Format	Recording Time (w/ 64GB SxS-1)
			NTSC mode				PAL mode				
			59.94p	59.94i	29.97p	23.98p	50p	50i	25p		
HD	HQ 35 Mbps (VBR)	1920×1080	–	Yes	Yes	Yes	–	Yes	Yes	Linear PCM 16 bit/48 kHz 2 CH	Approx. 200 min
		1440×1080	–	Yes	Yes	Yes	–	Yes	Yes		
		1280×720	Yes	–	Yes	Yes	Yes	–	Yes		Approx. 280 min
	SP 25 Mbps (CBR)	1440×1080	–	Yes	–	Over 59.94i	–	Yes	–		
SD	DVCAM 25 Mbps (CBR)	720×480	–	Yes	29.97 PsF	–	–				Approx. 260 min
		720×576	–				–	Yes	25 PsF		

Output/ Input Combination List

HD/SD	Recording Format	SDI/HDMI™/i.LINK I/O Select	i.LINK output	SDI output	HDMI output	Video output	i.LINK input
HD	HQ 1920/ HQ 1440/ HQ 1280	HD SDI	–	HD	–	HD-Y	–
		SD SDI	–	SD	–	Composite	–
		HD HDMI	–	–	HD	HD-Y	–
		SD HDMI P	–	–	SD Progressive	–	–
		SD HDMI i	–	–	SD Interlace	Composite	–
		SD HDMI i & DVCAM	DVCAM	–	SD Interlace	Composite	DV (Display Only)
	SP 1440	HD SDI	–	HD	–	HD-Y	–
		SD SDI	–	SD	–	Composite	–
		HD HDMI & HDV	HDV	–	HD	HD-Y	HDV
		SD HDMI P & HDV	HDV	–	SD Progressive	–	HDV
		SD HDMI i & HDV	HDV	–	SD Interlace	Composite	HDV
		SD HDMI i & DVCAM	DVCAM	–	SD Interlace	Composite	DV (Display Only)
SD	DVCAM	HD SDI	–	–	–	–	–
		SD SDI	–	SD	–	Composite	–
		HD HDMI & HDV	–	–	–	–	–
		SD HDMI P & HDV	–	–	–	–	–
		SD HDMI i & HDV	–	–	–	–	–
		SD HDMI i & DVCAM	DVCAM	–	SD Interlace	Composite	DV (Display Only)

Specifications

General			
Dimensions (W x H x D)	6 x 7 1/2 x 8 3/8 inches (151 x 189 x 210 mm) (PMW-F3L, without projection)		
Weight	5 lb 4 oz (2.4 kg) (Camera only)		
Power Requirements	DC 12 V (10.5 V to 17.0 V)		
Power Consumption	Approx.24.0 W (Typical) (REC mode, HD-SDI Dual Link On, EVF On, LCD Monitor Off)		
Operating Temperature	32°F to 104°F (0°C to 40°C)		
Storage Temperature	-4°F to +140°F (-20°C to +60°C)		
Continuous Operating Hours (with BP-U60)	Approx.130 Min (HD-SDI Dual Link On) Approx.170 Min (HD-SDI Dual Link Off)		
Lens (included in PMW-F3K only)			
Focal Length	35 mm	50 mm	85 mm
Aperture Value	T2.0 to Close	T2.0 to Close	T2.0 to Close
Minimum Shooting Distance	0.35 m	0.5 m	0.85 m
Filter Diameter	95 mm	95 mm	95 mm
Camera			
Image Sensor	Super 35mm Equivalent Single Chip Exmor CMOS Image Sensor		
Built-in Filter	OFF: Clear, 1: 1/8ND, 2: 1/64ND		
Sensitivity (2000 lux, Reflection ratio 89.9%, 1920 x 1080/59.94i)	F11 (Typical)		
S/N Ratio (1920 x 1080/59.94i)	63 dB (Typical)		
Lens Mount	PL mount (with supplied lens mount adapter)		
Shutter Speed	1/32 - 1/2000 sec		
Slow Shutter	2, 3, 4, 5, 6, 7, 8 frame accumulation		
Slow & Quick Motion 720p	1 - 60 fps selectable (17- 60 fps when HD-SDI Dual Link is active)		
Slow & Quick Motion 1080p	1 - 30 fps selectable (17- 30 fps when HD-SDI Dual Link is active)		
White Balance	Preset, Memory A, Memory B/ATW		
Gain	-3, 0, 3, 6, 9, 12, 18 dB, AGC		
Gamma Curve	Standard Gamma x6, CINE Gamma x4, S-Log Gamma		
Input/Output			
HD/SD SDI OUT	BNC (x1) (HD-SDI/SD-SDI switchable)		
HD-SDI Dual Link OUT	BNC (x2) 4:2:2 1080 50/59.94p 10 bit output; 4:4:4 1080 25/29.97p 10 bit output		
VIDEO OUT	BNC (x1) (HD-Y signal or Composite signal)		
HDMI OUT	HDMI connector (Type A) (x1)		
i.LINK IN/OUT	IEEE1394 S400 4-pin Connector (x1)		
AUDIO IN	XLR Type 3-pin (female) (x2), LINE/MIC/MIC+48 V selectable		
AUDIO OUT	RCA (x2)		
GENLOCK IN	BNC (x1)		
TC IN/OUT	BNC (x1 each)		
DC IN	XLR type 4-pin (male) (x1)		
REMOTE	8-pin (x1)		
USB	Mini TypeB connector (x1)		
PHONES	Stereo Mini Jack (x1)		
Display			
View Finder	0.45 inch, Aspect Ratio 16: 9		
LCD Monitor	3.5 inch, Aspect ratio 16: 9, Hybrid (semi-transmissive) type		
Audio			
Built-in Speaker	Monaural		
Media Slot			
Type	ExpressCard/34 (x2)		
Interface	ExpressCard Compliant		
Supplied Accessories			
	PL lens mount adapter, Stereo Mic, Windscreen, IR remote, Shoulder Strap, CD-ROM (XDCAM Browser, SxS device driver software, PDF version operation manual), Operational Manual, Warranty card, PL lens kit (PMW-F3K only)		

SONY

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