SONY
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F55 CineAlta 4K the future, ahead of schedule

What happens when top engineers spend years consulting cinematographers and creating breakthroughs in sensors, image processors and recording media? The Sony F55. Here is a camera engineered to reward its owners now and far into the future. The Sony 4K image sensor incorporates a remarkable electronic frame image scan. You get superb dynamic range, the widest color gamut, and pristine image quality whether you shoot in HD, 2K or 4K. With the optional AXS-R5 recorder, you can even make the jump to incredibly precise 16-bit Linear RAW in both 2K and 4K. (2K with free v1.3 upgrade, expected September 2013.)

CAMERA

Shoot spectacular HD, 2K or 4K

Does a 4K camera make sense in an HD world? Perfect sense. Even if you're not planning on 4K production, the 11.6 total megapixels of Sony's 4K image sensor enable you to shoot gorgeous, super-sampled HD now and learn how to get the best from the camera. Then as 4K postproduction and distribution continue to gain traction, you'll be ready with built-in 4K recording. The F55 supports three major shooting scenarios.

- **Shoot, Record, Master and Distribute in stunning 4K.** You're ready for the more than 13,000 movie theaters with Sony Digital Cinema 4K projectors—and the new wave of 4K home entertainment. Sony is one of several companies that have launched 4K home televisions while cable, satellite and network operators are currently considering the prospect of 4K content delivery.

- **Shoot, Record and Master in 4K. Distribute in 2K/HD.** Derive your delivery format while preserving the original as a future-proof archive. Your master is ready for future 4K release.

- **Shoot in 4K. Record, Master and Distribute in 2K/HD.** Sony's 4K sensor gives you a gorgeous, super-sampled HD picture with visibly superior texture, color reproduction, detail and high-frequency contrast that ordinary HD cameras cannot touch. (2K recording with free v1.3 upgrade, expected September 2013.)

4K on-board recording—and three other formats

While the F55 offers the option of glorious 16-bit 4K and 2K RAW recording using the outboard AXS-R5 recorder, not every production is prepared to take advantage. That's why the camera offers four internal recording formats, including the first 4K recording facility built into the camera itself. Internal modes range from 50 Mbps to 240 Mbps (at 24p), for images from HD to 2K to 4K. (2K available with the free v1.3 upgrade, expected September 2013.) You can choose the image type, codec, processing complexity and file size that match the needs of each project.

- **MPEG-2 HD.** The de facto standard for television production. 50 Mbps at 24p.

- **XAVC HD.** The next generation of H.264/AVC Intra-frame coding. 90 Mbps at 24p.

- **SR File.** A fixture in Hollywood production, post production and program exchange. 176 and 352 Mbps at 24p. Available with free v1.2 upgrade, expected July 2013.

- **XAVC 4K (and QFHD).** Now you can record 4K on to Sony's SxS® PRO+ media. 240 Mbps at 24p. QFHD available with free v1.4 upgrade, expected December 2013.

And the future is bright. Sony has a roadmap of planned firmware upgrades: version 1.2 (expected July 2013), v1.3 (expected September 2013) and v1.4 (expected December 2013). Each is available at no extra charge to users with an internet connection. Each is user installable, which means you won't need to bring the camera in to a service center to reap the benefits. And each brings you even more frame rates, more operating features and more recording options.

4K/2K RAW options

The ultimate camera capture system would record every nuance of light and shadow from the image sensor, preserving every detail from every pixel for full exploitation in post-production. If you want the maximum flexibility that 4K and 2K RAW deliver, Sony's optional AXS-R5 Access Memory System recorder is a remarkable choice. Unlike some RAW systems, Sony's 16-bit linear capture preserves more tonal values than the human eye can differentiate. This is also the ideal match for the 16-bit linear ACES workflow. For simplified creation of offline proxies, the camera even provides simultaneous onboard recording to SxS® cards using the same start frame and stop frame as the RAW recording.

With the F55, 2K RAW is not just a technical specification. It's a business model. Sony 2K RAW gives you everything you love about Super 35 cinematography with no crop factor, no telephoto conversion on your lenses. 2K RAW is a smart choice for HD productions and it's just one quarter the data of 4K RAW. (2K recording with free v1.3 upgrade, expected September 2013.)

The AXS-R5 has another clever advantage. Its HD-SDI output provides a closer-to-RAW live demoisaiced image for outboard monitors and recorders. This is a 4:2:2 10-bit digital signal with S-Log-2 encoding to protect highlights and shadows.

Electronic frame image scan

The traditional CMOS image sensor uses a "rolling" shutter that can result in images with unwanted distortions like motion skew and flash banding. That can be annoying, especially when shooting visual effects or 3D. Anything but typical, the F55 incorporates electronic frame image scan. Rolling shutter distortions aren't minimized, they're completely eliminated.

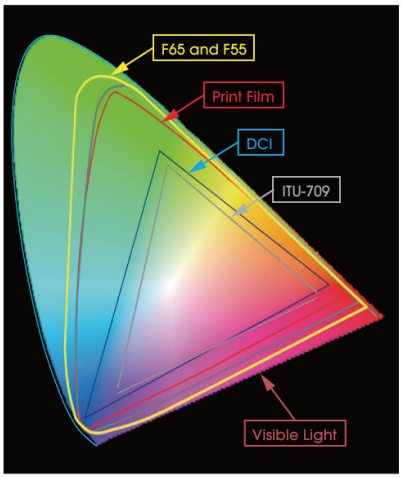
There's no trace of flash banding when nature's own strobe, lightning illuminates the second frame. (From the Stargate Digital production, Mahout.)

Vast exposure latitude

Cinematographers paint their images with light and shadow. So the ability to render tones from deepest shadows to brightest highlights is a crucial test of any digital camera. The F55 excels, with 14 stops of exposure latitude. DPs have noticed that the camera holds remarkable detail in the highlights, while noise in the blacks is extremely low. The result? Graceful rendering of scene contrast, even in searing sunlight. The camera is rated at ISO 1250 (S-Log 2 gamma, D55 light source). In fact, the camera is so sensitive that one cinematographer actually recorded starlight in exterior night scenes!

S-Gamut color system

Directors of photography and colorists are talking about Sony's S-Gamut color system, which made its debut on Sony's 8K flagship, the F65. DPs love how S-Gamut captures images that are closer to what the human eye actually sees. They appreciate the extraordinarily natural results with challenging mixed light scenes. They notice how S-Gamut is changing their approach to lighting. And they see how S-Gamut simplifies color correction.



The secret to the S-Gamut system is an often overlooked but fundamental component of the large, single-sensor camera: the color filter array (CFA), which screens incoming light so that each photosensor can detect Red, Green or Blue. Sony's S-Gamut system uses phenomenally pure CFA dyes to achieve a range of color that's not only wider than other digital cameras. It's even wider than motion picture print film.

Retaining maximum grayscale

Given all the effort Sony made to achieve 14 stops of exposure latitude, it would be a crime to crush this latitude in recording. That's why Sony gives you a choice of grayscale encoding.

- **16-bit linear RAW.** Preserve the maximum headroom for color correction. See everything the image sensor has to offer. Like other RAW recording, Sony's system captures a color sample for each photosite on the image sensor. Unlike some others, Sony's 16-linear system preserves more tonal values than the human eye can differentiate. As a result, your look isn't "baked in." It's fully open to creative manipulation.

- **S-Log 2 Gamma.** Postproduction can take advantage of the full range of grayscale values from the deepest shadows to the brightest specular highlights, thanks to Sony's latest S-Log 2 Gamma. While conventional video gamma preserves 109% of the sensor's nominal peak white, and Sony's original S-Log accommodates 800%, S-Log 2 extends all the way to 1300% of nominal peak white, to deliver the full 14-stop dynamic range of the camera.

- **Rec. 709 high definition.** Productions intended for television that plan little or no color correction may choose to take advantage of conventional Rec. 709 high definition, which is also available.

Viewfinders as revolutionary as the camera

It's ironic that with focus so critical, most operators are stuck with viewfinders and on-camera monitors that offer middling contrast and resolution. Sony changes all that with the F55. A new digital interface has given rise to a brilliant new series of viewfinders.

- **Amazing OLED: optional DVF-EL100.** Don't let the small size fool you. This 0.7-inch* viewfinder has the incredible clarity of 1280 x 720 High Definition. And resolution is just the beginning. Thanks to OLED technology, you get superb brightness, contrast and response. Features include focus magnification and an on/off switch for superimposed display characters.

- **Higher resolution, higher contrast: optional DVF-L350.** Take a major step forward in operating with the incredible image of this 3.5-inch* LCD viewfinder. Compared to previous Sony finders, this one has higher resolution (960 x 540) plus ten times the contrast. The finder is double-articulated. When holding your eye up against the camera is not an option, flip up the eyepiece for monitoring from the back of the camera or flip up the mirror for direct monitoring from the side.

- **Full HD: optional DVF-L700.** This compact 7-inch* LCD viewfinder provides high resolution when shooting in 2K and 4K, not to mention pixel-for-pixel 1920 x 1080 representation of your HD images. The monitor stands up to exterior day shooting with high brightness (1000 cd/m^2). HD-SDI input and output connect to other cameras, other sources and other monitors. The supplied Israeli arm enables mounting at almost any angle.

* Viewable area, measured diagonally.

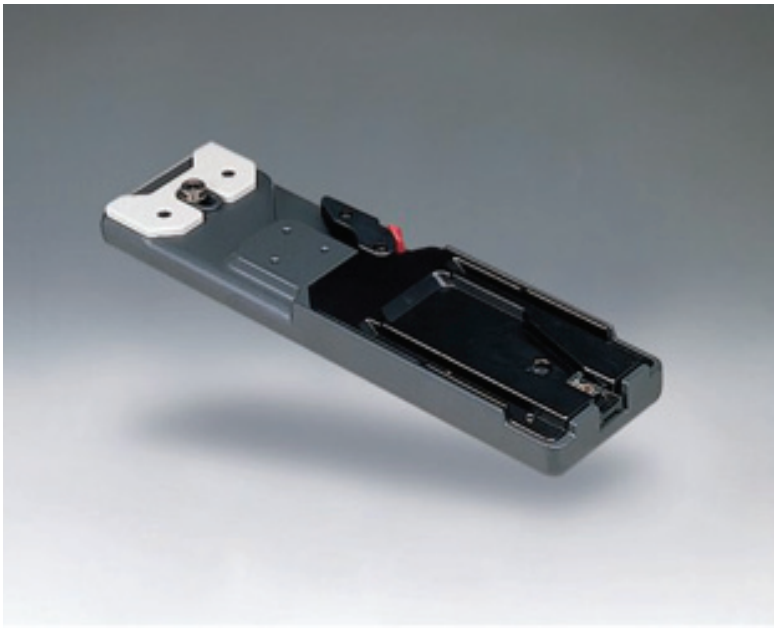
Modularity and versatility

Sony spent two years in close consultation with cinematographers and ACs. In particular, we focused on the ergonomics of handheld and shoulder-mounted shooting. The result is an ergonomic design unlike any previous Sony camera. It starts with a highly compact camera that builds up with modules to form an elegant, unified system.

- **Exceptional modularity.** The F55 is notably small, light and modular, letting you build up the right configuration for each job—or each shot. For example, you can add the optional AXS-R5 RAW recorder whenever you need it. Or go with internal 4K recording whenever size and weight are the highest priority.

- **Optional VCT-FSA5 shoulder rig with rosettes.** Sony's optional Sony shoulder rig with padded arch provides comfortable handheld operation hour after hour. The rig is sturdy, lightweight and features generous front-to-back adjustment for ideal weight balance. The side-mounted optional viewfinders also offer substantial front-to-back adjustment. The shoulder rig accepts 15 mm rods, while industry-standard rosettes on both sides enable quick and easy attachment of third-party hand grips and other accessories.

The camera is highly modular, a major advantage whenever size and weight are primary concerns.



For rapid changes from shoulder mount to tripod, the VCT-FSA5 shoulder rig snaps quickly and securely into the VCT-U14 tripod adaptor.

- **3D ergonomics.** Small size is particularly welcome in stereoscopic 3D shooting. The time code/genlock connections and XLR audio inputs are located in two modules that you can add or remove as needed. With the modules removed, the chassis is only slightly wider than a typical PL mount prime lens, perfect for both mirror rigs and side-by-side configurations.

- **Mounting threads.** For even greater versatility, Sony provides mounting threads to attach third-party accessories. For example, the bottom of the camera offers three 3/8-16 and three 1/4-20 threads. The top of the camera includes four 1/4-20 threads. The detachable top handle includes five 3/8-16 and four 1/4-20 threads.

To accommodate accessories and camera mounts, Sony provides an assortment of mounting threads on the top, the detachable top handle and the bottom.

High speed: Sony's roadmap to 240 fps

From stunts and explosions to the fall of a single raindrop, F55 high-speed shooting is a powerful storytelling tool. The camera also performs Slow & Quick (S&Q) motion for overcranking and undercranking. This enables you to alter the narrative by speeding up or slowing down the action, choosing frame rates from 1 frame per second (fps) to the maximum in 1 fps increments. And with the F55, every high speed shooting, overcranking and undercranking mode delivers full quality. There's no sacrifice in bit depth and no "windowing" of the sensor. So there's no crop factor, no loss in angle of view.

- **60 fps**
  - 4K RAW, XAVC 4K and XAVC HD out of the box at launch
  - XAVC QFHD with the free v1.4 upgrade, expected December 2013

- **180 fps XAVC HD** with the free v1.4 upgrade, expected December 2013.

- **240 fps 2K RAW**, with the optional AXS-R5 outboard recorder and the free v1.3 upgrade, expected September 2013. In this way, the F55 achieves the highest frame rates most productions will need, while retaining exceptional, 16-bit image quality.

Resolution	Codec	Maximum frame rate; Availability (S&Q = Slow & Quick motion: selectable frame rates in 1 fps steps)	Maximum data rate	Recording Media
HD (1280 x 720)	MPEG 422	60p v1.4 Expected December 2013	50 Mbps	SxS®-1 SxS PRO SxS PRO+
HD (1920 x 1080)	MPEG 422	30p/60i at launch	50 Mbps	SxS-1 SxS PRO SxS PRO+
	XAVC 422	60p at launch 120p v1.3 Expected September 2013	200 Mbps 400 Mbps	SxS PRO+
		1-60p (S&Q) at launch 1-120p (S&Q) v1.4 Expected December 2013	200 Mbps 400 Mbps	SxS PRO+
	SR File SStP 422	30p v1.2 Expected July 2013	220 Mbps	SxS PRO+
	SR File SStP 444	30p v1.2 Expected July 2013	440 Mbps	SxS PRO+
2K (2048 x 1080)	XAVC 422	120p v1.3 Expected September 2013	400 Mbps	SxS PRO+
		1-120p (S&Q) v1.4 Expected December 2013	400 Mbps	SxS PRO+
	F5 RAW	120p v1.3 Expected September 2013	1.2 Gbps	AXSM 512GB
		1-120p (S&Q) v1.4 Expected December 2013	1.2 Gbps	AXSM 512GB
4K (4096 x 2160)	F5 RAW	60p at launch	2.4 Gbps	AXSM 512GB
		1-60p (S&Q) v1.4 Expected December 2013	2.4 Gbps	AXSM 512GB

More than just a pretty interface

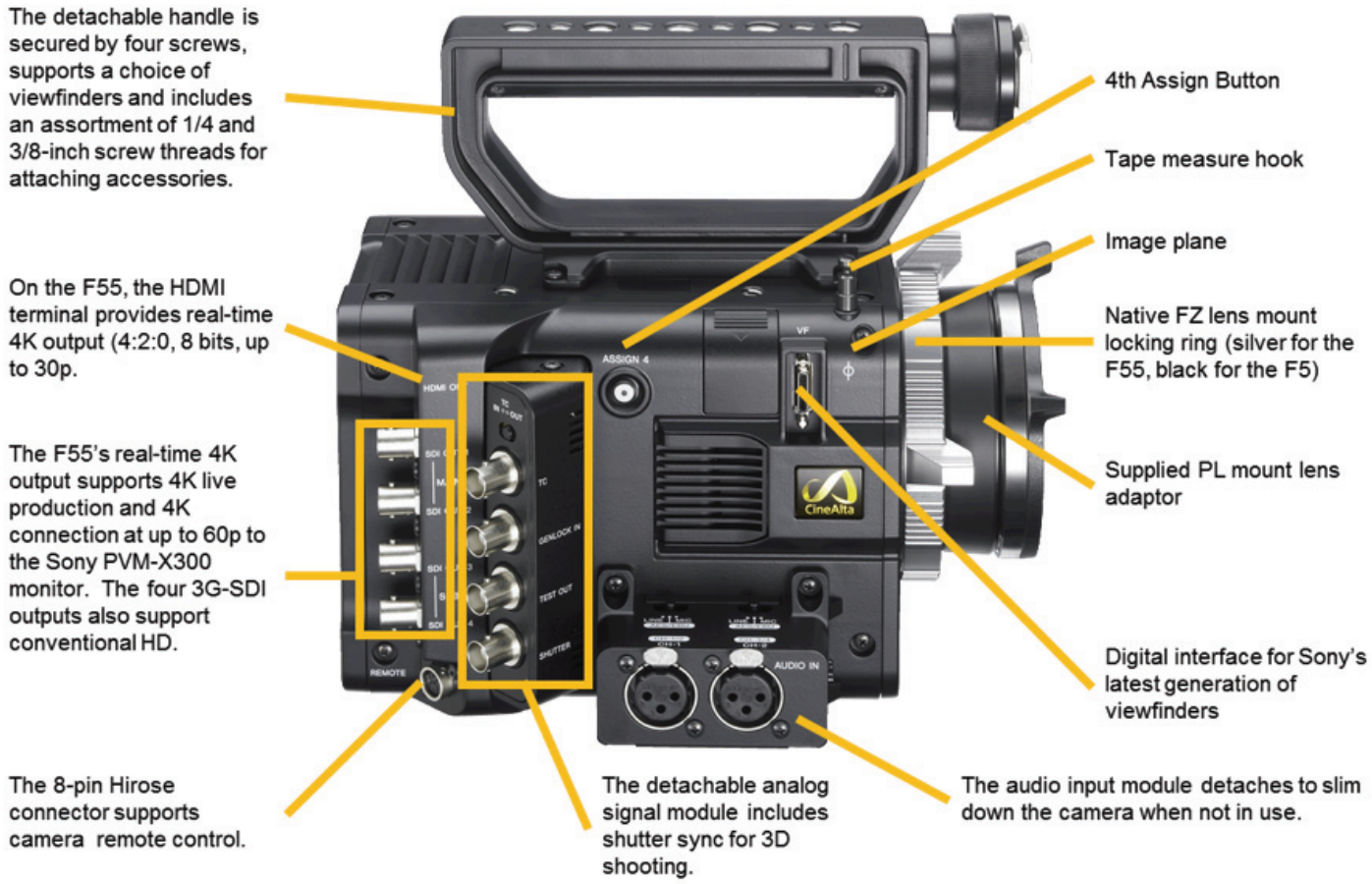
Carefully designed with significant input from cinematographers, the F55 provides an incredibly rich range of controls. And the interface is nicely intuitive. Instead of diving through menus, you get direct, one-touch access to key shooting parameters including frame rate, shutter speed, color temperature, ISO sensitivity and gamma. Assignable buttons mean that favorite adjustments are always at your fingertips.

To experience the user interface for yourself, **visit the Interactive F55 Simulator**.

The high-resolution status display confirms major settings for confident operation. Keys above and below the display are context sensitive and give you direct access to main shooting parameters.

Real-time 4K output and other vital connections

The F55 offers powerful connections, including real-time 4K output up to 60p. This supports all-new possibilities, including 4K live production as well as real-time output to a compatible 4K monitor. It's made possible by four 3G-SDI outputs. The HDMI® v1.4a output supports real-time 4K (4:2:0, 8 bits, up to 30p). There's also USB, DC in connection, a removable XLR audio module and a removable time code/genlock module. The XLR inputs accept balanced analog signals, provide 48-Volt phantom power and will accept four channels of AES/EBU digital audio with an expected free firmware upgrade.



Four 3G-SDI outputs can support live 4K production or connection to the Sony PVM-X300 4K monitor.

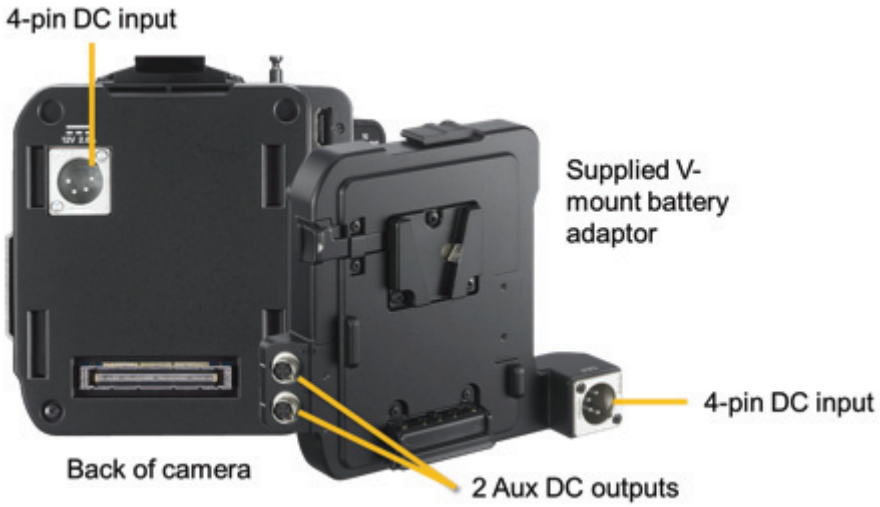
Long-life Olivine Battery

At Sony, we don't just know about cameras. We're also a leader in battery technology. The F55 takes advantage of Sony's innovative BP-FL75 battery pack, which uses Olivine—Lithium Iron Phosphate—instead of conventional Lithium Ion cathodes. The result is twice the number of charge-discharge cycles, compared to previous Sony batteries.

The BP-FL75 Olivine battery works with Sony's BC-L90 quick charger, which accommodates two batteries and cuts charging time from 120 minutes to just 60 minutes, compared to conventional Sony chargers.

The cameras and batteries are also interoperable. The F55 camera accepts Sony's conventional batteries: the BP-GL95A, GL65A, L80S and L60S. These batteries work with the BC-L90 charger (at normal speed). And the BP-FL75 Olivine battery works with the conventional BC-L70 and L160 chargers (at normal speed).

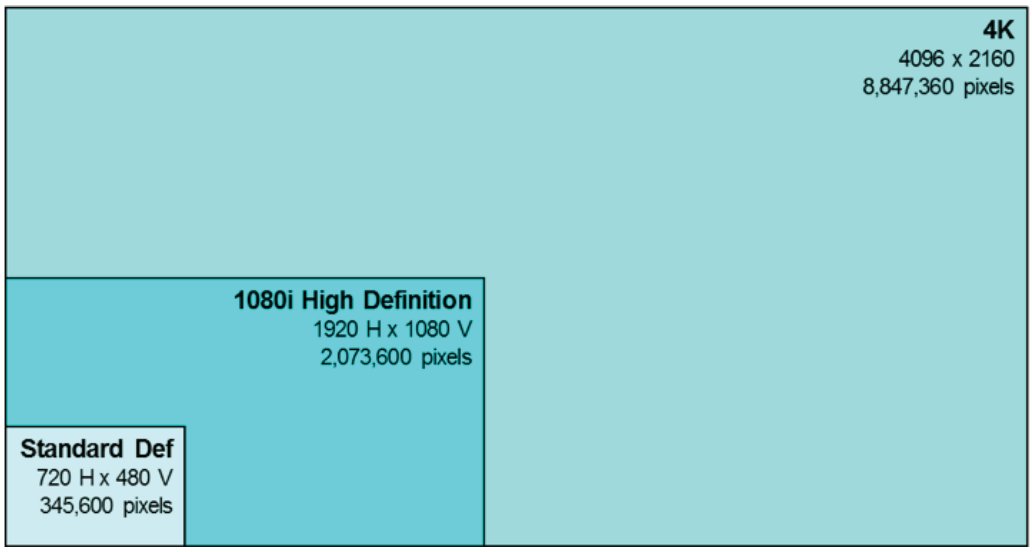
The Olivine battery is a remarkable piece of technology, capable of twice the charge-discharge cycles and recharging in half the time, compared to previous Sony batteries.



The supplied V-mount battery adaptor includes two aux DC outputs. This adaptor is not required when the camera is used with the optional AXS-R5 RAW recorder.

The Sony 4K universe

Like high definition a decade ago, 4K is emerging as a consumer entertainment platform. And Sony is playing a pivotal role in this transition. When we launched the world's first commercial 4K projectors in 2005, we had to explain that a "K" was 1024 horizontal pixels and that "4K" meant 4096 x 2160 resolution. We had to itemize the advantages with tutorials on resolution and seating distance. Today 4K is a robust production platform. It is enshrined in the Digital Cinema Initiatives (DCI) specification. The ITU and SMPTE have both issued 4K standards. And the Consumer Electronics Association has recently launched the term "Ultra High-Definition" (Ultra HD) to cover 4K consumer products.



Just as high definition was a giant leap ahead of standard definition, 4K is far more immersive than HD.

The Sony 4K universe includes consumer products like the XBR-84X900 television.

Sony 4K products include the world's leading lineup of Digital Cinema 4K projectors, with over 13,000 systems installed. We also created the PVM-X300 4K professional monitor, plus a line of 4K projectors for visualization, simulation auditoriums and post. Our Sony Vegas® Pro 12 software is enabled for 4K nonlinear editing. Our 4K consumer products include the VPL-VW1000ES home theater projector, three televisions and even Sony PlayMemories™ Studio software for the PlayStation®3 console, which enables owners to load still pictures onto the console for viewing in 4K on a television or projector.

Sony cameras compared

	F65	PMW-F55	PMW-F5	PMW-F3	NEX-FS700U	NEX-FS100U
Sensor Size	24.7 x 13.1 mm	24 x 12.7 mm	24 x 12.7 mm	23.6 x 13.3 mm	24 x 12.7 mm	23.6 x 13.3 mm
Sensor Diagonal	28 mm	27.1 mm	27.1 mm	27.1 mm	27.1 mm	27.1 mm
Sensor Aspect Ratio	1.89:1 (17:9)	1.89:1 (17:9)	1.89:1 (17:9)	1.78:1 (16:9)	1.89:1 (17:9)	1.78:1 (16:9)
Sensor Resolution	8182 x 2160	4096 x 2160	4096 x 2160	2448 x 1377	4096 x 2160	2448 x 1377
Photosites Total	20 million	11.6 million	11.6 million	3.5 million	11.6 million	3.5 million
Photosites Effective	n/s	8.8 million (17:9)	8.8 million (17:9)	3.4 million (16:9)	8.8 million (17:9)	3.4 million (16:9)
Color Gamut	S-Gamut	S-Gamut	Wide	Wide	Wide	Wide
Lens Mount	PL	Sony FZ & supplied PL adaptor	Sony FZ & supplied PL adaptor	Sony FZ & supplied PL adaptor	Sony E-Mount	Sony E-Mount
Flange Focal Depth	52 mm	19 mm (FZ) 52 mm (PL)	19 mm (FZ) 52 mm (PL)	19 mm (FZ) 52 mm (PL)	18 mm	18 mm
Shutter	Rotary 11.2 to 180° Electronic 4.2 to 360°	Frame Image Scan 4.2 to 360°	Electronic 4.2 to 360°	Electronic 1/32 to 1/2000	Electronic1/3 to 1/10000	Electronic 1/3 to 1/10000
Built in ND Filters	0, 0.9, 1.2, 1.5, 1.8 (0, 3, 4, 5, 6 stops)	0, 0.9, 1.8 (0, 3, 6 stops)	0, 0.9, 1.8 (0, 3, 6 stops)	0, 0.9, 1.8 (0, 3, 6 stops)	0, 0.6, 1.2, 1.8 (0, 2, 4, 6 stops)	-
Exposure Latitude	14 stops	14 stops	14 stops	12.5 stops	Over 12 stops (CineGamma 4)	n/s
Native ISO	800	1250 in S-Log 2	2000 in S-Log 2	1600 in S-Log	500 in Standard Gamma	500 in Standard Gamma
RAW Recording	With SR-R4	With AXS-R5	With AXS-R5	-	With AXS-R5 + HXR-IFR5	-
S-Log Recording	S-Log 2	S-Log 2	S-Log 2	S-Log	-	-
Video Recording	Yes	Yes	Yes	Yes	Yes	Yes
8K Recording (bitrate at 24p)	• F65RAW-SQ, 16-bit, 2.0 Gbps with SR-R4 • F65RAW-Lite, 16-bit, 1.2 Gbps with SR-R4	-	-	-	-	-

	F65	PMW-F55	PMW-F5	PMW-F3	NEX-FS700U	NEX-FS100U
4K Recording (bitrate at 24p)	-	• XAVC 4:2:2, 10-bit, 240 Mbps Internal (QFHD with v1.4 upgrade) • F55RAW, 16-bit, 960 Mbps with AXS-R5	F5RAW, 16-bit, 960 Mbps with AXS-R5	-	FS700RAW 12-bit payload, 960 Mbps with AXS-R5 + HXR-IF5	-
2K Recording (bitrate at 24p)	-	• XAVC 4:2:2, 10-bit, 90 Mbps Internal with v1.3 upgrade • F55RAW, 16-bit, 240 Mbps with AXS-R5 and v1.3 upgrade	• XAVC 4:2:2, 10-bit, 90 Mbps Internal with v1.3 upgrade • F5RAW, 16-bit, 240 Mbps with AXS-R5 and v1.3 upgrade	-	FS700RAW 12-bit payload, 240 Mbps with AXS-R5 + HXR-IF5	-
HD Recording (bitrate at 24p)	SR File, 12-bit or 10-bit, 4:4:4 or 4:2:2; 704, 352 or 176 Mbps with SR-R4	• XAVC 4:2:2, 10-bit, 80 Mbps • SR File, 4:4:4 or 4:2:2, 10-bit, 352 or 176 Mbps with v1.2 upgrade • MPEG 4:2:2, 8-bit, 50 Mbps • All internal	• XAVC 4:2:2, 10-bit, 80 Mbps • SR File, 4:4:4 or 4:2:2, 10-bit, 352 or 176 Mbps with v1.2 upgrade • MPEG 4:2:2, 8-bit, 50 Mbps • All internal	• MPEG 4:2:0, 8 bit, 35 Mbps internal • SR File, 10-bit, 4:4:4 or 4:2:2; 176, 352 or 704 with SR-R1	AVCHD 4:2:0, 8 bit, 24 or 28 Mbps, internal	AVCHD 4:2:0, 8 bit, 24 or 28 Mbps, internal
Maximum Frames Per Second (progressive)	120 fps @ 4K RAW with SR-R4	• 240 fps @ 2K RAW with AXS-R5 and v1.3 upgrade • 180 fps @ 2K/ HD XAVC with v1.4 upgrade	• 120 fps @ 2K RAW with AXS-R5 and v1.3 upgrade • 120 fps @ 2K/ HD XAVC with v1.3 upgrade	• 60 fps @ 1080p with SR-R1 • 60 fps @ 720p internal • 30 fps @ 1080p internal	• 960 fps in Super Slow Motion • 60 fps continuous	60 fps continuous
Recording Media	SRMemory cards for SR-R4	• SxS-1, PRO, PRO+ cards (internal) • AXSM cards for AXS-R5	• SxS-1, PRO, PRO+ cards (internal) • AXSM cards for AXS-R5	• SxS-1, PRO cards (internal) • SRMemory cards for SR-R1	• SD, SDHC, SDXC or Memory Stick PRO Duo (internal) • AXSM cards for AXS-R5	SD, SDHC, SDXC or Memory Stick PRO Duo (internal)
HD Output	HD-SDI x2	• 3G-SDI x4 with 2K and 4K capability • HDMI 1.4a	• 3G-SDI x4 • HDMI 1.4a	• HD-SDI x2 • Dual Link HD-SDI • HDMI 1.4	• 3G-SDI • HDMI	• HD-SDI • HDMI 1.4
Batteries	V-mount	V-mount	V-mount	Sony BP Series	Sony L Series	Sony L Series
Dimensions (body only)	12 x 9-1/8 x 7-3/4 inches (305 x 227 x 195 mm)	7-1/8 x 7-7/8 x 12-1/4 inches (151 x 189 x 210 mm)	7-1/8 x 7-7/8 x 12-1/4 inches (151 x 189 x 210 mm)	6 x 7-1/2 x 8-3/8 inches (151 x 189 x 210 mm)	5-3/4 x 7 1/8 x 10 inches (145 x 179 x 254 mm)	5 x 4 x 7 5/8 inches (127 x 102 x 194 mm)
Weight (body only)	11 lb (5.0 kg)	4 lb 14 oz (2.2 kg)	4 lb 14 oz (2.2 kg)	5 lb 4 oz (2.4 kg)	3 lb 11 oz (1.7 kg)	2 lb 4oz (1.0 kg)
Power Consumption (typical)	Approx. 65 W	Approx. 25 W	Approx. 24 W	Approx. 24 W	Approx. 9.6 W	Approx. 5.6W