

**SONY**  
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F65

## F65. Aiming for quality beyond film.

While all previous Sony cameras aimed to equal 35mm film, the F65 was designed from the outset to exceed 35mm. Higher resolution than any previous digital motion picture camera (as of August 2011) comes together with the vast potential of 16-bit linear RAW recording, giving cinematographers a brilliant new canvas on which to tell stories. RAW recording captures the full detail and performance of Sony's remarkable image sensor, preserving a latent image with the maximum potential for exploration, refinement and improvement in post. This is ideal for commercials, music videos and feature films—any production committed to full-on color grading.

**CINEMA**

# 16-bit linear RAW, the ultimate archive

Originally applied to digital still cameras, RAW recording captures the full potential of the image sensor. The RAW file consists of information from all 20 million photosites on the F65 sensor, preserving maximum resolution. Sixteen-bit linear recording equates to 65,536 shades of tonal gradation, preserving the maximum in grayscale accuracy and dynamic range. The RAW image also reflects a minimum of in-camera processing: no white balancing, no color matrix, not even conversion to a viewable RGB file. In this way, RAW recording maintains all the potential of the latent image, the full beauty of which is only revealed in post production. And RAW recording preserves the integrity of your precious camera masters into the archive; where the images will remain as vivid as the moment they were captured.

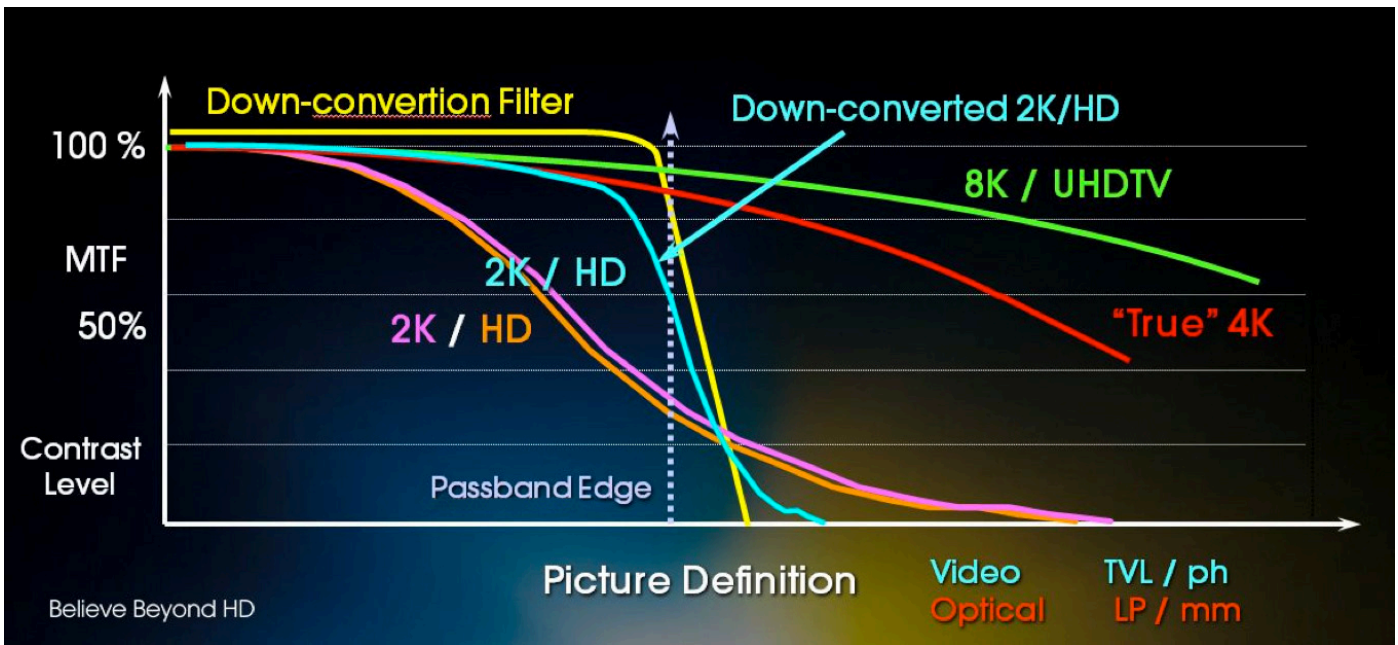
## Digital negative development

Just as Bayer pattern RAW files need to be de-Bayered to generate viewable RGB images, F65 RAW files need to be developed. While the structure of the F65 RAW file is completely determined, the development process allows for considerable freedom and creativity. Post houses and software vendors are free to pursue everything from quick and simple single-channel interpolation to edge-directed interpolation, constant-hue based interpolation, Laplacian second-order gradient enhancement and even high-frequency reconstruction. This means you can match the de-mosaicking to your budget, your time constraints and your artistic ambitions.

## Choice of HD, 2K, 4K or 8K output resolution

Because RAW recording preserves the full resolution of the 20 million photosites, the F65 RAW files maintain extraordinary flexibility in output resolution.

- **Supersampled HD.** At the end of your production process, you're free to deliver a gorgeous, supersampled HD master, with detail beyond the reach of conventional HD cameras.



Conventional HD cameras (orange curve) incur a noticeable loss of contrast as picture detail approaches the resolution limit. As applied in the F65, supersampling and electronic downconverting deliver far higher contrast at high frequencies, for a noticeably sharper picture.

- **Supersampled 2K.** The same advantages that extend the picture quality of F65 high definition productions also apply to digital cinema 2K files.
- **Supersampled 4K.** The F65 supports this burgeoning market with a superior 4K master. Unlike 4K cameras, each pixel in the F65 4K output file is based on a green photosite in the image sensor.
- **8K.** Pushing resolution to the maximum, in the future you will be able to de-mosaic files from 16-bit linear RAW

## Re-framing, punching in, motion stabilization

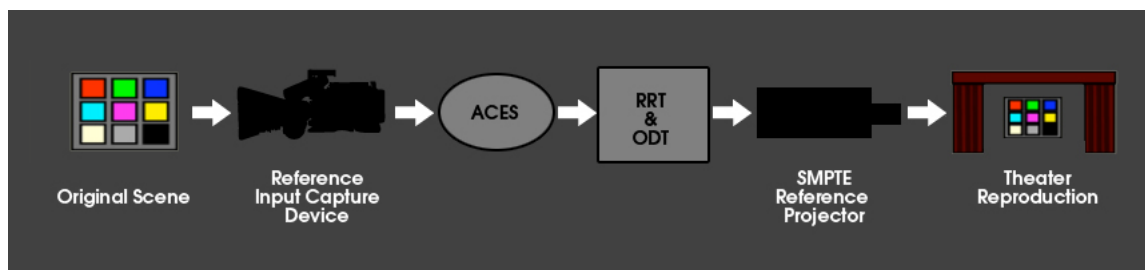
Compared to 4K, the 20 million photosites of the F65 represent a tremendous overhead in resolution. There are many ways to use this overhead to your advantage. For example, you can punch in, reframing a shot after the fact; at the very least to remove stands, cards and mic booms. For shots marred by camera shake, you can use the resolution to perform motion compensation. You can even extract 2K, HD quadrants from the 4K canvas.

## 4K and the digital cinema revolution

In movie theaters, 4K is rapidly becoming the projection format of choice. [Sony 4K projectors](#) have already been installed in over 9,000 cinema screens worldwide. Mindful of Sony's success, competing cinema vendors have announced 4K projectors of their own. No wonder the roster of [films distributed in 4K](#) continues to grow month by month. In this environment, producing in digital 4K is not only a smart artistic decision; it's also a business decision that maximizes the theatrical impact and archival life of your production.

## Academy IIF-ACES Workflow

After decades of development, motion picture film was graced by a stable, predictable workflow. Today the Digital Intermediate is king, Digital Cinema is reaching the tipping point and digital motion picture cameras have gone from strength to strength. But the digital workflow still has hiccups and speed-bumps when it comes to color. The color captured on-set doesn't always make it to the screen. It was to resolve these issues that the Academy of Motion Picture Arts and Sciences worked to develop the definitive color-encoding workflow. It's called the Image Interchange Format—Academy Color Encoding Specification (IIF-ACES). We are honored to report that [the world's first IIF-ACES production](#), an episode of the FX series *Justified*, used the Sony F35 digital camera. Needless to say, the F65 was built from the ground up to support IIF-ACES.



Thanks to the enormous color-handling potential of 16-bit linear OpenEXR storage, the IIF-ACES workflow beautifully maintains color values from scene to screen. To get the picture from stage to stage, the workflow protects color integrity with a series of tightly defined transforms: Input Device Transform (IDT), Look Modification Transform (LMT), Reference Rendering Transform (RRT) and Output Device Transform (ODT). In this way, the cinematographer's vision can be reliably conveyed through postproduction and into distribution. IIF-ACES is a breakthrough in color reproduction. And the F65 supports it.

## Complete SRMASTER™ production platform

It's not hard to record data onto memory cards. The real challenge is developing a solid state platform with superb data integrity, fast on-set backup, efficient post production and the headroom required for next-generation imaging. You need a system that simplifies data wrangling and minimizes sleepless nights. And for the F65, you need a system that supports master-quality recording at resolutions of HD, 2K, 4K and beyond. This is the SRMASTER™ production platform.

The SRMASTER platform is a comprehensive, next-generation production system that includes field recorders, studio decks, a transfer station and SRMemory™ cards.

### The SRMemory™ card

About the size of a smart phone, the SRMemory card delivers capacity and transfer speed far beyond previous cards. Where HDCAM SR tape achieves a sustained 440 and 880 Mbps and SxS™ cards can achieve momentary bursts of up to 1.2 Gbps<sup>1</sup>, SRMemory cards go much further. Sustained write speed is 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<sup>2</sup>) exceeds any previous memory card.<sup>3</sup> Other cards will be offered in capacities of 256 GB<sup>2</sup> and 512 GB.<sup>2</sup>



Remarkable to see on a memory card: the designation "1 TB."

The next-generation capacity and transfer rate of SRMemory cards enable productions to enjoy powerful recording options. Choices include 10-bit, 12-bit, the new 220 Mbps SR Lite level of the SR Codec, 440 Mbps, or 880 Mbps and extend all the way up to 16-bit RAW. SRMemory cards can record and output two data streams at the same time, enabling stereoscopic 3D recording and simultaneous, independent read/write operations. Sony is also upgrading the audio, going from 12 channels of uncompressed audio on HDCAM SR tape to 16 channels on SRMemory cards.

1. Read speed measured with benchmark software. Actual transfer speed varies based upon the measurement conditions.
2. 1 GB equals one billion bytes, a portion of which is used for data management functions.
3. As of August 2011.

## The SR-R4 SRMASTER field recorder



The F65 camera docked to the equally remarkable SR-R4 SRMASTER field recorder.

The F65 benefits from a dedicated, docking field recorder: the SR-R4. (Expected availability: January 2012).

- 16-bit linear RAW recording
- 12-bit SR Codec recording 880 Mbps (4:4:4 RGB HQ mode) of 1080p high definition
- 10-bit SR Codec recording of 1080p high definition
  - 880 Mbps (4:4:4 RGB HQ mode)
  - 440 Mbps (4:2:2 YCbCr and 4:4:4 RGB SQ mode)
  - 220 Mbps (4:2:2 YCbCr SR Lite mode)
- Selectable fps (Slow & Quick motion)
  - 4Kx2K (4096 x 2160): up to 60 fps
  - 4Kx1K (4096 x 1080): up to 120 fps

## Smarter, speedier data wrangling



The SR-R1000 multi-channel server has slots for four SRMemory cards.

The SRMASTER platform has you covered from the set, through data backup and well into post production. Sony provides the entire process, end to end. To back up your precious original camera masters, Sony created the SR-R1000 deck (expected availability September 2011). The SR-R1000 is essentially a multi-channel server, with four SRMemory card slots and up to 8 TB<sup>5</sup> of internal memory storage. Depending on the type of data, up to four SRMemory cards can be ingested at the same time. A 1 TB SRMemory card can store about an hour of F65 16-bit RAW data. The SR-R1000 can offload a full 1 TB card in less than 30 minutes, moving the data into internal memory storage. This makes the R1000 ideal for efficient data management on the set and in the post production studio.

5. 1 TB equals one trillion bytes, a portion of which is used for data management functions.



The SRPC-5 transfer station features a 10 Gigabit Ethernet interface.

The SRPC-5 transfer station (expected availability December 2011) connects to a computer or server via 10 Gigabit Ethernet to quickly move data from the SRMemory cards and into post production. A single Rack Unit high, this component also has 3G-SDI and HD-SDI outputs, and can back up data to HDCAM SR digital tape at up to 2x real time. The SRPC-5 also complements existing on-set data ingest solutions.