

**SONY**  
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## F65. Spectacular images. Speedy workflow.

The tyranny of the weekly schedule imposes unique production requirements on episodic television. Under this time-is-money pressure, the F65 thrives. In addition to the camera's phenomenal image making potential, you also get the simplicity of file-based capture with the companion SRMASTER™ field recorder. File-based recording saves time, enabling you to start your edit immediately. And Sony's SR Codec is the industry's de facto standard for mastering. This means broad compatibility with NLEs and convenient playback on a laptop PC.

**TELEVISION**

## Fast, file-based workflow

The F65's companion SR-R4 SRMASTER recorder captures your work onto solid state SRMemory cards, where your footage is written as MXF data files. This yields benefits throughout the production process.

- No more fast forward or rewind; instant access to each take.
- Read, back up, copy and transfer these just like any other data files.
- Transfers and backups can happen faster-than-real time.
- Backups are mathematically lossless clones of the original.
- You can enjoy direct-to-edit operation in the native SR Codec, using popular third-party NLEs.
- You can finish productions in the native SR Codec, using powerful third-party systems.
- You can even play back the files on laptop PCs, using free Sony software for Windows® OS.

While some MXF file structures can be complex, SRMASTER files are simple, interleaving audio and video in a single file. This is the same "Operational Pattern 1a" (OP1a) data structure used by XDCAM® HD files. The files also support robust, camera-specific metadata according to SMPTE RDD-18 (Sony) guidelines.

A product of open standards, the SR Codec uses [ISO/IEC compression](#): MPEG-4 Simple Studio Profile (SStP).

## Easy Computer Playback

The SR encoding process is hugely complex and processing intensive. But the decoding process is fast and simple. As a result, SR files will play on a laptop PC, using Sony's SRV-10 SR File player application for Windows® OS. The software supports the DirectShow framework so you can output from the Blackmagic™ DeckLink™ card to an external HD display or recorder.

[Download the Codec Player applications for Windows OS® here.](#)

## Direct-to-edit NLE and finishing workflow

The combination of MXF file transfers and third-party support for the SR Codec translates into something wonderful: native SR Codec editing. Sony has been cooperating with nonlinear editing vendors to deliver on this promise.

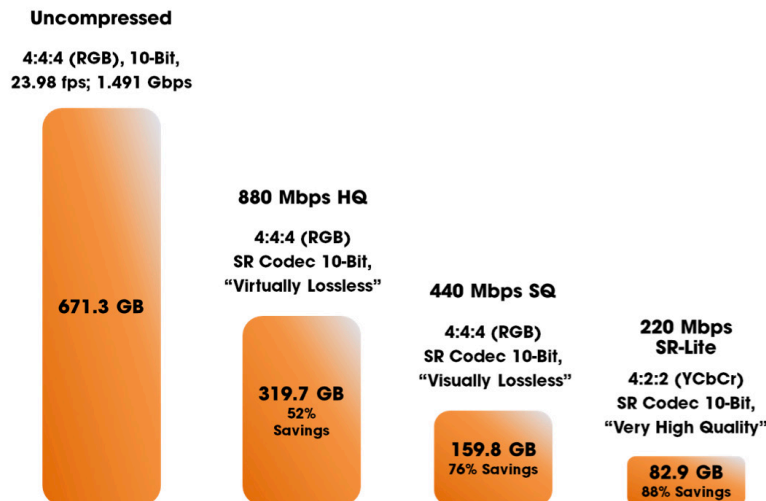
- **Avid Media Composer 5.5 (and higher) and Symphony Nitris 5.5 (and higher).** The Avid AMA plug-in decodes SRFiles, enabling you to edit and directly read the files. (Encoding/creating SRFiles is not currently supported.)  
[Download the free SRPA-10 Avid AMA plug-ins for Mac OS® or Windows® OS here.](#)
- **Final Cut Pro v7.** The Final Cut Pro QT v7 plug-in decodes SRFiles, enabling you to edit and directly read the files. (Encoding/creating SRFiles is not currently supported.) The plug-in maps the MXF wrapper to the QuickTime environment so no re-wrapping or other conversion process is needed. This enables native, direct to edit access of the files in Final Cut Pro.  
[Download the free SRPM-10 plug-in for Final Cut v7 here.](#)
- **Sony Vegas® - V10.d** incorporates native, direct-to-edit workflow with the SR Codec.
- **Final Cut Pro X.** No support at launch time. Sony is currently studying the development of a 64-bit plug in compatible with Final Cut Pro X.

[FilmLight Baselight systems](#) natively support SR Codec files in both hardware and software. For DI compositing and finishing, the SR Codec is natively supported by [BlackMagic Design DaVinci Resolve.](#)

# SR Codec: the de facto standard for mastering

Many of today's motion picture productions are recorded, stored, exchanged or archived using the SR Codec, as featured in the HDCAM SR™ tape format. Regardless of the acquisition camera brand, regardless of the acquisition codec, productions trust the de facto standard SR Codec to protect their assets. With the SRMASTER system, exactly the same codec comes to file-based recording. The advantages are decisive.

- Very mild compression; picture quality close to uncompressed at a significantly lighter data payload.
- 880 Mbps HQ mode is virtually lossless compared to uncompressed recording
  - 4:2:2 up to 60p
  - 4:4:4 RGB 10-bit up to 60p
  - 4:4:4 RGB 12-bit recording up to 30p
- 440 Mbps SQ mode is visually lossless compared to uncompressed recording
  - 4:2:2 up to 30p
  - 4:4:4 RGB 10-bit recording
- 220 Mbps SR Lite mode, 4:2:2 10-bit recording
- Significant savings in bandwidth and RAID hard disk arrays compared to uncompressed, for example 76% savings in 440 Mbps SQ mode.



The Gigabytes really add up. Uncompressed 1920x1080 recording can require 671 GB for a single hour of material. The three SR Codec modes substantially lighten the load.

- Superb grayscale rendition with a choice of 10-bit and 12-bit in RGB
- Multi-generation robustness: up to seven generations at 220 Mbps with very little quality loss
- Developed and supported by a company with a decades-long commitment to imaging professionals and a full understanding of the need to protect archival assets
- Each progressive frame or interlaced field is calculated independently
- Extraordinarily powerful encoding via Sony large-scale integrated circuit with tens of millions of transistor gates; uses the efficiencies of both lossless DPCM and DCT compression technology within each field or frame

- Simple decoding on a PC with modest CPU resources and HDD performance; Ideal for multi-track editing, finishing and laptop workflow
- Algorithm is highly scalable: HD, 2K, and up to 4K (four times 440 Mbps)
- Up to 16 channels of uncompressed audio: 24-bit depth, 48 kHz sampling; up to 8 channels at 96 kHz sampling

## Perfect for television: 220 Mbps SR Lite recording

Another boon to television production, the combination of the F65 camera and docking SR-R4 recorder supports acquisition at the new SR Lite data rate: 220 Mbps. This brings with it a host of practical advantages, including faster file transfers, lighter storage requirements and an 88% savings in storage cost versus 4:4:4 uncompressed. Interestingly, it is very difficult to see the difference between the 220 Mbps and 440 Mbps.

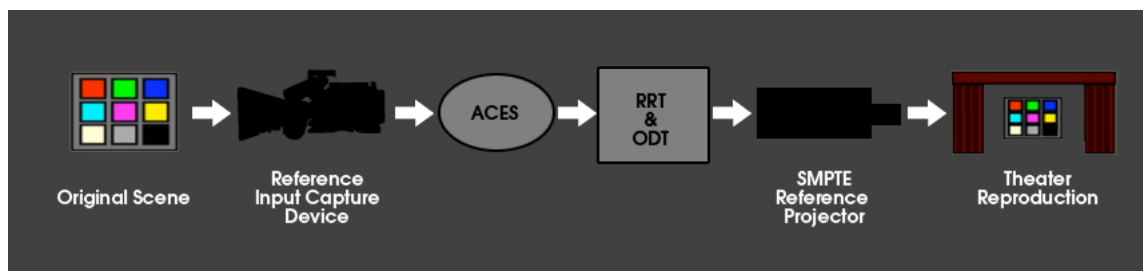
## SRMemory™ /SR tape hybrid workflow

The HDCAM SR tape format is nearly ubiquitous in studios and high-end post houses. Sony anticipates years of synergy between HDCAM SR tape and SRMASTER memory recording. For example, HDCAM SR tape users can take advantage of file-based operations with the SRW-5800/2 deck outputting 440 and 880 Mbps tape-recorded clips as SR Codec data files. Because the files are clones of the original essence data, the operation is mathematically lossless. You can also transcode 440 Mbps 4:2:2 HDCAM SR assets and 140 Mbps HDCAM® tapes to 220 Mbps SR Lite files. This is a brilliant way to future-proof HDCAM archival assets.

The SRPC-5 transfer station (expected availability December 2011) can dock to an SRW-5800/2 tape deck and clone the SR Codec files to an HDCAM SR™ digital tape at up to twice real time speed. In the case of 440 and 880 Mbps recordings, the tapes will be mathematically lossless clones of your originals. The SRPC-5 can also transfer the data from the SRMemory card into a server environment.

## 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>4</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.

4. 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.