SONY
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F65
Digital Motion Picture Camera

CineAlta

CineAlta

Elevating Digital Imaging to the Next Level

In 1999, Sony released the first 24p digital motion picture production system. Over the years, we have refined the technology based on invaluable insight from producers, cinematographers, colorists, and engineers. Features which are commonplace today, such as the Super 35 mm Imager, Log Recording, Variable Frame Rate, 60P and 3D were all pioneered by Sony's CineAlta products.

As we enter a new paradigm in digital imaging technology, we have decided to give a new look to the prestigious CineAlta logo. With the recent surge in 4K digital cinema projection systems throughout the world, a new standard in electronic cinematography is needed. And with the ever-accelerating speed of IT technology, manipulation of high-resolution image files has enabled an unprecedented scale of economy.

Regardless of changes in technology, our mission is to exceed the evolving needs of the creative community. Sony is committed to elevating image quality and maximizing the visual experience. Sony's new CineAlta logo symbolizes "Infinity" and represents our endless pursuit of perfecting technology and enabling limitless creative possibilities.

F65 – True 4K and Beyond

Its debut has been long-awaited, and now Sony proudly introduces the state-of-the-art F65 - the next-generation CineAlta camera for digital motion picture production.

Equipped with Sony's newly-developed 8K CMOS sensor, the F65 offers higher resolution, increased exposure latitude, and a wider color gamut than any previous digital motion picture camera. The F65 creates brilliant HD, 2K, and true 4K images today and it is ready to go far beyond 4K in the future as the industry's needs evolve.

Unparalleled Image Quality

The unique characteristics of the newly-developed CMOS sensor will achieve greater naturalism than ever before.
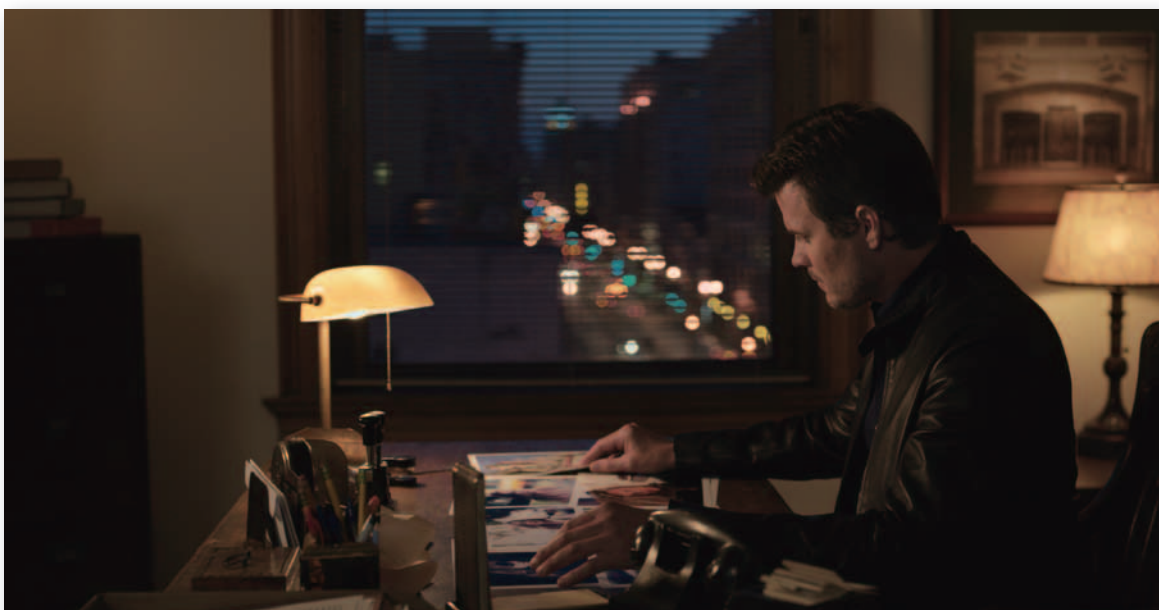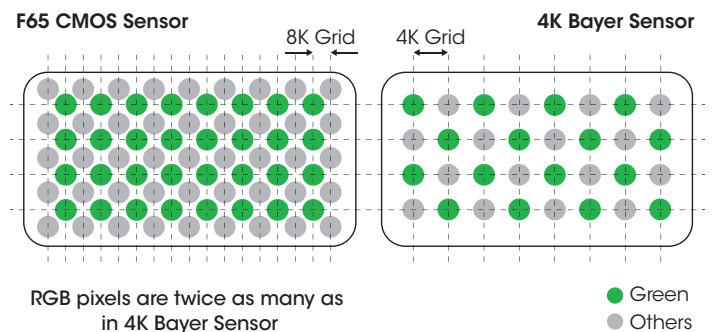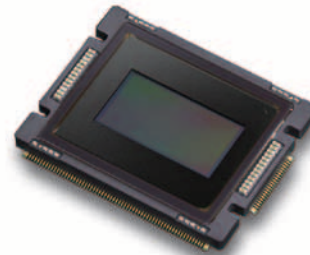
State-of-the-art 20 Megapixel Super 35 mm-sized CMOS Sensor

The F65 is equipped with a newly-developed Super 35 mm-sized CMOS sensor yielding an unprecedented 20 megapixels*. While a typical 4K sensor has only 2K resolution for the green channel, the F65 sensor has one green photosite for each 4K output pixel. This unique sensor structure delivers unparalleled resolution for 4K content production.

* Effective 19 megapixel count.

## Wide Exposure Latitude, High Sensitivity and Low Noise

Thanks to this new imager and 16-bit Analog-to-Digital conversion, the F65 camera delivers exquisite images with an increased exposure latitude of up to 14 stops. The base sensitivity is rated at 800 EI, although the extremely quiet noise floor allows the F65 to push sensitivity above ISO 3200.

F65 CMOS Sensor   8K Grid   4K Grid   **4K Bayer Sensor**

RGB pixels are twice as many as in 4K Bayer Sensor

● Green
● Others

Extended Color Gamut

Thanks to the unique characteristics of the color filter array, the F65 captures a much wider color space than Sony's renowned F35 camera. Supporting AMPAS IIF-ACES*, the F65 expands the creative potential of contrast and color reproduction for filmmakers.

* Image Interchange Framework, Academy Color Encoding Specification: the master format for next-generation cinema production by AMPAS (Academy of Motion Picture Arts and Sciences).
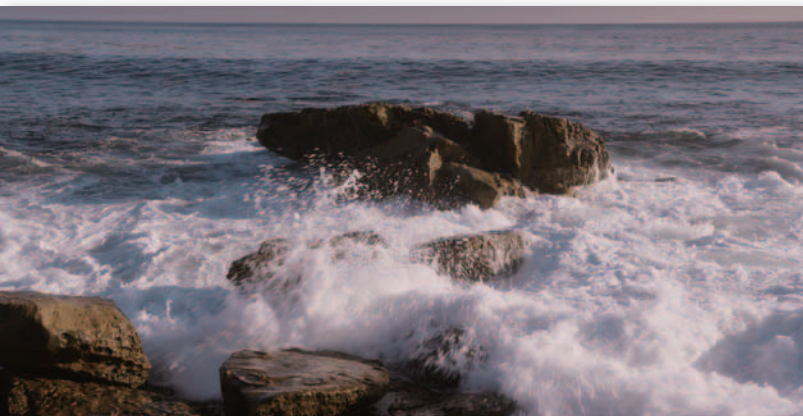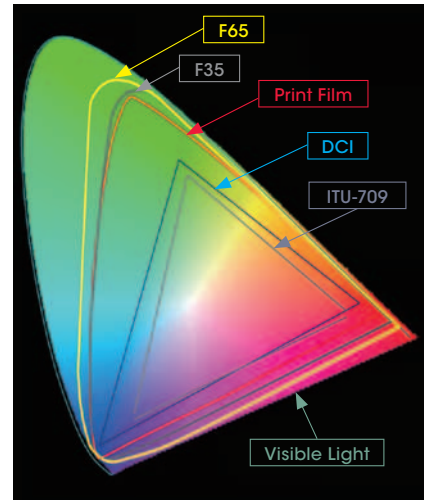
All images captured with F65

Enhanced Flexibility

The F65 provides many options to satisfy a variety of creative demands.

Up to 120 fps High-speed Recording*

The F65 camera, docked with the SR-R4 SRMASTER™ recorder, offers high-speed recording of up to 120 frames per second (fps). In fact, the frame rate can be adjusted from 1 to 120 fps in one-frame increments and can even be ramped while recording.

* 61 fps to 120 fps and variable frame rate recording will be supported by a software upgrade (Available July 2012).

Rotary Shutter and Built-in ND Filter

Typical CMOS sensors suffer from the so-called "jello" effect (a.k.a rolling shutter), in which moving objects are deformed or vertical objects are distorted during fast camera pans. A newly-developed mechanical rotary shutter for the F65 effectively shields the sensor from incoming light and eliminates rolling shutter artifacts. Consisting of two blades, the shutter angle ranges from 11.2 to 180 degrees and can be changed continuously, which allows operators to achieve the desired amount of motion blur. Along with this mechanical rotary shutter, four internal ND filters (0.9, 1.2, 1.5, and 1.8) are located within the camera for easy exposure control without the need to exchange lens-front optical filters.

Rotary Shutter OFF
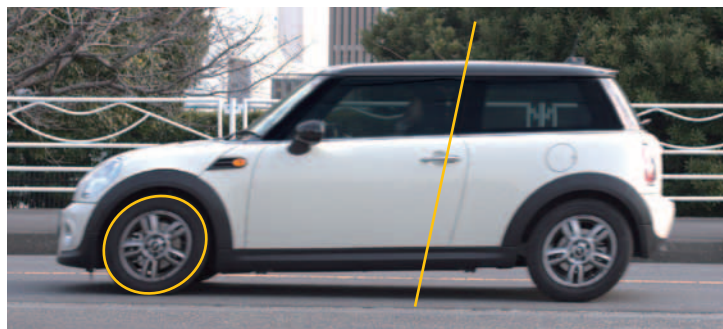
Rotary Shutter ON
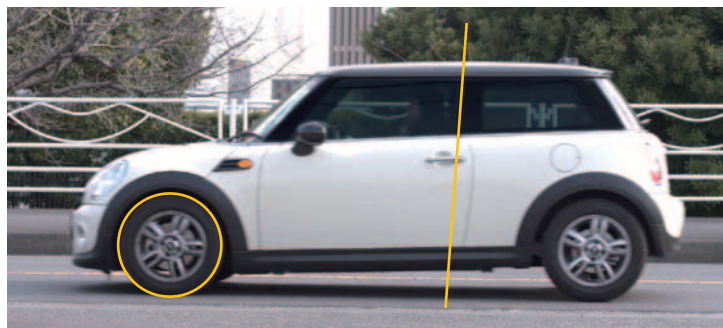
F65 for 4K, 2K, and HD Production

F65RAW Mode

F65RAW mode allows maximum creative flexibility for feature and episodic production. The camera creates an incredible 16-bit linear RAW signal which is recorded onto SRMemory™ cards with the SR-R4 on-board SRMASTER recorder. In this mode, all of the image information captured by the 20 megapixel CMOS sensor is maintained as 16-bit linear RAW data without compressing highlight information by any log or gamma functions. Since the entire tonal range and color information of the F65 camera can be transferred to post production, colorists are given enormous latitude in achieving the desired look in DI (digital intermediate) process. The F65RAW files can be easily converted to HD, 2K, or 4K RGB files with a multitude of software tools.

Choice of Three Recording Modes
Users can select from three recording modes – F65RAW-SQ, F65RAW-Lite, and F65RAW-HFR – to best accommodate production needs, picture quality, recording time and the desired look.
The F65RAW-SQ mode employs a mild compression and is ideal when the highest possible image quality is the priority. The F65RAW-Lite mode utilizes a higher compression; which extends the recording time by reducing the file size. F65RAW-HFR mode allows the F65, with the SR-R4, to record over 24 minutes of 120p content on a single SR-1TS55 (1 TB) card.

HD SStP Mode

HD SStP mode has been developed to offer the best of both worlds – creative freedom and efficiency – both of which are essential to relieve the time and budget pressures that are typical in HD Production. The F65 contains an internal processing system that creates RGB HD files (1920 x 1080) that can be recorded as either 10-bit 4:4:4 or 12-bit 4:4:4 and 10-bit 4:2:2 MPEG-4 SStP files on SRMemory cards with the SR-R4 recorder*. Combined with the S-Log gamma function, HD SStP mode allows the SR-R4 to record the entire tonal range of the F65 camera, while significantly reducing file size. In this mode, the F65 camera with the SR-R4 fits into a conventional HD workflow and expands the possibilities of HD content production.

* HD SStP recording will be supported by a software upgrade.

Easy and Efficient

Many of the F65's functions are designed to provide ease of use for efficient operation.

HD-SDI Output and SDI LUT

The F65 camera has built-in HD video processing hardware that enables users to monitor images on conventional HD viewfinders and/or HD monitors connected via the F65's two HD-SDI outputs. Utilizing an SDI LUT (Look-up table) function, users can allocate any LUT for HD-SDI outputs to view images with custom color and contrast.
In addition, a 2X and 4X magnification function facilitates critical focusing checks.

x2   x4
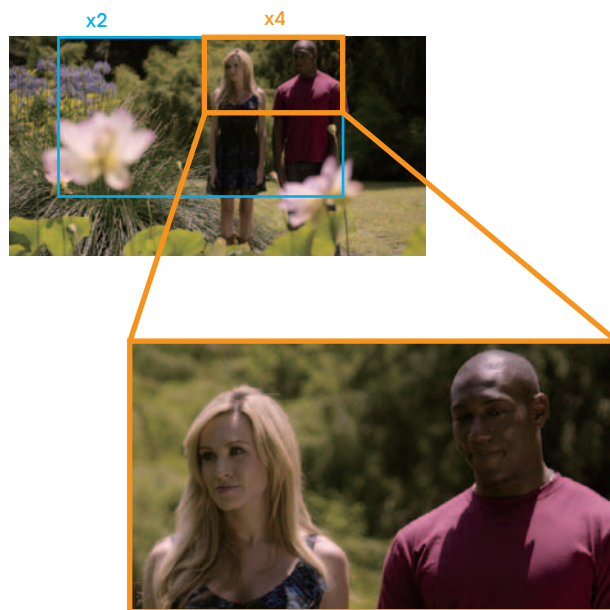
4K pixel to pixel focus

F65Remote

When an optional Wi-Fi adapter, (CBK-WA01*), is connected to the USB port of the F65, users can also perform wireless camera control operation and status checks from a tablet device such as Sony Tablet™ S Series or an Apple iPad2**. After installing the free F65Remote software on the tablet, users can intuitively change camera settings (such as the shutter speed, frame rate, and record start/stop) and check the shooting status remotely via a large touch-screen panel.

 * Requires an optional CBK mounting bracket to be connected to the F65. No upgrade key (CBKZ-UPG01/CBK-UPG01) is required.
** Applications must be downloaded from the iTunes® or Android™ application store. Check Android market from your device for compatibility.

F65Remote

Wi-Fi

SRNavi

SRNavi is web-based application software that runs on tablet devices* to check the maximum recording time on each SRMemory card in a selected recording format to find a suitable card. Users can operate this software off-line once the application is downloaded via the internet (except when refreshing cache memory).
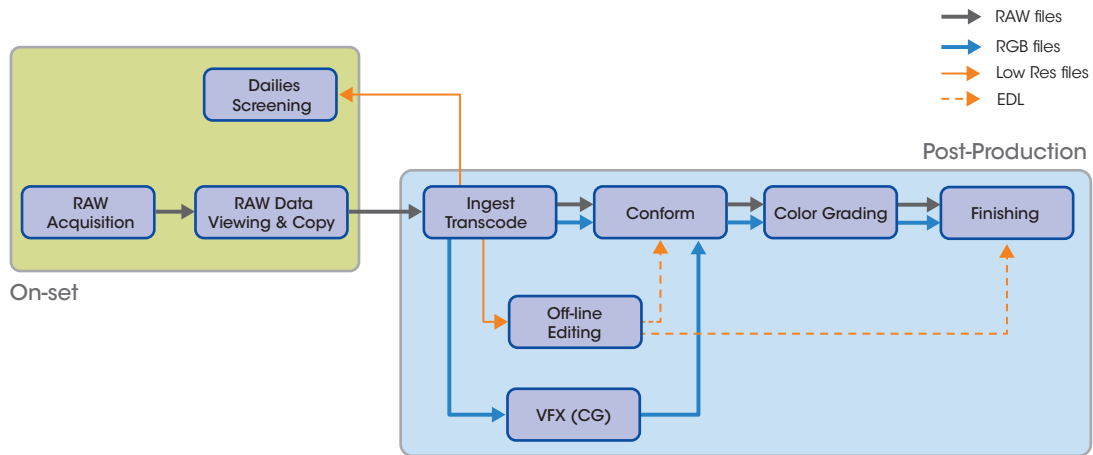
* Supported tablet devices: iPad, iPod Touch, iPhone, and Android devices.
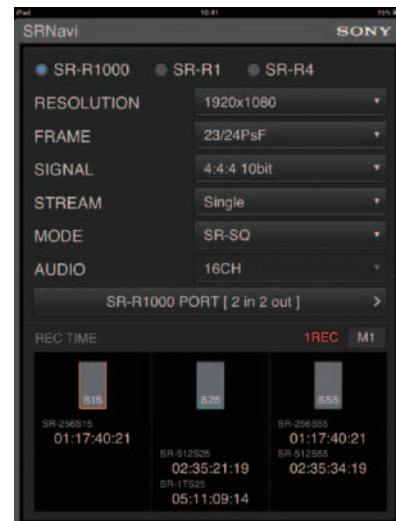
File-based Workflow

The F65 offers a simple and speedy file-based workflow suitable for the most demanding production environments.

Total Workflow

RAW Data Viewing

F65RAW files recorded on SRMemory cards can be reviewed on an HD monitor connected to an SR-PC4 or SRPC-5 data transfer unit. In addition, when a Microsoft Windows PC or Apple Mac is connected to the unit via GbE, it can be easily operated by a web-based GUI (SRControl), without the need to install specialized software. Users can play and stop clips, transfer files to the network, display a clip list, and check and change metadata.
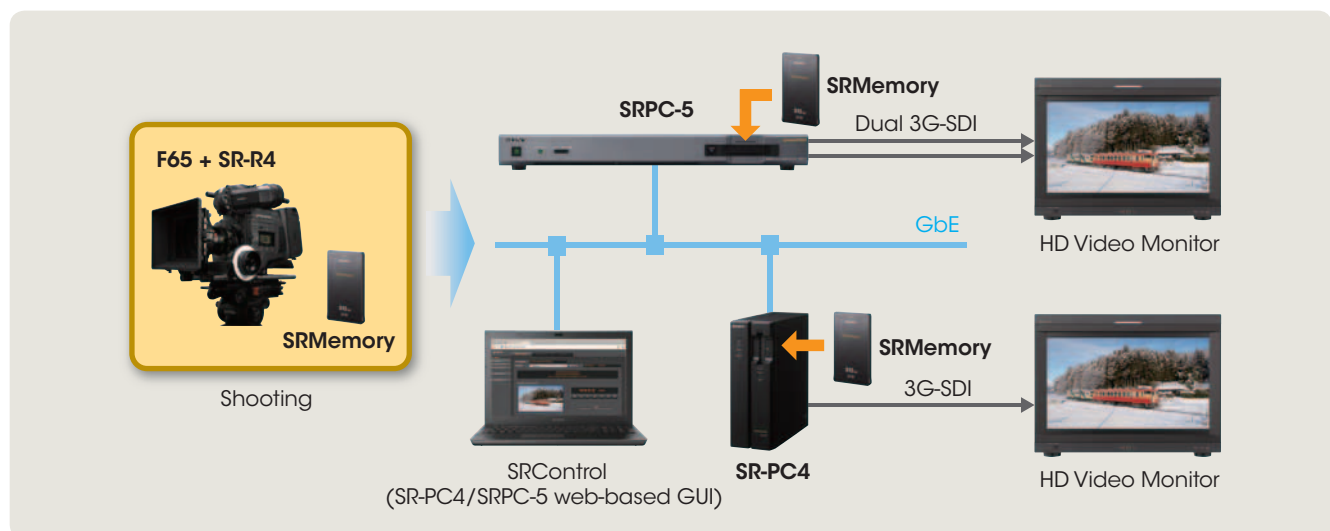
RAW Data Copy

The SR-PC4 and SRPC-5 facilitate the easy backup of files recorded on SRMemory cards. After installing a recommended eSATA card (host) into the PCIe slot of the SR-PC4 or SRPC-5 and connecting it to a hard disk with an eSATA interface, users can duplicate files to hard disk using SRControl on a Microsoft Windows PC or Apple Mac via GbE connection. The high-speed data transfer is executed via eSATA interface.
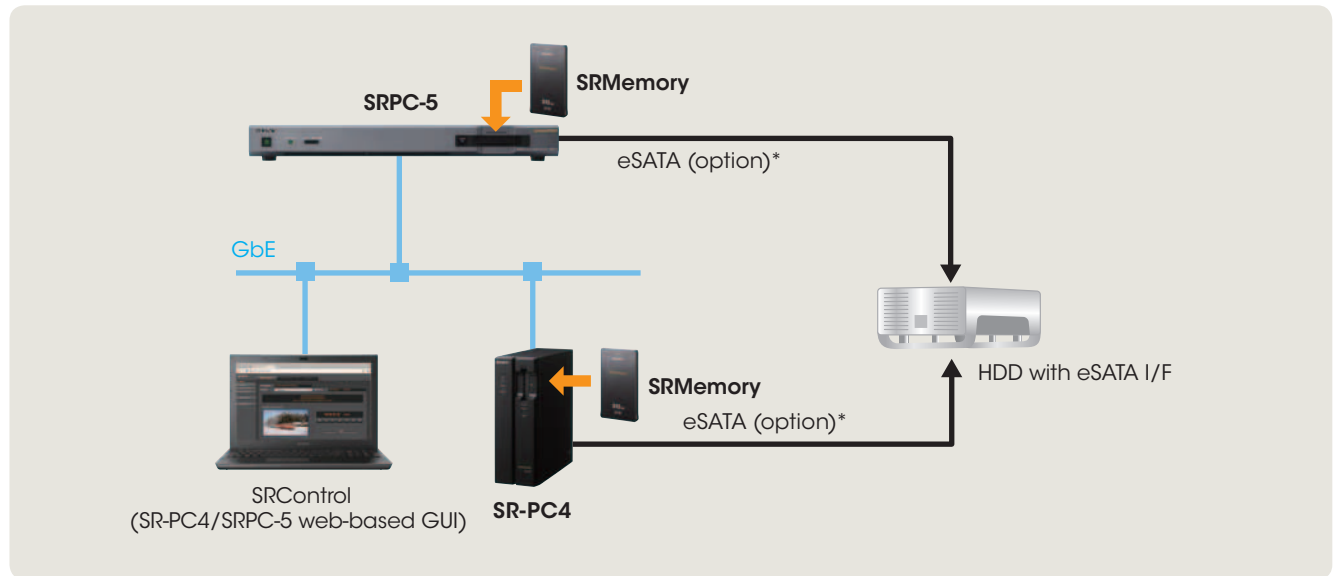
* Requires a third-party eSATA PCIe card.

High-speed Ingest

The transfer of files recorded on SRMemory cards can also be achieved via a GbE network equipped with the SR-PC4 or SRPC-5 data transfer unit. Furthermore, when a third-party 10GbE network interface card is installed into the PCIe expansion slot, the SR-PC4 or SRPC-5 enables file transfers at much higher speeds.
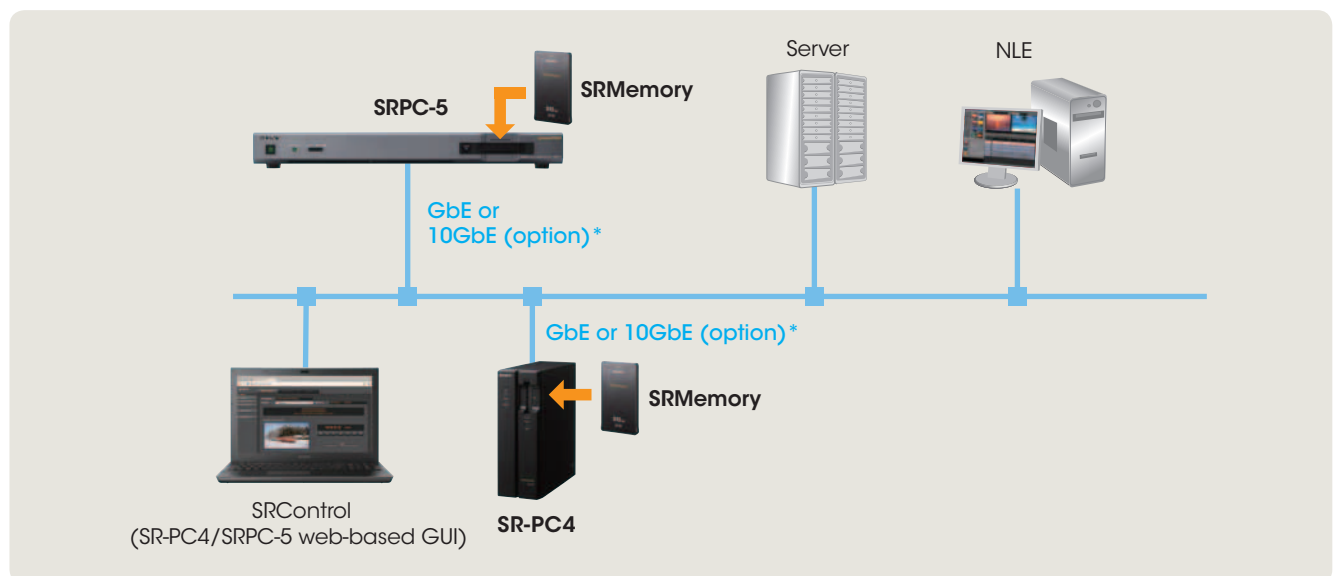
* Requires a third-party PCIe card for 10GbE file transfer.

SRMASTER – Ultimate Storage System

SRMASTER

Newly introduced with the F65 camera, SRMASTER is a next-generation storage format specifically designed to satisfy the increasing demands of file-based productions. A variety of SRMASTER products are available in the line-up to enable effective end-to-end workflow.

SRMemory

The SRMemory card is an ultra-high-speed, high-capacity, and highly-reliable flash memory media for SRMASTER Series products. It is ideal for demanding professional applications including high-resolution digital cinematography, high frame rate recording, and 3D production. The SRMemory card line-up includes three speeds and three capacities in six different models to best accommodate the full range of user requirements. Thanks to its sustained data throughput, the SRMemory card can record and playback multiple streams simultaneously, and supports data rates that can handle up to 4K*.

* Depending on the data rate of the recording signal (such as 4K, dual-stream, and I/O configuration), the selection of SRMemory cards may be limited.

SRMemory

Maximum Recording Time (Approximate)
Unit: min

SR-R4 Supported Format				SRMemory Card					
				SR-256S15	SR-512S25	SR-1TS25	SR-256S55	SR-512S55	SR-1TS55**
RAW/HD	Bit Depth	Recording Mode	Frame Rate	1.5 Gbps	2.5 Gbps	2.5 Gbps	5.5 Gbps	5.5 Gbps	5.5 Gbps
				256 GB	512 GB	1 TB	256 GB	512 GB	1 TB
F65RAW	16-bit Linear	F65RAW-Lite*	23.98p/24p	25	50	101	25	50	101
			25p	24	48	97	24	48	97
			29.97p	20	40	81	20	40	81
			59.94p/60p	N/A	N/A	N/A	10	20	41
		F65RAW-SQ	23.98p/24p	N/A	30	61	15	30	61
			25p	N/A	29	58	14	29	58
			29.97p	N/A	N/A	N/A	12	24	48
			59.94p/60p	N/A	N/A	N/A	6	12	24
		F65RAW-HFR*	119p/120p	N/A	N/A	N/A	6	12	24
HD SStP*	4:2:2 10-bit	SR-Lite	23.98PsF	142	285	572	142	285	572
			25PsF	137	274	549	137	274	549
			29.97PsF	114	228	457	114	228	457
			50p	72	144	290	72	144	290
			59.94p/60p	60	120	241	60	120	241
	4:2:2 10-bit	SR-SQ	23.98PsF	75	150	302	75	150	302
			25PsF	72	144	290	72	144	290
			29.97PsF	60	120	241	60	120	241
			50p	38	76	153	38	76	153
			59.94p/60p	32	64	128	32	64	128
	4:4:4 10-bit	SR-SQ	23.98PsF	75	150	302	75	150	302
			25PsF	72	144	290	72	144	290
			29.97PsF	60	120	241	60	120	241
			59.94p/60p	32	64	128	32	64	128
	4:4:4 10-bit 4:4:4 12-bit	SR-HQ	23.98PsF	40	80	160	40	80	160
			25PsF	38	76	153	38	76	153
			29.97PsF	32	64	128	32	64	128
			59.94p/60p	16	32	65	16	32	65

 * F65RAW-Lite, F65RAW-HFR and HD SStP recording will be supported by a software upgrade.
** SR-1TS55 card will be available in summer 2012.

SR-R4 Dockable Memory Recorder

The SR-R4 is exclusively designed as the companion dockable recorder for the F65. It takes full advantage of the ultra-high-speed SRMemory platform to record RAW data from the F65 at an unprecedented data rate up to 5.5 Gbps. Furthermore, HD recording in the MPEG-4 SStP format is also offered with the F65 and SR-R4 for HD production.

Main Features

• Direct docking to the F65 camera; no external cable required
• F65RAW (16-bit linear RAW) recording
• 60 minutes of RAW recording onto a 1 TB SRMemory card at 24 fps
• HD MPEG-4 SStP recording*
• Select FPS – variable frame rate image capturing from 1 fps to 120 fps**
• Up to 16 channels of 24-bit audio recording*
• Two channels of analog audio inputs
• Timecode In/Out
• Control panel (optional: SRK-CP1)

  * Will be supported by a software upgrade (Available Summer 2012).
** 61 fps to 120 fps and variable frame rate recording will be supported by
    a software upgrade.

SR-PC4 Memory Data Transfer Unit

The SR-PC4 is an SRMemory data transfer unit specifically designed for the on-set production environment. It can be smartly integrated into commodity PC-based production tools such as on set dailies systems and color grading systems. Materials shot by the F65 camera can be instantly reviewed via the SR-PC4 web-based GUI (SRControl) immediately after shooting.

Main Features

• SRMemory READ/WRITE*
• Fast data transfer from SRMemory card to servers and/or
  NLEs via GbE or an optional 10GbE** network interface;
  files and clips can be easily browsed using the SR-PC4 GUI
• F65RAW monitoring via HD-SDI connection
• Direct data copy to shuttle drives via an optional eSATA
  (host)** interface

  * SRMemory WRITE will be supported by a
   software upgrade (Available Summer 2012).
** Requires a third-party PCIe card.

F65RAW Viewer

F65RAW Viewer is a free application to view video clips shot with the F65 and SR-R4. Other than viewing clips, it supports F65 workflow with variable functions. Features of the F65RAW Viewer:
• Browse clips and metadata shot with the F65 and SR-R4
• View clips in a selected resolution: 4K, QFHD, 2K, or HD
• Develop RAW data and convert it to RGB data by batch processing
• Primary color grading, and sensitivity adjustment, color temperature, and look control
• Export files in DPX: 10/16-bit, 4096 x 2160/3840 x 2160/2048 x 1080/1920 x 1080 or OpenEXR: 32-bit float, 4096 x 2160/3840 x 2160/2048 x 1080/1920 x 1080
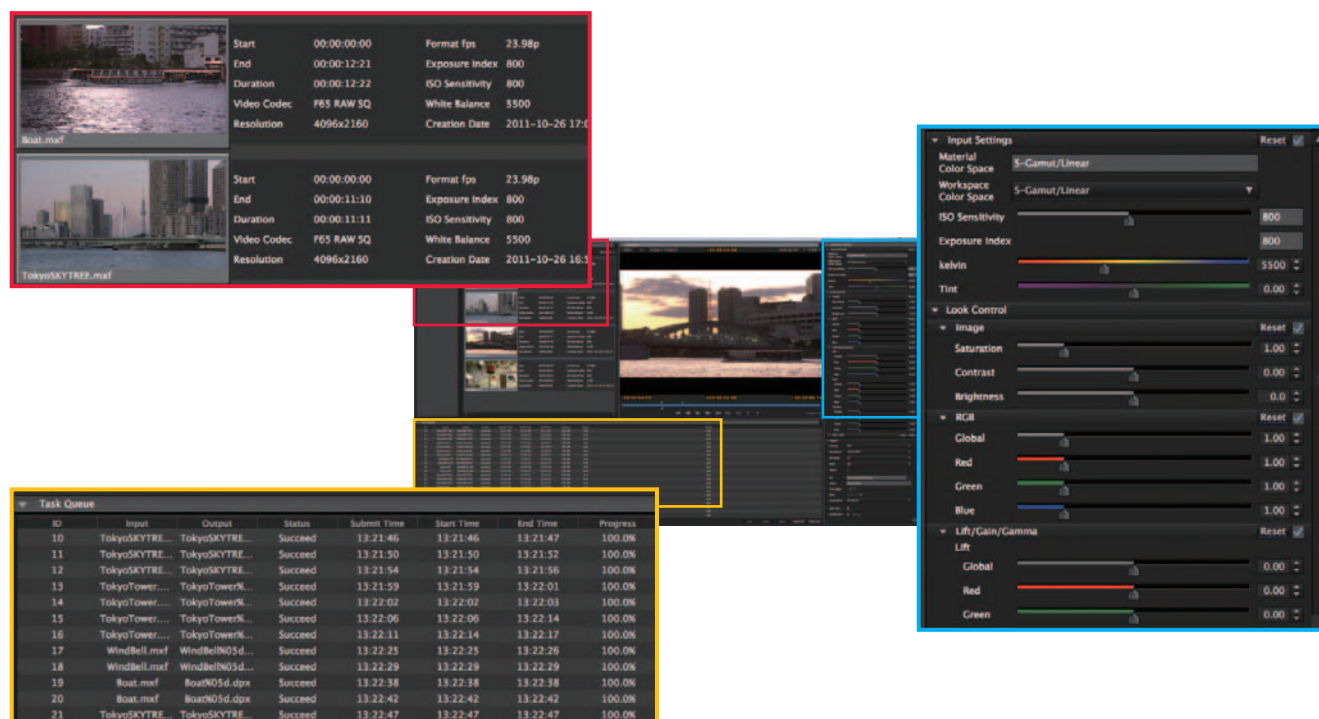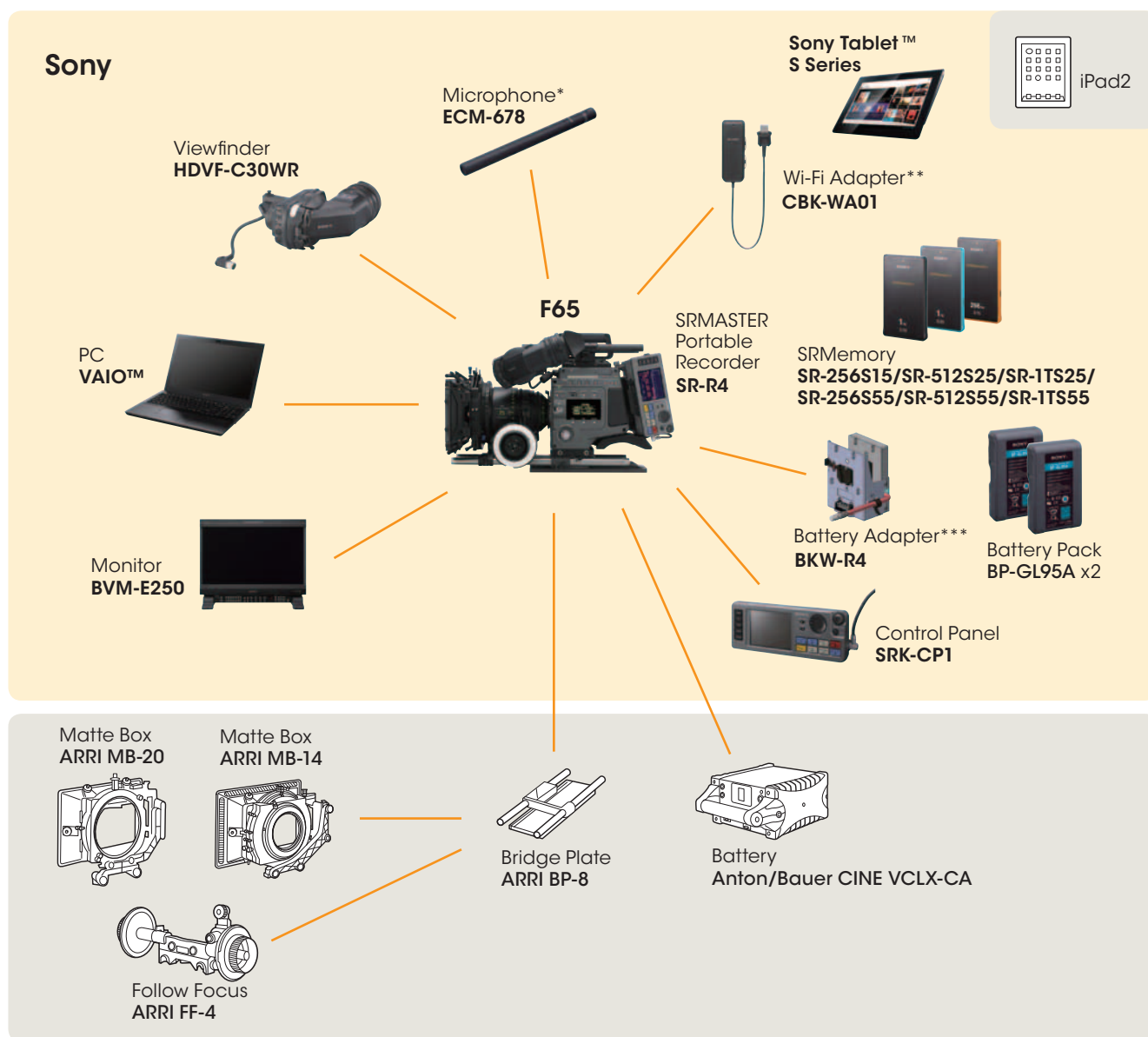

Digital Intermediate

Various companies provide several digital intermediate solutions. If a third-party wishes to develop its own solution, Sony will supply an SDK; please refer to the following license program.

SRMASTER License Program:

Sony offers a license program to support third-party development for the SRMASTER format. The program includes supply of technical documents and an SDK.
For more information, please contact: sr-license@jp.sony.com

Optional Accessories

Sony

Viewfinder
HDVF-C30WR

Microphone*
ECM-678

Sony Tablet™
S Series

iPad2

Wi-Fi Adapter**
CBK-WA01

PC
VAIO™

F65

SRMASTER
Portable
Recorder
SR-R4

SRMemory
SR-256S15/SR-512S25/SR-1TS25/
SR-256S55/SR-512S55/SR-1TS55

Monitor
BVM-E250

Battery Adapter***
BKW-R4

Battery Pack
BP-GL95A x2

Control Panel
SRK-CP1

Matte Box
ARRI MB-20

Matte Box
ARRI MB-14

Bridge Plate
ARRI BP-8

Battery
Anton/Bauer CINE VCLX-CA

Follow Focus
ARRI FF-4

* Requires an optional microphone holder to be attached to the F65.
** Requires an optional Wi-Fi mounting bracket to be connected to the F65. No upgrade key (CBKZ-UPG01/CBK-UPG01) is required.
*** Will be available in summer 2012.

Optional Parts

CBK Bracket

A-418-596-01 Wi-Fi Mounting Bracket

Extension Cables for SRK-CP1

1-829-412-11 (1.8 m)   1-832-382-11 (20 m)
1-832-381-11 (10 m)   1-838-003-11 (50 m)

Parts for ND Filters

A-1617-046-A Filter Base Assy
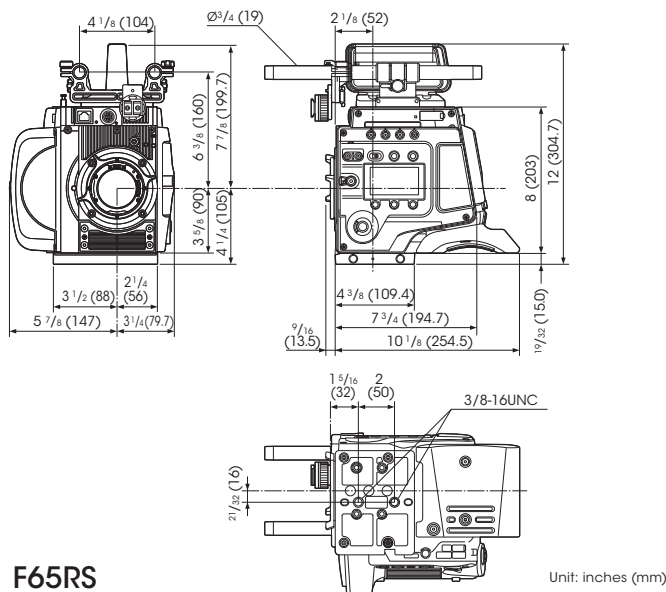A-1675-958-A Sub Filter Base Assy

Shims

4-260-711-02	0.02 mm (0.0008 inch)
4-260-711-12	0.03 mm (0.0012 inch)
4-260-711-22	0.04 mm (0.0016 inch)
4-260-711-32	0.05 mm (0.0020 inch)
4-260-711-42 (standard)	0.06 mm (0.0024 inch)
4-260-711-52	0.07 mm (0.0028 inch)
4-260-711-62	0.08 mm (0.0032 inch)
4-260-711-72	0.09 mm (0.0036 inch)
4-260-711-82	0.10 mm (0.0040 inch)

Specifications

General	
Power Requirements	DC 10.5 V to 17 V
Power Consumption	Approximately 65 Watts in 23.98P using the Rotary Shutter (not including a lens or a viewfinder)
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	–4°F to +140°F (–20°C to +60°C)
Weight	11 pounds (5.0 kg) without included accessories. 14 pounds 5 ounces (6.5 kg) with included accessories

Imager	
Imager	Super 35-mm CMOS image sensor (Total 20 megapixels)
Method	Single sensor
Aspect Ratio	17:9
Sensor Size	24.7 x 13.1 mm (1 x 1/2 inches), diagonal 28.0 mm (1 1/8 inches)

Electrical Characteristics	
Latitude	14-stop
ISO Sensitivity	ISO800
Shutter Angle	4.2° to 360° (Electrical shutter), 11.2° to 180° (Mechanical rotary shutter)

Optical System Specifications	
Lens Mount	PL Mount
Flange Focal Length	52.00 mm (±0.04 mm adjustable in 0.01 mm increments by shim replacement)

Input/Output Connectors	
DC Input	LEMO 8-pin male (x1), DC 10.5 V to 17 V, 20 V to 30 V
DC Output	12 V: 11-pin (x1), DC 12 V, 4 A maximum 24 V: 3-pin (x1), DC 24 V, 4 A maximum (The usable current may be limited depending on the load and input conditions.)
Viewfinder	20-pin (x1)
Lens	12-pin (x1)
SDI OUT	BNC (x2), HD-SDI signal, 4:2:2, BTA-S004A-compliant, 75 Ω, 0.8 Vp-p, 1.485 Gbps
HD-Y OUT	BNC (x1), 75 Ω, 1.0 Vp-p
Genlock Input	BNC (x1), 75 Ω, SMPTE 274M HD 3-level sync, 0.6 Vp-p
Remote	8-pin (x1)
External Input/Output	LEMO 5-pin, female (x1)
Ethernet	RJ-45 type (x1), 10BASE-T, 100BASE-TX
Lens Mount Hot Shoe	4-pin (x2), conforming to ARRI LDS (Lens Data System) and Cooke /I Intelligent Electronic Lens System
USB	Type A, USB2.0 Hi-Speed (x1)
"Memory Stick™" (MS)/SD Memory Card	Combo-connector (x1) Supports "Memory Stick Duo™", "Memory Stick PRO Duo™" Supports SD memory cards, SDHC memory cards up to class 10

Supplied Accessories	
	+B3 × 5 screws (4), Cable clamp belt (1), Belt bracket (1), Power cable connector (LEMO 8-pin) (1), Operation guide (1), Operation manual (CD-ROM) (1)

The F65 and the SR-R4 are classified as a CLASS 1 LASER PRODUCT.

Dimensions

F65RS

Unit: inches (mm)